



STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
JACKSON DISTRICT OFFICE



GRETCHEN WHITMER  
GOVERNOR

LIESL EICHLER CLARK  
DIRECTOR

March 14, 2019

**CERTIFIED MAIL- 7017 3380 0000 4105 8346**  
**RETURN RECEIPT**

Mr. Mark Johnson  
Advanced Disposal Services, Arbor Hills Landfill Inc.  
10833 West Five Mile Road - Building B  
Northville, MI 48168

SRN: N2688, Washtenaw County

Dear Mr. Johnson:

**VIOLATION NOTICE**

On January 18, 23 and 29, 2019, the Department of Environmental Quality (DEQ), Air Quality Division (AQD), conducted an inspection of Advanced Disposal Services, Arbor Hills Landfill Inc. (Company) located at 10690 West Six Mile Road, Northville Michigan. The purpose of this inspection was to determine the Company's 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) and the associated Air Pollution Control Rules, the conditions of Renewable Operating Permit (ROP) number MI-ROP-N2688-2011a; and Permit to Install (PTI) permits 19-17B & 79-17.

During the inspection and subsequent records review, AQD staff observed the following beyond what was previously described in Violation Notice (VN) dated February 7, 2019, for the same inspection:

Process Description	Rule/Permit Condition Violated	Comments
Asbestos Disposal	ROP Emission Unit EUASBESTOS-WEST-S1 S.C. VI. 2.; National Emissions Standards for Hazardous Air Pollutants Subpart M - Asbestos (Asbestos NESHAP) 40 CFR 61.154(f).	Required asbestos disposal location map is incomplete. The map only depicts disposal areas going back to June 2018.
Asbestos Disposal	ROP Emission Unit EUASBESTOS-WEST-S1 S.C. VII.6.; Asbestos NESHAP 40 CFR 61.154(j).	Company not notifying AQD District, 45 days prior to excavating in asbestos disposal area.
Asbestos Disposal	ROP Emission Unit EUASBESTOS-WEST-S1 S.C. III.1.; Asbestos NESHAP 40 CFR 61.150, 61.154	No asbestos warning signs were observed during inspection.
Municipal solid waste landfill (MSWL)	ROP Emission Unit EULANDFILL-S2 S.C. IV.2.; Standards of Performance for New Stationary	One uncontrolled passive landfill gas vent located on northside of landfill. WWW requires control.

	Sources-Subpart WWW- MSWL (WWW) 40 CFR 60.752(b)(2)(iii).	
MSWL	ROP Emission Unit EULANDFILL-S2 S.C. V.1.; WWW 40 CFR 60.753(d); NESHAP: MSWL (AAAA) 40 CFR 63.1955(a)(1).	Quarterly landfill surface methane scans are inadequate. See Note 1
MSWL	ROP Emission Unit EULANDFILL-S2 S.C. VI.1.; WWW 40 CFR 60.755(c)(5), AAAA 40 CFR 63.1955(a)(1).	Failed to correct issues identified in landfill cover integrity inspections since same areas show up in subsequent months.
MSWL	NSPS Subpart WWW 40 CFR 60.755(c)(5), NESHAP Subpart AAAA 40 CFR 63.1955(a)(1).	Landfill cover integrity problems. See Note [2].
Gas Collection and Control System (GCCS)	WWW 40 CFR 60.752(b)(2)(i).	The GCCS design plan dated 4/28/2016 is out of date.
GCCS	ROP Emission Unit EUACTIVECOLL-S2 S.C. VI.1. and 3. WWW 40 CFR 60.755(a)(3) and (5).	4 <sup>th</sup> Quarter 2018 Gas Collection NSPS Well Report shows noncompliance with out of range NSPS well operating parameters. See Note [3].
GCCS	ROP Emission Unit EUACTIVECOLL-S2 S.C. IX.3.; WWW 40 CFR 60.755(a)(3) & (5), AAAA 40 CFR 63.1955.	Failure to submit timely ACT requests for out of range NSPS well operating parameters when well field expansion is not appropriate. Also see Note [3].
GCCS	ROP Emission Unit EUACTIVECOLL-S2 S.C. IV.1.d.; WWW 40 CFR 60.752(b)(2)(ii)(a)(4), AAAA 40 CFR 63.1955(a).	Subsurface methane migration continuing. See Note [4].
GCCS	WWW 40 CFR 60.759; NESHAP 40 CFR 63.6(e)(1)(i).	GCCS wells impaired due to high liquid levels or otherwise compromised. See Note [5].
5000 scfm open utility flare. Began operation 11/2019.	PTI 79-17 Emission Unit EU5000CFMFLARE S.C. III.8.d., 8.e.	Malfunction abatement/preventative maintenance plan (MAP) inadequate. See Note [6].
5000 scfm open utility flare. Began operation 11/2019.	PTI 79-17 Emission Unit EU5000CFMFLARE S.C. IX.1.; WWW 40 CFR 60.755(e), AAAA 40 CFR 63.1955(a))	WWW compliance requirements not met during control system malfunctions that exceeded the 1-hour permit limit. See Note [7].
Two enclosed flares with a combined capacity of 7200 scfm.	PTI 79-17 Emission Unit FGENCLOSEDFLARES-S2. S.C. VI. 2.a.i, 4a; WWW 40 CFR	Unable to determine if flares are operating within 50 degrees F. of required combustion temperatures.

