FORTISTAR Methane Group

Arbor Hills Energy LLC
10611 West 5 Mile Road ◆ Northville, Michigan 48167
Tel. (248) 305-7774 ◆ Fax. (248) 305-7879

September 30, 2015

Ms. Diane Kavanaugh Vetort
Air Quality Division
Michigan Department of Environmental Quality
301 East Lewis B. Glick Highway
Jackson, MI 49201

Subject: Response to Violation Notice issued September 11, 2015
Arbor Hills Energy LLC
ROP No.: N2688-2011

Dear Ms. Kavanaugh Vetort;

We are in receipt of the above referenced Violation Notice regarding results of SOx emissions recorded during the source test of EUTURBINE1-S3 (EGT-1) and the associated EUDUCTBURNER1-S3 and EUTURBINE3-S3 (EGT-3) and the associated EUDUCTBURNER3-S3 conducted on March 10th and 11th, 2015. The Violation Notice states that the emission results for SO_2 in pounds per hour, as calculated by the Michigan DEQ, were found to be in excess of the current permitted limits.

As we have stated in earlier correspondence, we question the accuracy of Method 6C for measuring emissions from turbines. Although the benefit of Method 6C is that effluent concentration and values are available on a real-time basis, the analyzers are quick to fail in the field with the photo multiplier tube and associated components. Method 6C has a lot of variability in the calibration gases, calibrations, system bias, etc. that can add uncertainty and variability to the results. Oxygen, water vapor, nitrogen etc. can provide interference that can cause skewing of results obtained. Fuel gas analysis provides about 100 - 1,000 times better detection limits versus Method 6C since fuel gas analysis has detection limits in ppb versus ppm limits in Method 6C. The preference of fuel gas analysis versus Method 6C is also evident in the NSPS Subpart KKKK regulation which calls for a CEMS for NOx analysis but requires use of ASTM fuel gas analytical methods for sulfur / total sulfur in the fuel gas versus SO_2 in the exhaust gas. Most state agencies that we have worked with and all source test vendors we have spoken to recognize fuel gas analyses performed on the inlet gas as being more true and accurate versus Method 6C in the exhaust gas. Michigan DEQ also acknowledged the preference of fuel gas analysis in the past years as all our source testing has been conducted using this method. We have not relied on Method 6C to demonstrate compliance.

The inaccuracy of Method 6C can be demonstrated as follows:

The average SO2 ppm measured for Turbine 1 with Duct Burner operation was 21.97 ppm.
Measured SOx lb/hr = (SO2 ppm * DSCFM (Stack) * MW SO_2 * 60min/hr) / (385scf/mol *1,000,000)
= (21.97 ppm * 20,800 * 64.06 lbmol * 60min/hr) / (385scf/mol*1,000,000)
= **4.56 lb/hr** SO_2

Due to preservation of mass of sulfur during the combustion process, this 4.86 lb/hr SO2 at the stack would equate to the amount of sulfur as H2S in the raw landfill gas (LFG).
H2S ppm in raw LFG = (SO_2 lb/hr * 10^6) / (SCFH (inlet) * ((64 lb/lbmol) / (385 scf/lbmol))
= (**4.56 lb/hr** * 10^6) / (97,800 SCFH (inlet) * (64 lb/lbmol) / (385scf/lbmol))
= **280.48 ppm**

However on March 10th and March 11th, a reading of 190 ppm and 195 ppm, respectively, were recorded using the Draeger Tube method. The manufacturer of these monitoring devices states that the tubes are extremely accurate if the analysis is done before the device expires. The dates of the expiration of the tubes were listed on each of the H_2S monitoring log and was November 2015.
Expected SOx lb/hr = H_2S ppm * 10^{-6} * (SCFH (inlet) * (64 lb/lbmol) / (385 scf/lbmol))
= **195 ppm** * 10^{-6} * (97,800 SCFH (inlet) * (64 lb/lbmol) / (385 scf/lbmol))
= **3.17 lb/hr**

Expected SO_2 ppm = (SO_2 lb/hr * (385*1,000,000)) / (DSCFM (Stack) * MW SO2 * 60min/hr)
= (**3.17 lb/hr** * (385*1,000,000)) / (20,800 * 64.06 * 60)
= **15.26 ppm**

Therefore, there is a 30% error differential from the measured value at the source test using a questionable method 6C versus the calculated value based on draeger readings taken on the day of the source test. Please note that SOx emissions are always calculated as above for permit applications.

Arbor Hills Energy LLC contracted Jet-Care International on May 11, 2015 to perform a fuel analysis to determine the constituents within the landfill gas. This analysis further demonstrates that the expected H_2S ppm, calculated from the measured SOx ppm at the source test, is inconsistent with what is found in the landfill gas. The analysis found that the total sulfur content of the landfill gas was 125.76 ppm (see attached report). Using this analysis coupled with the observed flow rate at the source test, Arbor Hills Energy LLC is within the emission limits for SO_2 lb/hr set by the permit, as shown in the calculation below.

