Advanced Disposal

April 8, 2020

Ms. Diane Kavanaugh-Vetort
Michigan Department of Environment, Great Lakes, and Energy
Jackson District Office
Jackson State Office Building
301 Louis Glick Highway
Jackson, Michigan 49201

Subject: **Advanced Disposal Services - Arbor Hills Landfill, Inc.**
Response to March 18, 2020 Violation Notice

Dear Ms. Kavanaugh-Vetort:

On March 18, 2020 the Advanced Disposal Services Arbor Hills Landfill (Arbor Hills) located in Salem Township, Michigan received a Violation Notice (VN) issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) dated March 18, 2020.

Attached please find a written response to each of the violations cited in the VN. The response includes: the dates the condition occurred; explanation of the causes and the duration of the conditions cited as a violation; whether the conditions are ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the conditions and the date by which these corrective actions will take place; and what steps are being taken to prevent a re-occurrence of the conditions.

If you have any questions regarding this submittal, please contact me at (248) 412-0704.

Sincerely,
Advanced Disposal Systems - Arbor Hills Landfill, Inc.

Don Kindig
General Manager

cc: Ms. Jenine Camilleri, AQD EGLE Enforcement Unit Supervisor
Mr. Jay Warzinski, AHLF

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Ms. Jenine Camilleri, EGLE
Mr. Lonnie Lee, EGLE
Ms. Alexandria Clark, EGLE
Ms. Diane Kavanaugh Vetort, EGLE
Ms. Melinda Shine, EGLE
Mr. Mike Kovalchick, EGLE

BACKGROUND

Advanced Disposal Services Arbor Hills Landfill, Inc. (Arbor Hills) is an active municipal solid waste landfill operating in Washtenaw County, Michigan. The facility is subject to 40 CFR 60 Subpart WWW (the Landfill NSPS) and operates an active gas collection and control system (GCCS). Extracted landfill gas (LFG) is directed to the third party-operated Fortistar Landfill Gas to Energy (LFGTE) Plant for combustion in 4 gas turbines (3 of which are connected to heat recovery duct burners) with the balance of collected gas directed for combustion in flares owned by the landfill. The flare compound consists of two enclosed flares and one utility flare. The operating status of the flares is a function of the operating status of the LFGTE Plant. Flare operation may be limited to one flare during periods when the LFGTE Plant is operating at full capacity to as many as three flares operating when the LFGTE Plant is offline. Flare operating status is automated through a recently upgraded control system.

Dates of Event/Explanation of Causes/Duration:

As previously described to EGLE in our March 13, 2020 letter, the facility operates two enclosed flares – McGill Flare 391 and Zink Flare 392. The New Source Performance Standards for Municipal Solid Waste Landfills (NSPS), codified in 40 CFR 60 Subpart WWW and Renewable Operating Permit (ROP), MI-ROP-N2688-2011a, require that the site monitor combustion temperatures at each enclosed flare and maintain a rolling 3-hour block average combustion temperature that does not drop 28°C (approximately 50°F) or more below the temperature established in the most recent performance test for each flare. Enclosed Flare 391 (McGill Flare) had an established performance test temperature of 1,700°F measured at the top thermocouple on June 7, 2016. Enclosed Flare 392 (Zink Flare) had an established performance test temperature of 1640°F measured at the top thermocouple on March 22, 2016. Rolling three (3) hour block average combustion temperatures 28°C or more below these values for each respective flare are identified as deviations.

A review of the rolling three-hour block average enclosed flare temperature data for 2019 indicated the enclosed flares were operated at 28°C or more below their 2016 NSPS performance test temperatures for intermittent periods between May 20, 2019 and November 25, 2019 (McGill Flare 391); and between February 14, 2019 and November 14, 2019 (Zink Flare 392).

To aid in the understanding of how low combustion temperatures can occur, the following is a brief explanation of how operating temperatures within an enclosed flare are controlled. Each of the enclosed flares has four air damper louvers. The flare operating temperature is maintained by adjusting the position of the air damper louvers. Opening the air damper louvers reduces the operating temperature by increasing the amount of quench air, while closing the air damper louvers increases the temperature by decreasing the amount of quench air. Fluctuating landfill gas flow rates or varying methane concentrations alter the heat content of the landfill gas that

subsequently, upon combustion, alters the temperature within the stack and therefore requires the air damper louvers to open or close in response to these changes to maintain a preprogrammed operating temperature set point. The opening and closing of the air damper louvers is automated and utilizes a stack-mounted thermocouple (selected based on gas flow rate) which senses the operating temperature and sends a low voltage signal to the control panel temperature controller. This controller sends a 4 - 20 mA signal to an electrically operated actuator on the air damper louvers directing the air damper louvers to open or close depending on the temperature signal received relative to the preprogrammed operating temperature control set point.

