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

B210340149

FACILITY: DETROIT WASTEWATER TREATMENT PLANT		**SRN / ID:** B2103
LOCATION: 9300 W. JEFFERSON AVE, DETROIT		**DISTRICT:** Detroit
CITY: DETROIT		**COUNTY:** WAYNE
CONTACT: Melvin Dacres , Chemist		**ACTIVITY DATE:** 05/24/2017
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Compliance inspection of the Great Lakes Water Authority's Water Resource Recovery Facility (f/k/a WWTP). The facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:
Great Lakes Water Authority
Water Resource Recovery Facility (SRN B2103)
9300 West Jefferson Avenue
Detroit

Date of Activity:
Wednesday, May 24, 2017

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Melvin Dacres, Water Systems Chemist, GLWA

Purpose of Activity

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Water Resource Recovery Facility (hereinafter "GLWA WRRF", or "WRRF") was conducted on Wednesday, May 24, 2017. The GLWA WRRF 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 GLWA WRRF facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and Federal standards. The facility is also subject to the terms and conditions of Renewable Operating Permit (ROP) No. MI-ROP-B2103-2014c.

Facility Description

The GLWA WRRF facility is located along Jefferson Avenue in the southwest portion of the City of Detroit. The facility is located just north of the Rouge River, and most of the wastewater treatment operations are located west of Jefferson Avenue. The Biosolids Drying Facility (BDF), which is part of the GLWA WRRF stationary source but will be operated by New England Fertilizer Company (NEFCO), is located on the east side of Jefferson Avenue, directly across the street from the WRRF. The construction of the Biosolids Drying Facility was completed in the Fall of 2015, and commenced operating at that time. The GLWA WRRF is located adjacent to primarily industrial properties, but there are residential neighborhoods in relatively close proximity. The City of River Rouge is located across the Rouge River from the WRRF, and the northern edge of the residential area in this city is just over ¼ mile south of the WRRF's southern property line. There are also residential areas in Detroit to the north and northwest of the northern portion of the WRRF property, which contains the secondary treatment tanks, that are located less than 100 yards from the WRRF property line. The areas to the south and east of the GLWA WRRF contain some heavy industrial facilities. Zug Island, which contains some of U.S. Steel's operations (blast furnaces) and other activities associated with steelmaking, such as EES Coke's coke oven, lies just to the east and northeast of the GLWA WRRF, across the original Rouge River channel. U.S. Gypsum and Carmeuse Lime, Inc. are located directly across the Rouge River in the city of River Rouge.

The GLWA WRRF is a publicly-owned wastewater treatment plant. The facility operates as part of the Great Lakes Water Authority's sewerage handling and treatment system. The system was formerly owned and operated by the City of Detroit and operated by the Detroit Water and Sewerage Department (DWSD). 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 facility is now referred to as a water resource recovery facility rather than a wastewater treatment plant.

The GLWA WRRF facility collects and treats domestic and industrial wastewater from the Metro Detroit area, serving the City of Detroit and 76 other communities in Southeast Michigan. The facility receives wastewater via three (3) major interceptors – the Detroit River interceptor, which contains flow from Detroit; the Oakwood/Rouge interceptor, which directs flow from the west side of Detroit and western suburbs; and the North interceptor (also known as the Oakland Macomb Interceptor Drain, or OMID), which contains flow from some of Detroit's northern suburbs. The Detroit WWTP is one of the largest such facilities in terms of design treatment capacity in the world; according to information on the GLWA website, the facility is the largest single site wastewater treatment facility in the United States. The treatment capacity, or wet weather capacity, of the WRRF is 1.7 billion gallons per day primary treatment capacity, and up to 930 million gallons per day (MGD) can receive secondary treatment (activated sludge, disinfection and dechlorination); the average dry weather flow is 750 MGD.

The wastewater treatment process involves the removal of large solids from the influent wastewater stream using bar racks and grit chambers; primary and secondary biological treatment to remove suspended and dissolved solids; secondary treatment, which involves the use of oxygen activated sludge tanks and clarifier tanks; and chlorination of water from secondary clarifiers, followed by dechlorination of the effluent stream prior to discharge. The treated wastewater is discharged as effluent to Rouge and Detroit Rivers. Solids generated during the primary and secondary biological treatment are gravity thickened, then the resulting sludge/biosolids are dewatered using centrifuges and belt filter presses. After dewatering, the sludge is currently disposed of utilizing one of the following options:

1) **The biosolids are incinerated in one of the facility's eight multiple hearth sewage sludge incinerators, which are located in the incineration complex building. There were six additional incinerators operating at the facility, the last of which ceased operating earlier this year.**

2) **The material is conveyed under Jefferson Avenue to the NEFCO BDF, where the biosolids are dried into pellets that are used either as a fertilizer pellet, or as a fuel for cement kilns. The BDF process consists of four biosolids dryers, which are capable of processing up to 576 dry tons of biosolids per day (for all four dryers).**

3) **The biosolids are sent to the facility's Central Offload Facility, where lime is added to the material to stabilize it by driving off additional moisture, and to reduce any remaining pathogens. Material that is processed at the Central Offload Facility is trucked off-site for either land application, or disposal in a landfill.**

Facility Operations

The Detroit WWTP is a municipal utility that operates 24 hours per day, 7 days per week, and every day of the year.

As described in the last section of this report, the wastewater treatment portion of the facility consists of a multitude of treatment tanks that provide primary and secondary treatment of wastewater influent to the WWTP. The resulting treated effluent is discharged to the Rouge and Detroit Rivers. Many of the wastewater treatment tanks are open to the atmosphere, and the presence of odorous material in the tanks could potentially cause an odor in the ambient air. However, the wastewater treatment processes, including the treatment tanks, are not permitted by the Air Quality Division as this type of equipment is exempt from air quality permitting requirements per the provisions of Michigan Administrative Rule 285 (m).

The primary sources of air emissions at the WRRF are the eight multiple hearth sewage sludge incinerators, or SSIs, located in the WRRF's incineration complex, and the four natural gas-fired sludge dryers at the NEFCO BDF. The exhaust air flow from each of the incinerators, identified as Incinerators 7 through 14, or EUINC07 through EUINC14, is directed through a series of scrubbers to treat the air emissions. The treated exhaust is discharged to the ambient air via two tall stacks (one that vents incinerators 7-10, while the other exhausts incinerators 11-14) that discharge 254 feet above grade.

The exhaust flow from the dryer trains is exhausted through a scrubber and a regenerative thermal oxidizer (RTO). Some of the exhaust from the scrubbers is recycled to the inlet of the dryers, while the remainder of the scrubber exhaust gas passes through the RTOs. The treated exhaust from the dryers is discharged to the ambient air via four stacks (one for each dryer) that discharge 130 feet above grade. Dried solids that are produced in the dryers are discharged to a cyclonic separator, then screened to sort out product, recycle material and unusable solids material. The recycle material is sent to recycle bins (each dryer train has its own recycle bin), and the bins are equipped with a baghouse for particulate control. In addition, the air from inside of the BDF building is vented through four alkaline hypochlorite scrubbers to control potential odors present in the building air. The scrubbers exhaust through stacks 80 feet above grade.

There have been changes to the operations at the facility over the past couple of years due to a couple of events. These changes will be described in the following two subsections.

40 CFR Part 60, Subpart MMMM

Subpart MMMM, Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units, was promulgated on March 21, 2011 for the purpose of establishing emission guidelines and compliance schedules for the control of emissions from SSI units. The regulatory requirements introduced by Subpart MMMM include putting forth emission standards/limits for several air pollutants emitted by the SSIs, along with the requirement to conduct periodic compliance emissions testing to demonstrate compliance with the emission limits. The effective date of Subpart MMMM was March 21, 2016.

