

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

A393444963

|  |                               |                           |
|--|-------------------------------|---------------------------|
| FACILITY: Great Lakes Castings LLC                               |                               | SRN / ID: A3934           |
| LOCATION: 800 N. Washington Ave., LUDINGTON                      |                               | DISTRICT: Cadillac        |
| CITY: LUDINGTON  |                               | COUNTY: MASON             |
| CONTACT: Robert Ellis , Environmental, Health and Safety Manager |                               | ACTIVITY DATE: 06/19/2018 |
| STAFF: Caryn Owens   | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR       |
| SUBJECT: Scheduled Inspection and Records Review                 |                               |                           |
| RESOLVED COMPLAINTS:   |                               |                           |

On Tuesday, June 19, 2018, Caryn Owens and Chance Collins of the Department of Environmental Quality (DEQ) – Air Quality Division (AQD) conducted a scheduled field inspection of Great Lakes Castings LLC (GLC) (SRN: A3934) located at 800 North Washington Avenue, Ludington, Mason County, Michigan. The site is located on the east side of North Washington Avenue, approximately 1/10 mile north of East Tinkham Avenue and consists of one main building in the central portion of the site. The field inspection and records review were to determine compliance with the Renewable Operating Permit (ROP) MI-ROP-A3934-2015. The site is currently an area (a synthetic minor) source for hazardous air pollutants (HAPs), and is subject to the following National Emission Standard for Hazardous Air Pollutants (NESHAP): National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries in Area Sources 40 CFR Part 63, Subpart ZZZZZ; and for Stationary Reciprocating Internal Combustion Engines in 40 CFR, Part 63, Subpart ZZZZ (RICE MACT). It should be noted that the DEQ does not have delegation of the area source RICE MACT and this MACT was not reviewed during the field inspection and records review. Additionally, the following emission units are subject to federal Compliance Assurance Monitoring (CAM) Rule in 40 CFR Part 64: EUHUNTERSAND, EUHUNTER, EUDISA, EUCLEANING, and EUCUPOLA.

**Summary:**

The activities covered during the field inspection and records review for the facility indicates the facility was in compliance with ROP MI-ROP-A3934-2015 and no additional actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

**On-site Inspection:**

There hasn't been too much change since my last inspection of Great Lakes Castings LLC (GLC). GLC is a gray iron foundry that produces cast iron products. The major production operations are raw material handling and preparation, mold and core production, metal melting, pouring and cooling, and casting finishing/heat treating. Molten iron is produced in a cupola controlled with an afterburner, wet cap, quencher, venturi scrubber and demister. The molten metal is stored in a holding furnace. Green sand molds are produced on two separate mold lines, a Hunter and a DISA line which are controlled by baghouses and scrubbers. The molten metal is poured in the Hunter and DISA lines from portable ladles. The molds utilize shell and cold box cores which are also produced on-site. Finishing operations at the facility primarily consist of three Rotoblast (shot blasting) units.

Prior to entering the facility, I observed that the cupola appeared to be in operation (substantial water vapor plume). During the field inspection it was cloudy with occasional rain with calm winds about 3 miles per hour out of the east-northeast, and approximately 65 degrees Fahrenheit. At the time of the inspection I met with Mr. Bob Ellis and Ms. Rachel Cole, both are the Environmental, Health, and Safety Managers for GLC who provided records, accompanied AQD on the inspection, and answered our questions. During the inspection, I observed the emission units listed in the ROP, which are discussed in more detail below, in each section of this inspection report. AQD used our own personal protection equipment (PPE) during the inspection, which included: a hardhat, steel toe boots, hearing protection, safety glasses and flame resistant (FR) jackets.

Additionally, GLC was flagged as a potential source that may use per- and polyfluoroalkyl substances (PFAS) based on a SCC code used in MAERS. I asked Mr. Ellis to see if he knew what process/material would be related to PFAs, and he stated that PFAs have not been, nor currently are, used at the facility.