The rolling 3-hour block average temperature excursions occurred because the originally programmed operating temperature control set points were lowered by the site's third party control system vendor on two separate occasions – 1) when assisting the site in troubleshooting operations of the GCCS / Zink Flare 392 on January 23, 2019, and 2) when assisting with troubleshooting of the GCCS / McGill Flare 391 on May 1, 2019. On each occasion, the operating temperature control set points were not reset to their prior values, which had corresponded with the 2016 NSPS flare performance test temperatures for each flare. Not re-setting the operating temperature control set points to their respective correct values upon completion of the troubleshooting events was the result of miscommunication between site personnel and the third-party control system vendor. As a result, during subsequent periods of operation after these troubleshooting events, each flare had intermittent periods of operation with 3-hour block average combustion temperatures 28°C or more below the temperatures established during their respective 2016 performance tests.

Low flare combustion temperatures were initially identified by Arbor Hills on December 9, 2019 while reviewing the 2016 stack test reports in preparation for planned performance testing of the flares. Upon discovery of low operating temperatures, the third-party control contractor was contacted and instructed to review the operating temperature control set points. This review concluded that the operating temperature control set point values needed to be reset to the 2016 performance test values, which was done immediately. In addition, a comprehensive audit review of all of 2018 and 2019 data was performed by Environmental Information Logistics (EIL) at the direction of Arbor Hills to identify the extent of the temperature deviations. Temperature deviations identified for each flare were limited to the periods noted above. Arbor Hills was provided historical operating temperature control set point data for each flare from its third-party control system vendor for the period of identified temperature excursions on March 9, 2020. It was clear at that time that the cause of the low combustion temperatures was directly related to the lowered operating temperature control set points. A review of site maintenance records was performed for the dates the programmed set points were noted as having been changed during this same period which confirmed these changes occurred while performing troubleshooting flare operations on the two dates referenced above.

Attachment 1 provides the dates and durations of each rolling three-hour block average of time with temperatures 28°C or more below the established 2016 performance test values.

It is important to note that flare performance testing is not always completed at the lowest possible flare operating temperature at which compliance with the NSPS operational standard for NMOC destruction can be attained. There is an inherent presumption that the established performance test temperature is the lowest possible to achieve compliance, but subsequent performance testing demonstrates that is not always the case. As discussed later, the facility has demonstrated lower performance test temperatures at each flare, compliant with NSPS, both prior to and after the 2016 performance tests.

As EGLE is aware, Arbor Hills recently completed an extensive upgrade of the landfill gas collection and control system located on the south side of the railroad tracks that involved larger conveyance infrastructure, new blowers, a new automated control system, and installation of a large open flare in addition to the repair and maintenance of both 20+ year old enclosed flares. Work on the enclosed flares was performed between October 3, 2019 and November 4, 2019. The follow-up performance testing of both enclosed flares on December 19, 2019, demonstrated that both flares could operate at lower combustion temperatures and meet NSPS requirements. The results of this testing were submitted to EGLE on February 19, 2020. Enclosed Flare 391 (McGill Flare) has a new established performance test temperature of 1520°F as of 12/19/2019, and Enclosed Flare 392 (Zink Flare) has a new established performance test temperature of 1396°F as of 12/19/2019. It is unknown if the flare repair and maintenance work contributed to each flare's ability to operate at lower temperatures because many factors can impact flare performance.

Although these lower operating combustion temperatures were not established until 12/19/2019, it is worth noting that, with the exception of one timeframe, the temperature deviations listed in Attachment 1 starting on 11/7/2019 (after the flare repair and maintenance work was completed) would not be deviations relative to the newly established temperatures. For the one exception noted, the duration of the Zink Flare deviation from November 7-8, 2019 would have been reduced from 38 hours, 16 minutes to one hour, 52 minutes on November 8, 2019.

Event Status

No rolling 3-hour block average low temperature deviations have been recorded since the site had the third-party control contractor re-set the operating temperature control set points for each enclosed flare to their respective 2016 established value on December 9, 2019. Lower operating temperatures at each flare were established during subsequent performance testing on December 19, 2019.

The flare controls are designed to shut-down upon evidence that the combustion temperature is below the established set-point. The automated control system for the flares is functioning as designed.

