

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

FCE Summary Report

Facility : SUMPTER ENERGY ASSOCIATES	SRN : N8004
Location : 36450 29 MILE RD	District : Warren
	County : MACOMB
City : LENOX TWP State: MI Zip Code : 48062	Compliance Status : Compliance
Source Class : MAJOR	Staff : Robert Joseph
FCE Begin Date : 9/25/2018	FCE Completion Date : 2/26/2020
Comments : Section 2: summary generated since last FCE filed (09/24/18). (N5984 formerly N8004)	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
02/26/2020	Scheduled Inspection	Compliance	Section 2: Scheduled inspection of Landfill Gas to Energy Plant (formerly N8004 now N5984).

Activity Date	Activity Type	Compliance Status	Comments
02/07/2020	Stack Test	Compliance	<p>Stack Test Report for the verification of Sulfur Dioxide Emissions from two (2) CAT G3520C IC Engines - EUCENGINE8 and EUCENGINE9.</p> <p>Average engine operating conditions during the test periods:</p> <p>EUCENGINE 8:</p> <p>Generator Output: 1,585 kW Engine Output: 2,221 bHp Fuel Use: 545 scfm LFG Methane Content: 51.3% LFG Methane Content: 467 Btu/scf Exhaust Temp: 878 F</p> <p>EUCENGINE 9:</p> <p>Generator Output: 1,573 kW Engine Output: 2,204 bHp Fuel Use: 547 scfm LFG Methane Content: 53.3% LFG Methane Content: 485 Btu/scf Exhaust Temp: 899 F</p> <p>Stack Test Report for the verification of Sulfur Dioxide Emission Rates.</p> <p>EUCENGINE8: 1.85 (lb/hr) EUCENGINE9: 1.72 (lb/hr)</p> <p>Total Emissions 3.57 lb/hr, COMBINED Allowable Permit Limit 7.5 (lb/hr).</p>
01/08/2020	ROP Monthly	Compliance	<p>January 2020 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 305 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate December 2019: 2.80 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 15.4 tons.</p>

Activity Date	Activity Type	Compliance Status	Comments
12/09/2019	ROP Monthly	Compliance	December 2019 Monthly Sulfur Content (SO2) for FGICENGINES2 (Engines 8 and 9): H2S concentration: 300 (ppmv); Permit Limit: 600 (ppm). Max. SO2 emission rate November 2019: 2.88 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 15.8 tons.
11/07/2019	ROP Monthly	Compliance	November 2018 Monthly Sulfur Content (SO2) for FGICENGINES2 (Engines 8 and 9): H2S concentration: 465 (ppmv); Permit Limit: 600 (ppm). Max. SO2 emission rate Oct. 2018: 4.03 (lb/hr); Permit Limit: 7.5 (lb/hr).
11/07/2019	ROP Monthly	Compliance	November 2019 Monthly Sulfur Content (SO2) for FGICENGINES2 (Engines 8 and 9): H2S concentration: 292 (ppmv); Permit Limit: 600 (ppm). Max. SO2 emission rate October 2019: 2.97 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 16.4 tons.
10/21/2019	ROP Monthly	Compliance	October 2019 Monthly Sulfur Content (SO2) for FGICENGINES2 (Engines 8 and 9): H2S concentration: 302 (ppmv); Permit Limit: 600 (ppm). Max. SO2 emission rate September 2019: 2.76 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 16.7 tons.
09/24/2019	ROP Semi 1 Cert	Compliance	Semi Annual Deviation Report Jan. 1, 2019 - June 30, 2019. The facility reports no deviations occurred.

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09/20/2019	Stack Test	Compliance	<p>This test was performed per FG-ENGINES (1-7) Condition V.2. sampling on an annual basis the chlorine compounds present in the landfill gas stream. The facility is using the results from the HCl stack test results since the facility could not find a lab does that fuel gas analysis for chlorine. The objective was to find a lab that can determine all chlorinated compounds not just have it combusted to produce HCl.</p> <p>Results for three engines (one tested each day, June 3-5, 2019). Since only 3 of the 7 engines were tested, the average measured HCl concentration for the 3 tested engines was used for the 4 engines that were not tested for HCl.</p> <p>Engine 1: 6.52 ppm Engine 2-5: 6.45 ppm (not tested) Engine 6: 6.21 ppm Engine 7: 6.62 ppm</p> <p>Average gas flow: 300 scfm Recorded kW output data for 7 engines is 5,540 kW. Average kW was 791 kW. Emission factor is 5.02 lb/MMscf Emission rate is 0.63 lb/hr (Permit limit is 0.7 lb/hr)</p>
09/13/2019	ROP Monthly	Compliance	<p>September 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 285 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate August 2019: 3.44 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 17.9 tons.</p>
08/13/2019	Other Non ROP	Compliance	<p>Facility received an extension for the yet to installed Engine 10 (PTI 105-16) from 10/16/19 to 10/16/20. The facility is awaiting MISO interconnect approval and Lenox Township construction approval.</p>

