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

N754541628

FACILITY: DETROIT WATER & SEWERAGE DEPT.-WATER WORKS PARK		SRN / ID: N7545
LOCATION: 10100 EAST JEFFERSON, 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 Water Works Park Water Treatment facility in Detroit. The Water Works Park facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)
Water Works Park Water Treatment Plant (SRN N7545)
10100 East Jefferson Avenue
Detroit

Date of Activity:

Friday, August 25, 2017

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Reginald Bryant, GLWA, Team Leader – Maintenance

Purpose of Activity

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Water Works Park Water Treatment Plant (hereinafter "Water Works Park" or "Water Works facility") was conducted on Friday, August 25, 2017. The Water Works 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 Water Works Park 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

Water Works Park is located on the south side of East Jefferson across from Cadillac Blvd. The property extends along the west side of Marquette Drive from East Jefferson to the Detroit River. The facility is on a large parcel of land that is approximately 90 acres in area. Along with sharing a border with the Detroit River, the areas around the Water Works facility are primarily residential. There are residences located on the east side of Marquette across from the facility's property line. The properties on the north side of East Jefferson are a mix of residential and commercial properties.

Water Works Park operates as part of the Great Lakes Water Authority's drinking water distribution system. The system was formerly owned and operated by the Detroit Water and Sewerage Department (DWSD), but GLWA began a 40 year lease with the City of Detroit that provided for GLWA's operation of the regional water and sewerage system on January 1, 2016. GLWA operates five water treatment facilities that treat freshwater that is drawn from Lake Huron, Lake St. Clair and the Detroit River, and deliver the treated water to the drinking water customers of GLWA. There are currently nearly 4 million customers in 126 southeast Michigan communities that receive drinking water from GLWA. The drinking water is transported from the treatment facilities via a distribution system that consists of a network of water mains (larger transmission mains operated by GLWA, and distribution and water mains maintained by the various municipalities), fire hydrants, pressure reducing valves (on the distribution mains) and reservoirs and booster stations operated by GLWA that ensure that proper water flow and pressure are maintained in the water mains. Water Works Park is one of the water treatment facilities in the drinking water distribution system.

According to GLWA's website, Water Works Park is the GLWA water system's newest water treatment

plant. The facility is the largest water treatment plant in Michigan to use ozone to disinfect water during the treatment process. The Water Works facility can produce up to 240 million gallons per day (MGD) of drinking water. Water for the facility is sourced at the freshwater intake facility at the north end of Belle Isle. Four low lift pumps pull water from the intake into the Water Works facility where it is treated. Treated water is delivered from the facility to the drinking water distribution system using 11 high lift, or distribution pumps. The water that is treated at the Water Works facility is pumped to the portion of the drinking water system serving the east side of Detroit and Hamtramck. Also, some of the raw intake water that is disinfected at Water Works Park using the ozone process is sent to the Springwells Water Treatment Plant (SRN M4838) in Dearborn as the source of influent water for that facility.

There are several buildings that are part of the Water Works Park facility. The largest building on the site, which is located roughly in the middle of the property, contains the Administration Building (which is the front portion) and the water treatment processes. The High Lift Building is located in the northeast portion of the property. Just to the west of the High Lift Building on the west side of the facility's main driveway is the Water Quality Building, which houses the facility's engineers. The Firehouse Building, which is located in the northwest corner of the property, is currently used by Pewabic Pottery, who are located across the street from the facility at 10125 East Jefferson. There is also an old stable building located near the west property line that is used for storage.

The Water Works facility also has some equipment that is subject to air quality regulations. There are four diesel-fired emergency engines that were installed at the facility in January of 2006 to provide emergency back-up power to the operations at Water Works Park in case of a power outage. They are used to back up the pumps, and to provide power to the Administration Building. The engines are Cummins Model QSK60-G6 generators rated at 2,000 kW electrical output, with a maximum heat capacity of 17.25 MMBTU per hour. The generators are fueled via an above ground diesel fuel storage tanks having a storage capacity of 15,000 gallons. The generators and storage tanks are located at the far east end of the facility near the east property line near Marquette Drive.

There are three steam generators/boilers operating at the facility. Two of the boilers are located in the High Lift Building in the northeast portion of the facility. Both of these boilers are natural gas-fired Clayton units (model EG-100-1-D2), each with a maximum heat input capacity of 5.25 MMBTU/hour. They were installed in 2003. The third steam generator is located in the maintenance room in the Water Quality Building. It is essentially a large hot water heater that shares the room with a Trane HVAC system. The hot water heater is a Lochinvar unit rated at 340,000 BTU/hour. I was told that there is also a small, residential sized boiler/heater located in the Firehouse Building.

There are also two fuel dispensing pumps and associated underground storage tanks. There is one pump each for gasoline and diesel, and two underground gallon capacity storage tanks, one for each type of fuel. The dispensing operation is located adjacent to the parking lot to the west of the Administration Building, and provides fuel for facility personnel and GLWA vehicles.

Facility Operating Schedule

The Water Works facility Plant operates on a 24 hour per day basis every day of the year. There are currently approximately 45 staff employed at the facility.

Inspection Narrative

I arrived at the facility at 12:20pm. I met my facility contact, Reginald Bryant, in the main lobby of the Administration Building. We walked back to his office, and we briefly discussed the operations at the facility. Reginald explained how the influent water is drawn from the GLWA intake structure on Belle Isle, how the influent enters the facility via the low lift pumps, and how the treated water leaves the facility via the high lift pumps. He provided a brief description of the buildings on the property (a more detailed description was provided later as we walked around the property).