Fuel Analysis, SOx lb/hr = H_2S ppm * 10^{-6} * (SCFH (inlet) * (64 lb/lbmol) / (385 scf/lbmol))
= **125.76 ppm** * 10^{-6} * (97,800 SCFH (inlet) * (64 lb/lbmol) / (385 scf/lbmol))
= **2.04 lb/hr**

Arbor Hills Energy would like to reiterate that the H_2S concentration in the landfill gas is subject to the type of waste disposed of in the landfill, which is beyond our control as we do not own or operate the landfill. Since no additional sulfur is created as a result of combustion in the turbines, the quantity of total sulfur compounds in the landfill gas is emitted as SOx in the exhaust. In other words, this criteria pollutant is not created by the process occurring at Arbor Hills Energy LLC., rather it is a pass-through of pollutant already in landfill gas resulting from decomposition of the type of trash accepted into the landfill by the landfill owner.

In summary, as SOx is not created due to the combustion of landfill gas in our turbines and is rather a byproduct of total sulfur in the raw landfill gas that we have no control over. Based on general industry and regulatory agency accepted practice, we request that the Michigan DEQ continue to rely on Fuel Analysis as in the past to document compliance of the turbines with the SOx emission limit.

As required by the violation notice, please find attached the 12 month rolling SO2 emission calculations for each unit at Arbor Hills Energy LLC through August 2015. If you have any questions, please contact Suparna Chakladar at your convenience at (951)-833-4153.

Sincerely,

Anthony J. Falbo
Senior Vice President - Operations
FORTISTAR Methane Group
Arbor Hills Energy LLC

Enclosures

cc: Tom Maza, AQD Technical Programs Unit
Scott Miller, MDEQ
Suparna Chakladar, FMG

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE

DEQ

DAN WYANT
DIRECTOR

September 11, 2015

CERTIFIED MAIL – 7010 0290 0000 3734 2477
RETURN RECEIPT REQUESTED

Mr. Anthony J. Falbo, Senior Vice President -Operations
FORTISTAR Methane Group
Arbor Hills Energy, LLC
5087 Junction Road
Lockport, NY 14094

SRN: N2688, Washtenaw County

Dear Mr. Falbo:

VIOLATION NOTICE

On May 13, 2015, the Department of Environmental Quality (DEQ), Air Quality Division (AQD), received a performance test results report from Arbor Hills Energy, LLC (AHE) located at 10611 West 5 Mile Road, Northville, Michigan. The purpose of the performance testing conducted on March 10 and 11, 2015, was to determine AHE EUTURBINE1-S3 and EUTURBINE3-S3 (European Gas Turbines) 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 administrative rules and the conditions of Renewable Operating Permit (ROP) number MI-ROP-N2688-2011 and Consent Order AQD number 16-2015.

During the AQD's review of the May 13, test results report, staff observed the following:

Process Description	Rule/Permit Condition Violated	Comments
EUTURBINE1-S3 EUTURBINE1-S3 + EUDUCTBURNER1-S3	ROP, FGTURBINES-S3, Condition I. SO2 limit SO2 limit above added to FGDUCTBURNERS-S3, Condition I. SO2 limit	Test results indicate SO2 pounds per hour (lbs/hr) emissions exceeded the limit for Turbine1 (2.9 lbs/hr) & Turbine1 + Ductburner1 (3.2 lbs/hr)
EUTURBINE3-S3 EUTURBINE3-S3 + EUDUCTBURNER3-S3	ROP, FGTURBINES-S3, Condition I. SO2 limit SO2 limit above added to FGDUCTBURNERS-S3, Condition I. SO2 limit	Test results indicate SO2 lbs/hr emissions exceeded the limit for Turbine3 (2.9 lbs/hr) & Turbine3 + Ductburner3 (3.2 lbs/hr)

The AHE conducted testing of the Turbine alone and Turbine plus Ductburner for each EUTURBINE1-S3 and EUTURBINE3-S3. The AQD calculated the resulting SO2 emissions based on the EPA Reference Methods proposed in the AHE Test protocol. The AQD calculated SO2 emissions in pounds per hour differ from those calculated by AHE and submitted in the May 13, Test Results Report. The AQD calculated SO2 pounds per hour emissions indicate AHE EUTURBINE1-S3 and EUTURBINE3-S3 exceeded the permitted emission limits. The AQD believes the Company's calculations are in error and the correct emission results are presented below.

	T1 + D-burner emitted	T3 + D-burner emitted	T + D-burner limit	T1 emitted	T3 emitted	Turbine limit
SO2 pounds per hour:	6.2	5.0	**3.2**	4.6	4.8	**2.9**

Please be advised that the AQD will use the test data in evaluating AHE's compliance with their permitted annual SO2 emission limit (12 month rolling time period as determined at the end of each calendar month). As part of the written response (below), please submit the 12 month rolling time period SO2 emission calculations and supporting records for EUTURBINE1, EUTURBINE3 and the associated ductburners (as applicable) for month ending August 2015.

Please initiate actions necessary to correct the cited violations and submit a written response to this Violation Notice by October 2, 2015. 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.

If AHE 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.

