M4845
MANUAL

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

M484541629

FACILITY: Detroit Water & Sewerage, Central Service Facility		**SRN / ID:** M4845
LOCATION: 6425 Huber Avenue, DETROIT		**DISTRICT:** Detroit
CITY: DETROIT		**COUNTY:** WAYNE
CONTACT:		**ACTIVITY DATE:** 08/25/2017
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** Synthetic Minor
SUBJECT: Compliance inspection of the Great Lakes Water Authority Central Service Facility in Detroit. The Central Service Facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:
Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)
Central Services Facility (SRN M4845)
6425 Huber Street
Detroit

Date of Activity:
Friday, August 25, 2017

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Tory Thompkins, DWSD Team Leader, GLWA

Purpose of Activity

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Central Services Facility (hereinafter "Central Services" or "Central Services Facility") was conducted on Friday, August 25, 2017. The Central Services Facility is on my list of sources targeted for an inspection during FY 2017. The purpose of this inspection was to determine compliance of operations at the Central Services Facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), applicable Federal standards, and any applicable permits and orders.

Facility Description

The Central Services Facility is located on the north side of Huber Street between Mount Elliott and Van Dyke. The building was formerly the site of Chrysler's Corporation's Huber Foundry. According the Great Lakes Water Authority website (www.glwater.org), the City of Detroit took over the property in 1984, and the facility began operating as a Detroit Water and Sewerage Department facility in December 1989. The Central Services Facility is bounded by industrial/commercial properties, and vacant land directly to the east. The property to the north was formerly the Chrysler Corporation Detroit Axle Plant, and is now used as a new vehicle storage lot. The area to the south of the facility is part of the I-94 Industrial Park. A new Flex-N-Gate automotive component manufacturing and supply facility is currently under construction to the south of the facility, between Huber and Georgia Streets. There are residential neighborhoods within ¼ mile of the east and west property lines of the facility.

The Central Services Facility includes a large building (the former Chrysler Huber Foundry) that is 1.2 million square feet in area. The following excerpt from the GLWA website describes the function of the Central Services Facility (or CSF per the website):

"*Department functions currently housed at the CSF facility include: three district yards (North, East and Central) from where repairs to the northern, eastern and downtown areas of the City of Detroit are coordinated; the Heavy Repair Yard, which handles all main breaks 12-or more feet below the surface; DWSD's Meter Operations Division, which tests and calibrates water meters; the Mechanical Maintenance Division, an 80,000 square-feet full-service vehicle-maintenance garage for the Department's vehicles; and all of DWSD's trade*

shops (blacksmith, electrical, and machine shops, etc.). DWSD is only one of two city departments (the other being the Police) to operate a blacksmith's shop."

The Central Services Facility consists of the 1.2 million square foot building, and adjacent outdoor lots for vehicle parking and material storage. There are also some emergency back-up generators outside, and a fuel dispensing operation. One of the generators is a diesel-fired Caterpillar Model 3516B generator rated at 1,825 kW electrical output, with a maximum heat capacity of 18.3 MMBTU per hour. This generator is located on the east side of the building. There are also three natural gas-fired Generac engines located on the north side of the building that I was told were installed in 2015. The fuel distribution operation, which is located at the west end of the facility, consists of two underground diesel storage tanks, and two underground gasoline storage tanks, all with a capacity of 10,000 gallons, and fuel distribution pumps.

Facility Operating Schedule

The Central Services Facility operates on a 24 hour per day, 7 days per week basis.

Inspection Narrative

I arrived at the Central Services Facility at 10:45am. I was met at the main entrance by Tory Thompkins, and we began touring the facility. As the building is large, Tory drove us around on a cart. Our first stop was the location of the diesel-fired generator. This generator is subject to the terms and conditions of Permit to Install No. 121-02A. We took a look at the generator, and we opened the access panel to the engine. I read the information on the label that is affixed to the engine, which provided that the unit is a Caterpillar Model 3516B engine. I also looked at the hour meter on the engine, which read 231 hours of operation. Tory told me that GLWA contracts with an outside to perform a maintenance check and tune-up on the engine at least once a year. I inquired about the fuel usage monitoring and recordkeeping that is required by the permit. Tory told me that he believes that staff in the Central Service Facility's auto garage track the fuel usage, but that the information is ultimately kept at a central location within GLWA.

