

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

B179271053

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| FACILITY: Warren Waste Water Treatment Plant | | SRN / ID: B1792 |
| LOCATION: 32360 Warkop, WARREN | | DISTRICT: Warren |
| CITY: WARREN | | COUNTY: MACOMB |
| CONTACT: Danuta Dordeski , Division Head | | ACTIVITY DATE: 03/06/2024 |
| STAFF: Robert Joseph | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR |
| SUBJECT: Scheduled inspection of wastewater treatment plant. | | |
| RESOLVED COMPLAINTS: | | |

On March 6, 2024, I, Michigan Department Environment, Great Lakes, and Energy-Air Quality Division staff Robert Joseph, conducted a scheduled inspection of Warren Wastewater Treatment Plant, Inc. (SRN: B1792) located at 32360 Warkop Avenue, Warren, Michigan 48093. The purpose of the inspection was to determine the facility's compliance with the requirements of the Federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; and the Michigan Department Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) Administrative Rules, and conditions of the facility's Renewable Operating Permit (ROP) MI-ROP-B1792-2021.

General Facility Information

The Warren Wastewater Treatment Plant (WWTP) treats residential wastewater from the city of Warren as well as from industrial sources. WWTP was constructed in the late 1950s. The facility's sewage sludge incinerator is subject 40 CFR 60, Subpart M, Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units. This subpart is for all Sewage Sludge Incinerators that commenced construction before October 14, 2010. In addition, the facility is subject to 40 CFR Part 61, Subpart C and E of the National Emission Standards for Hazardous Air Pollutants (NESHAP).

I arrived at the facility at approximately 10 a.m. and met with Danuta Dordeski, Facility Director. I introduced myself and presented my identification and credentials and stated the purpose of my visit. Danuta was named Facility Director on January 5, 2024, assuming the duties from Bryan Clor.

The facility processes approximately 22 million gallons of wastewater a day and operates three shifts daily with approximately 36 employees: 7am-3pm, 3pm-11pm, and 11pm-7am. The maximum capacity of the plant is 100 million gallons per day. The wastewater undergoes a series of processes once it enters the facility through a gravity fed system which includes a wet well, grit chamber, primary clarifiers, aeration tanks, secondary clarifiers, tertiary treatment, UV disinfectant, belt presses, and an incinerator.

Facility Tour

Andrew Conigliaro, Facility Engineer, began the tour of the facility where the redundant pumps within the system guide the wastewater as it enters the wet well and where the treatment begins. Exhaust from the wet well is treated using chemical odor control through the usage of sodium hypochlorite (NaClO). The facility decreased the bar screens of the wet well from 2 inches to 5/8 inch in 2019 to prevent large debris from entering the system which can damage the pumps. The wet well process is an enclosed process, and the pH and water flow rate are monitored through the Envirocare Venturi wet scrubber.

The wastewater then enters the grit box which also is an enclosed process. It operates 24 hours a day and is also equipped with odor control. It is composed of a chamber and split box. Prior to entering the atmosphere, the exhaust air is captured and treated through a carbon adsorption treatment unit when the wastewater temperature is above 60 °F. This typically occurs around May or June. Potassium permanganate (KMnO₄) is used to remove the iron (Fe) and hydrogen sulfide (H₂S) from the wastewater and to detect for activated carbon breakthrough from the grit box. The facility monitors the pH of the wastewater as it enters the facility. Lastly, some residual waste from the grit box is sent to a landfill.

The wastewater then enters a primary clarifier which are tanks used to slow the velocity of the wastewater to allow the suspended solids to settle. The facility performs a daily density test to determine the settling time of the particles in the tank. The primary sludge is collected, and the tanks are cleaned yearly. The facility

maintains eight primary clarifiers. Some of the sludge is removed and stored as activated sludge within storage tanks.

The wastewater is then routed to aeration tanks where air is introduced to allow for aerobic digestion of the pollutants which allows the solids to easily settle. The facility has six aeration tanks with four in service. The wastewater then moves to a series of secondary clarifiers where bio-phosphorus removal occurs, and where the effluent from the wastewater is held for a specified time allowing the activated sludge to settle to the bottom of the tank. The facility maintains eight secondary clarifiers. This activated sludge then moves to two of the three belt presses within the facility. The third belt press is available should any one of the other two become unavailable.