Thank you for your attention to resolving the violations cited above. 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,

Diane Kavanaugh Vetort
Senior Environmental Quality Analyst
Air Quality Division
517-780-7864

cc: Mr. Scott Miller, DEQ

cc/via e-mail: Ms. Suparna Chakladar, Vice President FORTISTAR Methane Group
Ms. Lynn Fiedler, DEQ
Ms. Mary Ann Dolehanty, DEQ
Ms. Teresa Seidel, DEQ
Mr. Thomas Hess, DEQ
Ms. Karen Kajiya-Mills, DEQ
Mr. Thomas Maza, DEQ

12 - Month SOx Rolling Emissions based on Fuel Analysis

Arbor Hills Facility

SOx Emission Compliance with Fuel Analysis May 11, 2015 Sulfur = 125.76 ppm

(Tons Per Year (TPY) 12-Month Averages Rolled Monthly)

[shaded box] = Value Deviates from Permit Limit

GT1 (Typhoon) EUTURBINE 1-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,683.0	0.8	12.5 TPY (12-Month Limit)
February	2014	1,471.8	0.7	
March	2014	1,668.7	0.8	
April	2014	1,494.2	0.7	
May	2014	1,392.8	0.7	
June	2014	1,325.3	0.7	
July	2014	1,494.4	0.7	
August	2014	1,064.2	0.5	
September	2014	1,359.9	0.7	
October	2014	1,521.7	0.8	
November	2014	946.2	0.5	
December	2014	1,663.8	0.8	
January	2015	1,491.6	0.7	8.4
February	2015	1,311.9	0.7	8.4
March	2015	1,485.1	0.7	8.3
April	2015	1,210.3	0.6	8.1
May	2015	943.0	0.5	7.9
June	2015	1,272.9	0.6	7.9
July	2015	1,423.6	0.7	7.8
August	2015	1,513.2	0.8	8.1
September	2015	0.0	0.0	7.4
October	2015	0.0	0.0	6.6
November	2015	0.0	0.0	6.2
December	2015	0.0	0.0	5.3

GT2 (Typhoon) EUTURBINE 2-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,788.9	0.9	12.5 TPY (12-Month Limit)
February	2014	1,594.3	0.8	
March	2014	1,735.2	0.9	
April	2014	1,616.2	0.8	
May	2014	1,566.9	0.8	
June	2014	1,472.5	0.7	
July	2014	1,634.3	0.8	
August	2014	1,161.9	0.6	
September	2014	1,502.6	0.8	
October	2014	1,628.6	0.8	
November	2014	1,284.0	0.6	
December	2014	1,673.9	0.8	
January	2015	1,782.4	0.9	9.3
February	2015	1,619.0	0.8	9.3
March	2015	1,557.5	0.8	9.2
April	2015	1,215.1	0.6	9.0
May	2015	1,780.7	0.9	9.2
June	2015	1,579.1	0.8	9.2
July	2015	1,689.7	0.8	9.2
August	2015	1,842.7	0.9	9.6
September	2015	0.0	0.0	8.8
October	2015	0.0	0.0	8.0
November	2015	0.0	0.0	7.4
December	2015	0.0	0.0	6.5

GT3 (Typhoon) EUTURBINE 3-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,761.7	0.9	12.5 TPY (12-Month Limit)
February	2014	1,555.5	0.8	
March	2014	1,697.1	0.8	
April	2014	1,556.0	0.8	
May	2014	1,537.8	0.8	
June	2014	1,460.2	0.7	
July	2014	1,589.5	0.8	
August	2014	1,064.8	0.5	
September	2014	1,470.9	0.7	
October	2014	1,607.6	0.8	
November	2014	1,455.7	0.7	
December	2014	1,686.0	0.8	
January	2015	1,601.4	0.8	9.1
February	2015	1,462.4	0.7	9.1
March	2015	1,556.5	0.8	9.0
April	2015	1,403.3	0.7	8.9
May	2015	1,441.2	0.7	8.9
June	2015	1,290.6	0.6	8.8
July	2015	1,366.2	0.7	8.7
August	2015	1,601.5	0.8	9.0
September	2015	0.0	0.0	8.2
October	2015	0.0	0.0	7.4
November	2015	0.0	0.0	6.7
December	2015	0.0	0.0	5.9

GT4 (Taurus) EUTURBINE 4-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	172.2	0.1	TPY (12-Month Limit) Not Applicable (Source Test)
February	2014	161.4	0.1	
March	2014	226.6	0.1	
April	2014	234.5	0.1	
May	2014	249.8	0.1	
June	2014	231.1	0.1	
July	2014	234.3	0.1	
August	2014	186.5	0.1	
September	2014	220.0	0.1	
October	2014	248.6	0.1	
November	2014	249.8	0.1	
December	2014	138.8	0.1	
January	2015	621.5	0.3	1.5
February	2015	633.7	0.3	1.7
March	2015	779.6	0.4	2.0
April	2015	967.3	0.5	2.4
May	2015	1,051.7	0.5	2.8
June	2015	1,005.4	0.5	3.2
July	2015	1,210.4	0.6	3.7
August	2015	609.9	0.3	3.9
September	2015	0.0	0.0	3.8
October	2015	0.0	0.0	3.6
November	2015	0.0	0.0	3.5
December	2015	0.0	0.0	3.4

Duct Burner 1 EUDUCTBURNER 1-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	106.9	0.1	1.5 TPY (12-Month Limit)
February	2014	48.1	0.0	
March	2014	92.2	0.0	
April	2014	76.5	0.0	
May	2014	83.7	0.0	
June	2014	100.5	0.1	
July	2014	63.8	0.0	
August	2014	59.2	0.0	
September	2014	95.6	0.0	
October	2014	103.6	0.1	
November	2014	58.7	0.0	
December	2014	101.4	0.1	
January	2015	317.0	0.2	0.6
February	2015	224.7	0.1	0.7
March	2015	254.5	0.1	0.8
April	2015	408.6	0.2	0.9
May	2015	124.8	0.1	1.0
June	2015	122.6	0.1	1.0
July	2015	50.6	0.0	1.0
August	2015	0.0	0.0	0.9
September	2015	0.0	0.0	0.9
October	2015	0.0	0.0	0.8
November	2015	0.0	0.0	0.8
December	2015	0.0	0.0	0.8