The facility is claiming the following exemptions at the facility:

- Three metal natural gas-fired heat ovens with less than 10,000,000 Btu/hr input meets exemption Rule 336.1282(2)(b)(i).
- One 1,000 gallon propane storage tank meets exemption 336.1284(2)(b).
- Gas fired air make-up and Heating, Ventilation, and Air Conditioning (HVAC) Units with less than 10,000,000 heat input meets exemption Rule 336.1282(2)(b)(i).
- An existing Spark Ignition emergency generator engine with less than 500 horsepower meets exemption 336.1285(2)(g), this emission unit is covered in the ROP, however was not reviewed at this time since AQD does not have delegation of the RICE MACT for area sources of HAPs.
- Two small cold cleaners that meet exemption Rules 336.1281(h) and 336.1285(r)(iv), but these exemptions have reporting requirements and contains a small paragraph discussed below.
- A Rust Inhibitor application system, the pattern making process, the shell core machines, and core wash area meet

exemption Rule 336.1290, but this exemption has recordkeeping requirements, and is discussed in a short paragraph below.

**Source Wide Conditions:**

**I. Emission Limits:**

HAPS emissions are limited to 10 tons per individual HAP and 25 tons aggregate HAPS. Compliance with these limits is demonstrated through calculation of emissions based on emission factors associated with iron and sand binder usage rates. Records of HAPS emission over the last 12 months are attached. The most prominent individual HAP emitted by the facility is Benzene. Emissions of Benzene over the last 12 months total 1.3 tons per 12-month rolling time period. Total HAPS for the facility total 5.6 tons per 12-month rolling time period.

Opacity is also limited to 20% from any building. Testing for this is required once every six months, and was completed May 16, 2018 and demonstrated compliance.

**II. Material Limits:**

There are no material limits associated with Source-Wide Conditions.

**III. Process/Operational Restrictions:**

The facility has a written scrap procurement plan that follows the mercury scrap management option of not accepting scrap that contains motor vehicle scrap. Compliance with this plan is required to be certified and reported semi-annually. The most recent reporting was received by AQD for the period July 1, 2017 through December 31, 2017. The report and certification were submitted in a timely manner.

**IV. Design/Equipment Parameters:**

There are no design limits associated with Source-Wide Conditions.

**V. Testing/Sampling:**

Testing for fugitive emissions (opacity) from all buildings is required once every six months. Testing for this is required once every six months, and was performed in May 16, 2018, which demonstrated compliance.

**VI. Monitoring/Recordkeeping**

Records regarding HAP emission calculations and scrap procurement and segregation are being kept by the facility and demonstrate compliance with applicable standards. A report regarding this is submitted every six months per the Area Source Iron and Steel Foundry Area Source MACT (40 CFR Part 63, Subpart ZZZZZ).

**VII. Reporting:**

Semi-annual deviation reports, annual certifications of compliance and MACT reports were reviewed and documented as they were received. The required reporting was submitted in a timely and correct manner.

**VIII. Stack/Vent Restrictions:**

There are no specific stack parameters for Source-Wide Conditions.

**IX. Other Requirements:**

Malfunction Abatement Plans (MAP) are required for EUCUPOLA, EUCOLDBOXCORE, EUHUNTERSAND, EUDISASORM, FGDUSTAR, and FGCLEAN&FINISH. Plans for each have been developed and copies are on file with the AQD Cadillac District Office. There have not been any changes or updates to MAPs in the last 12 months. The latest MAPs on file were from 2013.

**EUCUPOLA:** Cupola and associated demister, afterburner, quencher, and venturi scrubber, metallic scrap storage area, coke storage area, and electric holding melting furnace. During the initial inspection of the EUCUPOLA, the Cupola was operating on blast.