	60.758(c)(1)(i); 40 CFR 60.758(b)(2)(i).	
--	---	--

Note [1] Quarterly surface methane scans failed to indicate if areas of distressed vegetation, cracks, or seeps in the cover were investigated beyond the prescribed path of the scan, despite monthly landfill cover integrity inspections highlighting numerous such areas. Also, the scans consistently avoided active areas on the landfill that could have been easily traversed during off-hours. Finally, the pathways that were followed during the scans appear to only be depicted as approximations on landfill maps despite having the ability to use GPS technology to accurately depict locations traversed.

Note [2] 2018 Monthly Cover Integrity Inspections show numerous problems, including settling of the cap, dead vegetation, erosion on side slopes, ponding of water on the cap, surface cracking, exposed waste/flagging and leachate seeps. Also, many acres at the top part of the landfill lack proper interim cover (i.e. 1-foot of low permeability, compacted soil) despite not having had waste disposed in this area for many months. It is also noted there has been and continues to be numerous construction activities disturbing landfill cover which haven't been quickly repaired. Taken together, this shows cover integrity remains problematic. Cover integrity is necessary to minimize surface emissions of landfill gas and to ensure efficient extraction of gas through a landfill's gas collection system.

Note [3] 4<sup>th</sup> Quarter 2018 Gas Collection NSPS Well Exceedances Report shows numerous wells exceeding required NSPS landfill gas collection operating parameters at the conclusion of the reporting period. The NSPS requires that exceedances of the gas collection control system (GCCS) wellhead monitoring parameters (temperature, oxygen, and pressure) are corrected within 15 calendar days, the GCCS is expanded within 120 days or an alternative compliance timeline (ACT) request be submitted. The Company has failed to be timely with ACT requests. This is a reoccurring problem. See Attachment (1) for details.

Note [4] The Company has failed to implement a proper landfill gas collection system design to mitigate the subsurface migration of methane. Subsurface methane concentrations at perimeter monitoring probes have been exceeding regulatory limits since 2003. The Company reported to the Waste Management and Radiological Protection Division (WMRPD) on 4/26/2018 that methane levels exceeding the lower explosive limit (LEL) are continuing. Methane surface scans as late as 4<sup>th</sup> quarter 2018 showed methane also at the surface along the eastern boundary of the facility. Part 115 Rule 433 was also cited by the WMRPD on January 7, 2019 for this same issue.

Note [5] NSPS Subpart WWW requires proper well design to properly handle water/leachate condensate in landfill gas wells. NESHAP Subpart AAAA requires owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Report on liquid level in gas wells was submitted by Company for well data obtained in September 2018. Leachate in the landfill gas wells impairs functionality of gas extraction. The design for vertical gas extraction wells includes an estimated radius of influence (ROI) which is based in part on the length of perforated pipe available for gas flow. A substantially flooded well will be limited in its ROI and this will lead to gaps in gas collection coverage.

Liquid level data of 215 wells was available for September 2018. Of those 215, 151 wells had more than 50% of the perforated well screen portion of the well submerged in liquid. Of those 151, 75 wells were more than 75% blocked and 35 wells were fully saturated with liquid. This

even though many of the wells are equipped with pumps to remove the leachate. Good engineering practices note that no more than 25% of the well screen should be covered in water. The well data shows that overall, the effectiveness of the entire landfill gas collection system has been significantly degraded by this problem. See Attachment (2). The table was constructed based on liquid levels measured by the Fortistar Methane Group. The liquid levels were measured from the top of the wells using a liquid level indicator meter. The % open screen was calculated based on available well construction records. (Note that the U.S. Environmental Protection Agent-Region V (EPA) reported that as of September 29, 2016, 70 wells had more than 50% of the perforated well screen portion of the well submerged by leachate which shows that the problem of saturated landfill gas wells has increased since that time.)

Liquid levels for the gas wells listed in Attachment (2) raises concerns about the functionality of these gas wells. Many of the wells listed also exhibit high methane concentrations (over 55%) along with notes indicating that the valve is 100% open. This is a strong indication that liquid levels are impeding gas collection. In addition, even if the wells with high liquid levels appear to be productive currently, the long-term presence of liquids can contribute to fouling of the stone and well screen, reducing the effectiveness of these wells over time. The Company should immediately begin evaluating the gas wells listed in Attachment (2) to determine which wells warrant the installation of pumps or to identify other appropriate corrective actions.