Duct Burner 2 EUDUCTBURNER 2-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	121.3	0.1	1.5 TPY (12-Month Limit)
February	2014	117.8	0.1	
March	2014	95.4	0.0	
April	2014	78.7	0.0	
May	2014	118.7	0.1	
June	2014	113.6	0.1	
July	2014	58.1	0.0	
August	2014	50.0	0.0	
September	2014	94.8	0.0	
October	2014	108.7	0.1	
November	2014	78.3	0.0	
December	2014	105.4	0.1	
January	2015	99.0	0.0	0.6
February	2015	74.9	0.0	0.5
March	2015	64.7	0.0	0.5
April	2015	10.5	0.0	0.5
May	2015	77.7	0.0	0.5
June	2015	29.1	0.0	0.4
July	2015	17.9	0.0	0.4
August	2015	44.2	0.0	0.4
September	2015	0.0	0.0	0.4
October	2015	0.0	0.0	0.3
November	2015	0.0	0.0	0.3
December	2015	0.0	0.0	0.2

Duct Burner 3 EUDUCTBURNER 3-S3				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	118.6	0.1	1.5 TPY (12-Month Limit)
February	2014	119.8	0.1	
March	2014	101.7	0.1	
April	2014	89.6	0.0	
May	2014	99.5	0.0	
June	2014	110.2	0.1	
July	2014	61.4	0.0	
August	2014	55.8	0.0	
September	2014	97.9	0.0	
October	2014	111.6	0.1	
November	2014	87.7	0.0	
December	2014	107.5	0.1	
January	2015	333.9	0.2	0.7
February	2015	240.8	0.1	0.7
March	2015	243.6	0.1	0.8
April	2015	377.9	0.2	1.0
May	2015	275.3	0.1	1.1
June	2015	218.2	0.1	1.1
July	2015	103.9	0.1	1.1
August	2015	165.9	0.1	1.2
September	2015	0.0	0.0	1.1
October	2015	0.0	0.0	1.1
November	2015	0.0	0.0	1.0
December	2015	0.0	0.0	1.0

Flare A				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	0.4	0.0	TPY (12-Month Limit) Not Applicable Landfill Responsible
February	2014	0.2	0.0	
March	2014	0.6	0.0	
April	2014	0.7	0.0	
May	2014	4.6	0.0	
June	2014	17.1	0.0	
July	2014	0.0	0.0	
August	2014	96.2	0.0	
September	2014	2.2	0.0	
October	2014	0.0	0.0	
November	2014	0.0	0.0	
December	2014	0.0	0.0	
January	2015	0.0	0.0	0.1
February	2015	0.0	0.0	0.1
March	2015	0.0	0.0	0.1
April	2015	5.7	0.0	0.1
May	2015	17.4	0.0	0.1
June	2015	22.8	0.0	0.1
July	2015	0.0	0.0	0.1
August	2015	0.0	0.0	0.0
September	2015	0.0	0.0	0.0
October	2015	0.0	0.0	0.0
November	2015	0.0	0.0	0.0
December	2015	0.0	0.0	0.0

Flare B				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	0.3	0.0	TPY (12-Month Limit) Not Applicable Landfill Responsible
February	2014	8.7	0.0	
March	2014	2.7	0.0	
April	2014	4.5	0.0	
May	2014	29.4	0.0	
June	2014	23.2	0.0	
July	2014	75.5	0.0	
August	2014	154.7	0.1	
September	2014	23.4	0.0	
October	2014	10.5	0.0	
November	2014	230.3	0.1	
December	2014	60.3	0.0	
January	2015	39.7	0.0	0.3
February	2015	11.5	0.0	0.3
March	2015	33.8	0.0	0.3
April	2015	39.7	0.0	0.4
May	2015	41.4	0.0	0.4
June	2015	18.5	0.0	0.4
July	2015	33.1	0.0	0.3
August	2015	2.8	0.0	0.3
September	2015	0.0	0.0	0.3
October	2015	0.0	0.0	0.3
November	2015	0.0	0.0	0.1
December	2015	0.0	0.0	0.1

Facility Total				
Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	5,753.3	2.9	TPY (12-Month Limit) Not Applicable Information Only
February	2014	5,077.7	2.5	
March	2014	5,620.2	2.8	
April	2014	5,150.8	2.6	
May	2014	5,083.2	2.5	
June	2014	4,853.5	2.4	
July	2014	5,211.4	2.6	
August	2014	3,893.2	1.9	
September	2014	4,867.3	2.4	
October	2014	5,341.0	2.7	
November	2014	4,390.8	2.2	
December	2014	5,537.1	2.8	
January	2015	6,286.3	3.1	30.7
February	2015	5,578.9	2.8	30.9
March	2015	5,975.3	3.0	31.1
April	2015	5,638.4	2.8	31.3
May	2015	5,753.1	2.9	31.7
June	2015	5,559.3	2.8	32.0
July	2015	5,895.4	2.9	32.4
August	2015	5,780.2	2.9	33.3
September	2015	0.0	0.0	30.9
October	2015	0.0	0.0	28.2
November	2015	0.0	0.0	26.0
December	2015	0.0	0.0	23.2