**I. Emission Limits:**

The emission unit currently has the following emission limits:

| Pollutant               | Limit                            | Highest Reported Record            |
|-------------------------|----------------------------------|------------------------------------|
| Particulate Matter (PM) | 50.8 tons per year (tpy)         | 33.79 tpy                          |
| PM                      | 1.4 pounds/ Ton of metal charged | 0.931 pounds/ Ton of metal charged |

|                                   |  |   |
|-----------------------------------|--|---|
| PM                                | 28 pounds per hour   | 13.43 pounds per hour   |
| PM                                | 0.25 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis | 0.179 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis |
| PM-10                             | 39.2 tpy   | 21.3 tpy  |
| PM-10                             | 1.08 pounds/ Ton of metal charged  | 0.986 pounds/ Ton of metal charged  |
| PM-10                             | 21.6 pounds per hour   | 14.22 pounds per hour   |
| Sulfur Dioxide (SO <sub>2</sub> ) | 54.4 tpy   | 0.37 tpy  |
| SO <sub>2</sub>                   | 1.5 pounds/ Ton of metal charged   | 0.0133 pounds/ Ton of metal charged   |
| SO <sub>2</sub>                   | 30.0 pounds per hour   | 0.191 pounds per hour   |
| Carbon Monoxide (CO)              | 408.0 tpy  | 10.9 tpy  |
| CO                                | 11.25 pounds/ Ton of metal charged   | 6.31 pounds/ Ton of metal charged   |
| CO                                | 225 pounds per hour  | 92.32 pounds per hour   |
| Volatile Organic Compounds (VOC)  | 13.6 tpy   | 0.61 tpy  |
| VOC                               | 0.42 pounds/ Ton of metal charged  | 0.022 pounds/ Ton of metal charged  |
| VOC                               | 8.4 pounds per hour  | 0.32 pounds per hour  |
| Lead (Pb)                         | 0.76 tpy   | 0.76 tpy  |
| Pb                                | 0.02 pounds/ Ton of metal charged  | 0.0018 pounds/ Ton of metal charged   |
| Pb                                | 0.4 pounds per hour  | 0.0278 pounds per hour  |
| Arsenic                           | 0.0036 pounds per hour   | 0.00059 pounds per hour   |
| Manganese                         | 0.87 pounds per hour   | 0.544 pounds per hour   |
| PM or Total Metal HAP             | 0.8 or 0.06 pounds per ton of metal charged                                  | 0.807 pounds of Total Metal HAPs per ton of metal charged                     |

Compliance with the emission limits is demonstrated through stack testing and calculations based on emission factors developed during stack testing. Stack testing was completed November 9 and 10, 2016 for majority of the above pollutant emissions. Lead, arsenic, and manganese emissions were determined during the November 2015 stack testing. Records of annual emissions (attached) indicate compliance with each of the limits.

**II. Material Limits:**

The sulfur content of the coke is limited to 2.5%, by weight. The facility currently has two separate supplies of coke. One from a foreign source and one from an American source. They are used separately since they have different burning properties. According to Mr. Ellis, they have similar sulfur content. Analytical results provided by GLC indicate that the sulfur content averaged 0.67% from one source and 0.695% by weight from the other source, which demonstrates compliance with the limit.

The facility is restricted to melting no more than 20 tons of metal per hour and 6,050 tons per month. Records maintained by GLC indicate that the highest melt rate observed was 19.0 tons per hour and 5,375 tons per month between May 2017 through May 2018, which demonstrates compliance with the limit.

