

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

B235726311

FACILITY: Holland BPW, Generating Station & WWTP		SRN / ID: B2357
LOCATION: 64 Pine Ave, HOLLAND		DISTRICT: Grand Rapids
CITY: HOLLAND		COUNTY: OTTAWA
CONTACT: Judy N. Visscher, Environmental Specialist		ACTIVITY DATE: 08/08/2014
STAFF: Steve Lachance	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FCE for FY '014		
RESOLVED COMPLAINTS:		

Site activities for the completion of a Full Compliance Evaluation (FCE) were primarily conducted on Friday, August 8, 2014. Weather conditions were mostly sunny, with mild easterly winds and temperatures of about 70 degrees F.

Prior to arrival on-site at about 8 AM on 8/8/14, SL completed an odor survey in the vicinity of the facility. No malodors were noted. SL also conducted quick Method 9 Visible Emissions readings from the 3 main stacks from the Civic Center parking lot; no visible emissions were observed. Visible Emissions (VE) readings had also been conducted from Kollen Park during the mid-/late- afternoon of Tuesday, 8/5/14; during which no visible emissions were also noted.

Note, in addition to the on-site activities discussed in this report, the compliance determination is based on review of all required reports and site activities since the last Full Compliance Inspection in June, 2013. The FCE Summary Report accompanying this report includes details on these activities and reviews.

## FACILITY DESCRIPTION

The facility consists of a municipal utility electricity generating station with an adjacent municipal wastewater treatment plant. The facility is located in an industrial section of Holland, Ottawa County, near the eastern end of Lake Macatawa.

Three steam generating units (EU-UNIT-3, EU-UNIT-4, and EU-UNIT-5) are in use and each fires coal and natural gas. (EU-UNIT-3 fires natural gas only for ignition.) The units are rated at 11.5, 22 and 29 megawatts maximum capacity, respectively. Each unit is controlled with a dry plate electrostatic precipitator; the precipitator for EU-UNIT-4 is preceded by a cyclone. EU-UNIT-5 is equipped with low-NOx burners.

Continuous Emission Monitoring Systems for opacity are installed on each unit, while emissions from EU-UNIT-5 are also monitored by Continuous Emission Monitoring Systems for sulfur dioxide, oxygen, oxides of nitrogen and flow.

The wastewater treatment system is enclosed and odors are controlled with an oxidizing wet scrubber.

Other miscellaneous sources at the facility include fuel and flyash storage and handling; a lime storage bin associated with the odor control scrubber; cold cleaners; assorted natural gas-fired heaters and small boilers; reciprocating internal combustion engines; and occasional asbestos demolition projects.

The facility was previously issued Permit to Install (PTI) No. 25-07, which authorized the construction and installation of an additional multiple fuel-fired generating unit rated at 78 megawatts, as well as ancillary equipment in support of the new unit (EU-Unit-10). Permit to Install No. 25-07 also required the retirement of EU-UNIT-3 as a condition to the installation and operation of Unit 10. Based on the lack of construction activity as the Board pursued other generation options, this permit expired on February 11, 2014 and is no longer valid. Conditions associated with voided PTI No. 25-07 are therefore not included in the current, draft/proposed ROP.

The stationary source is located in Ottawa County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations, Part 70, because the potential to emit nitrogen oxides, sulfur oxides, and particulate matter exceeds 100 tons per year. Moreover, the stationary source is considered a major source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of any single HAP (HCl) regulated by the federal Clean Air Act, Section 112 is greater than 10 tons per year, and the potential to emit of all HAPs combined is greater than 25 tons per year. Additionally, the source's potential to emit of Greenhouse Gases is 100,000 tons per year or more calculated as carbon dioxide equivalents (CO<sub>2</sub>e) and 100 tons per year or more on a mass basis.

