DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N280458466

FACILITY: CENTRAL SANITARY LANDFILL		**SRN / ID:** N2804
LOCATION: 21545 CANNONSVILLE RD, PIERSON		**DISTRICT:** Grand Rapids
CITY: PIERSON		**COUNTY:** MONTCALM
CONTACT: Justin Obermeyer , Environmental Manager		**ACTIVITY DATE:** 06/16/2021
STAFF: David Morgan	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

At 9:00 A.M. on June 16, 2021, Air Quality Division (AQD) staff Dave Morgan conducted an announced on-site inspection of the Central Sanitary Landfill (CSL) and the North American Natural Resources (NANR) - Central Generating Station located in Pierson. The purpose of the inspection was to determine the facility's compliance with state and federal air pollution regulations as well as Renewable Operating Permit (ROP) No. MI-ROP-N2804-2020. Accompanying AQD staff on the inspection was Justin Obermeyer, Republic Services Environmental Manager; Roger Rockburn, CSL Landfill Manager; Branden Boone, NANR Operation; Justin Boone, NANR Plant Operator; and Jason Devries, NANR Plant Operator. All Covid-19 safety protocols were followed.

FACILITY DESCRIPTION

The CSL is a solid waste landfill which accepts municipal waste, non-hazardous special waste, and construction and demolition debris and has a design capacity of 13.0 million cubic meters. Because the design capacity was increased after May 30, 1991, the landfill is considered a new source with respect to the requirements of 40 CFR Part 60, Subpart WWW and an existing source with respect to the requirements of the new Municipal Solid Waste Landfill Emission Guidelines under Subpart Cf. On May 14, 2021, a Tier II calculation was provided for the CSL which showed estimated NMOC emissions of 49.93 MG/year (see regulatory discussion in Activity Report No. N280438629). According to EPA guidance on significant figures, this equates to 50 Mg/year and therefore landfill gas collection and control is required under NSPS Subpart WWW. The company will be required to operate the gas collection and control system under 40 CFR Part 62, Subpart OOO (federal plan) because emissions exceed 34 Mg/year. The company will have one year to submit a GCCS design plan and thirty months to install and operate the system in accordance with the rule.

COMPLIANCE EVALUATION

EULANDFILL:

Because NMOC emissions were determined to be greater than 50 megagrams, the company is required to install a landfill gas collection and control system under Subpart OOO. The company will need to submit a GCCS design plan by May 14, 2022 for the existing active gas collection and control system which consists of approximately 48 vertical and horizontal wells, and an open flare. The company does monitor and balance the gas collection system at least once per month; no regular surface methane monitoring is conducted.

AQD staff toured the site. CSL has significantly reduced odors from the southwest corner of the landfill by adding more horizontal wells and temporary cover measures. During the inspection, a small amount of landfill gas odors were observed on the perimeter road and on top of the landfill. It is noted that no landfill gas odors were observed off-site and AQD has not received any recent complaints regarding the landfill.

The company is maintaining all recordkeeping on-site and in accordance with the ROP. These records include the year-by-year waste acceptance rate, waste in place records, the design capacity report, and cover inspection records. As of March 13, 2021, the landfill has consumed 9,134,867 cubic yards of the permitted 17,090,000 cubic yards.

All semi-annual and annual certification reports have been submitted in accordance with the ROP and Subpart WWW.

EUOPENFLARE:

CSL operates an open flare with a rated capacity of 4,700 scfm to control captured landfill gas. At the time of the inspection, flow to the flare was around 460 scfm.

The flare is fully operational and operates on a continuous basis. No visible emissions were observed from the flare during the inspection. The company electronically monitors and records the gas flow rate and presence of the pilot flame by monitoring the flame temperature as specified in the ROP. Records of flare operation for the period from June 2020 through May 2021 were reviewed and attached. No issues were identified. All instances of flare outage were reported on the ROP semi-annual report. During the inspection,

the thermocouple on the flare showed a temperature above 1,250°F and a flame was present as required by the ROP. If there is no flame, a sensor is tripped and attempts to relight the flare are made. The company conducts daily observations, as well as weekly and monthly maintenance.