**III. Process/Operational Restrictions:**

Emission control device operating parameters are specified in the ROP. At the time of the inspection I recorded the following operational parameters during the field inspection.

| Parameter       | Permit Limit   | Actual (on Blast) |
|-----------------|----------------|-------------------|
| Venturi Delta P | > 33 inches wc | 48" wc            |

|                         |                                |                |
|-------------------------|--------------------------------|----------------|
| Venturi Flow            | > 200 gallons per minute (gpm) | 269.0 gpm      |
| Demister Delta P        | < 1.0 inches wc                | 0.55" wc       |
| Demister Flow           | > 40 gpm                       | 68.9 gpm       |
| Quencher Flow           | > 200 gpm                      | 225.4 gpm      |
| Cupola Upper Stack Temp | > 1150 degrees F               | 1517 degrees F |

The Operational parameters observed during the field inspection were similar to the operational parameters observed during stack testing. The facility follows an O&M Plan, for the cupola venturi scrubber and the plan has daily, monthly and annual maintenance checks, and are recorded and kept onsite.

#### **IV. Design/Equipment Parameters:**

Devices to measure flow rate, pressure drop, and temperature across the various pieces of equipment were all installed and appeared to be operating properly.

#### **V. Testing/Sampling:**

The ROP requires testing for each of the pollutant limits every 5 years. The most recent test performed was to show compliance with the 40 CFR Part 63, Subpart ZZZZZ, which was completed on November 9 and 10, 2016 and demonstrated compliance with the associated emission limits. Lead, arsenic, and manganese emissions were determined during the November 2015 stack testing.

#### **VI. Monitoring/Recordkeeping:**

Required monitoring within the ROP includes the charge weight and time and the ratio of iron to coke charged. Monitoring of these items is maintained electronically. The computer monitors the time and weight of each material charged to the cupola. The computer system is also set up so that the facility cannot exceed the 20 ton per hour melt rate limit. Records of monitored data were available at the time of the inspection and examples are attached. Inspection of the records demonstrates that the facility is maintaining the required records. Records associated with CAM are also being kept and were available on request.

As previously stated, the facility monitors and records the sulfur content of each shipment of coke received.

The facility calculates monthly and 12-month rolling emissions for PM, PM-10, SO<sub>2</sub>, CO, VOC, and Pb using the most current stack test emission factors. As previously discussed above, the Cupola was operating within the permitted parameters. Any deviations to the operating established operating parameters are discussed below.

#### **VII. Reporting:**

The facility is required to report calendar year emissions to the AQD via the Michigan Air Emission Reporting System. The report was previously reviewed and documented. Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. Reporting associated with CAM was performed properly and was previously reviewed and documented. No CAM excursions or exceedances, and no monitor downtime were reported within May 2017 through May 2018. Additionally, reporting for 40 CFR Part 63, Subpart ZZZZZ was in compliance, and no deviations were reported within the reporting time period regarding segregation of certain types of scrap metal.

#### **VIII. Stack/Vent Restrictions:**

Stack parameters at the facility have not been modified and appear correct.

#### **IX. Other Requirements:**

There has been no need to modify the existing CAM plan.

**EUCOLDBOXCORE:** Cold box core machines with packed tower scrubber including ancillary core making equipment. During the inspection, the facility had one automated core machine in operation, and four manual core machines, which were not operating during the inspection. According to Mr. Ellis, two of the four manual core machines will operate at one time. This system is controlled by a sulfuric acid recirculating packed tower scrubber.

#### **I. Emission Limits:**

The facility is limited to 10 tons of VOC per year from this emission unit. Emissions are calculated using the resin manufacturer emission factor. Records (attached) indicate the 12 month rolling VOC emission rate was 0.6 tpy. The N, n-dimethylisopropanolamine (DMPA) limit is 0.50 tpy. The attached records indicate 12-month rolling DMPA emissions were 0.0 tpy. The ROP indicates that there must be no visible emissions from the emission unit. Records of

visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

#### **II. Material Limits:**

The emission unit is limited to using only 23,000 pounds of resin per calendar month. Based on the records reviewed, the amount of resin used in May 2018 was 9,600 pounds of resin, which is below the permitted limit.