The facility, owned and operated by DWSD at the time, evaluated the SSIs at the facility. There were fourteen SSIs operating at the WRRF facility for many years. The incinerators were located in two "Complexes" in the incineration building. Incinerators 1 through 6, which were built in the 1940's, operated in Complex 1, while Incinerators 7-14, which were built around 1970, still operate in an area of the building classified as Complex 2. DWSD was tasked with evaluating the SSIs operating at the WRRF facility to determine whether the emissions from the SSIs would be able to meet the requirements of Subpart MMMM. It was determined that the older Complex 1 would not be able to meet the emission standards, and that they could not feasibly be upgraded or modified to do so, whereas the Complex 2 incinerators could be upgraded to meet the standards. DWSD had to implement a plan to handle the biosolids that are generated by the wastewater treatment process in such a way as to meet the new emission standards in Subpart MMMM while still adequately handling the biosolids, and not adversely affecting the facility's compliance with applicable water regulations, most notably the WRRF facility's NPDES permit and an Administrative Consent Order (ACO) with DEQ's Water Division. As part of the operation of the WRRF, the entity responsible for the facility needs to ensure that there are ample, available treatment and disposal methods in place for all of the biosolids produced as part of the wastewater treatment process at all times, and that there are built-in "redundancies" in place in the event that one of the treatment/disposal methods is unavailable.

DWSD decided upon the following upgrades and changes at the WRRF facility to comply with Subpart MMMM:

1) **Upgrading SSIs 7 through 14 (the Complex 2 incinerators). The upgrades, referred to in subsequent permitting documents as "air quality control improvements", involved modifying some of the hearths, air ports and burners in these eight incinerators to achieve improved combustion and emissions control, and upgrading the scrubber systems on each of these incinerators.**

2) **Constructing and operating the Biosolids Drying Facility (BDF) and its four biosolids dryer trains. As previously mentioned, the BDF facility is located across West Jefferson from the WRRF, and operates as part of the same, single stationary source.**

3) **Permanently ceasing operation of the remaining Complex 1 incinerators.**

The SSI scrubber improvements referenced in 1) involved:

- Installing new quench sprays and a quench duct section upstream of the scrubber to ensure proper

saturation of the exhaust from the Complex 2 incinerators. The ductwork leading to the scrubber is also being reconfigured to allow for the new scrubber components.

- Fitting the existing impingement tray scrubbers with new trays and water sprays. Per the information presented in the application materials for Permit to Install 61-13, this part of the scrubber system removes larger and medium-sized particles, further cools the exhaust gases, and removes acid gases and metals, not including mercury.

- Installation of new venturi scrubbers following the impingement tray section of the scrubber system. The venturi scrubbers are being equipped with inlet and throat sprays.

- Installation of mist eliminators following the venturi section of the scrubber system to remove water droplets from the exhaust stream.

DWSD/GLWA was on schedule to implement their chosen plan for upgrading and making changes to the WRRF facility to achieve compliance with the requirements of Subpart MMMM. The facility planned and contracted for the changes and upgrades to the Complex 2 incinerators; entered into a contract to have the BDF constructed and operated by NEFCO; began performing the initial compliance emissions tests, as required by Subpart MMMM, on the Complex 2 incinerators after the upgrades were completed (compliance tests were performed in incinerators 7-10); planned to permanently shut down the remaining operating incinerators in Complex I; and applied for and acquired the necessary permits from DEQ-AQD to address any regulatory requirements associated with the changes and upgrades to the Complex 2 incinerators.

During the permit review process, DEQ-AQD staff analyzed the changes and upgrades to the Detroit WWTP against applicable federal and state air quality requirements, including New Source Review permitting requirements. The resulting permit conditions put forth terms and conditions to ensure that the proposed steps involved with the changes and upgrades at the Detroit WWTP, as provided by DWSD and GLWA, would be compliant with federal and state air quality requirements. Permit to Install Nos. 61-13 and 61-13A were issued by DEQ-AQD.

After completing the upgrades and changes to incinerators 7 and 8, compliance emissions testing was performed in April of 2015. Similarly, incinerators 9 and 10 were upgraded, and compliance emissions testing was conducted in October 2015. The upgrades on the remaining four incinerators was progressing, and compliance emissions testing was scheduled for Spring of 2016.

Fire on March 4, 2016

The compliance landscape for the WRRF facility changed on March 4, 2016 when a section of the biosolids conveyor system serving the Complex 2 incinerators caught fire. The fire caused major damage to the Complex 2 section of the incineration building, with damage sustained to the roof, many of the biosolids conveyors, and smoke and water damage to electrical components, as well as to the control room and many control panels, among other damage.

Despite the fire, the WRRF facility was still operational; wastewater was being directed to the facility for treatment, and the treatment process was generating biosolids that needed to be processed in compliance with applicable air and water regulations. In order to ensure that the WRRF facility had the necessary biosolids processing capacity to adequately handle the biosolids produced by the wastewater treatment process, one of the decisions that GLWA made was to continue to operate some of the incinerators in Complex 1 past the March 21, 2016 Subpart MMMM effective date. The facility operated three of the Complex 1 incinerators that were still in service to dispose of a portion of the biosolids produced at the facility in response to the fire, in addition to landfilling some of the biosolids, and utilizing the sludge dryers at the NEFCO BDF. As the repairs to Complex 2 progressed, GLWA utilized the Complex 1 incinerators less as time went on, favoring the other alternatives. The operation of any Complex 1 incinerators past this date was a violation of the facility's air permits. Violation notices were issued to GLWA citing the aspects of the operation of the incinerators that were not in compliance with Subpart MMMM, and an additional violation notice was issued to GLWA in relation to issues relating to compliance emissions testing that was performed on the sludge dryers at the BDF in January and February of 2016. As a result of these violations, Consent Order AQD No. 17-2017 was entered between

GLWA and DEQ-AQD. The Consent Order will be described in the "Permits/Orders/Regulations" section of this report.

In 2017, the repairs to the Complex 2 incinerators have been completed. As a result, the Complex 1 incinerators have permanently ceased operation, and the compliance emissions testing schedule that is required to be performed on the Complex 2 incinerators by Subpart MMMM has resumed.

Inspection Narrative

I arrived at the GLWA WRRF facility at 1:05pm. The compliance emissions testing for Incinerators 13 and 14 was in progress, and my visit to the facility served a two-fold purpose – to check on the progress of the testing, and to conduct a compliance review of the facility's operations. I checked in at the security office, and was met by Melvin Dacres of GLWA. We proceeded to the Complex 2 incinerator control room and staging area for the compliance emissions testing. We met with representatives from the testing company, Gammie Air Monitoring, LLC, and the WRRF facility's incineration consultant, Gene Waltz of Incinerator Rx. Gene and I spoke about the process and control equipment monitoring during the tests. Gene described the method that he uses to determine the operating limits that are to be established during compliant emissions tests for daily sludge dry ton feed rate, the hearth 1 temperature in the incinerators, the differential pressure across the scrubber system, the liquid flow rate to the scrubber, and the scrubber outlet water pH. These operating limits are required to be established by Subpart MMMM. Gene demonstrated on the control screen how these parameters are being monitored, and how the established operating limits for these parameters will be monitored going forward. Gene provided Melvin and I with emission estimates for some of the pollutants being tested for.

We left the incineration building, and proceeded to Melvin's office, which is located in the facility's Administration Building, to review the compliance status of the facility. We arrived at his office at around 2:00pm. During the course of my visit, Melvin and I went through the ROP, starting with the Source-Wide Conditions and proceeding through the various Emission Unit and Flexible Group tables.

As we went through the permit and regulatory requirements, Melvin described how GLWA tracks compliance with the requirements. For many of the permit conditions, he showed me records, some kept at his desk, some accessible via spreadsheets, and others accessible via logs and records kept in other parts of the WRRF offices. Melvin also demonstrated how some of the information that is required to be tracked and recorded is kept via the facility's Ovation data software system, which is accessible at Melvin's workstation. During the course of going over the requirements of the ROP, I requested and received copies of some of the records that Melvin showed me. We also reviewed the requirements associated with the NEFCO BDF portion of the facility.

I left the facility at 4:40pm.

The section that follows will provide details regarding the compliance demonstration presented during the May 24, 2017 site visit.

Permits/Orders/Regulations

Permits

The primary source of the regulatory requirements that are currently applicable to the Detroit WWTP are found in the facility's Renewable Operating Permit. The current version of the ROP, No. MI-ROP-B2103-2014d, became effective on August 29, 2017. This modification to the ROP, which was a minor modification, was made to incorporate a change in the control equipment for the sludge dryers at the BDF – the addition of a packed tower scrubber, which is exempt from AQD permitting. During this site visit, I recommended to GLWA staff that they update the ROP to include references to the new scrubber, including the addition of Special Conditions to the ROP to address the operation, maintenance and monitoring of the scrubber. This was achieved via the ROP modification. At the time of my site visit, ROP No. MI-ROP-B2103-2014c was in effect, so that is the permit that was evaluated during the site visit, and for which compliance will be described in this section. ROP No. MI-ROP-B2103-2014c became effective on January 1, 2016, and was an administrative amendment that served to change the facility name from Detroit Water and Sewerage Department – Detroit Wastewater Treatment Plant to Great Lakes Water Authority – Detroit Wastewater Treatment Plant.

