

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

B797774297

FACILITY: ZEELAND BOARD OF PUBLIC WORKS		SRN / ID: B7977
LOCATION: 347 E. Washington Ave., ZEELAND		DISTRICT: Grand Rapids
CITY: ZEELAND		COUNTY: OTTAWA
CONTACT: Robert Mulder , Power Supply Manager		ACTIVITY DATE: 10/15/2024
STAFF: Laura Martin	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled, unannounced inspection 2024.		
RESOLVED COMPLAINTS:		

On Tuesday October 15, 2024, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) Staff Laura Martin (LM) conducted a scheduled inspection of Zeeland Board of Public Works located at 347 E. Washington Avenue, Zeeland Michigan. The purpose of this inspection was to determine compliance with MI-ROP-B7977-2022 and all other applicable air quality rules and regulations.

LM arrived in the vicinity of the plant around 9:45 am. Prior to entering, LM observed the area for any excess emissions or odors; none were noted. LM rang the buzzer on the front door of the building, where she met with Robert Mulder, Power Supply Manager, who accompanied her on the inspection of the facility and provided her with the associated records.

Facility Description

Zeeland Board of Public Works (ZBPW) is a municipally owned and operated electric generating station consisting of seven (7) dual fuel engines. All of the engines have the capability to burn both diesel fuel and natural gas and are primarily used for peaking. Low sulfur diesel fuel is used for ignition of the internal combustion engines, and then they switch over to natural gas. The total capacity for the seven (7) units combined is approximately 24,000 kW. All of the engines utilize catalytic oxidation to control emissions.

Regulatory Analysis

ZBPW is currently operating under Title V permit MI-ROP-B7977-2022 and is a major source of Nitrogen Oxides (NOx). The engines at the facility are also subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal

Combustion Engines, as an area source for Hazardous Air Pollutants (HAPs). None of the engines at the facility were operating at the time of the inspection.

Compliance Evaluation

EU-ENGINE011

Engine 11, installed in 1981, is a 6 MW (8300 HP) engine and is the newest of the engines located at the facility. ZBPW is properly tracking the hours the engine ran as well as the inlet and outlet temperature and the pressure drop across the catalyst every fifteen minutes.

This engine has a sulfur dioxide (SO₂) limit of 0.59 lb/MMbtu heat input, when firing diesel fuel. Compliance with this limit is demonstrated via the use of ultra-low sulfur fuel, with a sulfur content that does not exceed 50 ppm (0.005%). Records of the most recent fuel received, from January 2024, had a sulfur content of 15 ppm, maximum.

When this engine fires natural gas, NO_x emissions are limited to 11.76 grams/kilowatt hour and when firing diesel fuel, NO_x emissions are limited to 23.6 grams /kilowatt hour. Compliance with the NO_x emission limits is demonstrated through testing, if the hours of operation for the engine exceeds 500 hours per 12-month rolling time period. Testing is not required at this time.

Engine 11 has energy production limitations based upon the fuel type that is combusted in the engine. ZBPW tracks the fuel used in the engine, as well as the energy produced. This engine is limited to 1,008 megawatt hours (MWH) per 12-month rolling time period for diesel fuel, and 18,637 MWH per 12-month rolling time period for combined natural gas and diesel fuel. For the period of September 2023 through August 2024 the 12-month rolling energy production for Engine 11 was 150.572 MWH. The engine has a 500-hour operating limit per 12-month rolling time period. The Engine operated for a total of 32 hours from September 2023 through August 2024. ZBPW most recently conducted USEPA Method 9 visible emission observations on September 8, 2022, indicating a 6-minute average opacity of approximately 5%. A method 9 reading is required at least once per 100 hours of unit operation. Having only around 30 hours of operation per year allows for readings every three to four years.

Maintenance reports for Engine 11 were obtained and indicate that regular maintenance is conducted on the unit, and the maintenance is done in accordance with the Continuous Parameter Monitoring System (CPMS) that the facility maintains. The AQD received an updated CPMS plan with the ROP renewal application in 2020.

LM observed the stack from the exterior of the facility and the stack exhausts unobstructed vertically upwards, but LM did not explicitly measure the dimensions.