The final treatment phase of the wastewater is the tertiary treatment process which improves the wastewater quality before it is discharged into the Red Run Drain. This process removes all remaining inorganic compounds. The facility applies an ultraviolet (UV) light treatment to the cleansed wastewater before it is routed to the nearby Red Run Drain. The (UV) light treatment consists of a series of UV bulbs which destroy the genetic material of micro-organisms rendering them sterile.

The remaining sludge from the tanks are sent to one of three filter belt presses which are fed into a gravity belt thickener. These belts are used to reduce the moisture of the sludge to a ratio of 80% water/20% solid. There are a series of intake vents with filters. Air is drawn into the carbon adsorption unit for the belt press due to the possible hydrogen sulfide (H₂S) emissions. The carbon adsorption unit changes color when it is time for the unit to be changed indicating the (H₂S) has broken through.

This dewatered sludge is then directed towards the facility's Nichols multi-hearth incinerator. The facility typically sends sludge to the incinerator 3-4 days a week. At the time of inspection, the incinerator was not operating due to repairs as hearth 4 broke off and crumbled onto hearth 5. This occurred in late in December. The facility has been shipping the processed sludge to Pine Tree Acres Landfill for approximately two months at a cost of \$7,000/week. The unit is expected to back online this week as final electrical repairs are being completed.

The incinerator consists of ten hearths with burners located on hearths 2, 4, 6, 8, and 10. The facility monitors the combustion chamber temperature in hearths 5, 6, and 7. The facility inspects the incinerator hearths yearly. The design capacity of the incinerator is 10 tons/hr with a typical sludge feed rate of 4 to 6 tons/hr which is established with each performance test. The sludge feed rate is currently 5.70 tons/hr and is monitored through the facility's water permit by the EGLE-Water Resource Division.

The incinerator temperature increases at a rate of 50 °F per hour. The control device used to control emissions for the incinerator is a 3-stage EnviroCare Venturi wet scrubber. The facility does not add any chemical compounds to the scrubber to control the pH of the waste. The incinerator contains a bypass which is located on the top floor of the incinerator which lets fresh air in. The bypass only opens when maintenance work is occurring or when the incinerator ID fan fails. The bypass is attached to dead weights and will sound an alarm when opened. The ID fan was installed at the same time as the scrubber and aids in combustion according to the facility. The stack has continuous emission monitoring (CEM) for total hydrocarbons and an oxygen monitor, both monitored through their water permit.

The ash from the incinerator is mixed in with some water and is discharged into the on-site lagoon. The lagoon is cleaned twice a year and the waste material is shipped to a landfill for burial.

Renewable Operating Permit: MI-ROP-B1792-2021. All applicable emission unit sections verified during inspection are referenced below.

Attachment A - General Conditions

There were no concerns regarding these conditions at the facility. No visible emissions were observed, no malfunctioning equipment, and no obvious modifications of the facility's equipment was observed.

EU-Incinerator

I. Emission Limits

Performance tests conducted June 27-28, 2023. I.2 (Mercury) and I.3 (Beryllium) are referenced under the Section VI. Monitoring/Recordkeeping since their Time Period/Operating Scenario is daily. All pollutants are below the permitted limit.

| Pollutant | Limit | Test Result |
|--|---|--------------------------|
| 1. Particulate Matter (PM) | 0.2 lbs per 1,000 lbs of exhaust air, corrected to 50% excess air | 0.011 lbs |
| 4. Particulate Matter (PM) | 80 mg/m ³ (dry standard) | 16.76 mg/m ³ |
| 5. Hydrogen chloride | 1.2 ppmv (dry) | 0.30 ppmv |
| 6. Carbon monoxide* | 3,800 ppmv (dry) | 1,529 ppmv |
| 8. Dioxins/furans (total equivalency basis) b, c | 0.32 ngs/m ³ (dry standard) | 0.044 ng/m ³ |
| 9. Mercury | 0.28 mg/m ³ (dry standard) | 0.043 mg/m ³ |
| 10. Oxides of nitrogen* | 220 ppmv dry (dry) | 126.5 ppmv |
| 11. Sulfur Dioxide | 26 ppmv (dry) | 5.31 ppmv |
| 12. Cadmium | 0.095 mg/m ³ (dry standard) | 0.0027 mg/m ³ |
| 13. Lead | 0.30 mg/m ³ (dry standard) | 0.013 mg/m ³ |
| 14. Fugitive Emissions from ash handling | Visible emissions of combustion ash shall be no more than 5 percent for the hourly observation period | 0% |