Summary of Additional Actions Taken and Prevention of Reoccurrence

The underlying cause of the event is miscommunication between the site and its third-party contactor. The respective programmed control operating temperature set-points for each flare were adjusted to aid in troubleshooting efforts but were never reset back to the original established set-points upon completion of the troubleshooting events. As a result, this change culminated in each flare having intermittent periods with a rolling three-hour block average of time with temperatures 28°C or more below their respective established 2016 performance test values during subsequent operation.

To address the root cause of these events, the Site has implemented a more stringent maintenance log that includes documenting conversations with third-party contractors during troubleshooting events, as well as any adjustments that were made to values associated with the flare operating system during said conversations. Moreover, Arbor Hills has instructed the third-party contractor to lock the minimum operating temperature set-point so that it cannot be lowered without direction from Arbor Hills site management or Advanced Disposal Service Region Staff thereby limiting any personnel outside of management level from adjusting set-points without their knowledge. The implementation of these protocols will further mitigate the potential for a re-occurrence of this type of event.

Response to the Violation Notice:

As a general matter, Arbor Hills takes exception to the characterization of the event as excess emissions. There are no discrete permit levels of NMOC (either in terms of lbs or tons) established for the flare or facility for NMOC, above which can be characterized as excess. Further, there is also no clear correlation for NMOC outlet concentrations at different flare temperatures, thus no realistic way to conclusively measure, calculate, or determine whether these events actually resulted in excess emissions. Prior performance tests and the most recent performance test suggests that the enclosed flares could in fact operate at lower temperatures and achieve the compliance threshold.

For clarity, the Department's comments appear below in italic type along with the responses to the issues in the order that they appeared in the VN.

Item 1: *PTI No. 79-17 Condition I.1. NMOC emission limit, WWW 40 CFR 60.752(b)(2)(iii)(B), WWW 40 CFR 60.754(d), WWW 40 CFR 60.758(b)(2) – Operating flares below required combustion temperatures may have resulted in excess NMOC emissions.*

Response: Arbor Hills disagrees that 40 CFR 60.754(d) and 40 CFR 60.758(b)(2) were violated. Specifically, both flares were successfully tested in accordance with 40 CFR 60.754(d) in 2016 and most recently in December 2019. In addition, records required under 40 CFR 60.758(b)(2) have been maintained. Therefore, Arbor Hills has maintained compliance with both of these cited provisions. Further, the statutory provisions listed in 40 CFR 60.752(b)(2)(iii)(B) relate to flare performance that does not correspond to a specific emissions rate that could be quantified as an excess.

Arbor Hills appreciates EGLE's distinction that the events noted herein "may have resulted" in excess NMOC emissions, since the corollary would be that operation at the lower temperatures may also not have resulted in excess NMOC emissions, for the reasons discussed below.

Establishment of a temperature threshold by USEPA for enclosed combustors in the Landfill NSPS was a reasonable, valid metric for measuring combustor performance and compliance. However, the standards did not impose an obligation to test at the lowest temperature at which compliance could be achieved. Indeed, the flares at Arbor Hills have been tested numerous times, and have established compliance with the 20 ppm NMOC outlet concentration on the following occasions, with the following range of temperatures:

McGill Flare (Flare 391)

Date of Performance Test	Established NSPS Performance Test Temperature (°F)	Minimum NSPS Temperature for Rolling 3-hr block average Calculations (°F)
December, 2004	1660	1610
June, 2016	1700	1650
December, 2019	1520	1470

Zink Flare (Flare 392)

Date of Performance Test	Established NSPS Performance Test Temperature (°F)	Minimum NSPS Temperature for Rolling 3-hr block average Calculations (°F)
April, 2004	1500	1450
March, 2016	1640	1590
December, 2019	1396	1346

Please note that the site did not attempt to establish the lowest possible temperatures capable of achieving the 20 ppm NMOC outlet concentration rate during any of these NSPS performance tests. These were merely the temperatures measured during the testing, and it is entirely possible that the flares could have met the NSPS performance standards at lower temperatures each time.

Item 2: *PTI No. 79-17 Condition III.5.a, WWW 40 CFR 60.752(b)(iii)(B)(2), AAAA 40 CFR 63.1955(a); Comment: Operated flares outside of temperature range established during the most recent performance stack test.*

Response: The incidents reported for 2019 were caused by miscommunication between site personnel and the third-party control system vendor, resulting in the operating temperature control set points for each respective flare not being re-set to their respective operating temperature values established in the 2016 performance tests upon completion of troubleshooting flare operations.

