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

P026230882

FACILITY: BLUE WATER RENEWABLES		**SRN / ID:** P0262
LOCATION: 6797 SMITHS CREEK ROAD, SMITHS CREEK		**DISTRICT:** Southeast Michigan
CITY: SMITHS CREEK		**COUNTY:** SAINT CLAIR
CONTACT: Nick Diedrich , Environmental Engineer		**ACTIVITY DATE:** 08/18/2015
STAFF: Rebecca Loftus	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: See also SRN: N6207, Smiths Creek Landfill. Together these are one stationary source.		
RESOLVED COMPLAINTS:		

On August 18, 2015, I, Rebecca Loftus, from the Department of Environmental Quality's (DEQ), Air Quality Division (AQD) conducted an inspection Blue Water Renewables, LLC at Smiths Creek Landfill, State Registration Number (SRN): P0262, located at 6779 Smiths Creek Road, in Smiths Creek, St. Clair County, Michigan. The purpose of this inspection was to determine the Blue Water Renewables compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, Michigan's Air Pollution Control Rules, and Renewable Operating Permit (ROP) No. MI-ROP-P0262-2012, Permit to Install (PTI) No 163-09A, and AQD Consent Order No 25-2015.

Contacts

I arrived on-site and met with the following staff:
Nick Diedrich, DTE Energy Resources, Environmental Engineer, 734-302-5392
Jason Galbraith, New Plant Operator

Facility Overview

Smiths Creek Landfill (SRN: N6207) is a Type II Sanitary Landfill, owned and operated by St. Clair County. Blue Water Renewables (operated by DTE Biomass, SRN:P0262) owns an electric generating facility located at the landfill that utilizes the landfill gas as fuel. Previously, an agreement was made between AQD management, St. Clair County, and Blue Water Renewables, which allowed the two entities to have separate ROPs and SRNs; together these entities comprise one single stationary source.

In 2009, Blue Water Renewables obtained Permit to Install (PTI) No. 163-09 for the operation of three reciprocating internal combustion engines (RICEs). This permit was subsequently rolled into ROP No. MI-ROP-P0262-2012. In addition, to the engines, Blue Water Renewables operated a landfill gas (LFG) treatment system which dewaters, filters, and compresses the LFG prior to combustion in the engines.

In response to a violation notice and subsequent consent order, Blue Water Renewables applied for PTI No. 163-09A to address formaldehyde emissions and increase stack heights. The permit was issued on February 11, 2015.

In addition to the on-site inspection of the engine plant and treatment system, AQD staff reviewed and has summarized below the following: compliance with the terms and conditions of MI-ROP-P0262-2012 and PTI No 163-09A, HAP emissions (including Formaldehyde), H_2S Concentrations/SO_2 Emissions, NSPS JJJJ, NESHAP ZZZZ, and MAERS data.

ENGINES

On February 11, 2015, PTI No 163-09A was issue to Blue Water Renewables. This PTI contained conditions for Flexible group, FGICENGINES. This flexible group represents Engines #1 and #2; two CAT Model 3520C, 2,233 bhp, lean burn engines, installed in June 2011, and capable of producing 1.6 megawatts.

The flexible group now has limits for NO_x, CO, HCl, VOC, and Formaldehyde. In addition Blue Water Renewables must monitor the LFG for H2S concentrations, calculate monthly SO2 mass emissions, record operating hours of each engine, record the amount of LFG consumed, properly operate and maintain an air/fuel ratio controller, record engine maintenance, and provide a Malfunction Abatement Plan.

At the time of my inspection, Blue Water Renewables was performing their annual stack test and using FTIR to test for the new formaldehyde emission limits established in the PTI for each engine.

While being tested, I noted Engine #1 was only operating at approximately 97% load. At the same time Engine #2 was operating at 77% load. Jason explained that due to the lower than anticipated amount of LFG (Averaging 900scfm), these engines typically run between 85-90% load.