III. PROCESS/OPERATIONAL RESTRICTIONS

The facility has submitted a malfunction abatement plan outlining staff personnel and the parameters monitored - including the ash handling system which is sent to the landfill. The facility inspects the equipment daily to ensure the equipment is in operating condition. The facility operates the EnviroCare Venturi scrubber whenever the incinerator is operating, and the bypass is only operated when the ID fan fails and when maintenance work is performed on the scrubber. The following operating limits were determined during their 2023 performance test and currently being met:

- Incinerator minimum combustion chamber temperature (hearths #4, #5, #6): 1342 F
- Sewage sludge maximum feed rate: 5.47 tons/hr (131.28 tons/day)
- Scrubber liquid pH limit (minimum): 5.31
- Scrubber liquid flowrate (minimum): 537.5 gal/min
- Scrubber minimum pressure drop (minimum): 23.35 inches H₂O

There were no concerns or observable emissions from the ash-handling system. There were no operating repairs necessary for the control devices.

IV. DESIGN/EQUIPMENT PARAMETERS

The Venturi wet scrubber was not operating at the time of inspection, however, records indicate it to be operating with all three stages. The facility maintains an electronical monitoring device (SCADA) which

continuously records and monitors the incinerator combustion chamber temperature, the EnviroCare Venturi scrubber pH, pressure drop, liquid flow rate and sewage sludge feed rate. Calibrations to the aforementioned wet scrubber devices occur yearly.

V. TESTING/SAMPLING

The facility analyzes both the mercury and beryllium content of the sludge feed to the incinerator monthly as provided by facility records, and the mercury and beryllium content of the ash from the incinerator once a year with the most recent test occurring in June 2023. The Mercury concentration was 0.002 mg/L, and the Beryllium concentration was 0.096 mg/L. There have been no process changes at the facility and no visible emissions have been observed due to the combustion of ash particulates. The facility has chosen to show compliance with the emission limits via performance testing.

The most recent test for all pollutants occurred in June 2023 which established the operating limits for minimum combustion temperature, sewage sludge feed rate, scrubber liquid pH, scrubber liquid flow rate, and pressure drop across the scrubber. All pollutants were 75 percent of their emission limit over two consecutive years (therefore testing is not required again until no later than 37 months since the last performance test in June 2023) except for carbon monoxide which will be tested again in 2024.

VI. MONITORING/RECORDKEEPING

Records indicate the mercury content of the sludge feed to the incinerator varied from 1.5 - 8.7 grams/day in 2023 and thus far in 2024. The permit limit is 3200 grams/day. Records indicate the beryllium content of the sludge feed to the incinerator varied from 2.5 - 4.6 grams/day in 2023 and thus far 2024. Permit limit is 10 grams/day. Monthly emissions for Mercury and Beryllium vary between 0.12 – 0.54 ppm and 0.20 – 0.27 ppm, respectively in 2023. The daily sewage sludge feed to the incinerator averages 4.3 tons/hour during that time span.

The transducer is calibrated annually and was calibrated June 2023. The differential pressure of the scrubber is monitored continuously. The sewage sludge feed rate was not active at the time of the inspection due to the incinerator repairs. The average has been 4.3 tons/hr the last 12 months. Records indicate the daily average sewage sludge feed rate ranging from 3.3 - 5 tons/hr on operational days. The facility also monitors and records the moisture content of the sewage sludge by obtaining multiple daily grab samples of the sewage sludge. The daily average moisture content for the samples is calculated and has a moisture content of approximately 80-85% the last 12 months.

The facility monitors and records the combustion chamber temperature for the Incinerator on a continuous basis and it is recorded every 15 minutes. The following temperatures were viewed electronically via the facility's database during the inspection:

Hearth 1: 938 F; Hearth 2: 1001 F; Hearth 3: 1050 F; Hearth 4: 1057 F; Hearth 5: 1032 F; Hearth 6: 823 F; Hearth 7: 686 F; Hearth 8: 495 F; Hearth 9: 244 F; Hearth 10: 81 F

The incinerator has been operating on this month only to allow for proper operating temperatures to be maintained for when incineration is to reoccur soon. Facility electronic records indicate the incinerator hearths (4, 5, and 6) are meeting the established operating limit when the incinerator is operating.

The facility has submitted a site-specific monitoring plan for each continuous monitoring system, and records the pressure drop across the scrubber, scrubber liquid flowrate, and scrubber liquid pH for the incinerator on a continuous basis and they are each recorded every 15 minutes. The sewage sludge feed rate is recorded on a continuous basis and facility electronic records indicate the parameters are operating within the established operating limits.