Although Attachment (2) lists gas wells that may already have pumps, many of these wells still exhibited elevated liquid levels. There is concern on whether the pumps and force mains are effective for allowing adequate dewatering of these wells. While it is understood that some liquid recharge in the wells would occur during the liquid level gauging activities, it would not be expected to see this level of flooding in this number of wells where pumps were already in place. The Company should conduct an evaluation of the gas wells listed in Attachment (2) to ensure that the installed pumps are functional, that the pump's discharge capacity is adequate to conduct effective dewatering, and that the force main for the pump discharge is not obstructed. The Company should also evaluate the wells for which well screen saturation information was not provided to the DEQ.

The following gas wells appear to be pinched or otherwise significantly obstructed based on information received from the Company:

AHW223R4, AHWW261R, AHWW265R, AHWW0281, AHWW0303, AHWW0334, AHWW0416, AHWW0421, AHWW0422, AHEW028M, AHWW0278, AHWW251R, AHWW273R, AHWW273R, AHWW0289, AHWW0305, AHEW026M, AHEW031M, AHC4W107, AH146AR2.

The Company should conduct an evaluation for these wells to determine which are no longer viable based on the depth of the pinch/obstruction and the available gas quality/vacuum/flow data, etc.

Note [6]. The MAP was submitted to the AQD in the Fall of 2018. It failed to identify blowers as major replacement parts that should be maintained in inventory for quick replacement in the event they failed. This contributed to the 4+ months it took to resolve a major malfunction of the blower system that feeds landfill gas to the flares lasted. In addition, the MAP does not include the required descriptions of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

Note [7]. WWW compliance requirements apply such as directing all collected landfill gas to a treatment system or flare, except during periods of start-up, shutdown, or malfunction, provided

that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed **1 hour for treatment or control devices**. There were several incidents in 2018/2019 that either due to problems at the AHE facility, construction downtime, blower problems or issues with liquid in the knockout tank preventing gas from reaching the flares that lasted longer than one hour.

In additions to the alleged violations outlined above, there are several areas of concern that need to be addressed.

-The Company is adding sewage sludge and other types of wastewater sludge material to Cell 4E. For the purposes of NESHAP AAAA, these types of high-water content wastes are considered liquids for the purposes of showing compliance with bioreactor requirements in 40 CFR 63.1947, 63.1955(c), and 63.1955(c) through (f). This cell is not controlled by a landfill gas collection system that has been activated, so calculations need to be done to show that the percent moisture by weight expected in the waste mass to which liquid is being added is less than 40 percent. (Note: Recent Company disclosure that as much as 27 feet of leachate was sitting on parts of the landfill liner for Cell 4 suggests the waste mass may have become saturated. This could greatly accelerate the generation of landfill gas in a location that is not yet controlled by the gas well collection system.) The calculation must consider the waste mass, moisture content of the incoming waste, mass of the water added to the waste including any leachate recirculation and other liquids addition, and precipitation, and the mass of water removed or other water losses. Moisture level sampling or mass balances calculations can be used. Please provide these calculations as part of your response to this VN using the most recent data available.

-Letter of Concern dated January 2, 2019, outlined concerns about significant odors emanating from a leachate seep known as TS-01. This leachate seep has been present at the landfill since at least May 2018 and has yet to be resolved by the Company. Please provide an update on what the Company is doing to resolve this matter and the other areas of concerned outlined in the letter.

The site visit conducted on March 12, 2019, identified new sources of odors at the facility in addition to the TS-01 seep and associated odorous "frac" tanks. These include a new leachate seep located just west of the TS-01 seep with a leachate creek draining down towards the base of the landfill, and two highly odorous landfill gas areas coming out of the ground located above the north geo-liner. Odors were also coming from a passive landfill gas vent located near Six-Mile road. In addition, there was a probable landfill gas bubble under the geo-liner on the northwest side of the landfill, a much larger gas bubble under the north geo-liner on the liner's west side, and a surface landfill gas seep just above the TS-01 area. Please provide an update on how the Company will be dealing with these new areas of concern.

-Based on the three (3) visits to the active asbestos disposal areas, there is a concern that the asbestos waste is not being covered with soil each evening on days after a shipment has been received. Rather, it is suspected that it is being done when a disposal pit is full which can take days or weeks. The disposal area on top of the landfill is highly exposed to wind and any asbestos from a broken bag could be quickly blown downwind. It also could represent a hazard to workers servicing nearby landfill gas wells or truck drivers in the area. Please provide daily asbestos records for the month of January 2019 that shows exactly what asbestos wastes were received each day and subsequently disposed of. Provide this information with the response to the VN.

-Please provide a written update on the status of fixing the landfill gas blower flare issue and installing back-up electrical capacity for the flares as outlined in VN dated February 7, 2019.