#### **III. Process/Operational Restrictions:**

During the inspection, the facility had one automated core machine in operation, and four manual core machines, which were not operating during the inspection. According to Mr. Ellis, two of the four manual core machines will operate at one time. The scrubber was operating during the inspection and the pH of the scrubber water was 0.3. According to Mr. Ellis, when the pH is around 4, then they will replace the acid in the scrubber. The permitted limit to maintain the scrubber liquid pH is below 4.5.

#### **IV. Design/Equipment Parameters:**

The pH meter on the scrubber was installed and appeared to be operating properly.

#### **V. Testing/Sampling:**

Non-certified visible emissions observations are required on a weekly basis, whenever the equipment is operating. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. Observations made during the inspection also confirmed no visible emissions were present.

#### **VI. Monitoring/Recordkeeping:**

Records indicate that GLC is monitoring and recording the pH of the scrubbing liquor, the VOC and DMPA emissions from the emission unit, and the presence of any visible emissions as required by the permit.

The facility records the differential pressure on a daily basis when the scrubber is operating. The scrubber differential pressure was 4.6 inches water column (wc). According to Mr. Ellis, the visible inspections of the packed bed scrubber are required on a quarterly basis, but happen more frequent than that.

#### **VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. No deviations were reported for EUCOLDBOXCORE within the reporting period from May 2017 through May 2018.

#### **VIII. Stack/Vent Restrictions:**

Stack parameters at the facility have not been modified and appear correct.

#### **IX. Other Requirements:**

There are no other requirements for EUCOLDBOXCORE.

**EUHUNTERPOURING:** Iron pouring process of the Hunter line. There are five pouring lines for EUHUNTERPOURING, but the facility typically uses one to three of the five lines.

#### **I. Emission Limits:**

PM emissions are limited to 0.10 pounds per 1000 pounds of exhaust gases. Stack testing on June 16 – 18, 2015 demonstrated emissions were 0.0157 pounds per thousand pounds exhaust gas. Furthermore, the absence of visible emissions during the testing and the absence of visible emissions based upon observations by facility personnel indicate continuous compliance with the emission limit. I observed no visible emissions during the inspection.

#### **II. Material Limits:**

There is no material limits associated with EUHUNTERPOURING.

#### **III. Process/Operational Restrictions:**

The Hunter line has a pouring rate limit of 20 tons per hour this is equivalent to the cupola melt rate limit. Cupola melt rate was observed at 19.0 tons per hour between May 2017 through May 2018.

#### **IV. Design/Equipment Parameters:**

There are no design/equipment parameters for EUHUNTERPOURING.

#### **V. Testing/Sampling:**

As previously stated, the most recent stack test was completed June 16 – 18, 2015, and the facility was in compliance with the emission limits. The facility is required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

Records of the amount of metal poured are being maintained.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. No deviations were reported during the reporting period from May 2017 through May 2018. Test protocols were submitted to the DEQ within required timeframes.

**VIII. Stack/Vent Restrictions:**

There are no Stack parameter restrictions for EUHUNTERPOURING.

**IX. Other Requirements:**

There are no other requirements for EUHUNTERPOURING.

**EUHUNTERSAND:** Hunter line sand system controlled by the CSI Baghouse.

**I. Emission Limits:**

PM emissions from this emission unit are limited to 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Stack testing on June 16 – 18, 2015 demonstrated emissions were 0.0027 pounds per thousand pounds exhaust gas. The facility demonstrates continuous compliance with this limit by maintaining the differential pressure across the CSI baghouse within the 0.2 to 7 inches wc range specified in the MAP, and 1 – 6 inches wc range specified in the CAM plan. Based upon a review of the records, the differential pressure has ranged from 1.0 inches wc to 5.8 inches wc, and was observed at 2.0 inches wc at the time of the inspection.

**II. Material Limits:**

There are no material limits associated with EUHUNTERSAND.

**III. Process/Operational Restrictions:**

The facility is not allowed to operate the emission unit unless the CSI baghouse differential pressure is within the range specified in the MAP. As mentioned previously, the CSI baghouse was operating within the acceptable range.