Arbor Hills has taken numerous corrective actions to ensure that the circumstances leading to the incidents are not repeated. These include:

- Resetting the operating control temperatures to the correct set-points on December 9, 2019;
- Implementing stringent maintenance logs to include documentation of conversations with third-party contractors and any adjustments made to values associated with the flare operating system during troubleshooting flare operations;
- More frequent data review by air compliance consultant, including use of their computerized flare database; and
- Locking the minimum operating temperature control set-point in the control program so that it cannot be adjusted without direct communication between Arbor Hills Site Management and the third-party contractor.

Arbor Hills believes that these measures should prevent future temperatures excursions of this type.

Item 3: *PTI No. 79-17 Condition III.6, WWW 40 CFR 60.755(e), AAAA 40 CFR 63.1955(a); Comment: Period of start-up, shutdown or malfunction duration exceeded one hour.*

Response: It is Arbor Hills position that these events cannot be classified as a violation of the start-up, shutdown or malfunction provisions. Specifically, the definition of a malfunction (from the NESHAP regulations – 40 CFR 63.2) is:

> *Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate*

in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The incorrect operating temperature control set point in the program led to the flares operating at lower temperatures during normal operations exclusive of start-ups, shutdowns and malfunctions. The instances listed in the March 13, 2020 report were due to inadvertent human error and have since been corrected. They are not a malfunction as that term is defined by EPA. Therefore, the events are not a violation of the cited conditions.

Item 4: *R336.1910 (Rule 910); Comment: An air-cleaning device shall be installed, maintained and operated in a satisfactory manner and in accordance with these rules and existing law.*

Response: Arbor Hills has installed, maintained and operated the three flares (a.k.a. "air cleaning devices") in accordance with manufacturer's recommendations and good engineering practice. The temperatures excursions were caused by inadvertent human error and have been corrected, with additional guardrails put in place to prevent future issues.

EGLE stated informally that "the reported control system exceedances must also be reflected in ADS' (sic) 2019 Michigan Air Emissions Reporting System (MAERS) report."

Response: When a flare is operated at a lower temperature than the value established during the performance test, the NSPS *presumes* that the flare is not able to meet the required NMOC outlet concentration. That may or may not be the case since as stated previously, performance tests are not always performed to establish the lowest possible temperature to achieve the NSPS compliance threshold. In addition, the NSPS provides no mechanism for calculation of emissions should an enclosed flare operate below the latest performance test temperatures. In the absence of a mechanism to calculate emissions from low temperature events, the facility is unable to estimate an emissions rate for the flares during these time frames.

It should be noted that enclosed flares can typically achieve in excess of 99% NMOC destruction efficiency. However, the site uses a 98% destruction efficiency in the MAERS calculations in order to be conservative.

Arbor Hills believes that it has taken the appropriate actions to address the issue which led up to the low temperature excursions, and has put several systems in place to prevent future such occurrences.

Attachment 1

2019 Enclosed Flare Three-Hour Rolling Temperature Periods 28°C Below 2016 Performance Test Temperatures

First Half 2019:

Time Start	Time End	Duration (hours)	Device
2/14/19 16:38	2/15/19 1:20	8:42:00	Zink Flare
3/23/19 16:55	3/23/19 20:11	3:16:00	Zink Flare
5/1/19 14:25	5/1/19 14:53	0:28:00	Zink Flare
5/20/19 1:59	5/20/19 2:55	0:56:00	McGill Flare
5/20/19 12:57	5/20/19 14:21	1:24:00	Zink Flare
5/20/19 18:33	5/21/19 23:15	28:42:00	Zink Flare
6/2/19 20:51	6/2/19 22:43	1:52:00	McGill Flare
6/3/19 4:47	6/3/19 5:29	0:42:00	McGill Flare
6/20/19 20:03	6/21/19 3:43	7:40:00	McGill Flare
6/25/19 5:43	6/25/19 9:41	3:58:00	McGill Flare
6/25/19 16:13	6/25/19 17:51	1:38:00	McGill Flare
6/28/19 13:31	6/28/19 16:33	3:02:00	McGill Flare

Second Half 2019:

Time Start	Time End	Duration (hours)	Device
8/8/19 1:42	8/8/19 2:24	0:42:00	McGill Flare
8/8/19 8:56	8/8/19 11:30	2:34:00	McGill Flare
9/11/19 20:39	9/12/19 5:17	8:38:00	Zink Flare
9/25/19 7:21	9/27/19 16:03	56:42:00	Zink Flare
11/7/19 3:21	11/8/19 17:37	38:16:00	Zink Flare[1]
11/11/19 11:39	11/13/19 1:55	38:16:00	Zink Flare[1]
11/11/19 16:19	11/11/19 18:25	2:06:00	McGill Flare[1]
11/11/19 21:41	11/12/19 4:41	7:00:00	McGill Flare[1]

