

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N132425976

FACILITY: South Kent Landfill		SRN / ID: N1324
LOCATION: 10300 South Kent Drive SW, BYRON CENTER		DISTRICT: Grand Rapids
CITY: BYRON CENTER		COUNTY: KENT
CONTACT: Dan Rose, Solid Waste Operations Manager		ACTIVITY DATE: 07/16/2014
STAFF: David Morgan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

At 9:00 A.M. on July 15, 2014, Air Quality Division staff Dave Morgan conducted a scheduled inspection at the South Kent Landfill and Granger Electric of Byron Center LLC located at 300 South Kent Drive SW, in Byron Center. 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 No. MI-ROP-N1324-2012 as part of a full compliance evaluation. Accompanying staff on the inspection was Dan Rose, Kent County Solid Waste Operations Manager. A DEQ Inspection Brochure was presented to Mr. Rose.

FACILITY DESCRIPTION

The South Kent Landfill is a municipal solid waste landfill which has an active capacity of over 10 million cubic meters, making it subject to the Federal Plan requirements for Municipal Solid Waste (MSW) Landfills under 40 CFR Part 62, Subpart GGG. Because the Non-methane Organic Compound (NMOC) emissions do not exceed 50 megagrams per year the South Kent Landfill is not required to have a collection and control system. In July 2008 the County voluntarily installed an active landfill gas collection system and an open flare on the active portion of the landfill. Collected landfill gas is routed to Granger Electric of Byron Center where two internal combustion engines burn the landfill gas to produce electricity.

The landfill is currently covered under ROP No. MI-ROP-N1324-2012, 40 CFR Part 62, Subpart GGG, and 40 CFR Part 63, Subpart AAAA.

The engines are also covered under ROP No. MI-ROP-N1324-2012, and also subject to the NSPS for Stationary Spark Ignition Internal Combustion Engines (40 CFR Part 60, Subpart JJJJ) and the major source requirements of the NESHAP for Stationary Reciprocating Combustion Engines (40 CFR Part 63, Subpart ZZZZ).

COMPLIANCE EVALUATION

EULANDFILL<50:

The South Kent Landfill has a design capacity greater than 2.5 million cubic meters and NMOC emissions (based on established Tier 2 values) less than 50 megagrams. Because of this, the County has to conduct a Tier II test every five years to demonstrate whether gas collection and control is required or not. In September 2011, Kent County conducted a Tier II test to determine the NMOC concentration and NMOC emission rate from the entire landfill including both closed and active portions. The Tier II results indicated that the average NMOC concentration from the site was 56.8 parts per million as hexane and NMOC emissions were calculated to be 9.19 megagrams through 2015. It is noted that these values are significantly lower than previous Tier II tests at the site. Because NMOC emissions are under the 50 megagram per year threshold in Subpart GGG the County is not subject to landfill gas collection and control requirements including operation, monitoring and recordkeeping requirements.

All records including the maximum design capacity, the year-by-year waste acceptance rate, and the current amount of MSW in place are being kept in accordance with the permit. The landfill currently accepts approximately 400 tons of refuse per day. Records of the current amount of MSW in place is maintained on a quarterly basis. Although records are not maintained on-site, it is available within 4 hours which is in compliance with Subpart GGG and the ROP. According to County records, approximately 225,420 tons of waste was received in 2013. In addition as of December 2013, there was a total of approximately 6 million cubic meters of waste in place.

Granger Electric of Byron Center LLC

No Granger personnel were available for the inspection, however, Mr. Rose provided access to the control room for the engines. Operating parameters were recorded from the control panel. In addition, maintenance records and the daily engine parameter records were hanging in the control room and were reviewed on site. Some records were obtained from Dan Zimmerman, Director of Compliance for Granger in follow-up to the site visit.

FGICEENGINES:

Granger Electric operates two Caterpillar G3520 internal combustion engines used to generate electricity from burning landfill gas. The two engines were installed in 2008 and originally permitted under PTI No. 212-08 which was subsequently rolled into ROP No. MI-ROP-N1324-2012. Landfill gas entering the generating plant is sent through a treatment system to de-water, filter and cool the gas prior to combustion. The two internal combustion engines generally operate 24 hours per day, 7 days per week. Any landfill gas that is not burned in the engines is routed to an open flare. At the time of the inspection, both engines were operating and no gas was being sent to the flare.