-Inspection of the compost facility showed that there was a large pile of highly odorous leaves and other organic material that had been received that hadn't been placed in the windrows. It appeared that this material had already partially decomposed and was in an anaerobic state giving off ammonia and hydrogen sulfide odors. Please explain in detail why the Company is receiving material that is already partially decomposed and highly odorous or otherwise not quickly processing the material.

-Highly odorous piles of contaminated soils or other types of odorous waste materials continue to be stock piled at the top portion of the landfill to be used as daily cover at the active face portion of the landfill. There is no indication that this odorous material is being quickly covered upon placement either at the top of the landfill or at the open face. Please explain why the Company is continuing this practice despite it contributing to the well documented odor problem coming from the landfill.

-Arbor Hills Landfill Operations Evaluation Report prepared by Clarke M. Lundell, P.E. dated May 16, 2018, was reviewed as part of this inspection. This report outlined several recommendations that the facility should implement to improve operations at the landfill. Please provide a written update to the status of implementing these recommendations or otherwise provide comment on why these recommendations have not been implemented. Note that many of the recommendations are directly related to remedying the on-going odor problems at the landfill.

Please initiate actions necessary to correct the cited violations and submit a written response to this Violation Notice by April 4, 2019. The written response should include: the dates the violations occurred; an explanation of the causes and duration of the violations; whether the violations are ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the violations and the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

Please submit written response to the DEQ, AQD Jackson District, at 301 East Louis B Glick Highway Jackson, Michigan 49201 and submit copy to Ms. Jenine Camilleri, Enforcement Unit Supervisor at the DEQ, AQD P.O. Box 30260, Lansing, Michigan 48909-7760.

If the Company believes the above observations or statements are inaccurate or do not constitute violations of the applicable legal requirements cited, please provide appropriate factual information to explain your position.

Please also note that the Company is advised that Administrative Order EPA-5-17-113(a)-MI-04 issued May 4, 2017, Paragraph 27 states "Respondent must demonstrate and maintain compliance with the Landfill NSPS, the Landfill NESHAP, the NSPS and NESHAP General Provisions and the facility ROP at the Landfill facility".

Thank you for your attention to resolving the violations cited above and for the cooperation that was extended to me during my inspection of this Company. If you have any questions regarding the violations or the actions necessary to bring this facility into compliance, please contact me at the number listed below.

Sincerely,



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

cc: Mr. Scott Miller, DEQ  
cc/via e-mail: Mr. Jay Warzinski, Vice President LF Operations, ADS  
Mr. Anthony Testa, Advanced Disposal Services  
Mr. Nathan Frank, USEPA  
Ms. Sarah Marshall, USEPA  
Mr. Kenneth Ruffatto, USEPA  
Ms. Mary Ann Dolehanty, DEQ  
Mr. Chris Ethridge, DEQ  
Ms. Jenine Camillari, DEQ  
Mr. Jeff Rathbun, DEQ  
Ms. Diane Kavanaugh Vetort, DEQ  
Mr. Lonnie Lee, DEQ  
Mr. Larry Bean, DEQ  
Mr. Greg Morrow, DEQ  
Ms. Alexandria Clark, DEQ  
Ms. Melinda Shine, DEQ

**Attachment (1)**  
4<sup>th</sup> Quarter 2018 Gas Collection NSPS Well Exceedances Report

Well ID	From	To	Parameter	Notes
AHEW0044*	6/12/2018	End of Quarter	Excess O2	Well valve barely open. ADS say problem due to inoperable dewatering pump. Remedy okay but ACT denied.
AHEW00AA*	6/25/2018	End of Quarter	Excess O2	Well sounding only 11 feet. Remote well head. Well valve barely open. Installed under over-liner at Arbor Hills East. ADS submitted request on January 25, 2019 to decommission well.
AHEW032R	11/2/2018	End of Quarter	Excess O2	Surging in header. 36 feet well sounding with 18.9 feet of leachate. Remedy okay but ACT denied.
AHEW046R*	6/12/2018	End of Quarter	Excess O2	Well valve barely open, well sounding 43 feet with 28.7 feet of leachate. ADS say problem due to inoperable dewatering pump. Remedy okay but ACT denied.
AHEW0ABR*	6/25/2018	End of Quarter	Excess O2	Well sounding only 12 feet. Remote well. Installed under over-liner at Arbor Hills East. ADS submitted request on January 25, 2019 to decommission well.
AHEW78BR	10/3/2018	End of Quarter	Excess O2	Remedy okay but ACT denied.