This ROP references the applicable State air regulatory requirements, as well as the applicable Federal

air regulatory requirements. The primary regulation that is applicable to the operations at the GLWAS WRRF is 40 CFR Part 60, Subpart MMMM. As mentioned previously in this report, this Federal standard has an effective date of March 21, 2016. The requirements of Subpart MMMM are adopted by reference into the Michigan Administrative Rules per Michigan Administrative Rule 902 (R 336.1902), and the requirements of Subpart MMMM were included in the Michigan rules as Michigan Administrative Rule 972 (R 336.1972), which is listed as an applicable requirement in the ROP.

The following paragraphs provide a summary of the compliance of the operations associated with the GLWA WRRF facility with the terms and conditions put forth by ROP No. MI-ROP-B2103-2014c, with the headings representing the sections of the ROP.

Source-Wide Conditions

The Source-Wide Conditions table in the ROP addresses two separate items:

- Emission standards put forth in 40 CFR Part 61 for beryllium and mercury;
- Fugitive dust control measures on the Detroit WWTP property.

40 CFR Part 61, Subparts C (National Emission Standards for Beryllium) and E (National Emission Standards for Mercury) are applicable to the GLWA WRRF due to the potential presence of these materials in the wastewater influent treated at the facility, as well as in the sludge/biosolids produced by the treatment process. Section "I. Emission Limits" of the Source-Wide Conditions section contains emission limits for these two elements, while under section "V. Testing/Sampling", Special Condition (SC) V.1 requires that monthly samples of the sewage sludge be tested for mercury content. Melvin described that samples of sludge are taken from the Central Offload facility, where sludge is prepared for off-site use/disposal, and from the incinerator feed belts (specifically the J belt). The samples are analyzed at the GLWA analytical lab, which is located at 2nd and Temple Streets in Detroit, and the results go into the report required by 40 CFR Part 503 (Standards for the Use or Disposal if Sewage Sludge). The Part 503 report is sent to DEQ-Water Division staff in October of each year, and to EPA in January. The Part 503 report requires analysis of cadmium, chromium, mercury, beryllium, arsenic, lead and nickel content of the sludge samples. In addition, DWSD sends reports of the mercury sampling results to DEQ-AQD.

Given the situation at the time of my visit, the samples were only being taken during months when incineration occurs. In 2017, none of the incinerators operated in February or March – the facility had ceased using the Complex 1 incinerators, and the Complex 2 incinerators were not yet ready for operation – so the last set of sample results that Melvin had were from January 2017. Melvin showed me these results, which showed beryllium and mercury well below the limits in Subparts C and E. The facility is in compliance with these requirements.

The requirements in this section of the ROP that relate to fugitive dust management cite Consent Order SIP No. 11-1993 as an applicable requirement. This Consent Order is part of the State of Michigan's State Implementation Plan (SIP); this part of the SIP was submitted by the State of Michigan as part of the attainment demonstration for PM-10. The Michigan Department of Natural Resources submitted the PM-10 SIP to EPA on June 11, 1993, and, after a couple of revisions, the nonattainment area PM SIP for Wayne County, Michigan was approved and became effective on February 16, 1995. One element of the SIP was the requirement that facilities with designated standard industrial classifications that are located in the area designated in Table 36 of Michigan Administrative Rule 371 "…develop and implement an approved fugitive dust control operating program and to have the program embodied in a legally enforceable order…" (this quote was taken from the preamble to the Consent Order). Many of the larger facilities in the portion of Wayne County designated in Table 36 were issued Orders as part of the SIP. The Detroit WWTP was issued the Consent Order referred to as SIP No. 11-1993.

The fugitive dust-related conditions in the Source-Wide Conditions section of the ROP contain requirements to perform daily sweeping in the material handling area when material handling takes place (Special Condition IX.1.1.a); weekly sweeping of paved roadways (IX.1.1.b); adding gravel cover to gravel parking areas as needed (IX.1.2.); washing sludge from the exterior of vehicles that haul sludge from the facility (IX.1.7); and daily washings/cleanings of roadways in the sludge haul area (IX.1.8). Melvin told me that a checklist is kept of daily sweepings and washings of roadways. He showed me a facility document titled "Fugitive Dust Control Treatment Log" on which fugitive dust management

measures are tracked. A copy of the form was provided to me by Melvin, and is attached to this report for reference. Facility staff complete the form by listing the areas of the facility that were washed/swept, and the date. There is also a group of rows provided that list the reasons that the frequency of treatment can be lessened, as put forth in SC IX.1.1(c). Regarding SC IX.6, Melvin told me that GLWA does not keep sludge outside. I asked about the table at the end of Section IX that contains a listing of different types of surface areas at the facility that have the potential to generate fugitive dust. Melvin told me that the acreage was updated in 2014. He also told me that the totals provided do not include the NEFCO BDF as they have their own fugitive dust management requirements in the ROP. The facility looks to be in compliance with the fugitive dust management requirements.

EULIMEPAD

EULIMEPAD is the only Emission Unit identified in the ROP that is not part of a Flexible Group. The ROP contains the following description for EULIMEPAD:

"The old sludge/lime mixing facility and the Lime Pad have been replaced with indoor Central Offloading Facility (COF) and a new outdoor Lime Pad facility. Belt conveyors transfer sludge cake from Complex 1 and Complex 2 dewatering units to three holding tanks and the cake is then transferred to three cake mixers where lime from three silos are added by gravity to mixers. All the cake mixers are connected to a scrubber, where any residual dust and gases are scrubbed. The mixture is dropped directly into trucks for transport to a landfill. Occasionally, the mixture of cake and lime is dropped into the Lime Pad area, where scum or ash is added and mixed with front loaders. Lime Pad is an outdoor three-sided concrete/steel mixing area used to prepare residuals for disposal in a sanitary landfill. The mixture is allowed to stabilize, then loaded into trucks for transport to a landfill."

Given the recent updates at the facility, there will no longer be any material sent to the COF from Complex 1. The Emission Unit table only contains two permit Special Conditions – IX.1, which requires that all trucks hauling sludge from the facility have their wheels cleaned, and IX.2, which requires that all sludge conveyors and conveyor transfer points be inspected one per shift. Melvin explained that there is a weight ticket referred to as a "Scale House Ticket" form for each inbound and outbound sludge hauling truck on which the weights of the truck is entered. If the "Material Hauled" field on the form shows sludge or lime, then the truck wheels are washed.

Regarding the conveyor inspections, Melvin told me that all of the conveyors in the COF are enclosed, so no material can drop to the ground. Melvin mentioned that the facility plans to request that SC IX.2 be changed during the next ROP renewal to have the permit requirements accurately reflect the operation of the COF. Melvin provided me with a copy of the "Central Offload Facility – Fugitive Dust Report" for a random date, which is attached to this report for reference. The facility looks to be in compliance with the conditions in EULIMEPAD.

FGC1ASH and FGC2ASH

This Flexible Group addresses the incinerator ash conveyance and storage systems associated with Incinerator Complexes 1 and 2. The ash is stored prior to being transported to a landfill for disposal.

These two Flexible Groups have been grouped together for the purposes of this compliance discussion because they have, essentially, the same permit requirements. The Complex 1 ash conveying and storage systems last operated on January 4, 2017, and is now permanently shut down, so the requirements under FGC1ASH were not evaluated during this site visit. The paragraphs that follow provide a summary of the GLWA WRRF facility's compliance with the Special Conditions for Flexible Group FGC2ASH.