12 - Month SOx Rolling Emissions based on contested Method 6C results

Arbor Hills Facility
SOx Emission Compliance with Contested Method 6C Emission Factors
(Tons Per Year (TPY) 12-Month Averages Rolled Monthly)

[shaded] = Value Deviates from Permit Limit

GT1 (Typhoon) EUTURBINE 1-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,683.0	0.8	
February	2014	1,471.8	0.7	
March	2014	1,668.7	0.8	
April	2014	1,494.2	0.7	
May	2014	1,392.8	0.7	
June	2014	1,325.3	0.7	12.5 TPY (12-Month Limit)
July	2014	1,494.4	0.7	
August	2014	1,064.2	0.5	
September	2014	1,359.9	0.7	
October	2014	1,521.7	0.8	
November	2014	946.2	0.5	
December	2014	1,663.8	0.8	
January	2015	3,314.6	1.7	9.4
February	2015	2,915.2	1.5	10.1
March	2015	3,300.3	1.7	10.9
April	2015	2,689.6	1.3	11.5
May	2015	2,095.4	1.0	11.8
June	2015	2,828.8	1.4	12.6
July	2015	3,163.7	1.6	13.4
August	2015	3,362.7	1.7	14.6
September	2015	0.0	0.0	13.9
October	2015	0.0	0.0	13.1
November	2015	0.0	0.0	12.7
December	2015	0.0	0.0	11.8

GT2 (Typhoon) EUTURBINE 2-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,788.9	0.9	
February	2014	1,594.3	0.8	
March	2014	1,735.2	0.9	
April	2014	1,616.2	0.8	
May	2014	1,566.9	0.8	
June	2014	1,472.5	0.7	12.5 TPY (12-Month Limit)
July	2014	1,634.3	0.8	
August	2014	1,161.9	0.6	
September	2014	1,502.6	0.8	
October	2014	1,628.6	0.8	
November	2014	1,284.0	0.6	
December	2014	1,673.9	0.8	
January	2015	1,782.4	0.9	9.3
February	2015	1,619.0	0.8	9.3
March	2015	1,557.5	0.8	9.2
April	2015	1,215.1	0.6	9.0
May	2015	1,780.7	0.9	9.2
June	2015	1,579.1	0.8	9.2
July	2015	1,689.7	0.8	9.2
August	2015	1,842.7	0.9	9.6
September	2015	0.0	0.0	8.8
October	2015	0.0	0.0	8.0
November	2015	0.0	0.0	7.4
December	2015	0.0	0.0	6.5

GT3 (Typhoon) EUTURBINE 3-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	1,761.7	0.9	
February	2014	1,555.5	0.8	
March	2014	1,697.1	0.8	
April	2014	1,556.0	0.8	
May	2014	1,537.8	0.8	
June	2014	1,460.2	0.7	12.5 TPY (12-Month Limit)
July	2014	1,589.5	0.8	
August	2014	1,064.8	0.5	
September	2014	1,470.9	0.7	
October	2014	1,607.6	0.8	
November	2014	1,455.7	0.7	
December	2014	1,686.0	0.8	
January	2015	3,558.6	1.8	10.1
February	2015	3,249.9	1.6	11.0
March	2015	3,458.9	1.7	11.8
April	2015	3,118.4	1.6	12.6
May	2015	3,202.6	1.6	13.5
June	2015	2,868.1	1.4	14.2
July	2015	3,035.9	1.5	14.9
August	2015	3,558.9	1.8	15.1
September	2015	0.0	0.0	15.4
October	2015	0.0	0.0	14.6
November	2015	0.0	0.0	13.9
December	2015	0.0	0.0	13.0

GT4 (Taurus) EUTURBINE 4-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	172.2	0.1	
February	2014	161.4	0.1	
March	2014	226.6	0.1	
April	2014	234.5	0.1	
May	2014	249.8	0.1	
June	2014	231.1	0.1	TPY (12-Month Limit) Not Applicable (Source Test)
July	2014	234.3	0.1	
August	2014	186.5	0.1	
September	2014	220.0	0.1	
October	2014	248.6	0.1	
November	2014	249.8	0.1	
December	2014	138.8	0.1	
January	2015	621.5	0.3	1.5
February	2015	633.7	0.3	1.7
March	2015	779.6	0.4	2.0
April	2015	967.3	0.5	2.4
May	2015	1,051.7	0.5	2.8
June	2015	1,005.4	0.5	3.2
July	2015	1,210.4	0.6	3.7
August	2015	609.9	0.3	3.9
September	2015	0.0	0.0	3.8
October	2015	0.0	0.0	3.6
November	2015	0.0	0.0	3.5
December	2015	0.0	0.0	3.4