There were no visible emissions from the stack given it was not operating at the time of inspection. In addition, the facility conducts monthly meetings with staff to ensure operator training procedures are maintained and annual inspection of the control devices is documented.

VII. REPORTING

The facility submitted the annual, semi-annual, and deviation reports detailing any deviated monitoring parameters as demonstrated in the most recent performance test, as well as any periods of monitoring downtime. This includes the summary information on the number, duration, and cause of excursions and/or exceedances and the corrective actions taken.

VIII. STACK/VENT RESTRICTIONS

There were no observed stack obstructions.

IX. OTHER REQUIREMENTS

Based on the inspection and record review there did not appear to be concerns with the special conditions.

EU-Belt Press

IV. DESIGN/EQUIPMENT PARAMETERS

The pressure differential unit is maintained to ensure the pressure drop is below 10 inches H₂O. A reading of 0.8 inches H₂O was observed on the digital screen and logged by the facility. The carbon adsorption unit is maintained and installed, and a pressure drop indicates maintenance must occur. The carbon adsorption unit is maintained and replaced according to a color code change from purple (new) to black (H₂S breakthrough) indicating that replacement is necessary. The unit was last replaced in April 2020 and currently is white colored. The facility maintains a supply of ductwork air intake filters on-site available for replacement and they are replaced bi-annually..

VI. MONITORING/RECORDKEEPING

The color changes of the carbon adsorption unit (H₂S breakthrough) and the ductwork air intake filters are monitored by facility staff and documented. Records show readings have occurred monthly. The facility indicated the air intake filters were recently changed last month in February 2024.

VII. REPORTING

The facility has submitted the annual and semi-annual reports relating to the Belt Press.

EU- Wet Well

III. PROCESS/OPERATIONAL RESTRICTIONS

The wet well operates continuously and is an enclosed system consisting of scrubber chamber, air compressor (approximately 80 psi), chemical feed system, and pH monitoring. The oxidative scrubber is installed and appears to be operating per the manufacturer's specification. The area is vented with two axial fans and is equipped with liquid flow meter and a pH meter. In addition, the chemical feed system is monitored electronically and was set at 45.36 gallons/day and can be adjusted. The pH logbook did not indicate any readings to be below 7.0 the last 12-months (values in March ranged between 8.0 - 9.0) and the facility maintains a corrective action plan should the pH fall below that.

IV. DESIGN/EQUIPMENT PARAMETERS

Flowrate to the wet well at the time of inspection was approximately 1.1 gallons/minute and it is equipped with a liquid flow indicator and a pH monitor for the scrubber.

VI. MONITORING/RECORDKEEPING

The facility continuously monitors the scrubber on a daily basis and can adjust the chemical feed as necessary. The pH at the time of inspection was 8.95 and wet well level was 16.0 feet. The facility is equipped with eight pumps that provide wastewater to the grit chamber and all pumps were in operation at approximately 30 MGD.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the wet well.

EU-Grit Box

III. PROCESS/OPERATIONAL RESTRICTIONS

The facility operates the blower when the wastewater temperature is above 60 °F occurring in late May/early June and was not in operation at the time of inspection. The grit chamber and splitter box were covered and the gate screen openings were reduced in 2019 from 2 inches to a 5/8 inch to better collect debris before entering the system. The facility's activated carbon adsorption canister controls the blower (odor control fan) from the grit chamber through the use of potassium permanganate (KMnO₄).

VI. MONITORING/RECORDKEEPING

The facility continuously monitors the wastewater temperature and records its temperatures and it was not in operation at the time of inspection. The facility monitors the carbon adsorption canister for H₂S breakthrough on a weekly basis and was last replaced in March 2021.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the wet well.

EU-Generator

III. PROCESS/OPERATIONAL RESTRICTIONS

Compliance date for this emergency generator was June 15, 2007. Per Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines), the facility shall not operate the existing emergency stationary RICE (EU-Generator) with a site rating of more than 500 brake HP located at a major source for than 15 hours specified in 40 CFR 63.6640(f)(2)(ii) and (iii). It is only used during storm power outages and has not been used in part with another entity as defined.

VI. MONITORING/RECORDKEEPING

The generator is 2.1 MW, 2,855 HP, diesel-fueled, and installed in 1971. A logbook detailing the maintenance work performed on the generator is maintained which includes oil changes, battery checks, and air intake louver checks. The facility appears to be in-compliance with the permit requirements per the record logbook as the last operation occurred for 1.4 hours to a DTE power outage.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the EU-Generator.