<u>I. Emission Limits</u>

There are two Special Conditions- I.1 contains a DEQ-AQD Air Pollution Control Part 3-based particulate limit of 0.2 lbs. of particulate matter per 1,000 lbs. of exhaust air, and I.2 is an opacity limit put forth by Subpart MMMM. The primary method of compliance with the particulate limit has been to monitor and record the pressure drop across the baghouse, and perform visible emission observations. The opacity limit also requires that the same tasks be performed. In addition, the Monitoring/Testing Method column in the "I. Emission Limits" references Special Condition V.I as one of the compliance basis for the particulate limit. Table 3 to Subpart MMMM states that, for the visible emission limit, the test method for demonstrating compliance with these Special Conditions is an EPA Method 22 visible emission test to

check for the presence of visible emissions. From my read, the Monitoring/Testing Method column in the "I. Emission Limits" section should reference Special Condition V.1 for the visible emissions limits, but not for the particulate matter limit. The facility is in compliance.

III. Process/Operational Restrictions

Special Condition III.1 limits the pressure drop across each baghouse controlling particulate emissions to 10 inches of water. Melvin told me that pressure drop readings are taken once per shift, and recorded on the "Ash System Shift Report". This report is completed by GLWA staff during each shift, and is accessible via the facility's central data system. Melvin provided me with a print out of the Complex 2 Ash System Shift Report for the May 22, 2017. This report is also used to log visible emissions during each shift. This report showed no visible emissions noted during the shift, and all of the pressure drop readings were below 10 inches of water. In compliance. A copy of the Complex 2 Ash System Shift Report for May 22 is attached to this report.

V. Testing/Sampling

Special Conditions V.1 and V.2 contain requirements put forth by Subpart MMMM. In relation to this particular Flexible Group, the language in Subpart MMMM addresses fugitive emissions from ash conveying systems, including conveyor transfer points. As discussed in the "I. Emission Limits", these testing requirements relate to the visible emissions limit in Special Condition I.2, and involve performing Method 22 VE readings over three 1-hour observation periods to check for compliance with the 5% opacity limit. According to Melvin, these visible emissions readings to satisfy the Subpart MMMM requirements were performed during the initial compliance emission tests for the Complex 2 incinerators by the test consultant, Gammie Air Monitoring, LLC, and also during the subsequent compliance emission tests. The facility is in compliance with these conditions.

VI.Monitoring/Recordkeeping

Special Conditions:

VI.1 – Compliance. GLWA is monitoring and recording the pressure drop across the baghouses, and performing and logging visible emission observations on the Complex 2 Ash System Shift Report, as previously described.

VI.2 – Compliance. A Site-Specific Monitoring Plan was submitted for the facility that included the ash handling system. It was received by DEQ-AQD on February 10, 2015.

VII. Reporting

Compliance. All of the required reports for this Flexible Group are being submitted.

The facility is in compliance with the requirements in FGC2ASH.

FGCOMPLEX1

The Complex 1 incinerators last operated on January 4, 2017. These incinerators have been permanently shut down. This Flexible Group was not evaluated as part of this site visit.

FGCOMPLEX2

Special Condition IX.1 in this Flexible Group reads:

"1. Both of the following apply to each incinerator in FGCOMPLEX2, and to its scrubber train, when the incinerator commences trial operation after the air quality control improvements authorized by this Permit have been completed for that incinerator[2]:

a. The Special Conditions in FGAQCI become applicable requirements for that incinerator and its scrubber train.

b. The Special Conditions in FGCOMPLEX2 cease to be applicable requirements for that incinerator and its scrubber train."

At the time of my site visit, the air quality improvements for the Complex 2 incinerators had been completed, and trial operation of these incinerators had commenced. Per SC 1.b, the Special Conditions in FGCOMPLEX2 are no longer applicable requirements for these incinerators or their associated control equipment. As such, FGCOMPLEX2 was not evaluated as part of this site visit.

FGLIMESTORAGE

This Flexible Group includes the storage devices that are used to store lime, which is used to stabilize the sludge that is hauled offsite for landfilling. This Flexible Group is part of the Central Offload Facility. There are Special Conditions in this Flexible Group that put forth emission limits for particulate matter and opacity (S.C. I.1 and I.2). Special Conditions VI.1 through VI.3 serve as the compliance method for these emission limits, requiring that the baghouses associated with the Flexible Group are inspected at least once per month, that the pressure drop across the baghouse is monitored, and that visible emission readings be performed and recorded during daylight hours.

Melvin told me that the preventative maintenance activities at the facility are tacked via the facility's Work Assessment Management System, or WAMS, software program. Melvin showed the program to me, and he provided me with a screen shot of the preventative maintenance that was scheduled for the No. 1 lime silo on April 24, 2017. The next scheduled preventative maintenance for that equipment was the day of my site visit. A copy of the screen shot is attached to this report for reference.

Regarding the requirement to monitor and record the pressure drop and visible emissions from the baghouse during lime loading, Melvin stated that this is being done. For the pressure drop, he explained that the facility's Ovation software system has a screen for the lime storage silos that indicates the pressure drop, and includes an alarm indicator when the pressure drop exceeds its set point. Melvin provided me a screen shot from the Ovation system that shows the operating parameters that are being monitored when the lime system operates, which is attached to this report. The area of the screen where the alarm indicator is located is highlighted.

The facility is in compliance with these conditions.

FGENGINES

This Flexible Group addresses the seventeen emergency engines at the Detroit WWTP. These engines are a mix of natural gas and diesel-fired units. The facility tracks the usage and NOx emissions from these engines via an electronic spreadsheet. Engine usage is initially tracked using a form called the "Emergency Generator Usage Report", a copy of which is attached to this report for reference. SC I.1 limits emissions from the seventeen engines to 36 tons per year (tpy). Melvin provided me with a printout of the aforementioned electronic spreadsheet used for the time period from April 29, 2016 through April 29, 2017 which shows that the calculated 12 month rolling time period NOx emissions from all of the engines in this Flexible Group for the time period was just under 1,728 pounds, which is well below the 36 tpy limit. In addition, SC III.2 limits each engine to 500 hours of operation per 12 month rolling time period. The spreadsheet shows that the engine with the highest recorded usage over the 12 month time period logged 27 hours of operation. A copy of the spreadsheet is attached to this report.

In reference to the sulfur in fuel requirement put forth in SCs III.1 and VI.4, Melvin told me that the fuel supply company sends an analysis for each diesel fuel batch that they supply to the WRRF facility. This was last done on April 28, 2017, and the analysis provided that the sulfur content of the diesel fuel that was delivered to the facility as 2.7 ppm, below the 15 ppm limit.

All of the records required in section VI of this Flexible Group are being maintained. The WRRF facility is in compliance with the requirements in FGENGINES.

FGCIENGINES

This Flexible Group also addresses emergency diesel-fired engines, separating out five of the seventeen engines from FGENGINES into a different Flexible Group. These five engines are diesel-fired units, and are subject to the requirements of 40 CFR Part 60, Subpart IIII (New Source Performance Standards for Stationary Compression Ignition Engines). This Flexible Group puts forth the separate, specific requirements that these five engines are subject to in addition to the requirements found in FGENGINES.

Some of the limits in this Flexible Group and the records required are similar to FGENGINES. The sulfur in fuel information is, again, provided by the fuel supplied and maintained by GLWA. The hours of operation, as required by SC III.2, and the reason that the engines are used, as referenced in SC III.3, is tracked using the Emergency Generator Usage Report and the spreadsheet that have been attached to this report for reference. The engines are equipped with non-resettable hours meters, as required in SC IV.1. In addition, staff at the WRRF maintain a spreadsheet that tracks the level of diesel fuel in each engine each month, as well as any fuel additions, to produce a record of the diesel fuel usage. In addition, the maintenance activities associated with these engines are tracked using the aforementioned WAMS internal software system. This information is used to track the amount of hours operated for maintenance and testing purposes, which is limited by Subpart IIII to 100 hours for these purposes. All of the required records relating to the operation of the engines in FGCIENGINES, as described in the Special Conditions in Section VI of the Flexible Group, appear to be kept and maintained by GLWA.

Regarding Special Condition V.1, DWSD received manuals for each engine that included the manufacturer emission certifications. This information is maintained by GLWA. Accordingly, the engines did not need to have an initial performance test conducted. The facility is in compliance with the requirements in FGCIENGINES.