Duct Burner 1 EUDUCTBURNER 1-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	106.9	0.1	
February	2014	48.1	0.0	
March	2014	92.2	0.0	
April	2014	76.5	0.0	
May	2014	83.7	0.0	
June	2014	100.5	0.1	1.5 TPY (12-Month Limit)
July	2014	63.8	0.0	
August	2014	59.2	0.0	
September	2014	95.6	0.0	
October	2014	103.6	0.1	
November	2014	58.7	0.0	
December	2014	101.4	0.1	
January	2015	915.8	0.5	0.9
February	2015	649.1	0.3	1.2
March	2015	735.1	0.4	1.5
April	2015	1,180.5	0.6	2.1
May	2015	360.4	0.2	2.2
June	2015	354.1	0.2	2.3
July	2015	146.2	0.1	2.4
August	2015	0.0	0.0	2.4
September	2015	0.0	0.0	2.3
October	2015	0.0	0.0	2.3
November	2015	0.0	0.0	2.2
December	2015	0.0	0.0	2.2

Duct Burner 2 EUDUCTBURNER 2-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	121.3	0.1	
February	2014	117.8	0.1	
March	2014	95.4	0.0	
April	2014	78.7	0.0	
May	2014	118.7	0.1	
June	2014	113.6	0.1	1.5 TPY (12-Month Limit)
July	2014	58.1	0.0	
August	2014	50.0	0.0	
September	2014	94.8	0.0	
October	2014	108.7	0.1	
November	2014	78.3	0.0	
December	2014	105.4	0.1	
January	2015	99.0	0.0	0.6
February	2015	74.9	0.0	0.5
March	2015	64.7	0.0	0.5
April	2015	10.5	0.0	0.5
May	2015	77.7	0.0	0.5
June	2015	29.1	0.0	0.4
July	2015	17.9	0.0	0.4
August	2015	44.2	0.0	0.4
September	2015	0.0	0.0	0.4
October	2015	0.0	0.0	0.3
November	2015	0.0	0.0	0.3
December	2015	0.0	0.0	0.2

Duct Burner 3 EUDUCTBURNER 3-S3

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	118.6	0.1	
February	2014	119.8	0.1	
March	2014	101.7	0.1	
April	2014	89.6	0.0	
May	2014	99.5	0.0	
June	2014	110.2	0.1	1.5 TPY (12-Month Limit)
July	2014	61.4	0.0	
August	2014	55.8	0.0	
September	2014	97.9	0.0	
October	2014	111.6	0.1	
November	2014	87.7	0.0	
December	2014	107.5	0.1	
January	2015	816.1	0.4	0.9
February	2015	588.5	0.3	1.2
March	2015	595.5	0.3	1.4
April	2015	923.7	0.5	1.8
May	2015	672.9	0.3	2.1
June	2015	533.3	0.3	2.3
July	2015	254.0	0.1	2.4
August	2015	405.5	0.2	2.6
September	2015	0.0	0.0	2.6
October	2015	0.0	0.0	2.5
November	2015	0.0	0.0	2.4
December	2015	0.0	0.0	2.4

Flare A

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	0.4	0.0	
February	2014	0.2	0.0	
March	2014	0.6	0.0	
April	2014	0.7	0.0	
May	2014	4.6	0.0	
June	2014	17.1	0.0	TPY (12-Month Limit) Not Applicable Landfill Responsible
July	2014	0.0	0.0	
August	2014	96.2	0.0	
September	2014	2.2	0.0	
October	2014	0.0	0.0	
November	2014	0.0	0.0	
December	2014	0.0	0.0	
January	2015	0.0	0.0	0.1
February	2015	0.0	0.0	0.1
March	2015	0.0	0.0	0.1
April	2015	5.7	0.0	0.1
May	2015	17.4	0.0	0.1
June	2015	22.8	0.0	0.1
July	2015	0.0	0.0	0.1
August	2015	0.0	0.0	0.0
September	2015	0.0	0.0	0.0
October	2015	0.0	0.0	0.0
November	2015	0.0	0.0	0.0
December	2015	0.0	0.0	0.0

Flare B

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	0.3	0.0	
February	2014	8.7	0.0	
March	2014	2.7	0.0	
April	2014	4.5	0.0	
May	2014	29.4	0.0	
June	2014	23.2	0.0	TPY (12-Month Limit) Not Applicable Landfill Responsible
July	2014	75.5	0.0	
August	2014	154.7	0.1	
September	2014	23.4	0.0	
October	2014	10.5	0.0	
November	2014	230.3	0.1	
December	2014	60.3	0.0	
January	2015	39.7	0.0	0.3
February	2015	11.5	0.0	0.3
March	2015	33.8	0.0	0.3
April	2015	39.7	0.0	0.4
May	2015	41.4	0.0	0.4
June	2015	18.5	0.0	0.4
July	2015	33.1	0.0	0.3
August	2015	2.8	0.0	0.3
September	2015	0.0	0.0	0.3
October	2015	0.0	0.0	0.3
November	2015	0.0	0.0	0.1
December	2015	0.0	0.0	0.1