No emission units at the stationary source are currently subject to the Prevention of Significant Deterioration (PSD) regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451 or 40 CFR, Part 52.21 because the process equipment was constructed/installed prior to June 19, 1978, the promulgation date of the PSD regulations. Subsequent installation of control equipment was not a modification subject to PSD permitting. Any future modifications of the process equipment at this stationary source may be subject to the PSD requirements for pollutants for which Ottawa County is in attainment.

EU-Unit-3, EU-Unit-4, EU-Unit-5 and associated coal and ash handling systems were installed prior to August 15, 1967. As a result, this equipment is considered "grandfathered" and is not subject to New Source Review (NSR) permitting requirements. However, future modifications of this equipment may be subject to NSR.

Current natural gas feeding systems for each unit were subject to permitting at the time of installation.

Each existing coal-fired unit (EU-UNIT-3, EU-UNIT-4, and EU-UNIT-5) is equipped with a Continuous Opacity Monitoring System (COMS), operated and maintained in accordance with 40 CFR 60, Appendix B.

Sulfur emissions for the existing coal-fired units are limited by Rule 401 and the facility has accepted, through Air Use Permits, a 24-hour averaging time for the applicable limit. Compliance is based on use of compliant fuel/fuel blends, while EU-UNIT-5 has a Continuous Emissions Monitoring System (CEMS) for sulfur dioxide.

Units EU-Unit-3 and EU-Unit-4, as well as various small boilers and process heaters at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters at Major Sources promulgated in 40 CFR, Part 63, Subparts A and DDDDD. The ROP includes tables of applicable requirements for existing solid/stoker fueled boilers (EU-Unit-3 and EU-Unit-4) and existing "Gas1" units. Note, EU-Unit-5 is not subject to 40 CFR Part 63, Subpart DDDDD because it is a defined Electric Generating Unit (based on size of the turbine served) and is instead subject to Acid Rain and Mercury and Air Toxics Standards as discussed below.

**Two Reciprocating Internal Combustion Engines (RICE) are subject to the National Emission Standard for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ.**

**EU-Unit-5 at the stationary source is subject to the federal Acid Rain program promulgated in 40 CFR, Part 72.**

EU-UNIT-5 is regulated by Michigan's Part 8 Rules ("Emission Limitations and Prohibitions – Oxides of Nitrogen"). Each is also subject to the Clean Air Interstate Rule (CAIR) NO<sub>x</sub> annual trading program pursuant to Rules 802a, 803, 821, and 830 through 834; to the CAIR NO<sub>x</sub> ozone season trading program pursuant to Rules 802a, 803 and 821 through 826; and to the CAIR SO<sub>2</sub> annual trading program pursuant to Rule 420. The applicable requirements are included in the CAIR permits, which are incorporated into the ROP as Appendices 10 through 12. Note, CAIR requirements stand until the remanded Cross State Air Pollution Rule (CSAPR) is legally finalized.

Additionally, EU-UNIT-4 is subject to the emission limitations and prohibitions – oxides of nitrogen pursuant to Rule 801(4)(g), and has successfully petitioned to AQD for an alternative (uncontrolled) emission rate for oxides of nitrogen during the defined ozone control period.

Part 15 of Michigan Air Pollution Control Rules, adopted pursuant to Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) addresses new requirements pertaining to mercury in the State of Michigan. These rules were intended to limit mercury emissions from electric generation units as of January 1, 2015. Rule 1502a, however, recognizes that the Part 15 permitting requirements defer to MATS/EGU MACT.

Visual inspections for opacity are required for miscellaneous pieces of equipment (EU-FLYASH, EU-LIME-BIN) not equipped with Continuous Emissions Monitoring Systems for opacity. These visual inspections are not Method 9 readings by qualified observers, but rather a more frequent visual assessment of equipment operation/emissions by persons familiar with normal site operations. Observation of any visible emissions initiates abatement action; and records of all visual inspections' results and actions are maintained.

The stationary source occasionally undertakes renovation projects subject to the National Emission Standard for Hazardous Air Pollutants for Asbestos promulgated in Title 40 of the Code of Federal Regulations, Part 61, Subparts A and M.

