

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N268855916

FACILITY: Advanced Disposal Services Arbor Hills Landfill Inc		SRN / ID: N2688
LOCATION: 10690 W. SIX MILE RD, NORTHVILLE		DISTRICT: Jackson
CITY: NORTHVILLE		COUNTY: WASHTENAW
CONTACT: Anthony Testa , Site Manager		ACTIVITY DATE: 10/28/2020
STAFF: Mike Kovalchick	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: SEM Survey conducted with 33 exceedances found.		
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 October 28, 2020, AQD conducted an announced compliance inspection of the Arbor Hills Landfill owned and operated by Advanced Disposal Services (Company) located at 10690 West Six Mile Road, Northville, 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-N2688-2011a; National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills 40 CFR Subpart AAAA; and the Federal New Source Performance Standard (NSPS) for Municipal Solid Waste Landfills 40 CFR Part 60, Subpart WWW.

Mike Kovalchick performed an abbreviated methane surface emission monitoring (SEM) survey with assistance from Diane Kavanaugh Vetort. H₂S measurements were also taken. A representative of Sniffer Robotics was also present during the inspection. Sniffer Robotics performs the quarterly NSPS SEM surveys for the Company.

General Summary of the Results:

During the inspection, AQD performed an abbreviated surface emission monitoring (SEM) survey according to the standard and found **33** areas with surface methane concentrations greater than 500 ppm. AQD staff used a SEM 5000 methane detector device equipped with a NSPS Subpart XXX compliant sampling wand. Instrument specifications and calibration information are available in Section (1) while detailed spreadsheets/reports of the data collected have already been provided electronically to the Company via email. Section (2) provides an aerial image of the landfill showing the path followed during the survey and the locations of methane concentrations above 500 ppm.

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	Caisson well Cell 4E	42.40588967	-83.55624233	10,412
AQD 2	Just NE of Well 434	42.40588067	-83.5569145	916
AQD 3	2 penetrations at Well 434	42.40586817	-83.5569705	2221
AQD 4	2 penetrations at Well 412	42.40584833	-83.55775183	59,610
AQD 5	Well 411, East next to the well	42.4058405	-83.55844333	673
AQD 6	Well 411 at penetration. 2 penetrations	42.40582467	-83.55848717	17,253
AQD 7	Exactly ½ way between 2 wells #411 and #412 (wells that are in line along north side landfill)	42.4058245	-83.55882467	1015
AQD 8	Between same wells #411 and #412 but to the West of AQD7.	42.405816	-83.55886783	891
AQD 9	Between Wells 409 and 410, closer to	42.40579317	-83.5601975	4377

	409			
AQD 10	Well 408 at the wellhead / vacuum is the second penetration.	42.40573783	-83.56071733	807
AQD 11	Well 407 at the wellhead. Start of erosion rill w/multiple hits.	42.40570217	-83.561476	2966
AQD 12	In erosion rill next to Well 407 [Note: Above ground header (Jumper) line runs length from Well 407 to higher elevation wells, along the erosion rill]	42.40570133	-83.56144783	1242
AQD 13	Higher uphill elevation (heading south) in same erosion rill	42.40564217	-83.56140983	1494
AQD 14	Higher uphill elevation (heading south) in same erosion rill	42.40555017	-83.56142083	699
AQD 15	Higher uphill elevation (heading south) in same erosion rill	42.405148	-83.56140167	704
AQD 16	Just north of Well 415	42.40511667	-83.56138517	1315
AQD 17	Just north & east of Well 415	42.40508083	-83.5613665	593
AQD 18	In the erosion rill, higher up elevation, south of jumper line. Between Well 415 and Well 423 (top active face)	42.40476683	-83.56124567	527
AQD 19	Well 147AR3, high at the top of the hill	42.40391017	-83.56075183	4243
AQD 20	At Sump, south of Active Face. North of Well 286R.	42.40205867	-83.55763133	829
AQD 21	Well 311R Caisson, at top of the hill	42.4013775	-83.5568965	3780
AQD 22	Well 265R2, at the well head	42.40314517	-83.55643633	114,995
AQD 23	Well 264R2 (2) penetrations. Well is at top/active face.	42.4032405	-83.557268	53,388
AQD 24	Access Riser (No ID, essentially can become a well) this is 1 penetration. On slope facing east to Cell 6.	42.40387817	-83.556866	50,723
AQD 25	Caisson Well 5-01. (3) penetrations. Leaking in two places, at the Fernco and at the Cap. Appeared to have two damage nicks in cap with discoloration, and gas could be seen/heard and smelled. Methane concentration exceptionally high from damaged cap. NOTE: Generally high hit area starting about 20 feet from Well 5-01 on slope facing east to Cell 6.	42.40429733	-83.55687983	32,873
AQD 26	Access Riser in line with the above Well 5-01, further north.	42.40481383	-83.55695583	35,254
AQD 27	Well 439R	42.40479667	-83.55651167	4257
AQD 28	Cell4E Temporary separation Berm. Visible length of Synthetic liner bubbling up with gas. Installed a Vacuum with Jumper line to well on slope.	42.40502217	-83.55550667	1010
AQD 29	At Cell 4E Temporary separation Berm, farther south. [See attached photo.]	42.404903	-83.55552783	717
AQD 30	Well 437, (2) penetrations	42.40535283	-83.555958	7254
AQD 31	Next to Well 437, in the same construction area of the well.	42.405314	-83.55599333	858
AQD 32	Well ??, (2) penetrations, located at the top of the hill, active face. (Note, this is one w/flag 33)	42.4053595	-83.55670283	2040
AQD 33	Well 433, located farther north of the above. (Note, this is one w/flag 32)	42.4058555	-83.55620283	715