Time Start	Time End	Duration (hours)	Device
11/12/19 7:15	11/12/19 13:47	6:32:00	McGill Flare[1]
11/12/19 18:55	11/12/19 19:23	0:28:00	McGill Flare[1]
11/13/19 0:03	11/13/19 1:55	1:52:00	McGill Flare[1]
11/13/19 6:21	11/14/19 9:25	27:04:00	Zink Flare[1]
11/13/19 19:25	11/14/19 0:33	5:08:00	McGill Flare[1]
11/14/19 4:03	11/14/19 5:27	1:24:00	McGill Flare[1]
11/14/19 5:55	11/14/19 6:37	0:42:00	McGill Flare[1]
11/14/19 13:56	11/14/19 14:52	0:56:00	McGill Flare[1]
11/14/19 13:56	11/15/19 21:54	31:58:00	Zink Flare[1]
11/14/19 15:20	11/14/19 16:58	1:38:00	McGill Flare[1]
11/14/19 20:56	11/15/19 1:50	4:54:00	McGill Flare[1]
11/15/19 6:30	11/15/19 7:26	0:56:00	McGill Flare[1]
11/15/19 8:22	11/15/19 13:30	5:08:00	McGill Flare[1]
11/15/19 13:58	11/15/19 17:28	3:30:00	McGill Flare[1]
11/15/19 18:10	11/15/19 20:30	2:20:00	McGill Flare[1]
11/16/19 3:16	11/16/19 8:10	4:54:00	McGill Flare[1]
11/16/19 11:40	11/16/19 14:56	3:16:00	McGill Flare[1]
11/16/19 19:08	11/16/19 21:56	2:48:00	McGill Flare[1]
11/17/19 1:26	11/17/19 1:54	0:28:00	McGill Flare[1]
11/17/19 4:00	11/17/19 6:06	2:06:00	McGill Flare[1]
11/17/19 8:54	11/17/19 12:10	3:16:00	McGill Flare[1]
11/17/19 13:48	11/17/19 14:16	0:28:00	McGill Flare[1]
11/17/19 16:08	11/17/19 17:04	0:56:00	McGill Flare[1]
11/17/19 17:46	11/17/19 19:10	1:24:00	McGill Flare[1]
11/17/19 22:54	11/18/19 2:24	3:30:00	McGill Flare[1]

Time Start	Time End	Duration (hours)	Device
11/18/19 3:34	11/18/19 4:02	0:28:00	McGill Flare[1]
11/18/19 4:30	11/18/19 5:12	0:42:00	McGill Flare[1]
11/18/19 5:40	11/18/19 6:22	0:42:00	McGill Flare[1]
11/18/19 15:14	11/18/19 16:10	0:56:00	McGill Flare[1]
11/18/19 20:50	11/18/19 22:14	1:24:00	McGill Flare[1]
11/18/19 22:42	11/18/19 23:52	1:10:00	McGill Flare[1]
11/19/19 1:16	11/19/19 2:40	1:24:00	McGill Flare[1]
11/19/19 12:14	11/19/19 15:16	3:02:00	McGill Flare[1]
11/19/19 15:44	11/19/19 19:42	3:58:00	McGill Flare[1]
11/19/19 21:06	11/19/19 22:30	1:24:00	McGill Flare[1]
11/19/19 23:12	11/20/19 0:08	0:56:00	McGill Flare[1]
11/20/19 0:36	11/20/19 4:34	3:58:00	McGill Flare[1]
11/20/19 9:28	11/20/19 16:56	7:28:00	McGill Flare[1]
11/20/19 23:42	11/21/19 10:12	10:30:00	McGill Flare[1]
11/21/19 10:40	11/21/19 11:22	0:42:00	McGill Flare[1]
11/21/19 21:24	11/22/19 2:18	4:54:00	McGill Flare[1]
11/22/19 8:08	11/22/19 8:50	0:42:00	McGill Flare[1]
11/25/19 4:16	11/25/19 7:32	3:16:00	McGill Flare[1]
11/25/19 8:42	11/25/19 9:10	0:28:00	McGill Flare[1]
11/25/19 10:34	11/25/19 11:02	0:28:00	McGill Flare[1]

[1] Flare repair and maintenance was completed November 4, 2019. The rolling 3-hr block average temperatures during these periods, while less than the 2016 performance test, were above the new temperatures established for the flares during the performance test completed on December 19, 2019 with the exception of a single time frame. The duration of the Zink Flare exceedance from November 7-8, 2019 would have been reduced from 38 hours, 16 minutes to one hour, 52 minutes on November 8, 2019 relative to the new lower performance test temperatures established on December 19, 2019.