FG-ENGINES001

This flexible group covers six (6) dual fuel internal combustion engines. These engines are EU-ENGINE001, EU-ENGINE002, EU-ENGINE007, EU-ENGINE008, EU-ENGINE009, and EU-ENGINE010. Each of these engines are equipped with an oxidizing catalyst and are subject to the provisions of 40 CFR Part 63 Subpart ZZZZ; the requirements of this subpart are evaluated in FG-RICEMACT. The engines vary in size ranging from 1600 hp to 7760 hp. The units were installed between 1966 and 1975 with EU-ENGINE001 being the oldest, and EU-ENGINE010 being the newest, of the engines in this flexible group.

These engines have a sulfur dioxide (SO₂) limit of 1.11 lb/MMbtu, when firing diesel fuel. Compliance with this limit is demonstrated via the use of ultra-low sulfur fuel, with a sulfur content that does not exceed 1.0 % by weight, based on a heat value of 18,000 BTU per pound of diesel fuel. Records of the most recent fuel received, from January 2024, had a sulfur content of 15 ppm, maximum.

ZBPW tracks the amount of natural gas and diesel fuel combusted in each engine, the hours of operation, and the amount of energy produced by each engine. Of these six (6) engines, Engine 10 has produced the most energy during the period of September 2023 through August 2024, producing 147.737 MWH of energy; Engine 8 produced the least energy, producing 6 MWH. During the period of September 2023 through August 2024, EU-ENGINE001 operated for a total of 9 hours, EU-ENGINE002 operated for a total of 8.1 hours, EU-ENGINE007 operated for a total of 5.1 hours, EU-ENGINE008 operated for a total of 4.5 hours, EU-ENGINE009 operated for a total of 33 hours, and EU-ENGINE010 operated for a total of 35 hours.

EU-ENGINE009 and EUENGINE010 require USEPA Method 9 Visible Emissions readings at least every 100 hours of operation. ZBPW most recently conducted Method 9 readings on both engines on March 20, 2024, both indicating a 6-minute average opacity of 5%.

ZBPW continues to maintain preventative maintenance as it is outlined in the Continuous Parameter Monitoring System plan (CPMS), with the most recent version being submitted during the 2020 ROP renewal. Maintenance that has been conducted is recorded and kept on file and was provided during the records request portion of the inspection.

LM observed the stacks from the exterior of the facility and the stacks exhaust unobstructed vertically upwards, but LM did not explicitly measure the dimensions.

FG-RICEMACT

These engines have a Carbon Monoxide (CO) limit of 23 ppmvd at 15% O₂ or 70% reduction or more. Compliance with this limit is demonstrated via stack testing. ZBPW most recently conducted stack testing in August 2023. The stack test results indicated a destruction of 70% or greater for CO for all of the engines. The facility monitors and records the pressure across the catalyst and the temperature of the exhaust for each of the engines per Table 2b of 40 CFR 63.6603. ZBPW tracks the hours of operation for each of the engines as well, with each of the engines operating between a range of 4.5 and 35 hours for the time period of September 2023 through August 2024, as mentioned above.

LM observed the stacks from the exterior of the facility and the stacks exhaust unobstructed vertically upwards, but LM did not explicitly measure the dimensions.

Additionally, ZBPW has successfully been submitting the required compliance notifications for 40 CFR Part 63 Subpart ZZZZ.

FG-COLDCLEANERS

ZPBW only has one (1) cold cleaner which utilizes the same citrus-based solvent that was used during the previous inspection. The unit is not heated or agitated and is exempt from Rule 201 permitting pursuant to Rule 281(2)(h).

Miscellaneous

Also located on site, are two (2) 10,000-gallon diesel fuel storage tanks. These tanks are exempt from Rule 201 permitting pursuant to Rule 284(2)(d). ZBPW also has a 1.4 MMBTU natural gas fired water heater, which is also exempt from Rule 201 permitting pursuant to Rule 282(2)(b)(i).

The 2023 SLEIS emissions report was reviewed as a part of this Full Compliance Evaluation, and the emissions reported in the SLEIS Report are consistent with the operating parameters reported during the inspection. Additionally, all compliance reports have been received.

Compliance Determination

Based upon the observations made during the inspection and a subsequent review of the records, Zeeland Board of Public Works is in compliance with MI-ROP-B7977-2022 and other applicable air quality regulations.

NAME 

DATE 10/30/24

SUPERVISOR 