AHEWRW05	9/14/2018	End of Quarter	Excess O2	Surging in header. Well valve barely open.
AHW0264R*	4/4/2017	End of Quarter	Excess O2	Surging in header. Well sounding only 6.5 feet. ADS say they now have fixed problem by replacing dewatering pump.
AHW259R2	10/26/2018	End of Quarter	Excess Temp	Well valve 100% open. Well sounding 45 feet.
AHWW0176	10/10/2018	End of Quarter	Excess O2	Well sounding 145 feet with 82 feet of leachate. Remedy okay but ACT denied.
AHWTR024	10/4/2018	End of Quarter	Excess O2	
AHWW0262* & ***	9/17/2018	End of Quarter	Excess O2	Well sounding 31 feet with 15.6 feet of leachate. Needs dewatering pump. Remedy okay but ACT denied.
AHWW0290*	1/11/2018	End of Quarter	Excess** Temp	Well sounding 150 feet with 34.2 feet of leachate. ADS to make waiver request.
AHWW0297	10/09/2018	End of Quarter	Excess** Temp	Well sounding 115 feet with 39.6 feet of leachate.
AHWW0299*	5/14/2018	End of Quarter	Excess** Temp	Well valve 100% open. Well sounding 92 feet with 9.8 feet of leachate. ADS to make waiver request.
AHWW0301*	5/14/2018	End of Quarter	Excess** Temp	ADS to make waiver request.
AHWW0302*	5/31/2018	End of Quarter	Excess** Temp	Well sounding 90.1 feet with 15 feet of leachate. ADS to make waiver request.

AHWW0305	10/10/2018	End of Quarter	Excess O2	Well sounding only 12 feet-pinched.
AHWW0308	11/12/2018	End of Quarter	Excess O2	Well valve barely open. Well sounding only 5 feet-pinched. Remedy okay but ACT denied.
AHWW0311	10/09/2018	End of Quarter	Excess** Temp	Well sounding 120 feet with 28.5 feet of leachate.
AHWW0312*	6/21/2018	End of Quarter	Excess** Temp	Well sounding 126 feet with 41 feet of leachate. ADS to make waiver request.
AHWW0315	11/06/2018	End of Quarter	Excess O2 & Temp**	Well sounding 150 feet with 96.4 feet of leachate. ACT for Temp approved but O2 unresolved.
AHWW0323*	4/10/2018	12/17/2018	Positive Pressure	Installed replacement lateral pipe to fix problem.
AHWW0329*	8/6/2018	11/7/2018	Excess O2	Retuned well to fix problem.
AHWW0423*	9/5/2018	End of Quarter	Excess O2, positive pressure	Well sounding 66 feet with 6 feet of leachate. Replaced lateral. ADS plan to pull then reinstall dewatering pump by end of February.
AHWW0425	8/16/2018	End of Quarter	Excess O2	Surging in header. Well sounding 27 feet with 10 feet of leachate. Remedy okay but ACT denied.
AHWW0500*	7/23/2018	End of Quarter	Excess O2	Well sounding only 11.5 feet with 2.5 feet of leachate. ADS say need to install force main to location and install dewatering pump to be completed by end of March.

**Attachment (2)**  
September 2018 Landfill Gas Collection Well Liquid Levels

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AH146AR2	9/29/2018	<b>134.44%</b>	N
AH147AR2	9/13/2018	---	N
AH148AR2	9/19/2018	48.00%	N
AHC4W104	9/19/2018	31.00%	N
AHC4W105	9/29/2018	29.00%	N
AHC4W106	9/29/2018	<b>127.00%</b>	N
AHC4W107	9/29/2018	<b>133.00%</b>	N
AHC4W108	9/19/2018	24.07%	N
AHC4W109	9/13/2018	44.00%	N
AHC4W110	9/19/2018	36.00%	N
AHE78AR2	9/13/2018	<b>208.81%</b>	Y
AHEW0014	9/13/2018	<b>80.33%</b>	Y
AHEW0016	9/13/2018	<b>55.00%</b>	Y
AHEW0018	9/13/2018	30.00%	Y
AHEW0024	9/13/2018	<b>116.60%</b>	Y
AHEW0026	9/13/2018	40.00%	Y

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHEW0059	9/14/2018	<b>74.50%</b>	Y
AHEW0063	9/15/2018	28.00%	Y
AHEW0079	9/14/2018	11.76%	Y
AHEW00AA	9/29/2018	<b>143.00%</b>	N
AHEW00AC	9/14/2018	29.00%	Y
AHEW00AE	9/13/2018	12.00%	Y
AHEW00AF	9/13/2018	34.00%	Y
AHEW00AG	9/15/2018	<b>51.00%</b>	N
AHEW020R	9/13/2018	32.14%	Y
AHEW021R	9/13/2018	<b>72.22%</b>	Y
AHEW022R	9/13/2018	45.00%	Y
AHEW023R	9/13/2018	35.00%	Y
AHEW024M	9/29/2018	Data Missing	N
AHEW025R	9/13/2018	35.00%	Y
AHEW026M	9/13/2018	Data Missing	N