08/08/2019	Stack Test	Compliance	<p>Test Report for landfill gas fueled engines 1 through 7 (FG-ENGINES). ROP 5-year compliance test.</p> <p>-Individual RICE fuel is not measured individually so total fuel use is averaged out through 7 engines.</p> <p>-HCl testing was performed once a day during each of the 3 test days, averaged for the three engines tested (1, 6, and 7) and those averages were used for the remaining engines (2, 3, 4, and 5).</p> <p>-Emission Totals for each pollutant; CO (51.1 lb/hr); NOx (35.2 lb/hr); NMOC (8.8 lb/hr); HCl (0.7 lb/hr).</p> <p>ENGINE 1: Generator Output 799 kW; Engine Output 1,141 bhp; Facility Fuel Use 2,126 scfm; RICE Fuel Use 304 scfm; LFG CH4 Content 52.1%; LFG Btu Content 474 Btu/scf; Exhaust Temp 803 F; CO emission rate 7.68 lb/hr; NOx emission rate 1.92 lb/hr; NMOC emission rate 0.56 lb/hr; HCl emission rate 0.091 lb/hr.</p> <p>ENGINE 2: Generator Output 800 kW; Engine Output 1,143 bhp; Facility Fuel Use 2,083 scfm; RICE Fuel Use 298 scfm; LFG CH4 Content 51.4%; LFG Btu Content 468 Btu/scf; Exhaust Temp 757 F; CO emission rate 5.74 lb/hr; NOx emission rate 1.94 lb/hr; NMOC emission rate 0.40 lb/hr; HCl emission rate 0.091 lb/hr.</p> <p>ENGINE 3: Generator Output 800 kW; Engine Output 1,143 bhp; Facility Fuel Use 2,087 scfm; RICE Fuel Use 298 scfm; LFG CH4 Content 51.3%; LFG Btu Content 467 Btu/scf; Exhaust Temp 794 F; CO emission rate 7.16 lb/hr; NOx emission rate 1.35 lb/hr; NMOC emission rate 0.66 lb/hr; HCl emission rate 0.091 lb/hr.</p> <p>ENGINE 4: Generator Output 791 kW; Engine Output 1,130 bhp; Facility Fuel Use 2,107 scfm;</p>
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08/08/2019	Stack Test	Compliance	<p>RICE Fuel Use 301 scfm; LFG CH4 Content 51.9%; LFG Btu Content 472 Btu/scf; Exhaust Temp 742 F; CO emission rate 6.71 lb/hr; NOx emission rate 2.17 lb/hr; NMOC emission rate 0.57 lb/hr; HCl emission rate 0.091 lb/hr.</p> <p>ENGINE 5: Generator Output 777 kW; Engine Output 1,104 bhp; Facility Fuel Use 2,099 scfm; RICE Fuel Use 300 scfm; LFG CH4 Content 51.7%; LFG Btu Content 470 Btu/scf; Exhaust Temp 781 F; CO emission rate 5.72 lb/hr; NOx emission rate 1.13 lb/hr; NMOC emission rate 0.46 lb/hr; HCl emission rate 0.091 lb/hr.</p> <p>ENGINE 6: Generator Output 773 kW; Engine Output 1,104 bhp; Facility Fuel Use 2,099 scfm; RICE Fuel Use 300 scfm; LFG CH4 Content 51.4%; LFG Btu Content 468 Btu/scf; Exhaust Temp 753 F; CO emission rate 7.16 lb/hr; NOx emission rate 0.97 lb/hr; NMOC emission rate 0.71 lb/hr; HCl emission rate 0.087 lb/hr.</p> <p>ENGINE 7: Generator Output 800 kW; Engine Output 1,143 bhp; Facility Fuel Use 2,110 scfm; RICE Fuel Use 301 scfm; LFG CH4 Content 51.3%; LFG Btu Content 467 Btu/scf; Exhaust Temp 821 F; CO emission rate 7.33 lb/hr; NOx emission rate 1.18 lb/hr; NMOC emission rate 0.82 lb/hr; HCl emission rate 0.094 lb/hr.</p>
08/07/2019	ROP Monthly	Compliance	<p>August 2019 Monthly Sulfur Content (SO2) for FGICENGINES2 (Engines 8 and 9):</p> <p>H2S concentration: 313 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO2 emission rate July 2020: 3.00 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 18.5 tons.</p>