Facility Total

Month	Year	SOx Monthly Mass Emissions (lbs/month)	SOx Monthly Mass Emissions (tons/month)	12-Month Rolling Average (tons per year)
January	2014	5,753.3	2.9	
February	2014	5,077.7	2.5	
March	2014	5,620.2	2.8	
April	2014	5,150.8	2.6	
May	2014	5,083.2	2.5	
June	2014	4,853.5	2.4	TPY (12-Month Limit) Not Applicable Information Only
July	2014	5,211.4	2.6	
August	2014	3,893.2	1.9	
September	2014	4,867.3	2.4	
October	2014	5,341.0	2.7	
November	2014	4,390.8	2.2	
December	2014	5,537.1	2.8	
January	2015	11,147.6	5.6	33.1
February	2015	9,741.9	4.9	35.4
March	2015	10,525.4	5.3	37.9
April	2015	10,150.5	5.1	40.4
May	2015	9,300.3	4.7	42.5
June	2015	9,239.1	4.6	44.7
July	2015	9,550.9	4.8	46.8
August	2015	9,826.7	4.9	49.8
September	2015	0.0	0.0	47.4
October	2015	0.0	0.0	44.7
November	2015	0.0	0.0	42.5
December	2015	0.0	0.0	39.7

Jet-Care International

Date: *14-May-15*

CLIENT:	Fortistar Methane Group	**Client Sample ID:**	LFG-1
Lab Order:	C1505038	**Tag Number:**	1326
Project:	Arbor Hills Plant	**Collection Date:**	5/11/2015
Lab ID:	C1505038-001A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
SILOXANE SERIES		**TO-15**				Analyst: **WD**
Decamethylcyclopentasiloxane-D5	3500	300		ug/m3	4	5/12/2015 6:55:00 PM
Decamethyltetrasiloxane-L4	ND	250		ug/m3	4	5/12/2015 6:55:00 PM
Dodecamethylcyclohexasiloxane-D6	ND	1800		ug/m3	4	5/12/2015 6:55:00 PM
Dodecamethylpentasiloxane-L5	ND	1600		ug/m3	4	5/12/2015 6:55:00 PM
Hexamethylcyclotrisiloxane-D3	440	180		ug/m3	4	5/12/2015 6:55:00 PM
Hexamethyldisiloxane-L2	5500	330		ug/m3	10	5/12/2015 7:35:00 PM
Octamethylcyclotetrasiloxane-D4	3600	240		ug/m3	4	5/12/2015 6:55:00 PM
Octamethyltrisiloxane-L3	230	190		ug/m3	4	5/12/2015 6:55:00 PM
Trimethyl silanol	21000	8900		ug/m3	490	5/13/2015 2:38:00 PM
SULFURS SERIES BY TO-15		**TO-15**				Analyst: **WD**
1-Propanethiol	340	120		ug/m3	4	5/12/2015 6:55:00 PM
Carbon disulfide	610	120		ug/m3	4	5/12/2015 6:55:00 PM
Carbonyl sulfide	850	98		ug/m3	4	5/12/2015 6:55:00 PM
Dimethyl sulfide	9400	1900		ug/m3	49	5/13/2015 3:16:00 PM
Ethyl mercaptan	560	100		ug/m3	4	5/12/2015 6:55:00 PM
Hydrogen Sulfide	110000	6800		ug/m3	490	5/14/2015 12:22:00 PM
Isopropyl mercaptan	2600	310		ug/m3	10	5/12/2015 7:35:00 PM
Methyl mercaptan	1400	200		ug/m3	10	5/12/2015 7:35:00 PM
VOC'S METHOD TO15 + TIC		**TO-15**				Analyst: **WD**
1,1,1-Trichloroethane	86	110	J	ug/m3	4	5/12/2015 6:55:00 PM
1,1,2,2-Tetrachloroethane	ND	140		ug/m3	4	5/12/2015 6:55:00 PM
1,1,2-Trichloroethane	ND	110		ug/m3	4	5/12/2015 6:55:00 PM
1,1-Dichloroethane	210	81		ug/m3	4	5/12/2015 6:55:00 PM
1,1-Dichloroethene	67	79	J	ug/m3	4	5/12/2015 6:55:00 PM
1,2,4-Trichlorobenzene	ND	150		ug/m3	4	5/12/2015 6:55:00 PM
1,2,4-Trimethylbenzene	15000	1200		ug/m3	49	5/13/2015 3:16:00 PM
1,2-Dibromoethane	ND	150		ug/m3	4	5/12/2015 6:55:00 PM
1,2-Dichlorobenzene	ND	120		ug/m3	4	5/12/2015 6:55:00 PM
1,2-Dichloroethane	1000	81		ug/m3	4	5/12/2015 6:55:00 PM
1,2-Dichloropropane	ND	92		ug/m3	4	5/12/2015 6:55:00 PM
1,3,5-Trimethylbenzene	2700	250		ug/m3	10	5/12/2015 7:35:00 PM
1,3-butadiene	ND	44		ug/m3	4	5/12/2015 6:55:00 PM
1,3-Dichlorobenzene	ND	120		ug/m3	4	5/12/2015 6:55:00 PM
1,4-Dichlorobenzene	2000	120		ug/m3	4	5/12/2015 6:55:00 PM
1,4-Dioxane	130	140	J	ug/m3	4	5/12/2015 6:55:00 PM
2,2,4-trimethylpentane	4200	230		ug/m3	10	5/12/2015 7:35:00 PM
4-ethyltoluene	2500	250		ug/m3	10	5/12/2015 7:35:00 PM
Acetone	12000	12000		ug/m3	490	5/13/2015 2:38:00 PM
Allyl chloride	ND	63		ug/m3	4	5/12/2015 6:55:00 PM

Qualifiers:				
	**	Reporting Limit	.	Results reported are not blank corrected
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
	JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

NOTE: As previously agreed, samples are sub-contracted to Centek for analysis. The report format is as agreed and may not meet ISO 17025 criteria. This service is outside the scope of UKAS accreditation.

