

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

M483841627

FACILITY: Detroit Water & Sewerage, Springwells Plant		SRN / ID: M4838
LOCATION: 8300 West Warren, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 09/06/2017
STAFF: Stephen Weis	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: Synthetic Minor
SUBJECT: Compliance inspection of the Great Lakes Water Authority Springwells Water Treatment facility in Dearborn. The Springwells facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)
Springwells Water Treatment Plant (SRN M4838)
8300 West Warren Avenue
Dearborn

Date of Activity:

Wednesday, September 6, 2017

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
William Henry, GLWA, Team Leader - Operations
Karone Law, GLWA, Team Leader – Maintenance

Purpose of Activity

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Springwells Water Treatment Plant (hereinafter “Springwells Plant” or “Springwells facility”) was conducted on Wednesday, September 6, 2017. The Springwells 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 Springwells 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 Springwells Plant is located on the north side of West Warren Avenue less than ¼ mile east of Wyoming Avenue. The facility is on a large parcel of land that is approximately 48 acres in area. The facility property stretches along the north side of West Warren from behind the residences on the east side of Indiana Street to the rail right of way ¼ mile to the east, and north from West Warren to the back of the residential properties along Wisconsin and Morross Streets in Detroit. The areas to the west and north of the Springwells facility are residential. The property to the northeast of the facility is occupied by the Diez Group, and consists of various buildings used for steel warehousing and storage (the property was formerly occupied by American Standard Company). The area to the south of the facility consists of commercial and industrial properties, and includes the Kenwal Steel Pickling, LLC facility (SRN M4847). The area to the east is a railroad right of way, and there are commercial and residential properties on the east side of the right of way.

The Springwells Plant 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. The Springwells Plant is one of the water treatment facilities in the drinking water distribution system.

According to GLWA's website, the Springwells Plant was the Detroit drinking water system's second water treatment facility, and when the facility was dedicated in 1935, it was the largest water treatment facility in the world. The Springwells facility has a pumping capacity of 600 million gallons per day. The facility receives water from the Detroit River via the Water Works Park Water Treatment Plant (SRN N7545), where the river water is disinfected prior to being sent to Springwells. The Springwells Plant consists of low lift pumps which bring water into the facility for treatment; a treatment building in which chemicals are added to the water, including alum to coagulate/aggregate solid particles present in the water, and acid to adjust the pH; two filtration buildings at the west end of the facility that contain 108 filter beds containing sand or anthracite to filter the water to remove solids; a building complex on the eastern half of the property along the main driveway of the facility that contains final treatment processes, and the high lift pumps that direct the treated drinking water to the transmission mains in the drinking water system; and below grade drinking water storage tanks, which are located behind the filtration buildings. The water that is treated at the Springwells facility is pumped to the portion of the drinking water system serving the west side of Detroit, suburban communities in the northwest portion of Wayne County and far southern Oakland County, and some of the portion of Washtenaw County that is served by GLWA.

The Springwells Plant also has some equipment that is subject to air quality regulations. There are five diesel-fired emergency engines that were installed at the facility in August of 1999 to provide emergency back-up power to the Springwells facility in case of a power outage. The engines are Caterpillar Model 3516B generators rated at 1,825 kW electrical output, with a maximum heat capacity of 18.3 MMBTU per hour. The generators are fueled via two above ground diesel fuel storage tanks, each having a storage capacity of 10,000 gallons. The generators and storage tanks are located at the far east end of the facility. There are three steam generators located in the northern portion of the treatment building. The three boilers are natural gas-fired Clayton units; unit No. 1 was built in 2007, and unit Nos. 2 and 3 were built in 1998. One of the boilers is a model E-154, having a maximum rated heat input capacity of 6,123,476 BTU per hour, and the other two are Clayton Model E-304 boilers, each having a maximum rated heat input capacity of 12,246,951 BTU per hour.

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 to the north of the treatment building, and provides fuel for facility personnel and GLWA vehicles.

Facility Operating Schedule

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

Inspection Narrative

I arrived at the facility at 8:37am. I signed in at the security gate, and I was directed to wait near the front of the high lift pump building for my facility contact, Karone Law. Karone met me just before 9am, and told me that one of his co-workers, William Henry, would be showing me around the facility. William arrived a few minutes later, and we walked to the engines. Michigan Caterpillar was on site performing some maintenance work on the engines. William told me that during a no-load test run of the engines yesterday, engines 1, 3 and 5 were not working properly, so Caterpillar was called to service the engines. The access doors on the engine compartments were open for the three engines being serviced. I looked at engine number 3, and saw that the plate information showed an engine rating of 1,825 kW, and a model number of A269490000.