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07/03/2019	ROP Monthly	Compliance	<p>July 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 308 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate June 2019: 3.39 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 19.4 tons.</p>
06/11/2019	ROP Monthly	Compliance	<p>June 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 323 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate May. 2019: 3.49 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 19.7 tons.</p>
05/08/2019	ROP Monthly	Compliance	<p>May 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 322 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate April. 2019: 3.53 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 20.1 tons.</p>
04/08/2019	ROP Monthly	Compliance	<p>April 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 345 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate March. 2019: 3.95 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 19.4 tons.</p>
03/14/2019	ROP Monthly	Compliance	<p>March 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 397 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate Feb. 2019: 4.16 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 19.3 tons.</p>

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02/11/2019	ROP Monthly	Compliance	<p>February 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 456 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate Jan. 2019: 3.62 (lb/hr); Permit Limit: 7.5 (lb/hr). 12-month rolling total = 19.4 tons.</p>
01/24/2019	ROP Monthly	Compliance	<p>January 2019 Monthly Sulfur Content (SO₂) for FGICENGINES2 (Engines 8 and 9):</p> <p>H₂S concentration: 383 (ppmv); Permit Limit: 600 (ppm).</p> <p>Max. SO₂ emission rate Dec. 2018: 3.81 (lb/hr); Permit Limit: 7.5 (lb/hr).</p>

Activity Date	Activity Type	Compliance Status	Comments
01/10/2019	Stack Test	Compliance	<p>Stack Test Report for the verification of Carbon Monoxide, Nitrogen Oxides, and Volatile Organic Compound Emissions from two (2) CAT G3520C IC Engines - EUIENGINE8 and EUIENGINE9.</p> <p>Average engine operating conditions during the test periods:</p> <p>EUIENGINE 8:</p> <p>Generator Output: 1,546 kW Engine Output: 2,166 bHp Fuel Use: 499 scfm LFG Methane Content: 53.5% LFG Methane Content: 487 Btu/scf Exhaust Temp: 879 F</p> <p>EUIENGINE 9:</p> <p>Generator Output: 1,545 kW Engine Output: 2,165 bHp Fuel Use: 519 scfm LFG Methane Content: 52.6% LFG Methane Content: 479 Btu/scf Exhaust Temp: 857 F</p> <p>Stack Test Report for the verification of Carbon Monoxide, Nitrogen Oxides, and Volatile Organic Compound Emission Rates.</p> <p>EUIENGINE8:</p> <p>CO Emission Rate 12.4 (lb/hr), Permit Limit 16.3 (lb/hr) NOx Emission Rate 2.16 (lb/hr), Permit Limit 3.0 (lb/hr) VOC Emission Rate 0.14 (g/bhp-hr), Permit Limit 1.0 (g/bhp-hr)</p> <p>EUIENGINE9:</p> <p>CO Emission Rate 12.9 (lb/hr), Permit Limit 16.3 (lb/hr) NOx Emission Rate 2.06 (lb/hr), Permit Limit 3.0 (lb/hr) VOC Emission Rate 0.15 (g/bhp-hr), Permit Limit 1.0 (g/bhp-hr)</p>

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12/03/2018	ROP Monthly	Compliance	December 2018 Monthly Sulfur Content (SO ₂) for FGICENGINES2 (Engines 8 and 9): H ₂ S concentration: 459 (ppmv); Permit Limit: 600 (ppm). Max. SO ₂ emission rate Nov. 2018: 4.56 (lb/hr); Permit Limit: 7.5 (lb/hr).
10/04/2018	ROP Monthly	Compliance	October 2018 Monthly Sulfur Content (SO ₂) for FGICENGINES2 (Engines 8 and 9): H ₂ S concentration: 521 (ppmv); Permit Limit: 600 (ppm). Max. SO ₂ emission rate Sept. 2018: 5.09 (lb/hr); Permit Limit: 7.5 (lb/hr).

Name: Robert Joseph Date: 03/05/20

Supervisor: Sebastianykallemkal