EU-House Generator

II. MATERIAL LIMITS

The EU-HouseGenerator must not burn diesel fuel with a maximum sulfur content of 15 ppm. The sulfur content of the fuel (ultra-low sulfur diesel) is 10 ppm via safety data sheets from the manufacturer.

III. PROCESS/OPERATIONAL RESTRICTIONS

This is a certified engine, and the facility maintains a logbook of all maintenance work performed on the generator. The initial performance test of the engine indicated the NO_x to be below the permit limit of 6.9 g/HP-hr. It is used to start backup power for EU-Generator after total loss of power.

It is subject to the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and IIII. It is also subject to the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ given its site rating is equal to or less than 500 brake HP at major source of HAP emissions that commenced on or after June 12, 2006.

40 CFR 63, Subpart ZZZZ (40 CFR 63.6590) states that an affected source that is a new or reconstructed stationary RICE, located at a major source of HAP emissions and is a compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP, must meet the requirements of this subpart by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under 40 CFR 63, Subpart ZZZZ.

Based on discussion with the city and a determination of the pollutants emitted, the facility will be classified as an area source (major source for criteria pollutants but minor source for HAPs) during the next ROP renewal.

IV. DESIGN/EQUIPMENT PARAMETER(S)

The unit is a 60 kW, 82 HP, certified diesel-fueled generator that was installed in October 2006. The hour meter and logbook indicate 6 hours of usage this year due to storm events.

VI. MONITORING/RECORDKEEPING

The EU-HouseGenerator may operate no more than 100 hours per calendar which includes 50 hours per calendar year in non-emergency situations. According to the facility logbook it has not operated for more than 100 hours per calendar year or 50 hours in non-emergency situations. The facility indicates it is only used for emergency purposes when there is a total loss of power to the facility. Records show this occurs during storm events and has operated for 6 hours this year and 45 hours on a 12-month rolling basis. Monthly usage varies between 0 to 36 hours the 12-months. The facility logs the annual inspection, diesel fuel usage, and oil changes as part of its recordkeeping requirements.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the EU-HouseGenerator

FG-Coldcleaners

II. MATERIAL LIMITS

The facility does not use any of the compounds listed as indicated on the SDS.

III. PROCESS/OPERATIONAL RESTRICTIONS

The washer was not in use at the time of inspection.

IV. DESIGN/EQUIPMENT PARAMETERS

The washer was closed during the time of inspection. The air/vapor interface appeared to be less than ten square feet and is equipped with a device for draining parts. This is exempt per Rule 281(2)(h).

VI. MONITORING/RECORDKEEPING

The facility washer is manufactured by Safety Kleen Corporation, Inc. and the operating procedures are posted near the washer and is in-compliance with all applicable rules.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the FG-Coldcleaners.

FG-Boilers

III. PROCESS/OPERATIONAL RESTRICTIONS

The facility maintains two boilers that are less than 5 MMBtu/hr and burn natural gas. They are located in Building D of the facility in room 134 and are used for providing warmth for human comfort. They are subject to 40 CFR Part 63, Subpart DDDDD due to being under 10 MMBtu/hr located at major source of HAP emissions. The facility performs monthly inspections on the boilers to optimize performance, as well as yearly testing.

The facility has also scheduled a one-time energy assessment in October 2022 per 40 CFR Part 63, Subpart DDDDD. Given that the boilers are only used to provide heat for the facility they are currently shut down for the summer season and are not in operation.

VI. MONITORING/RECORDKEEPING

The facility maintains yearly test data, and both units are natural gas-fired hot water heating tube boilers with a 2 MMBtu heat input capacity. They were installed in 2012 and are manufactured by Aerco International and classified as benchmark 2.0 low NO_x boilers.

Based on discussion with the city and a determination of the pollutants emitted, the facility will be classified as an area source (major source for criteria pollutants but minor source for HAPs) during the next ROP renewal.

VII. REPORTING

The facility has submitted the appropriate annual and semi-annual reports regarding information pertaining to the FG-Boilers.

Conclusion

Based on the AQD inspection and records review, the Warren Wastewater Treatment Plant is in compliance with the aforementioned requirements and the conditions of the facility's ROP MI-ROP-B1792-2021.

NAME Robert Joseph

DATE 04-04-24

SUPERVISOR Joyce