*All methane concentrations above 500 ppm were marked with an orange 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 October 28, 2020.

General SEM Survey Comments:

This was a follow-up SEM to a previous AQD SEM survey that was conducted on June 25, 2020. During that survey, an area of concern was noted near the active face on the northside of the landfill. This SEM survey focused on that area of concern noted before.

The Company's consultant accompanied us during the survey and took concurrent readings. A CAIRPOL H2S monitoring device was also used during the survey in conjunction with the SEM 5000. This device records readings as 1-minute averages over the distance walked during that one minute and measures in the part per billion (ppb) range. The H₂S readings were taken about 3 feet off the ground from a short post attached to the SEM 5000 device.

Downwind methane reading as measured on Napier Road prior to the SEM survey was 14 ppm which is notable. The methane was in conjunction with a strong sewage like smell. Cover integrity observed during the AQD SEM survey appeared to be variable. Newly planted grass was evident of the north slope just north of active area. The very top of the landfill that was not surveyed has been leveled flat and was completely bare. The area on the west side of the landfill south of the geo-liners have been reseeded. Areas near the top of the south slope is being graded over in preparation to be seeded. Overall, it appears the landfill has improved cover in several areas since the last visit. Soil conditions were moist to occasionally muddy along nearly the entire survey route due to recent rain.

Observed gas collection well heads were generally in good condition although several were hard to reach due steep elevation difference from base slope elevation. Some had newly added bentonite at the base of the wellheads. SEM hits detected were related to surface penetrations, in erosion rills, and others associated with wells that are known to contain water that has completely submerged the perforated well screen preventing adequate gas capture. A separation berm at the edge Cell 4E was also a source of methane hits. (See attached photo.) This exposed berm liner was inflated due to trapped methane under it although vacuum was being applied to it to remove it. Areas to the south of the active area in the higher elevations had low methane/H₂S background levels due to much thicker cover present in this area. This also coincides with wells that have previously measured well head landfill gas H₂S concentrations above 1000 ppm. An area just to the North and East of the active area remain areas of concern due to both elevated methane and H₂S levels.

SECTION 1:

Pursuant to 40 CFR 60.753(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 60.753(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 a SEM 5000 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 NSPS Subpart WWW. The instrument was calibrated using calibration gas of zero and 500 ppm of methane. All monitoring and calibration were done between 8:00 and 11:00 AM. Monitoring was observed by Company representatives.

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	38° F.	44° F.
Relative Humidity	89%	65%
Wind Speed mph	7 mph	16 mph
Wind Direction	W	W
Pressure/Trend	30.04" S	30.04" S
Sky Conditions	Sunny	Sunny
Soil Conditions	Moist	Moist
Background methane	2 ppm taken on Chubb road.	

upwind	
Background methane downwind	14 ppm taken just east of landfill on Napier road.

SECTION 2:

Pursuant to 40 CFR 60.755(c), 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 60.753(d).

(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 60.755 (c)(4)(v) 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 60.755 (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 a previous table, **33** locations were found to have exceeded the 500 ppm above background threshold during the inspection. The attached aerial image of the AHL shows the path followed during the survey and the locations of methane concentrations above 500 ppm. It also shows the locations of where H2S was measured to be above 20 ppb. Finally, it outlines the locations of the areas of concern and the current location of the active face.



Image 1(SEM Path) : SEM Path along with SEM methane hits and areas where H2S was above 20 ppb.(Yellow circles.)



Image 2(Berm): Cell 4E separation berm ballooning out due to trapped methane.

NAME Mike Kovalchik

DATE 10/28/20

SUPERVISOR [Signature]