AHWW0501***	11/13/2018	End of Quarter	Excess O2	Surging in header. Well sounding 23 feet with 18.5 feet of leachate.
AHWW0507*	9/11/2018	End of Quarter	Excess O2	ADS say need to install force main to location and install dewatering pump to be completed by end of March.
AHWW257R	9/25/2018	End of Quarter	Excess O2	Surging in header. Well sounding 55.9 feet with 27.7 feet of leachate.
AHWW258R*	Previous Quarter	End of Quarter	Excess O2 & Temp**	Well sounding 150 feet with 71 feet of leachate. Applying for exemption for Temp.
AHWW285R*	5/31/2018	End of Quarter	Excess** Temp	Well sounding 86 feet with 13 feet of leachate. Applying for exemption for Temp.
AHWW286R*	5/31/2018	End of Quarter	Excess** Temp	Well valve 100% open. Well sounding 150 feet with 85.4 of leachate. Applying for exemption for Temp.
AHWWHW11*	1/15/2018	End of Quarter.	Excess O2.	Horizontal well. Camera confirmed excess liquids. Surging conditions. Can't install dewatering pump since horizontal and there are other competing wells nearby, so ADS made request to decommission well which was approved.

\* Already Cited in VN for 3<sup>rd</sup> Quarter 2018. \*\* ADS applying for variance for temperature exceedances in top of landfill area due to special waste generating heat at depth. \*\*\*Wells that appear to be located under surface geomembrane liner.

AHEW0027	9/13/2018	<b>62.00%</b>	Y
AHEW0029	9/14/2018	30.25%	Y
AHEW0033	9/14/2018	<b>51.00%</b>	N
AHEW0038	9/29/2018	47.00%	N
AHEW0040	9/29/2018	<b>207.00%</b>	N
AHEW0052	9/15/2018	19.00%	Y
AHEW0054	9/14/2018	<b>65.00%</b>	Y
AHEW0056	9/14/2018	18.50%	Y

AHEW028R	9/14/2018	17.11%	Y
		Data Missing	
AHEW031M	9/29/2018		N
AHEW032R	9/14/2018	23.00%	Y
AHEW046R	9/15/2018	<b>125.76%</b>	Y
AHEW048R	9/14/2018	-19.60%	Y
AHEW049R	9/14/2018	17.00%	N
AHEW051R	9/15/2018	46.00%	N
AHEW053R	9/14/2018	<b>80.80%</b>	N


AHEW055R	9/14/2018	31.36%	Y

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHEW058R	9/14/2018	<b>64.38%</b>	Y
AHEW062R	9/15/2018	<b>83.58%</b>	Y
AHEW065R	9/15/2018	<b>72.34%</b>	Y
AHEW066R	9/15/2018	<b>101.35%</b>	Y
AHEW067R	9/14/2018	<b>71.23%</b>	Y
AHEW072R	9/13/2018	<b>77.78%</b>	Y
AHEW0ABR	9/29/2018	<b>110.00%</b>	N
AHEW15R2	9/13/2018	<b>57.00%</b>	Y
AHEW19R2	9/13/2018	24.00%	Y
AHEW30R2	9/14/2018	17.00%	Y
AHEW47R2	9/14/2018	26.00%	N
AHEW50R2	9/15/2018	<b>53.00%</b>	Y
AHEW57R2	9/14/2018	<b>68.00%</b>	Y

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHWW0416	9/28/2018	<b>50.62%</b>	N
AHWW0417	9/28/2018	<b>65.75%</b>	N
AHWW0418	9/28/2018	-3.67%	N
AHWW0422	9/27/2018	46.18%	N
AHWW0425	9/28/2018	22.27%	Y
AHW145R2	9/19/2018	<b>64.00%</b>	Y
AHW146R2	9/13/2018	<b>111.45%</b>	N
AHW148BR	9/19/2018	<b>62.41%</b>	Y
AHW149R3	9/19/2018	<b>78.00%</b>	Y
AHW153R2	9/18/2018	<b>83.00%</b>	Y
AHW169R2	8/30/2018	<b>56.36%</b>	Y
AHW171R3	9/18/2018	<b>57.00%</b>	N
AHW172R2	9/19/2018	9.00%	N

AHEW60R2	9/14/2018	<b>70.90%</b>	Y
AHEW61R2	9/14/2018	36.94%	Y
AHEW64AR	9/15/2018	<b>69.89%</b>	Y
AHEW64R2	9/15/2018	<b>103.03%</b>	N
AHEW68AR	9/15/2018	<b>52.00%</b>	Y
AHEW71AR	9/15/2018	<b>54.00%</b>	Y
AHEW71R2	9/18/2018	<b>81.00%</b>	Y
AHEW78BR	9/13/2018	<b>90.00%</b>	Y
AHWW0413	9/19/2018	<b>67.10%</b>	N
AHWW0414	9/19/2018	41.67%	N
AHWW0415	9/28/2018	<b>64.95%</b>	N