FGNSPSBOILERS

This Flexible Group addresses four small natural gas-fired boilers that, due to their relative small heat input rating, are exempt from DEQ-AQD permitting requirements. These boilers are still subject to 40 CFR Part 60, Subpart Dc. The only permit requirements associated with this Flexible Group are a requirement that the boilers only fire natural gas (SC III.1), and a requirement to record the amount of natural gas used in each boiler on a calendar month basis (SC VI.1). GLWA staff keep track of facility-wide natural gas usage. There is a separate natural gas meter for each building at the facility, and a separate meter for each of the boilers. GLWA tracks the gas usage and records it in a spreadsheet on a monthly basis. The facility is in compliance with FGNSPSBOILERS.

FGCOLDCLEANERS

Melvin told me that he and one of his co-workers, Al Rhoades, did a facility-wide inventory of cold cleaners, and found that there are only two left. The cold cleaners are no longer in use; they are empty and the lids are closed. During the next ROP renewal, GLWA plans to assess whether they will continue to have any cold cleaners on site.

FGAQCI

The description for this Flexible Group reads:

"This flexible group covers the Complex 2 incinerators for which the air quality control improvements (AQCI) have been completed. When the AQCI have been completed, it will consist of eight (8) multiple hearth sewage sludge incinerators, each with a venturi scrubber followed by an impingement tray wet scrubber and a mist eliminator. (PTI No. 61-13A)"

The upgrades to the Complex 2 incinerators are complete. The following paragraphs describe the compliance of Incinerator Units 7 through 14 with the requirements in FGAQCI.

<u>I. Emission Limits and V. Testing/Sampling</u>

When an incinerator is upgraded, new emission limits and emissions testing requirements are triggered. The testing requirement is the method through which compliance with the emission limits in section I. (Emission Limits) of FGAQCI is determined. Some of the pollutants, and their associated emission limits, listed in this section are taken directly from Subpart MMMM. The other pollutants/emission limits were analyzed as part of the review of Permit to Install Nos. 61-13 and 61-13A. The testing required in SC V.1 in this Flexible Group is only required to be performed once after the air quality control improvements have been completed for each pair of incinerators in FGAQCI, within 180 days after trial operation of either incinerator in that pair of incinerators.

Emission testing was performed on Incinerators 7 and 8 in April 2015, and on Incinerators 9 and 10 in October 2015 to demonstrate compliance with the emission limits in FGAQCI, to satisfy the testing requirement of Special Condition V.1, and to satisfy the initial compliance requirement of paragraph

60.5185 of 40 CFR Part 60 Subpart MMMM. In the aftermath of the March 4, 2016 fire, it was decided that these units would be re-tested to determine post-fire repair emissions for Units 7-10, in addition to the initial testing on Units 11-14. All of this testing was completed on May 26, 2017. The test results are summarized as follows, comparing the test results to the permitted limit:

For Incinerator 7, tested May 19-20, 2017:

Pollutant	Test result	Permit limit
Particulate matter	16.81 mg/dscm	80 mg/dscm
PM2.5	0.87 lb/hr	1.2 lb/hr
PM10	0.89 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.14 ppmvd	1.2 ppmvd
Carbon monoxide	465.9 ppmvd	3,800 ppmvd
VOC	0.15 lb/hr	3.2 lb/hr
Dioxins/furans	0.14 ng/dscm 0.003 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.045 mg/dscm	0.28 mg/dscm
Nitrogen oxides	191.7 ppmvd	220 ppmvd
Sulfur Dioxide	0.56 ppmvd	26 ppmvd
Sulfuric acid	0.10 lb/hr	1.3 lb/hr
Cadmium	0.046 mg/dscm	0.095 mg/dscm
Lead	0.083 mg/dscm	0.3 mg/dscm
Fluorides	0.0018 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 8, tested April 19-20, 2017:

Pollutant	Test result	Permit limit
Particulate matter	17.29 mg/dscm	80 mg/dscm
PM2.5	0.74 lb/hr	1.2 lb/hr
PM10	0.74 lb/hr	1.2 lb/hr
Hydrogen chloride	0.14 ppmvd	1.2 ppmvd
Carbon monoxide	1,691.5 ppmvd	3,800 ppmvd
VOC	0.54 lb/hr	3.2 lb/hr
Dioxins/furans	1.74 ng/dscm 0.048 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.052 mg/dscm	0.28 mg/dscm
Nitrogen oxides	153.2 ppmvd	220 ppmvd
Sulfur Dioxide	0.5 ppmvd	26 ppmvd
Sulfuric acid	0.094 lb/hr	1.3 lb/hr
Cadmium	0.022 mg/dscm	0.095 mg/dscm
Lead	0.087 mg/dscm	0.3 mg/dscm
Fluorides	<0.0019 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 9, tested April 24-25, 2017:

Pollutant	Test result	Permit limit
Particulate matter	7.94 mg/dscm	80 mg/dscm
PM2.5	0.66 lb/hr	1.2 lb/hr

PM10	0.70 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.131 ppmvd	1.2 ppmvd
Carbon monoxide	733.7 ppmvd	3,800 ppmvd
VOC	0.23 lb/hr	3.2 lb/hr
Dioxins/furans	0.66 ng/dscm 0.018 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.049 mg/dscm	0.28 mg/dscm
Nitrogen oxides	197.5 ppmvd	220 ppmvd
Sulfur Dioxide	0.2 ppmvd	26 ppmvd
Sulfuric acid	0.064 lb/hr	1.3 lb/hr
Cadmium	0.021 mg/dscm	0.095 mg/dscm
Lead	0.061 mg/dscm	0.3 mg/dscm
Fluorides	<0.0019 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 10, tested April 21-22, 2017:

Pollutant	Test result	Permit limit
Particulate matter	12.53 mg/dscm	80 mg/dscm
PM2.5	0.74 lb/hr	1.2 lb/hr
PM10	0.79 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.134 ppmvd	1.2 ppmvd
Carbon monoxide	1,585.4 ppmvd	3,800 ppmvd
VOC	0.54 lb/hr	3.2 lb/hr
Dioxins/furans	3.53 ng/dscm 0.116 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.076 mg/dscm	0.28 mg/dscm
Nitrogen oxides	169.8 ppmvd	220 ppmvd
Sulfur Dioxide	0.4 ppmvd	26 ppmvd
Sulfuric acid	0.045 lb/hr	1.3 lb/hr
Cadmium	0.021 mg/dscm	0.095 mg/dscm
Lead	0.173 mg/dscm	0.3 mg/dscm
Fluorides	<0.0019 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 11, tested May 15-16, 2017:

Pollutant	Test result	Permit limit
Particulate matter	19.0 mg/dscm	80 mg/dscm
PM2.5	0.76 lb/hr	1.2 lb/hr
PM10	0.81 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.12 ppmvd	1.2 ppmvd
Carbon monoxide	213.3 ppmvd	3,800 ppmvd
VOC	0.08 lb/hr	3.2 lb/hr
Dioxins/furans	2.32 ng/dscm 0.109 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.055 mg/dscm	0.28 mg/dscm
Nitrogen oxides	143.3 ppmvd	220 ppmvd
Sulfur Dioxide	0.41 ppmvd	26 ppmvd

Sulfuric acid	0.059 lb/hr	1.3 lb/hr
Cadmium	0.048 mg/dscm	0.095 mg/dscm
Lead	0.045 mg/dscm	0.3 mg/dscm
Fluorides	0.0023 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 12, tested May 17-18, 2017:

Pollutant	Test result	Permit limit
Particulate matter	17.72 mg/dscm	80 mg/dscm
PM2.5	0.84 lb/hr	1.2 lb/hr
PM10	0.86 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.094 ppmvd	1.2 ppmvd
Carbon monoxide	1,068.8 ppmvd	3,800 ppmvd
VOC	0.45 lb/hr	3.2 lb/hr
Dioxins/furans	1.89 ng/dscm 0.082 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.043 mg/dscm	0.28 mg/dscm
Nitrogen oxides	177.6 ppmvd	220 ppmvd
Sulfur Dioxide	0.42 ppmvd	26 ppmvd
Sulfuric acid	0.100 lb/hr	1.3 lb/hr
Cadmium	0.052 mg/dscm	0.095 mg/dscm
Lead	0.097 mg/dscm	0.3 mg/dscm
Fluorides	<0.0015 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 13, tested May 22-23, 2017:

