

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

N787940934

FACILITY: DETROIT WATER AND SEWERAGE DEPARTMENT		SRN / ID: N7879
LOCATION: 2 PLEASURE DR, BELLE ISLE, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 08/02/2017
STAFF: Stephen Weis	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: Synthetic Minor
SUBJECT: Compliance inspection of the Great Lakes Water Authority Belle Isle CSO facility in Detroit. The Belle Isle facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

**Location:**

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)  
Belle Isle CSO RTB Facility (SRN N7879)  
2 Pleasure Drive, Belle Isle  
Detroit

**Date of Activity:**

Wednesday, August 2, 2017

**Personnel Present:**

Steve Weis, DEQ-AQD Detroit Office  
Luther Blackburn, GLWA  
David McCord, GLWA  
Vijay Valecha, GLWA

**Purpose of Activity**

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Belle Isle Combined Sewer Overflow (CSO) Retention Treatment Basin (RTB) facility (hereinafter "Belle Isle" or "Belle Isle facility") was conducted on Wednesday, August 2, 2017. The Belle Isle 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 Belle Isle 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 Belle Isle facility is located on Belle Isle State Park just to the west of the MacArthur Bridge. The facility is located along Pleasure Drive, which runs west from the main road coming off of the MacArthur Bridge, Sunset Drive. The facility is bounded by a U.S. Coast Guard facility that is located at the foot of the bridge, a cell phone tower and adjacent property to the west, and the Detroit River to the north and northwest.

The Belle Isle facility operates as part of the Great Lakes Water Authority's sewerage 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. The Belle Isle retention basin was installed in 2007 to the existing Belle Isle CSO Pump Station.

There are 18 CSO facilities in the GLWA's regional sewer system in Wayne, Oakland and Macomb Counties. According to the GLWA website ([www.glwater.org](http://www.glwater.org)), the CSO-RTB facilities are part of a four-part strategy to address combined sewer overflows:

- Source reduction – reduce the amount of storm water flow that enters the wastewater system;
- In-system storage – maximize the use of existing storage space in the sewer system during storms;

- Wastewater treatment plant expansion – expand the capacity of primary treatment from 1.5 billion to 1.7 billion gallons per day to treat more flows during storms;
- End-of-pipe treatment – construct facilities to store and treat the combined sewage, preventing it from entering area waterways unless it is treated and disinfected.

The following description of a GLWA CSO-RTB facility is taken from the GLWA website:

*“A CSO RTB is an underground tank that temporarily stores and treats combined sewage that previously was discharged through outfalls during storms. Flows diverted to the RTB are screened and treated with a disinfectant and discharged to the river if RTB storage capacity is exceeded. Materials removed by the screens are sent to the wastewater treatment plant (WWTP) for disposal. The stored flows are sent to the WWTP after the storm has subsided and capacity is available in the sewer system. Many times the flows are small enough to be completely captured and stored in the RTB.”*

The website further provides that the Belle Isle facility was designed to provide 10 minutes of detention for the peak flow of the 10 year, 1 hour storm. The facility has a storage capacity of 300,000 gallons, and it has been operational since March of 2008. All of the sewerage produced on Belle Isle goes to wet wells, from which it is pumped to the Belle Isle facility. The influent wastewater receives primary treatment at the Belle Isle facility – it is screened for fine particles, and disinfected. The treated effluent from the Belle Isle facility is sent to the Detroit River Interceptor (DRI) and on to the GLWA Water Resources Recovery Facility (WRRF), and treated overflow is discharged to the Detroit River.

There is one emergency diesel generator at the facility that is used to provide back-up power to the pump station to ensure that the storm water pumps and CSO equipment can operate during a power outage. There are no boilers located at the facility. The buildings are heated via an HVAC system and small unit heaters.

### **Facility Operating Schedule**

The Belle Isle facility is available for use on a 24 hour per day basis every day of the year. The facility is not regularly staffed. GLWA staff visit and check the site regularly, and perform maintenance/readiness checks of the engine once per month.

### **Inspection Narrative**

I arrived at the facility with GLWA staff at 2:00pm. We began by looking at the generator, which is located on the northeast side of the facility's building. We opened the access panel, and I wrote down the information from the generator's name plate. It is a Detroit Diesel Hotstart model 361247, rated at 750 kW, and installed in 2007. GLWA described the facility operations. I was told that the CSO RTB consists of two basins that have a total storage capacity of 300,000 gallons. GLWA staff explained how all of the sewerage from the island is pumped to the facility. Most of the influent is storm water, as there are not many buildings on the island, and no residences, so the amount of sanitary sewerage produced is relatively low. There are numerous small "packing" stations around the island that pump storm water to the Belle Isle facility. During low flow, storm water is sent to the wet well, and during high flow, the storm water is pumped to the CSO.

We then entered the building on site to look at the scrubber unit. The scrubber is in place to address potential odors from the wet wells and the CSO basin. We discussed the requirement to monitor the carbon bed in the scrubber for breakthrough. I was told that GLWA has not been sampling and analyzing the carbon in the scrubber, but that GLWA plans to sample the carbon from sample ports in the unit, and work Calgon Corporation to have the sample analyzed.

We went to the facility's office to try and find some additional information about the generator, including the heat input capacity, and whether there are any logs of the hours of operation on site.

We left the facility at 2:38pm.