AHW174R3	9/29/2018	25.00%	N
AHW196R4	9/29/2018	<b>99.00%</b>	Y
AHW197R3	9/28/2018	<b>94.85%</b>	Y
AHW198R3	9/29/2018	<b>118.00%</b>	Y
AHW200R2	9/19/2018	<b>66.00%</b>	Y
AHW201R2	9/19/2018	<b>73.00%</b>	Y
AHW203R3	9/19/2018	<b>67.00%</b>	N
AHW204R2	8/31/2018	<b>98.00%</b>	Y
AHW205R2	9/13/2018	<b>61.00%</b>	N
AHW211R2	8/31/2018	<b>76.00%</b>	Y
AHW213R2	8/31/2018	49.00%	Y
AHW217R2	8/30/2018	<b>74.85%</b>	Y

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHW220R2	8/30/2018	<b>75.89%</b>	Y
AHW221R3	8/30/2018	<b>84.22%</b>	Y
AHW222R4	9/19/2018	<b>59.00%</b>	N
AHW224R3	9/18/2018	<b>55.00%</b>	Y

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHW259R2	9/13/2018	-43.00%	N
AHWW0427	9/28/2018	<b>116.00%</b>	Y
AHWW0501	9/28/2018	<b>232.00%</b>	Y
AHWW0428	9/28/2018	<b>115.00%</b>	Y

AHW225R3	9/29/2018	<b>126.00%</b>	N
AHW226R2	9/18/2018	<b>75.00%</b>	Y
AHW227R2	9/18/2018	<b>87.79%</b>	Y
AHW228R3	9/18/2018	<b>97.00%</b>	N
AHW229R2	9/18/2018	<b>55.00%</b>	Y
AHW230R2	9/18/2018	<b>65.00%</b>	Y
AHEW0080	9/14/2018	<b>229.85%</b>	Y
AHEW031R	9/14/2018	<b>83.00%</b>	Y
AHW231R4	9/18/2018	<b>51.55%</b>	N
AHW232R2	9/18/2018	<b>50.81%</b>	Y
AHW233R2	9/19/2018	<b>87.00%</b>	N
AHW234R2	9/15/2018	<b>67.68%</b>	N
AHW235R3	9/18/2018	<b>68.44%</b>	N
AHW237R3	8/31/2018	<b>80.00%</b>	N
AHW247R2	9/13/2018	<b>73.00%</b>	Y
AHW248R2	9/13/2018	<b>100.59%</b>	Y
AHW249R2	9/13/2018	<b>74.00%</b>	Y
AHW253R2	9/13/2018	<b>69.00%</b>	N

AHWW0426	9/28/2018	<b>56.00%</b>	N
AHWW0424	9/28/2018	48.73%	N
AHWW0500	9/28/2018	<b>212.00%</b>	Y
AHWW0241	9/13/2018	42.72%	Y
AHWW0256	9/13/2018	<b>96.92%</b>	Y
AHWW0262	9/28/2018	<b>129.17%</b>	N
AHWW0266	9/18/2018	21.30%	N
AHWW0267	9/18/2018	<b>96.00%</b>	N
AHWW0269	9/15/2018	<b>66.79%</b>	N
AHWW0275	9/18/2018	<b>145.17%</b>	N
AHWW0276	9/18/2018	44.35%	N
AHWW0278	9/18/2018	<b>112.74%</b>	N
AHWW0279	9/13/2018	0.00%	N
AHWW0280	9/15/2018	18.57%	N
AHWW0281	9/18/2018	<b>82.00%</b>	N
AHWW0282	9/18/2018	<b>92.88%</b>	N
AHWW0283	9/19/2018	<b>58.00%</b>	N
AHWW0284	9/19/2018	<b>51.00%</b>	N



AHW254R2	9/18/2018	<b>77.00%</b>	N
AHW255R2	9/13/2018	<b>72.00%</b>	N

AHWW0287	9/18/2018	40.00%	N
AHWW0288	9/13/2018	<b>62.00%</b>	Y
AHWW0289	9/13/2018	<b>89.67%</b>	N

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHWW0290	9/19/2018	8.00%	N
AHWW0294	9/19/2018	33.00%	N
AHWW0295	9/25/2018	46.00%	N
AHWW0296	9/19/2018	<b>61.00%</b>	N
AHWW0297	9/19/2018	<b>51.00%</b>	N
AHWW0299	9/19/2018	4.27%	N
AHWW0300	9/19/2018	34.00%	N
AHWW0301	9/19/2018	<b>85.00%</b>	N
AHWW0302	9/19/2018	<b>69.05%</b>	N
AHWW0303	9/19/2018	<b>130.00%</b>	N
AHWW0304	9/18/2018	<b>61.00%</b>	Y
AHWW0306	9/18/2018	<b>50.96%</b>	N
AHWW0307	9/18/2018	<b>57.00%</b>	N