EUAIRSTRIPPER:
There is a groundwater air stripping unit (QED Environmental Systems Model EZ12.6SS) installed under Rule 290. Exhaust air is vented through a stack with a 6 inch diameter and 7 foot height from the ground. No visible emissions were observed from the air stripper during the inspection.

The company conducts semi-annual monitoring of the VOC concentration in the influent and effluent of the air stripper in order to calculate emissions. On a monthly basis, the company calculates VOC emissions using the semi-annual VOC concentrations. In 2020 VOC emissions were no more than than 1.0 pounds per month which is below the 1,000 pound per month limit In addition, all emissions are below 20 pound per month thus meeting emission limits for constituents with an applicable ITSL or IRSL. Total emissions in 2020 were 10.97 pounds. Records are attached.

It is noted that the company is installing an additional air stripping unit in a separate building to address per- and polyfluoralkyl substances (PFAS). A Rule 290 demonstration has already been made for this additional air stripper.

EUASBESTOS:
The CSL does not accept asbestos waste and there is no documentation that the site has accepted it in the past.

EUEXISTGASOLINEENGINE:
This emission unit is for a 16 horsepower Briggs and Stratton AC-225/DC-210-6 spark ignited reciprocating internal combustion engine for a welder. According to Roger Rockburn, the engine and welder for were not used and have been scrapped. A permit modification will be submitted to remove the equipment from the ROP.

EUCOLDCLEANER:
There are no issues with the cold cleaner.

MISCELLANEOUS:
There are several liquid storage tanks at the facility which are exempt from permitting under Rule 284.

EVALUATION SUMMARY:
CSL is in compliance with the requirements evaluated. Records obtained as part of the inspection are attached.

The NANR Central Generating Station is a landfill gas treatment and electric generating facility where landfill gas produced at the CSL is routed through a pipe where the gas is filtered, dewatered, compressed, and cooled prior to being burned in internal combustion engines to produce electricity. Any gas not treated in the system is burned in the CSL open flare.

Gas Treatment System:

The gas entering the treatment system first goes through a knockout scrubber vessel, then through a compressor, then an after-cooler system which is supposed to cool the gas to a temperature around 90° F. At the time of the inspection, the temperature on the inlet to the cooler was around 106°F and outlet temperature was around 106°F, as determined by Branden Boone using an infrared temperature monitor. No temperature differential indicates a problem with the after cooler resulting in no cooling of the gas. Mr. Boone indicated the problem was likely the result of plugging of the fan. By the end of the day, NANR had cleaned the unit and documented that there was a temperature differential. There are no atmospheric vents or emissions from the landfill gas conditioning system.

The treatment system's only filter mechanism for particulates is the knockout scrubber. According to Branden Boone, the filter has not been replaced since installation, but the unit was inspected during a plant shutdown. Maintenance is conducted on the treatment system in accordance with a facility maintenance plan and a log book of all maintenance activities is kept on site.

The facility has developed as part of the facility's overall preventative maintenance plan a treatment system monitoring plan. According to that plan (attached), parameters are monitored for treatment system operation

which consist of the scrubber vessel differential pressure and condensate site tube level, the compressor oil level and maximum operating temperatures, the water/oil separator gauges, and the gas cooler maximum inlet and outlet temperatures. NANR may need to update the preventative maintenance plan and further define recordkeeping parameters for the treatment system.

FGRICEENG:
The NANR electric generating plant has one Caterpillar 3516LE and two Caterpillar 3520C internal combustion engines used to generate electricity from burning landfill gas. The 3516LE engine has a capacity of 1,148 brake-horsepower and the two 3520C engines have a capacity of 2,242 brake-horsepower. It is noted that EUENGINE3 is the newest engine and is in a self contained unit (or box) on the north side of the main building. The following is a summary of facility engines:

Parameter	Engine 1	Engine 2	Engine 3
Type	Caterpillar G3516	Caterpillar G3520C	Caterpillar G3520C
Serial #	ZBA00709	GZJ00282	GZJ00552
Rating	900 kW (1148 hp)	1600 kW (2233 hp)	1600 kW (2233 hp)
Mfg Date/installed date	2007, 9/2018	2007, 9/2018	2012, 11/2020
Total Operating Hrs	~85,334	~97,442	~19,995
12-month Hrs	7,675	5,817	4,824
Non resettable Hrs meter	Y	Y	Y
NSPS JJJJ Subject	N	N	Y
MACT ZZZZ Subject	Y	Y	Y
Original NSR PTI	45-17A	45-17A	45-17B

The company began full production in September 4, 2018.