The engines at the site have emission limits for CO, NOx, VOC and formaldehyde. Under ROP No. MI-ROP-N1324-2012 the company was required to verify the emission rates of these pollutants. The last performance testing results are as follows:

Pollutant	Result		Limit	Test Date
	Engine1	Engine2		
VOC	0.20 g/bhp-hr	0.22 g/bhp-hr	1.0 g/bhp-hr	1/2014
CO	15.02 lb/hr	14.13 lb/hr	16.23 lb/hr	1/2014
NOx	2.08 lb/hr	2.01 lb/hr	4.92 lb/hr	1/2014
formaldehyde	1.65 lb/hr	NA	2.10 lb/hr	8/2012

Per ROP No. MI-ROP-N1324-2012 Granger 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 and the gas is analyzed at regular intervals to verify the quality of the gas. At the time of the inspection, the following parameters were noted:

Parameter	Total for Both Engines
Methane %	51.8%
O2 %	0.26%
Flow	712 scfm
Kilowatt Output	2050

Records are maintained on-site in accordance with ROP No. MI-ROP-N1324-2012 and in accordance with the preventative maintenance plan. A daily record sheet is used record various engine and treatment system parameters. According to company records, the total landfill gas feed rate for August 2013 through July 2014 was 379.4 million cubic feet which is less than the permit limit of 565.88 million cubic feet.

The company also records, once per day, the kilowatt output from each engine and maintains a monthly and a 12-month rolling record of the hours of operation. It is noted that the company uses non-resettable hours meters; each engine has operated for over 44,000 hours since installation.

Based on facility records, a preventative maintenance program is conducted. Routine maintenance is conducted on the engines in accordance with manufacturer specifications which include replacing engine spark plugs, oil, and lubrication. Maintenance is also conducted on an as needed basis. In addition, a "top-end" overhaul, which includes replacing/cleaning cylinder heads, turbochargers and valves, is conducted on each engine after approximately 10,000 hours of operation. This is typically completed on site. It is noted that Engine #1 had a "top-end" overhaul completed in May 2012.

Also, a "major" overhaul is conducted every 50,000 to 100,000 hours of operation. A major overhaul includes all of the work of a top end overhaul plus disassembling all of the bearings, seals, gaskets, and components that wear and may even include replacing the crankshaft. When an engine is due for a major overhaul Granger swaps the engine out with another rebuilt engine.

Under ROP No. MI-ROP-N1324-2012, each engine is required to have a minimum stack height of 65.0 feet above ground level and maximum diameter of 14 inches. All stack dimensions are currently being met.

40 CFR Part 60, Subpart JJJJ:

The engines are subject to the requirements of 40 CFR Part 60, Subpart JJJJ based on the engine installation and manufacture dates. The company submitted an initial notification on June 6, 2012 and Subpart JJJJ requirements were incorporated into ROP No. MI-ROP-N1324-2012. Under the NSPS an initial performance test and subsequent testing is required every 8,760 hours of operation (or 3 years). The engines have operated around 4,300 hours since the last performance test, therefore the testing requirement has not been triggered. Granger appears to be meeting Subpart JJJJ requirements at this time.

40 CFR Part 63, Subpart ZZZZ:

The potential to emit of formaldehyde from the engines is 18.4 tons which is above the major source threshold of 10 tons for a single HAP. Because the engines are considered a major source of HAPs and were installed after

December 12, 2002, they are subject to the requirements of 40 CFR Part 63, Subpart ZZZZ , which were incorporated into ROP No. MI-ROP-N1324-2012. The company submitted an initial notification on June 6, 2012. Granger appears to be meeting Subpart ZZZZ requirements at this time.

SUMMARY

South Kent Landfill and Granger Electric Company appear to be in compliance with all applicable requirements included ROP No. MI-ROP-N1324-2012.

NAME  DATE 8/5/14 SUPERVISOR PAAB