Pollutant	Test result	Permit limit
Particulate matter	14.73 mg/dscm	80 mg/dscm
PM2.5	0.97 lb/hr	1.2 lb/hr
PM10	0.98 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.16 ppmvd	1.2 ppmvd
Carbon monoxide	516.8 ppmvd	3,800 ppmvd
VOC	0.34 lb/hr	3.2 lb/hr
Dioxins/furans	0.58 ng/dscm 0.012 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.076 mg/dscm	0.28 mg/dscm
Nitrogen oxides	183.7 ppmvd	220 ppmvd
Sulfur Dioxide	0.53 ppmvd	26 ppmvd
Sulfuric acid	0.171 lb/hr	1.3 lb/hr
Cadmium	0.063 mg/dscm	0.095 mg/dscm
Lead	0.159 mg/dscm	0.3 mg/dscm
Fluorides	0.0027 lb/hr	1.73 lb/hr
Fugitive emission (opacity)	0%	5%

For Incinerator 14, tested May 24-25, 2017:

Pollutant	Test result	Permit limit
Particulate matter	13.48 mg/dscm	80 mg/dscm
PM2.5	0.65 lb/hr	1.2 lb/hr
PM10	0.66 lb/hr	1.2 lb/hr
Hydrogen chloride	<0.16 ppmvd	1.2 ppmvd
Carbon monoxide	1,249.2 ppmvd	3,800 ppmvd
VOC	0.35 lb/hr	3.2 lb/hr
Dioxins/furans	3.44 ng/dscm 0.099 ng/dscm TEF	5.0 ng/dscm 0.32 mg/dscm TEF
Mercury	0.070 mg/dscm	0.28 mg/dscm
Nitrogen oxides	187.4 ppmvd	220 ppmvd
Sulfur Dioxide	0.20 ppmvd	26 ppmvd
Sulfuric acid	0.055 lb/hr	1.3 lb/hr
Cadmium	0.037 mg/dscm	0.095 mg/dscm
Lead	0.091 mg/dscm	0.3 mg/dscm
Fluorides	0.0020 lb/hr	1.73 lb/hr

These results are well in compliance with the applicable emission limits for each pollutant listed in Section I. of FGAQCI. The compliance emissions tests satisfy the requirements in Section V of this Flexible Group. The test reports associated with these compliance emissions tests can be found in the WRRF facility file.

II. Material Limits

The Complex 2 incinerators are limited to 129,564 dry tons of total sludge feed per year. Due to the fire, the Complex 2 incinerators had not operated since March 4, 2016. The compliance tests marked the recommencing of operation of incinerators 7-14. Melvin and I discussed the monitoring of sludge feed rate, but there were no recent records to look at during this site visit.

All of the sludge that is to be processed in the incinerators is loaded onto the J Belt conveyor from the filter presses adjacent to the incinerators. The J Belt runs the length of Complex 2 on the south side of the building. Sludge from the J Belt is directed to the M Belt, which feeds incinerators 7-10, and the N Belt, which fees incinerators 11-14. Using incinerators 7-10 as an example, a reading of the weight of the sludge on the M Belt is taken, then another reading is taken of the weight of the sludge on the Q Belt, which directs some of the sludge on the M Belt to incinerators 9 and 10. In this way, the facility tracks the amount of wet tons sent to the incinerators. Once each shift (or every 8 hours), sludge samples are taken to determine certain properties, including percent dry solids and pH. This information is factored with the tracking of the amount of sludge, in wet tons, sent to the incinerators to determine the dry solids feed rate.

The facility's Ovation software system is used to track all incinerator operating hours, as well as the time that each unit is in standby and is out of service. Since April, Melvin has been tracking the dry tons of sludge fed to the incinerators per day, the incinerator operating hours per day, and the dry tons per hour fed to each incinerator, based on averaging. The facility is in compliance with this limit.

III.Process/Operational Restrictions

Special Conditions:

III.1 – Compliance. The facility maintains and operates the upgraded scrubber system when the incinerators are operating.

III.2 and III.3– Compliance. GLWA has a Malfunction Abatement Plan (MAP) with established scrubber and incinerator hearth temperature parameters. In accordance with paragraph 60.5190 of Subpart MMMM, as well as Special Condition V.5 of FG-4M-INCIN, GLWA established new operating parameters for incinerator temperature, scrubber liquid flow rate, and pressure drop across the scrubber, along with scrubber liquid pH, as part of the compliance emissions testing in April and May.

IV. Design/Equipment Parameters

Special Conditions IV.1, IV.2, and IV.3 – the facility is in compliance with these requirements. All of the required monitoring equipment was install during the upgrades to the Incinerators.

VI. Monitoring/Recordkeeping

Special conditions:

VI.1 – Compliance. GLWA continuously monitors oxygen from each incinerator, when operating.

VI.2 - Compliance. Visible emissions/opacity are continuously being monitored using the facility's COMS.

VI.3 – Compliance. Periodic inspections are performed on the incinerators, and records of inspections and any resulting maintenance are kept by GLWA staff, logged in internal software programs such as WAMS.

VI.4 and VI.5– Compliance. The required incinerator and scrubber operating parameters are being monitored and recorded. The MAP is being revised after the upgrades are made.

VI.6 and VI.8 – These conditions address the monitoring of sludge feed rate. VI.6 requires that the daily sludge feed rate, on a wet ton basis, be monitored and recorded. VI.8 requires that the sludge feed rate, on a dry tons basis, be monitored and recorded on a calendar month and 12 month rolling time period basis. Each of these SCs specifies that the information shall be monitored and recorded, "…except during periods when there is no sludge in the incinerator." The sludge feed rate was monitored for the Complex 1 incinerators until they ceased operating in January of 2017, and the information will be tracked in the Complex 2 incinerators going forward. Compliance.

VI.7 – As a result of the emissions testing, there will be site-specific emissions information for each upgraded Complex incinerator. This information will be the basis for some of the emissions calculations required by this permit condition as the Complex 2 incinerators commence regular operation.

VII. Reporting

Special Conditions:

VII.4 – In compliance. GLWA informed DEQ-AQD when the modifications to the Complex 2 incinerators were completed in accordance with this condition.

VII.5 – DWSD, who was the owner and operator of the WRRF facility at the time, submitted the closure notification for Incinerator No. 2.

VIII. Stack/Vent Restrictions

The stack parameters provided in the SC table have been established and used for different air quality related purposes, including air dispersion modeling and MAERS reports, for many years.

IX. Other Requirements

Special Conditions:

IX.1 – In compliance. This condition states that FGAQCI becomes applicable when the upgrades are made to the Complex 2 incinerators, and that the terms and conditions of FGCOMPLEX2 are no longer applicable.

IX.2 – In compliance. The GLWA WRRF has implemented a Malfunction Abatement Plan.

IX.3 – In compliance. Incinerator No. 2 has been permanently shut down.

FG4M-INCIN

This Flexible Group contains the requirements associated with 40 CFR Part 60 Subpart MMMM that apply

to the incinerators at the Detroit WWTP. These requirements became effective on March 21, 2016. As described in the last section, as the Complex2 incinerators were upgraded, emissions testing was performed that serves to meet the initial compliance demonstration requirements of Subpart MMMM, which is also presented in Special Condition V.1 of this Flexible Group.

The following paragraphs describe the compliance of Incinerator Units 7 through 14 with the requirements in FG4M-INCIN.

I. Emission Limits and V. Testing/Sampling

In the discussion regarding Emission Limits and Testing/Sampling for FGAQCI, the results of the most recent compliance emissions tests were provided. These results show that the emissions measured during these tests are in compliance with the emission limits in SCs I.1 through 10.

Regarding the testing/sampling requirements in Section V, the recent compliance emissions testing satisfies the testing requirements in Subpart MMMM, as put forth in SCs V.1 and V.4. As part of the emissions testing, the facility established the incinerator and control equipment parameters detailed in SC V.5.a through d. The information required by SC V.5 was presented to DEQ-AQD via correspondence from GLWA dated July 5, 2017. In accordance with SC V.6, the bypass stack was not used during any of the compliance tests. The WRRF looks to be in compliance with the conditions in Section V of this Flexible Group.

The test reports associated with the compliance emissions tests can be found in the WRRF facility file.

III.Process/Operational Restrictions

SC III.1 – Compliance. I was told that any use of the bypass stack is tracked on a form in the facility's Telecon software system. The Incineration Complex Supervisor is to record all stack bypasses. In addition, the facility's Ovation software system track all times that the damper to the bypass stack is open.