The facility's cold cleaners are not subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for halogenated solvent cleaning operations, 40 CFR 63, Subpart T. These units are regulated by Rule 707.

The stationary source is subject to the federal Compliance Assurance Monitoring (CAM) rule for particulate matter under Title 40 of the Code of Federal Regulations, Part 64. EU-UNIT-3, EU-UNIT-4, and EU-UNIT-5 have both a control device and potential pre-control emissions of particulate matter greater than the major source threshold level. CAM requirements for these emission units are included in this ROP. CAM is based on existing COMS. Opacity is used as a surrogate for PM for CAM purposes; opacity was selected as a useful performance indicator because it is indicative of operation and maintenance of the PM control device (electrostatic

precipitators). Opacity is also continuously monitored with existing equipment, easily understandable, and enforceable. Through existing, continuous opacity monitoring, the facility can assess operations and properly implement existing maintenance procedures.

A CAM excursion (indicating a possible deviation from the allowed PM limit; or at the very least, probable abnormal operations of the boiler or associated ESP) for each boiler is defined as opacity greater than 12% for 24 hours; or any continuous two-hour period with opacity exceeding 20%. (Note, an incident such as the latter would already require reporting to the AQD as an abnormal condition per Rule 912.) These levels have been established based on plant operating experience; such opacity levels generally indicate a problem with or malfunction of the associated ESP.

The facility has been required to complete an acceptable stack test for particulate matter (PM) emissions from each unit every three years. Historical stack test results indicate compliance with the applicable emission limit by a wide margin in each case per the following summary of stack test results for particulate matter (all units are pound PM per 1,000 pounds exhaust gas, corrected to 50% excess air.)

Unit	PM Limit	2003	2006	2009	2012
EU-UNIT-3	0.30	0.0114	0.0226	0.0061	0.0197
EU-UNIT-4	0.26	0.0316	0.00195	0.0310	0.0029
EU-UNIT-5	0.25	0.0300	0.00285	0.0213	0.028

**Given the wide margin of compliance at normal opacity operating levels (<12% continuous opacity), the CAM-established Excursions (above) should assure continued compliance with the applicable PM limits.**

## INSPECTION DETAILS

SL arrived on-site for the inspection at about 8 AM. The facility was represented by Ms. Judy Visscher (entire facility) and Mr. Bill Grysen (wastewater treatment plant only.) Intern "Nick" participated in the inspection, and other managers (Mr. Ted Siler) and equipment-specific operators were brought into discussions on an as-needed basis.

The inspection began with an entry interview. SL provided a copy of DEQ's "Environmental

Inspections; Rights and Responsibilities" brochure. Ms. Visscher stated Units 3 and 4 were not operating on this date, while Unit 5 was operating on coal.

- There were no known technical issue on this date. Only Unit 5 was operating (on coal.) SL requested Daily Opacity Reports for Tuesday through "current" to affirm operations and emissions consistent with visible emissions observations. See attached.
- Units 3 and 4 were down for scheduled/economic reasons and will return to service in November.
- The facility has probably received its last shipment of coal. The reported fuel mix is currently a purchased 35% blend (off-site) of Powder River Basin coal. CEMS readings indicate compliance with sulfur dioxide emissions restrictions. SL requested CEMS data from Unit 5 corresponding to the same "8-5-14 through current" operating period, as well as a current calibration report. See attached and further discussion, below.
- The originally proposed plan for Unit 10, permitted by PTI #25-07, has been dismissed; this permit has been voided. Instead, an off-site, natural gas turbine plant (separate facility) has been permitted per PTI #107-13. Demolition for the new location has reportedly begun.
- The ROP for this facility will soon proceed to the EPA-only, 45-day "Proposed" review stage.

The inspection continued with site observations and further record reviews. A discussion of these observations relative to the facility's compliance with current Renewable Operating Permit (ROP) No. MI-ROP-B2357-2006a and draft/proposed ROP No. MI-ROP-B2357-201x follows.