The above ground diesel fuel storage tanks that provide the fuel for the engines are located adjacent to and to the north of the engines. I read the labels that are affixed to one end of each tank, which provide that the tanks each have a storage capacity of 10,000 gallons, and they were installed in August of 1999. William and I went into the control room for the generators. An operational log is kept in the control room through which GLWA staff who operate and maintain the equipment at the facility keep records of all times that the engines are operated. In looking at the log, the dates that the engines were operated were noted, as well as the reason for the operation (e.g. maintenance testing, emergency use). I was told that the engines are started at least once a month for a "no load" test for readiness and training purposes. We briefly discussed the fuel dispensing pumps and storage tanks which are located to the north of the treatment building.

We then went to look at the steam generators, which are located in the treatment building. William told me that the steam generators operate from November through April. We looked at the three steam generators, and I tried to locate a boiler plate or label to find some information about them, in particular, the maximum rated heat input capacity, the date that they were installed, and the model number. There are no boiler plates affixed to the steam generators, and the labels that are affixed to the unit did not include the information. We opened the access doors on unit number 1, and I able to find some information – a model number of 2124, a serial number of 130468, and “11/97” after “Mfr”. There were certificates for each of the steam generators that were issued by the Michigan Department of Licensing and Regulatory Affairs posted on a wall near the units. These certificates indicated that unit 1 was installed in 2007, and units 2 and 3 were installed in 1998. I received information via e-mail from Karone on October 19, 2017 related to the boilers. Per the e-mail, Karone provided that the maximum rated heat input capacity of units 1 and 2 are 11,955,357 BTU/hour, and unit 3 has a maximum rated heat input capacity of 3,985,119 BTU/hour. He also provided that facility operation and maintenance records show that the units were installed in 1998.

We then walked through the rest of the treatment building, and we stopped in the control room on the second floor that overlooks the high lift pumps. William provided me with a copy of the Generator Exercise Record Form that is used at the facility to track the no-load maintenance runs of the emergency engines.

William and I then walked through the filter buildings, and he described the operation of the filters. After walking through both of the filter buildings, we walked back to the high lift building. After concluding our tour of the facility, we had a brief discussion to wrap up the site visit. I left the facility at 10:10am.

Permits/Regulations/Orders/

Permits

The facility currently has one active air permit, PTI No. 256-99B. The original permit, PTI No. 256-99, was applied for in June 1999 by DWSD to address the pending installation of the five Caterpillar engines. The application material states that the engines were being installed “...to provide power to the water pumping station in the event of a power outage in January 2000 or at any time thereafter.” 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 NO_x to 12 tons per year). The permit was issued in August of 1999.

PTI No. 256-99A was issued to allow an increase in the hours of operation of the engines 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 engines so that the engines 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 NO_x emissions to 39.4 tons per year. PTI No. 256-99A was issued in August of 2002.

The current PTI, No, 256-99B, was issued on December 1, 2008. DWSD applied for this permit to change the permitting operating limit on the engines 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 engines. DWSD provided that the engines are 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 NO_x limit of 39.4 tons per year. Thus, the current permit still serves to limit the potential emissions from the engines to below major source thresholds.

The compliance status of the Springwells Plant with the requirements of PTI No. 256-99B 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 two engines to 39.95 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. 256-99A provide a Caterpillar guaranteed NO_x emission rate of 30.9 pounds per hour, based on 100% load. The four engines would need to operate for 2,585 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 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. Compliance.

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 Conditions VIII.1 and 2 – 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 engines were installed in 1999, and have not been modified since they were installed. The installation date for these engines 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 five engines at the Springwells facility are not subject to Subpart IIII.

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 Springwells 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 Springwells facility occurred for purposes of peak shaving, then the engines could conceivably be subject to the requirements of Subpart ZZZZ.

Boilers

The three boilers are exempt from the requirement to obtain a Permit to Install per the provisions of Michigan Administrative Rule 282.

Two of the boilers 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. The two steam generators identified at the facility as units 1 and 2 (SG#1 and SG#2) are subject to Subpart Dc as they were installed after 1989, and have a heat input capacity between 10 and 100 MMBTU per hour. 60.48c requires that GLWA submit notification that includes the date of

construction and startup of the boilers, and the design heat input capacity of the boilers. 60.48c also requires that records of the amount of fuel combusted in the boilers on a monthly basis.

Fuel Distribution

As previously mentioned, the Springwells 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. The throughput of gasoline at the Springwells 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 September 6, 2017 site visit and subsequent records review, the Springwells Water Treatment Plant facility is not in compliance with all of the applicable requirements of Permit to Install No. 256-99B.

Attachments to this report: A copy of the Generator Exercise Form.

NAME Andrew Wess DATE 10/30/17 SUPERVISOR JK