### **Permits/Regulations/Orders/**

## Permits

The facility currently has two active air permits, PTI Nos. 332-07 and 333-07. PTI No. 332-07 is a General Permit for Diesel Fuel-Fired Engine Generators with Maximum Capacity of five Megawatts. This permit was approved by DEQ-AQD on October 11, 2007. PTI No. 333-07 addresses the odor control system at the Belle Isle facility.

### **PTI No. 332-07**

#### Emission Limits

Special Condition (SC) 1.1 limits NOx emissions to 515 lbs./1,000 gallons of diesel fired. There is no specific requirement to perform a compliance test to demonstrate compliance with this emission limit (testing may be required per SC 1.7). Rather, the testing/monitoring method involves recording to amount of diesel fuel used in the generator on a monthly and 12 month rolling time period basis.

#### Material Usage Limits

SC 1.2 – Compliance. GLWA only burns diesel fuel in the generator.

SC 1.3 – This requirement does not apply as any electricity produced by the generator is not sold to the utility power distribution system

SC 1.4 – As of the finalizing of this report, GLWA has not produced any records to demonstrate that diesel fuel usage is no more than 136,000 gallons per 12 month rolling period. In the permit application for the General Permit, it was provided that the maximum annual fuel flow for the engine is 119 gallons per hour. The engine would need to operate for 1,143 hours at the maximum fuel flow rate to reach 136,000 gallons. Given the number of hours that the engines are being used, the diesel fuel usage should be well below 136,000 gallons per 12 month rolling time period. It is assumed that the facility is complying with the requirement.

#### Process/Operational Limits

SC 1.5 – Compliance. GLWA states that the generator is operated in accordance with manufacturer's recommendations.

SC 1.6 – Compliance. The total capacity from the generator is less than 2 MW; the permit limit is 5 MW.

#### Testing

SC 1.7 – DEQ-AQD has not requested that a compliance emissions test be performed on the generator.

#### Monitoring

SC 1.8 – 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.

#### Recordkeeping/Reporting/Notification

SC 1.9 – Compliance. GLWA tracks records of malfunctions and maintenance performed on the generator.

SC 1.10 - This requirement does not apply as any electricity produced by the generator is not sold to the utility power distribution system.

SC 1.11 – 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.

#### Stack/Vent Restrictions

SC 1.12 – Compliance. Emissions from the generator are vented to the ambient air, unobstructed and vertically.

#### Miscellaneous/Allowed Modification

These conditions do not apply. The General Permit for Diesel Generators is no longer being issued by DEQ-AQD. Any future replacements or modifications to this generator would need to go through permit review by

DEQ-AQD.

**PTI No. 333-07**

Special Condition 1.1a (Emission Limits)– This condition limits the hydrogen sulfide emission rate to 0.0107 pounds per hour. There is a requirement to perform a compliance stack test to determine H<sub>2</sub>S emissions from the scrubber, but only if requested by DEQ-AQD. The primary compliance method is to monitor that the scrubber is operating properly by performing carbon breakthrough tests.

Special Condition 1.2 (Process/Operational Limits) – The facility is in compliance with this condition. I was told that the odor control system is placed in operation when the Belle Isle facility is operating.

Special Condition 1.3 (Process/Operational Limits) – GLWA has an operation and maintenance plan for the scrubbers at this facility. Compliance.

Special Condition 1.4 (Testing) – The facility has not been required to test the odor control system for hydrogen sulfide emissions by DEQ-AQD.

Special Condition 1.5 (Testing) – GLWA was not sure when the scrubber was last tested for activated carbon bed breakthrough. A Violation Notice (VN) was issued to GLWA dated August 14, 2017. GLWA submitted a response to the VN dated August 31, 2017 in which they provided that they consulted with Continental Carbon Corporation regarding the activated carbon beds. Based on this consultation, GLWA staff will be collecting a sample of carbon prior to September 30, 2017 and sending it to Calgon Corporation for an analysis and determination of remaining bed life. GLWA also committed to continuing to collect and analyze samples of the carbon quarterly, and to maintain records of the test results. A copy of GLWA's response to the VN is attached to this report for reference.

Special Condition 1.6 (Recordkeeping/reporting/Notification) – Non-compliance. GLWA is not maintaining records of the activated carbon breakthrough tests. See the discussion and resolution described in the discussion for SC 1.5.

Special Condition 1.7 (Stack/Vent Restrictions) – The stack information was not verified during this site visit.

Federal regulations

The generator was installed in 2007. Based on this installation date, the generator appears 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 Belle Isle 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 generator at Belle Isle is classified as a 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.

Compliance Determination

Based upon the results of the August 2, 2017 site visit and subsequent records review and correspondence with GLWA, the Belle Isle facility is not complying with all of the applicable requirements of Permit to Install No. 332-07. Also, there are the non-compliance issues relating to the testing of the activated carbon bed breakthrough, as required in Permit to Install No. 333-07. GLWA provided a response to the Violation Notice that seems to have presented a plan to address these requirements. This non-compliance issue will be considered resolved when GLWA completes sampling and analysis of the carbon bed, and demonstrates that records of these sampling and testing events are being maintained on a quarterly basis. DEQ-AQD will request copies of the results from the next test.

Attachments to this report: a copy of GLWA's response to the Violation Notice that was issued by DEQ-AQD on

' August 14, 2017.

NAME Andrew

DATE 9/28/17

SUPERVISOR JK