Tory then mentioned that there are three additional emergency generators at the facility, and that they were installed in 2015. He drove us to the north side of the building where these generators are located. The units are all Generac natural gas-fired generators. We opened the access panels for the generators so that I could try to find some information about these generators. I found a label that provided the model and serial numbers and the date of manufacture. All three units had a model number presented on the label of SC13GT5250 (or perhaps "D" for the last character). The date of manufacture for each unit is May 2014. Each generator has a unique serial number – generator no. 1's is G9145002512, generator no. 2's is G9145002575, and generator no. 3's is G9145002513. I could not find any information relating to the maximum rated heat input capacity for these units. I tried doing a web search of the Generac generators using the model and serial numbers, and nothing came up. Tory provided me with the name and contact number for a person with the company that installed the generators. I informed Tory that the installation and operation of these generators most likely needed to be permitted by DEQ-AQD.

Tory and I then went back inside of the building to look at the boilers at the facility. Most of the building is heated by rooftop HVAC units, but there are a few boilers scattered throughout the building. We stopped near the women's locker room, where there are two natural gas-fired hot water heaters. One is a small Lochinvar unit, and the other is a Raytherm hot water heater. I looked at the label on the Raytherm unit, which showed that it has a model number of WH3-0260, and a maximum rated heat input capacity of 264,000 BTU/hour. I was told that there are three more similar hot water heaters in the building – one in the meter shop, one near a men's locker room, and one in the garage area. Tory took me to see the heater in the garage area; it was a Raytherm hot water heater with the same model number and maximum rated heat input capacity as the first one that I looked at.

We then went to the building's boiler room, which is located just behind/to the north of the administration section of the facility. There are two boilers located in the boiler room. Both boilers are Cleaver Brooks, with a maximum rated heat input capacity of 800,000 BTU/hour. The plate on the boilers showed that the model number is WTW-703-800, and that they were built in 1988.

We returned to the garage area and discussed the facility's fuel dispensing operation. According to Tory, there are four underground storage tanks and four associated dispensing pumps, two of each for diesel and gasoline. The fuel is used in GLWA/DWSD vehicles. Tory told me that the fuel storage tanks are inspected quarterly by DEQ and Phoenix Environmental. The amount of fuel that is dispensed is tracked via fuel inventory

readings which are done weekly. The fuel is supplied by Waterfront Petroleum. Tory told me that there are eight fuel distribution operations at various GLWA/DWSD facilities, and that the fuel inventory information is kept at the Central Services Facility. He introduced me to LaTanya McTaw, who works in the dispatch area and works on tabulating the fuel inventory information.

Tory and I returned to the main entrance and concluded the site visit. I left the facility at 12 noon.

Permits/Regulations/Orders/

Permits

The facility currently has one active air permit, PTI No. 121-02A, which was approved by DEQ-AQD on December 1, 2008 to address the operation of the diesel-fired generator. The original permit for the generator, PTI No. 473-99, was applied for in December 1999 by DWSD to address the pending installation of a Caterpillar engine. The PTI limited the hours of operation of the engines to 500 hours per year to limit the potential emissions from the engines to below major thresholds (the permit also limited emissions of NOx to 12 tons per year). The permit was issued in January of 2000.

PTI No. 121-02 was issued to allow an increase in the hours of operation of the engine from 500 hours per year to 2,550 total combined operating hours per year. DWSD applied for this permit revision in May of 2002 to increase the allowed hours of operation of the engine so that the engine could be operated for electrical load peak shaving in addition to their use in providing emergency back-up power to the pumps. This PTI also increased the allowable NOx emissions to 39.4 tons per year. PTI No. 121-02 was issued in August of 2002.