## **SECTION 1: James DeYoung Electric Generating Station**

### EG-FLYASH-SILO

Flyash is pneumatically conveyed from the three boilers to a silo controlled by a baghouse. The ash is wetted and gravity loaded into open trucks for off-site disposal. At the time of the inspection, load-out was not taking place, nor were visible emissions noted from the baghouse vent. Housekeeping conditions in this area were currently very good.

**All requested records (documentation of required Environmental Inspections per Appendices 1-3.1 and 1-3.2) were available.**

### ***NOTES PERTAINING TO THE COLLECTIVE INSPECTION OF COAL-FIRED BOILERS:***

The facility burns a blend of approximately 65%/35% Bituminous:Powder River Basin coal. Per Appendix 1-3.5, each source/shipment is specified and tested for various parameters including %Sulfur, %Ash, moisture, heat content, etc. Compliance with sulfur restrictions is based on these specification/test results, but also by compliance with SO<sub>2</sub> emissions limits based on CEMS results.

Since each unit is burning the same fuel (when operating), the Unit 5 CEMS for SO<sub>2</sub> can be used to determine compliance for each of the units; no deviations pertaining to gaseous emissions have been recorded in this inspection/FCE timeframe. Each CEMS had passed calibrations for August 8 (see attached) and so each CEMS observation made during the inspection is considered to be valid.

### EG-UNIT-3

The unit has a rated capacity of 11.5 MW and 125,000 pounds of steam per hour. This unit was not operating at the time of the inspection, based on economic considerations. PM emissions are controlled by an ESP, and the unit has natural gas startup capability. The Unit was tested in March, 2012 for particulate emissions, and found to operate in compliance at an estimated emission rate of 0.01 lbs/1000 lbs exhaust gas (50% excess air). This represents about 3% of the allowable emission rate.

Fuel specifications and testing indicate the use of compliant coals with respect to sulfur dioxide emissions (see above.)

Opacity and COMS performance are evaluated quarterly, through the review of required quarterly excess emissions and semi-annual CAM reports.

### EG-UNIT-4

This unit has a rated capacity of 22 MW and 220,000 pph steam. Particulate emissions are controlled by an ESP preceded by a cyclone. This unit also has natural gas startup capability.

This unit was not operating at the time of the inspection.

Fuel specifications and testing indicate the use of compliant coals with respect to sulfur dioxide emissions (see above.)

The Unit was tested in January, 2013 for particulate emissions, and found to operate in compliance at an estimated emission rate of 0.002 lbs/1000 lbs exhaust gas (50% excess air). This represents about 1% of the allowable emission rate.

Opacity and COMS performance are evaluated quarterly, through the review of required quarterly excess emissions and semi-annual CAM reports.

### EG-UNIT-5

This unit has a maximum rated capacity of 29 MW and 290,000 pph steam. Particulate emissions are controlled by an ESP preceded by a cyclone. This unit also has natural gas startup capability. This unit was operating at the time of the inspection.

The Unit was tested in August, 2012 for particulate emissions, and found to operate in compliance at an estimated emission rate of 0.0245 lbs/1000 lbs exhaust gas (50% excess air). This represents about 10% of the allowable emission rate.

Fuel specifications and testing indicate the use of compliant coals with respect to sulfur dioxide emissions, and as an Acid Rain-subject unit, SO<sub>2</sub> CEMS are in place (see above.) Calibrations of each CEMS (attached) indicate valid CEMS data, and the attached "Average Data" report for the day preceeding and day of inspection document the unit's use, startup, load, NO<sub>x</sub> emissions and SO<sub>2</sub> emissions; no issues noted. The same can be said for the Unit's Opacity Zero and Span Calibration reports and 6-minute average opacity matrix report for the same period (see attached); recorded COMS values are valid, and generally below 1% opacity.

At about 8:40 AM, August 8, 2014, the following Control Room data was observed; the operator reported no current issues with Unit 5, the only operational unit at this time due to economics.