IV. Design/Equipment Parameters

SC IV.1 – the facility did not choose the compliance demonstration option described in SCs V.2 and V.4, instead opting to perform compliance emissions tests, as described in SCs V.1 and V.3. Thus, SC IV.1 is not valid.

Special Conditions IV.2 through IV.6 – the facility is in compliance with these requirements. All of the required monitoring equipment was install during the upgrades to the Incinerators.

VI. Monitoring/Recordkeeping

SC VI.1 – Compliance. GLWA staff monitor and record the sludge feed rate. I was told that the weightometers on the sludge conveyors send a wet tons feed rate value to the Ovation system every 15 seconds. In addition, facility staff calculate the daily average sewage sludge feed rate to each incinerator. For each shift day, an Incineration Report is created that includes the total sludge feed.

SC VI.2 – Compliance. A grab sample of sludge is taken once per shift, more frequently than required by this condition, and the moisture content of each sample is determined and used to determine the sludge feed rate in dry tons.

SC VI.3 – Compliance. The Ovation system includes measurements of the combustion temperature that are taken and recorded in the system every 15 seconds.

SC VI.4 – Compliance. A site-specific monitoring plan, as described in 60.5200, was submitted to DEQ-AQD on February 10, 2015.

SC VI.5-7 – Compliance. The pressure drop across the inlet and outlet of each scrubber (VI.5), the liquid flow rate through each scrubber (VI.6), and the scrubber liquid pH (VI.7) are measured and recorded in accordance with the conditions.

SC VI.8 – Compliance. GLWA keeps track of permit deviations.

SC VI.9 – The facility does not elect to utilize the compliance option described in SCs V.2 and V.4.

VII. Reporting

The WRRF facility is in compliance with the reporting requirements in the Flexible Group.

IX. Other Requirements

SC IX.1 – Compliance. The requirements of FG4M-INCIN became effective on March 21, 2016.

SC IX.2 – Compliance. The WRRF submitted the Operator Training and Qualification Program to DEQ-AQD on August 26, 2015. AQD approved the program, and the initial training program was conducted at the facility during the week of January 5, 2016. I attended one of the training program sessions, along with some other DEQ-AQD staff.

SC IX.3 – Compliance. According to Melvin, the air pollution control devices were scheduled to be inspected, as required by this SC and 40 CFR 60.5220(c), as the upgrades to the incinerator controls were completed, and the initial compliance emissions tests were completed. Melvin showed me the entry in the facility's internal records indicating that Incinerators 7 and 8 were inspected on December 8, 2015. The March 4, 2016 fire disrupted this schedule. I was told that the facility has completed the inspections.

SC IX.4 – The WRRF facility is demonstrating substantial compliance with the applicable provisions of Subpart MMMM and Rule 972. The Subpart MMMM Initial Compliance Report for the GLWA WRRF facility, required by 40 CFR 60.5235(b), was submitted by GLWA via correspondence dated August 15, 2017.

SC IX.5 – Compliance. The facility monitors compliance with the emission limits in Subpart MMMM at all times when sludge is in the combustion chamber.

FGDryerTrains

This Flexible Group addresses the four dryer trains in the NEFCO Biosolids Drying Facility (BDF). This BDF has been operating since the Fall of 2015, and a couple of rounds of compliance emissions testing has been performed on the dryer trains.

The following paragraphs describe the compliance of the four sludge dryer trains with the requirements in FGDryerTrains. Melvin is provided with operational data and records for the operations at the BDF from NEFCO, and he shared this information with me during the compliance review for the NEFCO BDF operations.

I. Emission Limits

Emission testing was performed on the four sludge dryer trains, identified in the facility's permits as EUDryerTrainA, EUDryerTrainB, EUDryerTrainC and EUDryerTrainD, from January 18-21, 2016. The exhaust from the dryers, which are natural gas-fired and equipped with low-NOx burners, were tested for emissions of PM, PM10, PM2.5, NOx, CO, SO2, VOC, lead and hydrogen sulfide, and the results compared to the permit limits for these pollutants in SCs I.1 through I.12. The measured emissions of the PMs, NOx, CO, VOC, lead and hydrogen sulfide from all four dryers were in compliance with the applicable permit limit. However, the three-hour average hourly SO2 emissions from Dryer Train D, as measured during the test, were 0.92 pounds per hour, which is greater than the permit limit of 0.82 pounds of SO2 per hour. The measured SO2 emissions from the other three dryers were compliant with the permit limit. A second, follow-up compliance emissions test was performed on the dryers from February 2-3, 2016; this test only measured SO2 emissions from the four dryers. This test also resulted in measured emissions of SO2 in exceedance of the permit limits from one of the dryers, this time Dryer Train C; the three-hour average hourly SO2 emissions measured during this test event were 0.83 pounds per hour.

A violation notice was issued to GLWA on June 21, 2016. GLWA and NEFCO met with DEQ-AQD on February 12, 2016 to discuss a plan to address the SO2 emission exceedances. The facility submitted a SO2 Compliance Plan to DEQ-AQD, and GLWA has been submitting monthly SO2 Compliance Plan updates. In May 2017, NEFCO and GLWA made the decision to being planning to install a second

scrubber after the RTO in the exhaust stream. As mentioned in the "Facility Operations" section of this report, GLWA and DEQ-AQD entered into a Consent Order, Consent Order AQD No. 17-2017. The Consent Order will be described in further detail later in this section. The Consent Order and the SO2 Compliance Plan that is being implemented at the facility serve to address the violation relating to the measured SO2 exceedances from the BDF Dryer Trains. The SO2 Compliance Plan updates can be found in the facility file.

III. Process/Operational Restrictions

Melvin provided me with run time data that is kept by NEFCO. I requested and received a copy of the data for March 2017, which includes 12 month rolling time period totals. This information is attached to this report for reference. The records kept by NEFCO show that the 12 month rolling time period run hours for the four dryers, as of the end of March 2017, was 20,596 hours, which is in compliance with the permit limit of 31,536 hours.

IV. Design/Equipment Parameters

The facility, and by extension the BDF, look to be in compliance with the requirements in this section. According to Melvin, the dryers are only operated when the associated control equipment (scrubbers, RTOs) are operational. This is put forth in the Malfunction Abatement Plan for the BDF. Similarly, material is only sent to the recycle bins when the associated fabric filter controls are operating properly. Regarding SC IV.3, Melvin told me that NEFCO monitors the RTO combustion chamber temperature, the pressure drop across the dryer scrubbers dryers and the recycle bin fabric filters, the liquid flow rate to the scrubber, and opacity. A summary of this information is provided to Melvin each month that summarizes the monitored information for each day in that month. The control equipment operating parameters are monitored continuously. A copy of the summary report for March 2017 is attached to this report.

V. Testing/Sampling

As described in the information for Section I. (Emission Limits), the testing required by SC V.1 was conducted in compliance with this condition. The facility has not yet had to perform the follow-up testing required in SC V.2 as, per V.2.a, it has not yet been 30 months since trial operation of the first dryer train commenced.

VI. Monitoring/Recordkeeping

The facility is in compliance with the recordkeeping requirements in this section. The attached records from March 2017 show that records of the hours of operation of the dryers (SC VI.1), of the operating parameters of the dryer control equipment (SC VI.2), of the pressure drop across the recycle bin fabric filter dust collectors (SC VI.3), and of the visible emission readings of the recycle bin stacks during routine operating conditions are being kept.

VII. Reporting

All required reports are being submitted in relation to the dryers.

VIII. Stack/Vent Restrictions

The stack parameters for the dryers and recycle bins were not addressed during this site visit.

FGDryerFacility

As the description in the ROP provides, this Flexible Group covers the entire Biosolids Drying Facility. NEFCO staff track the BDF's compliance with the permit requirements that relate to their portion of the facility. This information is kept by NEFCO, and it is also shared with and kept by GLWA.

The following paragraphs describe the compliance of the BDF facility with the requirements in FGDryerFacility.

I. Emission Limits

NEFCO calculates monthly and 12 month rolling time period emissions to demonstrate compliance with

the emission limits put forth in SCs I.1 through I.6. Attached to this report is information for March 2017 that includes the monthly and 12 month emission totals. This information shows that emissions from the BDF are in compliance with these emission limits. NEFCO tracks visible emissions from the roadways of the BDF. I was provided with a copy of the Fugitive Dust Emission Log that is used by NEFCO to track fugitive emissions.