The engines generally operate 24 hours per day, 7 days per week, however whether a particular engine is running is dependent on the amount of gas that the landfill is generated from the landfill. All three engines were operating at the time of the inspection with a total gas fuel flow rate around 1,300 scfm.

NANR monitors on a continuous basis, many parameters for engine operation including gas flow rate from the main header, gas flow rate into the engines, gas quality, electricity production, and hours of operation. Each engine can process approximately 400 to 500 cubic feet of landfill gas per minute. At the time of the inspection, the following parameters were noted:

Parameter	Total for Both Engines
Methane %	55.6%
O2 %	0.1%
Flow	1300 scfm
Kilowatt Output	1,888 kw
Avg. Btu of gas	480

Records are maintained on-site in accordance with ROP No. MI-ROP-N2804-2020 and in accordance with the preventative maintenance plan. A daily record sheet is used to record various engine and treatment system parameters. (attached)

The following table is a summary of emission and material limits. Records for the period from June 2020 through May 2021 are attached.

Equipment	Parameter	Emissions	Limit	Stack test Date	Compliance	Comments
EUENGINE1	CO	10.0 pph	16.3 pph	9/2018	Yes	
	NOx	2.73 pph	4.94 pph	9/2018	Yes	
	SO2	3.6 pph	5.8 pph	9/2018	limit changed	
	Formaldehyde	1.62 pph	2.1 pph	9/2018	Formaldehyde	
EUENGINE2	CO	2.99 pph	7.9 pph	9/2018	Yes	
	NOx	0.75 pph	5.1 pph	9/2018	Yes	
	SO2	1.90 pph	3.3 pph	9/2018	Yes	

	Formaldehyde	0.53 pph	0.71 pph	9/2018	Yes	
EUENGINE3	CO	11.7 pph	16.3 pph	1/2021	Yes	
		2.4 g/bhp-hr	5.0 g/bhp-hr or 610 ppmvd at 15% O2	1/2021	Yes	
	NOx	1.92 pph	4.94 pph	1/2021	Yes	
		0.4 g/bhp-hr	2.0 g/bhp-hr or 150 ppmvd at 15% O2	1/2021	Yes	
	SO2	2.1 pph	5.8 pph	1/2021	Yes	
	VOC	2.42 pph	**7.04 pph**	1/2021	Yes	
		0.1 g/bhp-hr	1.0 g/bhp-hr* or 80 ppmvd at 15% O2*	1/2021	Yes	
	Formaldehyde	1.8 pph	2.1 pph	1/2021	Yes	
FGRICEENG	SO2	12.8 tons	65.2 tpy (12-month rolling)	NA	Yes	
	Landfill gas usage	403.0 MMcf/year	783 MMcf/year (12-month rolling)	NA	Yes	

NANR has been verifying the hydrogen sulfide (H2S) content of the gas using Draegar Tubes in accordance with the permit. AQD staff observed spent Draeger tubes which are kept on site. Draeger tube results indicate H2S concentrations for the past 12 months have not exceeded 600 ppm which is below the 1,000 ppm H2S concentration limit in the permit. It is noted that trends in H2S concentration have decreased over the past 12 months.

The company conducts appropriate engine maintenance in accordance with a malfunction abatement/preventative maintenance plan. All engine maintenance activities are maintained in a logbook located on site which was reviewed by staff. There were no apparent issues identified with the engine maintenance records.

No visible emissions were observed during the site visit and all stack heights appeared to meet the permitted dimensions.

EVALUATION SUMMARY

NANR appears to be in compliance with all applicable requirements. Records obtained during the inspection including maintenance and engine operating records are attached.

NAME David L. Ryan DATE 7-7-21 SUPERVISOR