We then began walking the facility grounds. Our first stop was the location of the four generators. I looked at the above ground diesel storage tank. The label that is affixed to the tank provides that the tank was installed in January 2006, and it has a storage capacity of 15,000 gallons. We opened the access doors on some of the engines. I looked at the nameplate on a couple of the engines, which provided that the model, serial number, and 2,000 kW rating. Reginald told me that the engines are operated once month for readiness testing.

As we walked to the High Lift Building, Reginald pointed out the other buildings on the property and provided me with some details about them. We entered the High Lift Building, and we looked at the two boilers. I gathered

some information about the boilers from the boilerplates affixed to the units. There was a small Graymills Clean-O-Matic parts washer in the building. Reginald told me that the unit was used to clean parts with mineral spirits. At the time of my site visit, I was told that parts washer is no longer being used. We took a look at the unit; it was empty, and looked as if it had not been used for some time.

After looking at the high lift pumps, we visited the Water Quality Building. Reginald showed me the hot water heater, and I wrote down information about the unit from the informational stickers on the unit.

After leaving the Water Quality Building, we headed for the fuel dispensing area. As we walked, Reginald pointed out the other buildings on site, and described how they are heated. There used to be a boiler in the low lift portion of the main building, but that boiler has been decommissioned. Heat for that area is now provided by the building's HVAC system and small unit heaters. The barn is heated with overhead propane heaters. The raw water booster building had a small heating unit which has been decommissioned. The Firehouse Building has a small, residential sized boiler/heater, and a small hot water tank for the restroom. The Screening Building uses electric heaters.

We arrived at the fuel dispensing area. We looked at the two fuel distribution pumps – one for diesel fuel, the other for gasoline. Reginald showed me the location of the two underground storage tanks. He told me that both tanks have a storage capacity of 2,500 gallons, and that they were installed in 2003.

We returned to Reginald's office to summarize the visit, and go over any remaining questions. I left the facility at 1:55pm.

Permits/Regulations/Orders/

Permits

The facility currently has one active air permit, PTI No. 108-06. This permit addresses the operation of the four diesel-fired generators at the facility. This permit was issued on August 8, 2006, and it replaced PTI No. 299-05, which was a General Permit for Diesel Fuel-Fired Engine Generators with Maximum Capacity of Five Megawatts. PTI No 108-06 served to increase the allowed usage of the engines to greater than the 500 limit that was put in place by the General Permit.

The compliance status of the Water Works facility with the requirements of PTI No. 108-06 is summarized, as follows:

Special Condition 1.1 (Emission Limits) – This condition limits the total emissions of nitrogen oxides (NO_x) from the operation of the four engines to 50 tons per year. As of the finalizing of this report, GLWA has not provided me with valid information demonstrating how NO_x emissions are being calculated and tracked by GLWA. Based on the low usage of these generators (typically an hour or less per generator, per month), the NO_x emissions should be well below the permitted limit. The application materials that were submitted for PTI No. 108-06 provide a Cummins guaranteed NO_x emission rate of 41.43 pounds per hour, based on 100% load. The four engines would need to operate for 2,414 hours during a 12-month time period to meet the permit limit. Based on the operational logs that I looked at, the engines look to be in compliance with this emission limit.

Special Condition 1.2 (Material Usage 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 1.3 – As of the finalizing of this report, GLWA has not produced any records to demonstrate that diesel fuel usage is no more than 297,371 gallons per 12 month rolling period. The engines have a maximum fuel consumption rate of 123.2 gallons per hour, per engine. Given the number of hours that the engines are being used, the diesel fuel usage should be well below 297,371 gallons per 12 month rolling time period. It is assumed that the facility is complying with the requirement.

Special Condition 1.4 (Monitoring) – 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. Compliance.

Special Condition 1.5 (Recordkeeping/Reporting/Notification) – As of the finalizing of this report, GLWA has not produced any records to demonstrate that they are completing the calculations associated with this permit. Non-compliance.

Special Condition 1.6 – 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 1.7 – GLWA maintains fuel specifications for each delivery of fuel at GLWA facilities. Compliance.

Special Condition 1.8 - 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 Conditions 1.9a through d – These conditions put forth the ambient exhaust parameters for the four engines. This information was provided in the PTI applications. The stack parameters were not evaluated during this site visit.

Federal regulations

The generators at Water Works Park were installed in 2006. Based on this installation date, the four generators appear to meet 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). This paragraph states that Subpart IIII applies to owners and operators of engines that commence construction after July 11, 2005.

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 Water Works facility is a minor, or area 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. The generators at the Water Works facility are classified as new stationary RICE, as defined in Subpart ZZZZ. Paragraph 63.6590(c) states that new stationary RICE located at an area source meets the requirement of Subpart ZZZZ by meeting the requirements of 40 CFR Part 60 Subpart IIII, and that no further requirements of Subpart ZZZZ apply to the RICE.

Boilers

The boilers at Water Works Park are exempt from the requirement to obtain a Permit to Install per the provisions of Michigan Administrative Rule 282, based on their respective maximum rated heat input capacity. The boilers are also exempt from 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.

Fuel Distribution

As previously mentioned, the Water Works facility has two underground storage tanks (one for diesel fuel, one for gasoline), and two 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. While the gasoline storage tank at this facility has a capacity greater than 2,000 gallons (2,500), the throughput of gasoline at Water Works Park 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 CCCCC** (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 Water Works Park Water Treatment Plant is not in compliance with all of the applicable requirements of Permit to Install No. 108-06.

NAME Steve Weiss

DATE 9/28/17

SUPERVISOR JK