III. Process/Operational Restrictions

The facility looks to be in compliance with the permit requirements in this section of the Flexible Group. I was told that the facility keeps the pug mill's cover closed when the pug mill is in operation (SC III.1). A Malfunction Abatement Plan (MAP) has been submitted, and I was told that NEFCO adheres to the MAP when operating the dryer trains (SC III.2). The facility adheres to the procedure of adding non-volatile oil to dryer product (pellets) that is being loaded to trucks (SC. III.3), and material is transferred to the silos using enclosed conveyors (SC III.4). The records that are kept by NEFCO account for the run time of the natural gas-fired make up air units (also referred to as air handling units). The March 2017 records that are attached to this report show a 12 month rolling total of 8,583.4 hours of operation of the air handling unit. This number represents the total operating time of the air handling equipment, not just the time when natural gas is being burned; thus, the facility is well in compliance with SC III.5.

IV. Design/Equipment Parameters

The facility looks to be in compliance with the requirements in this section. Facility roadways are paved, and NEFCO adheres to a fugitive dust management plan for the BDF (SC IV.1). NEFCO monitors the information required to be monitored by SC IV.2.

VI. Monitoring/Recordkeeping

The information that is required to be monitored and recorded by the conditions in this section is being kept by NEFCO. As the records from March 2017 that are attached to this report show, monthly and 12 month records of the emission calculations required in SC VI.2 are being kept in an acceptable format (which meets the requirement of SC VI.1). The operating parameters for the scrubber that controls ambient exhaust from the BDF building is kept on a per shift basis (SC VI.3). The facility logs fugitive dust management measures at the facility (SC VI.4), and the use of the air handling equipment (EUMakeUpAir) is logged (SC VI.5).

VII. Reporting

All required reports are being submitted in relation to the BDF.

VIII. Stack/Vent Restrictions

The stack parameters for the various BDF building ambient exhaust points were not addressed during this site visit.

FG2013Project

This Flexible Group covers all of the Complex 2 incinerators that have been upgraded (which, as of the date of the site visit, is all of them), and the BDF. The following paragraphs describe the compliance of these portions of the WRRF facility with the requirements in FG2013Project.

I. Emission Limits

As described for the last two Flexible Groups, NEFCO calculates and logs emissions from the operations at the BDF. This information is provided to GLWA staff to compile the information necessary to demonstrate compliance with SCs I.1 through I.6. At the time of my site visit, the Complex 2 incinerators had just begun operating after the March 4, 2016 fire, so the emissions contribution from these incinerators is currently low. Melvin told me that he has a spreadsheet set up that will combine the emissions information from the Complex 2 incinerators with the NEFCO emissions data. The facility is currently in compliance with the emission limits.

VI. Monitoring/Recordkeeping

As mentioned for the Emission Limit section, GLWA staff calculated and track emissions from the BDF, and this information is combined with the emissions information that GLWA staff compile for the Complex incinerators. The facility is in compliance with SC VI.1.

Regarding SC.VI.2, GLWA has been working with DEQ-AQD's Air Monitoring Unit (AMU) group to set up and operate the ambient NO_2 monitoring program required by this condition. Melvin told me that he had just submitted to monitoring data from April 2017 to DEQ-AQD. He told me that there have been some data gaps with one of the monitors, and that calculations showed NO2 emissions of greater than or equal to the NOx NAAQS. GLWA has been in discussions with DEQ-AQD-AMU, and they have agreed to continue to monitor for NO2 until October 2017, at which time the monitoring program will be reassessed.

VII. Reporting

All required reports are being submitted.

FGDryIncTrans

This Flexible Group was created as a result of the review of Permit to Install No. 61-13A. The Flexible Group contains requirements to ensure that during operation of the biosolids drying facility before incinerators 1, 3, 4, 5, and 6 permanently cease operating, there is not a significant emission increase of a regulated new source review pollutant. The flexible group requires that the Complex 1incinerators permanently cease operating no later than March 20, 2016. As described earlier in this report, because of the March 4, 2016 fire, some of the Complex 1 incinerators continued to operate after the March 21, 2016 deadline. The description for this Flexible Group states that the Flexible Group terminates when incinerators 1, 3, 4, 5, and 6 have permanently ceased operating, at which time its conditions will no longer be applicable requirements for any of the equipment in the Flexible Group.

The Complex 1 incinerators ceased operating in January 2017. However, GLWA had not submitted the permanent closure notification for Incinerators 1, 3, 4 and 5. The facility may have been waiting for the compliance testing of the Complex 2 incinerators to conclude to ensure that these units are ready to operate going forward, and there will no longer be a need for the Complex 1 incinerators to operate.

In correspondence dated June 5, 2017, GLWA notified DEQ-AQD that Incinerators 1, 3, 4 and 5 have been permanently decommissioned on June 1, 2017, which concludes the decommissioning of all of the Complex 1 incinerators. A copy of the letter is attached to this report for reference. Accordingly, the requirements in FGDryIncTrans are no longer in effect. The primary requirement in this Flexible Group is a limit on the amount of sludge that can be fired in the entire GLWA WRRF stationary source, which includes the Complex 1 and 2 incinerators and the Biosolids Drying Facility, until the time when all of the Complex 1 incinerators permanently cease operation. Melvin showed me how the facility has been tracking this information, which was compliant with the requirements in the Flexible Group.

Consent Order

Consent Order AQD No. 7-2017 became effective on June 5, 2017. The Order, which is in full force and effect for a period of at least four years (paragraph 18), was entered to resolved the air violations resulting from the March 4, 2016 fire at the WRRF facility, and the emissions testing violations associated with the biosolids dryers at the BDF portion of the facility. There are some specific requirements in the Order that pertain to operations at the facility.

Paragraph 9.A.- GLWA shall comply with the SO2 emission limit in FGDryerTrains no later than December 31, 2017. GLWA and NEFCO are completing work on the SO2 Compliance Plan in order to meet this deadline. The new post RTO scrubber is scheduled to be installed and operational by that date.

Paragraph 9.B.1 – the facility permanently ceased operating the Complex 1 incinerators by June 30, 2017.

Paragraph 9.B.2 – the facility is in compliance. Sludge feed rate is monitored, but, as mentioned in the discussion for FGDryIncTrans, the requirements of this Flexible Group are no longer in effect with the permanent decommissioning of the Complex 1 incinerators.

Paragraph 9.C – the conditions in 9.C no longer apply after the requirement in paragraph 9.B.1 has been met.

Paragraph 9.D – the facility will be required to meet the testing requirements for the dryers in FGDryerTrains put forth in 9.D.1 through 5. The first milestone among these requirements will be the submittal of a test plan to test each of the dryers in FGDryerTrains by January 1, 2018.

Compliance Determination

Based upon the results of the May 24, 2017 site visit and subsequent records review, along with the results of the most recent compliance emissions testing that occurred in April and May 2017, the GLWA WRRF facility appears to be in substantial compliance with the terms and conditions of Renewable Operating Permit MI-ROP-B2103-2014c and, in turn, applicable State and Federal regulations.

DEQ-AQD will be monitoring the facility's progress in completing the implementation of the SO2 Compliance Plan for the dryers at the BDF in the coming months. The completion of the Compliance Plan will need to satisfy the requirements of the Consent Order.

Attachments to this report: a blank copy of the Fugitive Dust Control Treatment Log for the WRRF grounds, as well as a copy of a fugitive dust report for the Central Offload Facility; a copy of the "Complex 2 Ash System Shift Report" for 5/22/17; a screen shot from GLWA's WAMS software system that shows the preventative maintenance that was scheduled for the No. 1 lime silo on April 24, 2017; a screen shot of the facility's Ovation software system that shows the operating parameters that are being monitored when the lime system operates; a printout of the Emergency Generator Operating Summary for time period from 4/29/2016 through 4/29/2017; a copy of the hours usage log sheet for the engines; a copy of the records kept by NEFCO for March 2017; a copy of the correspondence that was sent to notify DEQ-AQD that the Complex 1 incinerators have been permanently decommissioned.

NAME Steve Wees DATE 9/13/17 SUPERVISOR JK