Jet-Care International

Date: *14-May-15*

CLIENT:	Fortistar Methane Group	**Client Sample ID:**	LFG-1
Lab Order:	C1505038	**Tag Number:**	1326
Project:	Arbor Hills Plant	**Collection Date:**	5/11/2015
Lab ID:	C1505038-001A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
VOC'S METHOD TO15 + TIC		**TO-15**				Analyst: **WD**
Benzene	7000	770		ug/m3	49	5/13/2015 3:16:00 PM
Benzyl chloride	ND	110		ug/m3	4	5/12/2015 6:55:00 PM
Bromodichloromethane	ND	130		ug/m3	4	5/12/2015 6:55:00 PM
Bromoform	ND	210		ug/m3	4	5/12/2015 6:55:00 PM
Bromomethane	ND	78		ug/m3	4	5/12/2015 6:55:00 PM
Carbon disulfide	530	62		ug/m3	4	5/12/2015 6:55:00 PM
Carbon tetrachloride	ND	130		ug/m3	4	5/12/2015 6:55:00 PM
Chlorobenzene	270	92		ug/m3	4	5/12/2015 6:55:00 PM
Chloroethane	350	53		ug/m3	4	5/12/2015 6:55:00 PM
Chloroform	ND	98		ug/m3	4	5/12/2015 6:55:00 PM
Chloromethane	67	41		ug/m3	4	5/12/2015 6:55:00 PM
cis-1,2-Dichloroethene	1400	79		ug/m3	4	5/12/2015 6:55:00 PM
cis-1,3-Dichloropropene	ND	91		ug/m3	4	5/12/2015 6:55:00 PM
Cyclohexane	4600	830		ug/m3	49	5/13/2015 3:16:00 PM
Dibromochloromethane	ND	170		ug/m3	4	5/12/2015 6:55:00 PM
Ethyl acetate	2900	360		ug/m3	10	5/12/2015 7:35:00 PM
Ethylbenzene	15000	1000		ug/m3	49	5/13/2015 3:16:00 PM
Freon 11	1700	110		ug/m3	4	5/12/2015 6:55:00 PM
Freon 113	94	150	J	ug/m3	4	5/12/2015 6:55:00 PM
Freon 114	420	140		ug/m3	4	5/12/2015 6:55:00 PM
Freon 12	1300	99		ug/m3	4	5/12/2015 6:55:00 PM
Heptane	7300	980		ug/m3	49	5/13/2015 3:16:00 PM
Hexachloro-1,3-butadiene	ND	210		ug/m3	4	5/12/2015 6:55:00 PM
Hexane	5700	850		ug/m3	49	5/13/2015 3:16:00 PM
Isopropyl alcohol	6700	590		ug/m3	49	5/13/2015 3:16:00 PM
m&p-Xylene	27000	2100		ug/m3	49	5/13/2015 3:16:00 PM
Methyl Butyl Ketone	ND	160		ug/m3	4	5/12/2015 6:55:00 PM
Methyl Ethyl Ketone	10000	1400		ug/m3	49	5/13/2015 3:16:00 PM
Methyl Isobutyl Ketone	1900	410		ug/m3	10	5/12/2015 7:35:00 PM
Methyl tert-butyl ether	ND	72		ug/m3	4	5/12/2015 6:55:00 PM
Methylene chloride	470	69		ug/m3	4	5/12/2015 6:55:00 PM
o-Xylene	10000	1000		ug/m3	49	5/13/2015 3:16:00 PM
Propylene	16000	4100		ug/m3	490	5/13/2015 2:38:00 PM
Styrene	ND	85		ug/m3	4	5/12/2015 6:55:00 PM
Tetrachloroethylene	1400	140		ug/m3	4	5/12/2015 6:55:00 PM
Tetrahydrofuran	4600	710		ug/m3	49	5/13/2015 3:16:00 PM
Toluene	23000	9000		ug/m3	490	5/13/2015 2:38:00 PM
trans-1,2-Dichloroethene	150	79		ug/m3	4	5/12/2015 6:55:00 PM
trans-1,3-Dichloropropene	ND	91		ug/m3	4	5/12/2015 6:55:00 PM
Trichloroethene	660	110		ug/m3	4	5/12/2015 6:55:00 PM

Qualifiers:				
	**	Reporting Limit	.	Results reported are not blank corrected
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
	JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

NOTE: As previously agreed, samples are sub-contracted to Centek for analysis. The report format is as agreed and may not meet ISO 17025 criteria. This service is outside the scope of UKAS accreditation.

Jet-Care International

Date: *14-May-15*

CLIENT:	Fortistar Methane Group	**Client Sample ID:**	LFG-1
Lab Order:	C1505038	**Tag Number:**	1326
Project:	Arbor Hills Plant	**Collection Date:**	5/11/2015
Lab ID:	C1505038-001A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
VOC'S METHOD TO15 + TIC		**TO-15**				Analyst: **WD**
Vinyl acetate	ND	70		ug/m3	4	5/12/2015 6:55:00 PM
Vinyl Bromide	ND	87		ug/m3	4	5/12/2015 6:55:00 PM
Vinyl chloride	1100	130		ug/m3	10	5/12/2015 7:35:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

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