- 16.2 MW (gross)
- about 10.6 tph coal; 171,000 pounds used so far this date
- 1% instantaneous opacity
- 1% (6-minute average) opacity
- 0.68# SO<sub>2</sub>/mmBtu
- 0.38# NO<sub>x</sub>/mmBtu

Opacity and COMS performance are evaluated quarterly, through the review of required quarterly excess emissions and semi-annual CAM reports.

### FG-PARTSCLEANERS

**One unit was observed during the inspection; this unit was observed to be closed while not in use, and procedures were properly posted. On-site parts cleaners continue to be maintained by Safety-Kleen; the observed machine utilizes "Premium Gold" solvent that has been previously documented at this and other facilities.**

## **SECTION 2: Wastewater Treatment Plant**

SL continued the inspection by visiting the adjacent wastewater treatment plant and discussing RO Permit requirements and associated monitoring and recordkeeping with Ms. Visscher and Mr. Bill Grysen (WWTP Maintenance Manager.)

### EU-LIME-BIN

Lime is used for odor control. It is pneumatically loaded into a lime storage bin, emissions from which are controlled by a fabric filter. The bin is inspected for visible emissions during loading of each batch of lime. Required preventative maintenance, bag inspection, and blower system operation are confirmed before loading is allowed. The loading process is observed for visible emissions by plant personnel. Each of these requirements is documented in the facility's "Lime Loading Sheet" which was readily available for each lime

shipment. No unloading was taking place at the time of the inspection, but SL viewed the area around this unit and noted good, clean conditions on, near, and around the unit.

### EU-ODOR-SCRUBBER

**An oxidizing wet scrubber controls odors from various treatment portions of the plant. Scrubber liquor ORP; pH; and system area odors are the key monitoring components for the effective operation of this equipment. The targeted Oxidation Reduction Potential range for the scrubber is 650-800, and pH is 9.0 +/- 0.2. Scrubber operations are automatically/logistically controlled, and each of these components is evaluated/documentated on a per-shift basis.**

The area immediate down-wind of the scrubber exhaust vents was free of malodors. SL specifically surveyed roof-top areas for malodors, and none were observed.

**SL observed differential pressure across the scrubber of less than 0.35" water (low due to recent media cleaning) and instantaneous values of 758 (ORP) and 8.8 (pH); both within planned operational range. Graphical depiction of these parameters indicates steady control of pH and controlled maintenance of ORP >650 for the last week. ("Odor Control System Screenshot")**

### FG-PARTSCLEANERS

**The wastewater treatment plant's parts cleaner (new/replacement) was not observed during this inspection; but operational requirements were discussed. The same (Safety-Kleen Premium Gold) solvent is used as in previous inspections. See also the corresponding discussion for Section 1.**

### Observed Installation of New Gen-Set

SL observed the poured concrete pad and "plumbing " for a new emergency engine/generator ("Gen-Set.") See attached. SL asked about the permitting status of this engine and received data that it is a 1,072 hp/800 kW engine. After the inspection, both HBPW personnel and SL concluded that these values correspond to 2.73 mmBtu/hr capacity. Even at an assumed 60% efficiency the maximum heat input capacity for this engine should be about 4.4 mmBtu/hr (well < 10 mmBtu/hr) and so this equipment is exempt from PTI per Rule 285(g). Note, this equipment has been included in the Draft/Proposed ROP and appropriate RICE notification(s) have been submitted.

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At the time of the inspection, SL considers the facility to be in compliance with applicable requirements. This finding is based on the observations of August 8, 2014, as well as the other activities and document reviews contained in the FCE Summary Report.

ATTACHMENTS:

1. Opacity Calibration and Matrix Reports for 8/5/14 through 8/8/14 (current)
2. Unit 5 Average Data Reports for 8/5/14 through 8/8/14 (current)
3. CEMS Calibration Detail Report for 8/8/14
4. Email RE: New generator for WWTP

NAME  DATE 8/11/14 SUPERVISOR 