During my inspection, I recorded the following engine parameters:

	Engine #1	Engine #2
Serial #	GZJ00491	GZJ00493
Engine Hours	32022	23877
Correction Factor %	100	101
LFG Btu	465	460
Fuel Temp(°F)	82.4	82.4
Fuel Pressure (psi)	16.5	16.4
Inlet Air Temp(°F)	154.8	129.4
Manifold Air Pressure (psi)	48.6	36.3
Air-Fuel Ratio	8.2	7.9
Air Flow (scfm)	4443	3466
Fuel Flow (scfm)	541	437
Oil Pressure (psi)	71	73.9
Oil Differential (psi)	6.3	5.4
Oil Temp(°F)	199	188
Battery Voltage	22.5	25.5
Speed (RPM)	1200	1200
Throttle %	62	50
Load %	97	77
Coolant Temp (°F)	197	194
Cylinder Temps (°F)	1100-1150	1100-1150

All record keeping was available on-site at the time of my inspection. Jason provided me with blank copies of the new daily record keeping forms (see attached) and later via email, Nick provided a copy of the data/emissions (see attached). Upon review of the records, I noted that engine parameter data was similar to the conditions I observed during my inspection. Jason explained the H2S concentrations are taken monthly as required by the permit and analyzed using Tedlar bags and dragger tubes. The range for 2014 was 115-180ppm and the range for 2015 was 75-140ppm.

The maintenance records for each engine (available on-site) indicated that Engine #1 had "in-frame" maintenance conducted on January 6, 2015 at 26,971hours and Engine #2 had "in-frame" maintenance conducted on January 13, 2015 at 27,229 hours.

Previously staff explained maintenance activities performed as follows: At Blue Water Renewables, an "in-frame" includes a "Top-end" plus a change in the pistons, rods, cylinders, etc. When a "Major" rebuild occurs, the engine is taken off-site, rebuilt, and re-installed (no engine is in place while the maintenance occurs), therefore the engine maintains the same serial number.

Updated Malfunction Abatement/Preventative Maintenance Plans required by the PTI were received by the AQD in 2015 (see file for plans).

At the time of my inspection, I noted the stacks' heights had been increased per the requirements of the PTI. Blue Water Renewables has submitted a ROP modification to the AQD to have the PTI rolled into the ROP. At the time of my inspection, the modification was being processed and should be issued by the end of August.

In addition to the above mentioned permit requirements, the engines are subject to the National Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart JJJJ (NSPS JJJJ) and the National Emission Standards for Hazardous Air Pollutant for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ (NESHAP ZZZZ). See sections below for more information on these federal regulations.

EUTREATMENTSYS

Typically EUTREATMENTSYS is operated by the landfill owner, however at Smiths Creek Landfill, Blue Water Renewables operates the LFG treatment system which filters particulate matter, remove moisture, and compress the LFG; designated in the ROP as EUTREATMENTSYS. These treatment systems are used to process the gas prior to it being sent to their two Reciprocating Internal Combustion Engines. Maintenance activities are kept on-site in a binder and any malfunctions are reported in the semiannual reports.

NSPS JJJJ

The two 3520 CAT Engines are subject to 40 CFR Part 60, Subpart JJJJ, the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS JJJJ). On December 22, 2011, Blue Water Renewables submitted their Initial Notification for NSPS and on August 23, 2012 the required Engine Preventative Maintenance Plan (see file).

NESHAP ZZZZ

Before 2013, Blue Water Renewables was considered a minor source of HAPs. Given the new formaldehyde data, Blue Water Renewables is now consider a major source of HAPs and is subject to 40 CFR, Part 63, Subpart ZZZZ, the Nation Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (NESHAP ZZZZ).

The initial notification and 2013 annual report for Blue Water Renewables as a major source of HAPs were submitted late on October 1, 2014. This was addressed in the Consent Order between the AQD and Blue Water Renewables. The 2014 Annual Report was received on time with all other semi-annual reports on March 12, 2015.

MAERS

For 2014, Blue Water Renewables reported the following emissions:

Pollutant	Tons
CO	95.76
NOx	17.03
PM10	9.25
SO2	4.32
VOC	8.53

Note: Formaldehyde emissions from the engines were not included in the reported VOC emissions.

Compliance Conclusions

Based on information gathered during the inspection and the records reviewed, Blue Water Renewables appears to be in compliance with the Federal Clean Air Act, Michigan's Air Pollution Control Rules, and the conditions of ROP No. MI-ROP-N5984-2013, PTI 163-09A, and AQD CO No. 25-2015.

NAME Rebecca Jeffers DATE 9/25/15 SUPERVISOR CJE