The current PTI, No, 121-02A, was issued on December 1, 2008. DWSD applied for this permit to change the permitting operating limit on the engine from an hours of operation basis to a fuel restriction basis. DWSD requested this change on the basis that the hours of operation limit from the past versions of the permit were based on 100 percent load during the operation of the engine. DWSD provided that the engine is frequently operated at reduced loads, but that any operation was essentially being regulated, from an emissions standpoint, as being at 100 percent load. The fuel usage restriction was calculated based on the NOx limit of 39.4 tons per year. Thus, the current permit still serves to limit the potential emissions from the engine to below major source thresholds.

The compliance status of the Central Services Facility with the requirements of PTI No. 121-02A is summarized, as follows:

Special Condition I.1 (Emission Limits)– This condition limits the total emissions of nitrogen oxides (NO_X) from the operation of the engine to 39.95 tons per year. As of the finalizing of this report, GLWA has not provided me with valid information demonstrating how NOx emissions are being calculated and tracked by GLWA. Based on the low usage of this engine (typically an hour or less per month), the NOx emissions should be well below the permitted limit. The application materials that were submitted for PTI No. 121-02A provide that the engine would need to operate over 2,550 hours at 100% load to exceed the 39.95 tons per year limit. Since the hour meter for the entire run time of the engine since it started operating read 231 hours, the engines look to be in compliance with this emission limit.

Special Condition II.1 (Material Limits) – The facility is in compliance with this condition. All of the fuel that is used at GLWA facilities is ultra low sulfur diesel, and has a sulfur content of less than 0.05% by weight.

Special Condition II.2 – As of the finalizing of this report, GLWA has not produced any records to demonstrate that diesel fuel usage is no more than 328,333 gallons per 12 month rolling period. The engines have a maximum fuel consumption rate of 130.8 gallons per hour, per engine. Given the number of hours that the engines are being used, the diesel fuel usage should be well below 328,333 gallons per 12 month rolling time period. It is assumed that the facility is complying with the requirement.

Special Condition IV.1 (Design/Equipment Parameters) – There is no device associated with the engines to monitor the fuel usage. Rather, the fuel usage is monitored based on the flow of fuel to each engines' day tank.

Special Condition VI.1 (Monitoring/Recordkeeping) – As of the finalizing of this report, GLWA has not demonstrated that the monthly calculations of the NOx emissions from the engines are being performed and recorded. Non-compliance.

Special Condition VI.2 – GLWA maintains fuel specifications for each delivery of fuel at GLWA facilities. Compliance.

Special Condition VI.3 – As of the finalizing of this report, GLWA has not demonstrated that the monthly and 12 month rolling time period records of diesel fuel usage is being maintained. Non-compliance.

Special Condition VIII.1 – These conditions put forth the ambient exhaust parameters for the engine. This information was provided in the PTI applications. The stack parameters were not evaluated during this site visit.

PTI 121-02A serves as an opt-out permit, as the permit limits potential emissions of NOx to below major source thresholds. At the time that the PTI was issued, it is assumed that all of the boilers and hot water heaters that were discussed during my site visit were in place and operating. The potential NOx emissions from the boilers and hot water heaters can be estimated as follows:

- There are two boilers rated at 800,000 BTU/hour, and five hot water heaters that have all have an assumed rating of 264,000 BTU/hour (based on the two Raytherm units that I took specifications from). The total maximum BTUs from all of these units totals 2.92 MMBTU/hour.
- The maximum annual natural gas usage equivalent for these BTU's is conservatively estimated as 2.92MMBTU / 1050 MMBTU per MMft3 of natural gas * 8,760 hours per year = 24.36 MMft3.
- Estimating the potential NOx emissions using a conservative MAERS emission factor for boilers units with a heat input value of 10-100 MMBTU/hour, 100 lb/MMft3, and combining it with the maximum hourly natural gas consumption rate results in a NOx PTE estimate of 1.22 tpy.

Thus, the potential emissions of NOx from the natural gas-fired boilers and hot water heaters at the Central Services Facility, combined with the NOx emission limit for the diesel-fired generator, does not exceed major source thresholds.

However, the three Generac natural gas-fired generators were installed without a PTI. They may meet the PTI exemption criteria put forth in Administrative Rule 285(g). However, without a PTI, there are no enforceable limits on the hours of operation of these three generators, the amount of gas that they can consume and the amount of NOx that they can emit. The operation of these generators without a permit may result in potential NOx emissions from the Central Services Facility exceeding major source thresholds.