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHWW0325	9/13/2018	<b>273.19%</b>	N
AHWW0326	9/18/2018	<b>79.41%</b>	Y
AHWW0327	9/28/2018	<b>138.00%</b>	Y
AHWW148R	9/19/2018	<b>61.00%</b>	Y
AHWW157R	9/18/2018	<b>54.00%</b>	N
AHWW163R	8/30/2018	38.30%	N
AHWW167R	8/30/2018	<b>52.00%</b>	N
AHWW207R	9/13/2018	<b>56.89%</b>	Y
AHWW212R	8/31/2018	<b>87.00%</b>	Y
AHWW214R	8/31/2018	<b>53.00%</b>	N
AHWW239R	8/31/2018	39.00%	Y
AHWW240R	8/31/2018	<b>71.00%</b>	Y
AHWW252R	9/18/2018	<b>78.81%</b>	Y

AHWW0308	9/18/2018	---	N
AHWW0309	8/31/2018	<b>51.00%</b>	N
AHWW0311	9/19/2018	<b>60.00%</b>	N
AHWW0312	9/19/2018	<b>100.00%</b>	N
AHWW0313	9/18/2018	47.00%	N
AHWW0314	9/19/2018	<b>59.00%</b>	N
AHWW0315	9/15/2018	30.54%	N
AHWW0316	9/15/2018	3.00%	N
AHWW0317	9/18/2018	<b>55.00%</b>	N
AHWW0322	9/18/2018	<b>70.00%</b>	Y
AHWW0324	9/13/2018	<b>258.38%</b>	N

AHWW257R	9/18/2018	<b>81.00%</b>	N
AHWW258R	9/18/2018	<b>91.43%</b>	Y
AHWW260R	9/28/2018	<b>106.00%</b>	N
AHWW261R	9/28/2018	<b>133.00%</b>	N
AHWW265R	9/29/2018	<b>63.00%</b>	N
AHWW268R	9/29/2018	27.03%	Y
AHWW270R	9/28/2018	<b>54.00%</b>	N
AHWW271R	9/18/2018	<b>65.00%</b>	N
AHWW273R	9/29/2018	<b>116.65%</b>	N
AHWW274R	9/29/2018	<b>122.45%</b>	N
AHWW277R	9/29/2018	<b>79.00%</b>	N

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHWWTS01	9/13/2018	Data Missing	Y
AHEW0017	9/13/2018	38.82%	Y
AHWW0328	9/18/2018	<b>126.04%</b>	N
AHWW0305	9/18/2018	---	N
AHW215R2	8/31/2018	<b>59.00%</b>	Y
AHW218R2	8/30/2018	<b>76.00%</b>	Y
AHW219R2	8/30/2018	<b>100.73%</b>	Y
AHWW0333	9/18/2018	<b>60.00%</b>	N
AHW263R3	9/28/2018	<b>55.00%</b>	Y
AHWW0329	8/31/2018	<b>51.00%</b>	N
AHW162R2	8/30/2018	46.00%	N
AHWW0338	9/18/2018	<b>82.00%</b>	N
AHWW0337	9/18/2018	<b>82.00%</b>	N
AHW175R4	9/29/2018	<b>102.00%</b>	N
AHW202R3	9/19/2018	<b>76.00%</b>	N
AHWW0400	9/19/2018	Data Missing	N
AHWW0401	9/19/2018	Data Missing	N

Well ID	Sample Date	Screen Submerged (%)	Pump (Y/N)
AHW250R2	9/13/2018	<b>85.00%</b>	N
AHC4106A	9/27/2018	<b>230.00%</b>	N
AHWW0404	9/19/2018	Data Missing	N
AHWW0336	9/15/2018	<b>86.00%</b>	N
AHWW0411	9/28/2018	Data Missing	N
AHWW0429	9/29/2018	4.32%	N
AHWW0408	9/19/2018	Data Missing	N
AHWW0409	9/19/2018	Data Missing	N
AHWW0410	9/19/2018	Data Missing	N
AHWW0405	9/28/2018	Data Missing	N
AHWW0406	9/19/2018	Data Missing	N
AHWW0407	9/19/2018	Data Missing	N
AHWW0502	9/28/2018	<b>84.00%</b>	N
AHWW0504	9/15/2018	16.67%	N

AHWW0402	9/19/2018	Data Missing	N
AHWW0403	9/19/2018	Data Missing	N
AHWW0330	9/15/2018	<b>57.00%</b>	N
AHWW0331	9/18/2018	46.00%	N
AHWW0332	9/18/2018	<b>77.00%</b>	N
AHWW0334	9/15/2018	<b>51.00%</b>	N