Federal regulations

The diesel engine was installed in 1999, and has not been modified since it was installed. The installation date for this engine is prior to the dates that make up the applicability criteria associated with 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines), as put forth in 60.4200(a). Thus, the diesel-fired engine at the Central Services Facility is not subject to Subpart IIII.

The three natural gas-fired Generac generators may be subject to the requirements of 40 CFR Part 60, Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines). The information label affixed to the generators stated that they were manufactured in May of 2014. This date would fit into the Subpart JJJJ applicability criteria put forth in 60.4230(a). There are other applicability criteria associated with this Subpart relating to the engine power; this information is unknown at this time.

The requirements of 40 CFR Part 63, Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines) apply to owners and/or operators of stationary reciprocating internal combustion engines (RICE) at both major and area (or minor) sources of hazardous air pollutant (HAP) emissions, except if the RICE is being tested at a test cell/stand. The Central Services Facility is a minor source of HAP emissions, as the potential to emit HAPs is less than 10 tons of any single HAP, and less than 25 tons for combined HAP emissions. Engines that meet the definition of "Emergency Stationary RICE" in Subpart ZZZZ are not subject to the provisions and requirements of this Subpart. In order to be considered an emergency RICE, the operation of the engines must meet the requirements put forth in 40 CFR 63.6640(f). If the operation of an engine does not comply with the requirements in 63.6640(f), then the engine is not considered to be an emergency stationary RICE for the purposes of this Subpart, and the engine is subject to the requirements of Subpart ZZZZ. Among the criteria for an engine to be classified as an emergency stationary RICE is the requirement put forth in 63.6640(f)(4) that while an engine can operate for up to 50 hours per year in non-emergency situations, after May 3, 2014, the 50 hours per year cannot be used for peak shaving or non-emergency demand response. The hours of operation of the engines is quite low, but if any of the operating hours at the Central Services Facility occurred for purposes of peak shaving, then the engines could conceivably be subject to the requirements of Subpart ZZZZ.

Boilers

All of the boilers at the facility are exempt from the requirement to obtain a Permit to Install per the provisions of Michigan Administrative Rule 282 based on their size.

As well, none of the boilers at the facility are subject to the requirements of 40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Industrial Steam Generating Units). Subpart Dc applies to steam generating units/boilers for which construction was commenced after June 9, 1989, and that has a maximum heat input capacity between 10 and 100 MMBTU per hour. All of the boilers at the facility are rated below criteria for Subpart Dc applicability.

Fuel Distribution

As previously mentioned, the Central Services Facility has four underground storage tanks (two for diesel fuel, two for gasoline), and four corresponding fuel pumps. The fuel dispensing facility is potentially subject to State and Federal regulations, including:

- Michigan Administrative **Rule 606**, which applies to gasoline storage tanks with a gasoline throughput of more than 120,000 gallons per year that have tanks of more than 2,000 gallons capacity. The throughput of gasoline at the Southwest facility is presumably well below 120,000 gallons per year.
- **Rule 703**, which applies to dispensing operations at which gasoline is loaded into tanks of more than 2,000 gallons capacity.
- **40 CFR Part 63, Subpart CCCCCC** (National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Bulk Terminals, Bulk Plants and Pipeline Facilities; and Gasoline Dispensing Facilities). This Federal regulation is applicable to **all** gasoline dispensing facilities, regardless of size and fuel throughput. However, the requirements are very basic for facilities with a throughput of less than 10,000 gallons per calendar month. DEQ-AQD does not have delegated authority for Subpart BBBBBB. EPA is the delegated authority to determine the facility's compliance with this Subpart.

Compliance Determination

Based upon the results of the August 25, 2017 site visit and subsequent records review, the Central Services Facility is not in compliance with all of the applicable requirements of Permit to Install No. 121-02A. In addition, the installation and operation of the three natural gas-fired generators at the facility appears to be in violation of Michigan Administrative Rule 201(1).

NAME Steve Weeks DATE 10/31/17 SUPERVISOR JK