**IV. Design/Equipment Parameters:**

A device to measure differential pressure across the baghouse was installed and appeared to be operating properly.

**V. Testing/Sampling:**

PM testing is required every 5 years. As previously stated, stack testing was completed June 16 – 18, 2015, and testing demonstrated compliance with the PM emissions limit.

**VI. Monitoring/Recordkeeping:**

The facility is required to continuously monitor the differential pressure across the baghouse and record the parameter once per day during operation. At the time of the inspection, the monitor was operating and the differential pressure was 2.0 inches wc. Based on the records reviewed, no malfunctions, excursions or exceedances of the monitoring data were documented.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. Reporting associated with CAM is being performed properly and was previously reviewed and documented. No monitor downtime, excursions or exceedances were reported to the DEQ within the past year of this inspection report. Test protocols were submitted to the DEQ within required timeframes.

**VIII. Stack/Vent Restrictions:**

There are no Stack parameter restrictions for EUHUNTERSAND

**IX. Other Requirements:**

There has been no need to modify the existing CAM plan.

**EUHUNTERMOLDCOOL:** Hunter line mold cooling. No control equipment is associated with this emission unit.

**I. Emission Limits:**

This emission unit is limited to 0.10 pounds of particulate per 1,000 pounds of exhaust gases. Compliance with this limit is based on non-certified visible emission readings. Records of these readings are attached to this report and demonstrate zero visible emissions. No visible emissions were noted during the inspection.

**II. Material Limits:**

There are no material limits associated with EUHUNTERMOLDCOOL.

**III. Process/Operational Restrictions:**

There are no process restrictions for EUHUNTERMOLDCOOL.

**IV. Design/Equipment Parameters:**

There are no equipment restrictions for EUHUNTERMOLDCOOL.

**V. Testing/Sampling:**

The facility is required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating and conduct Method 9 readings if any visible emissions are observed. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. No deviations were reported for EUHUNTERMOLDCOOL from May 2017 through May 2018.

**VIII. Stack/Vent Restrictions:**

Stack parameters at the facility have not been modified and appear correct.

**IX. Other Requirements:**

There are no other requirements for EUHUNTERMOLDCOOL.

**EUEASTCOREOVEN:** East core oven and associated equipment. No pollution control is associated with this emission unit.

**I. Emission Limits:**

The ROP states that there shall be no visible emissions from the core oven. At the time of the inspection, I observed no visible emissions from the oven stack.

**II. Material Limits:**

There are no material limits associated with EUEASTCOREOVEN.

**III. Process/Operational Restrictions:**

There are no operational parameters associated with EUEASTCOREOVEN.

**IV. Design/Equipment Parameters:**

There are no design limits associated with EUEASTCOREOVEN.

**V. Testing/Sampling:**

The facility is required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

There are no monitoring requirements for EUEASTCOREOVEN.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. No deviations were reported for EUEASTCOREOVEN from May 2017 through May 2018.

**VIII. Stack/Vent Restrictions:**

Stack parameters at the facility have not been modified and appear correct.

**IX. Other Requirements:**

There are no other requirements for EUEASTCOREOVEN.

**DISAEWETDC:** Disamatic line shakeout and return mold sand system operations controlled by the east wet dust collector.

**I. Emission Limits:**

The ROP emission limits for PM-10 are 0.10 pound per 1,000 pounds of exhaust gases, calculated on a dry gas basis and 64.8 tpy. Demonstration of compliance is through stack testing and non-certified visible emissions readings. The facility performed stack testing June 16 – 18, 2015, which demonstrated PM-10 emissions were 0.019 pounds per 1000 pounds of exhaust gases.

The East Wet Dust Collector controls emissions from DISA line cooling, most of the shakeout, and sand reclaim. Opacity from the East Wet Dust Collector is limited to 5% during normal operation and 20% during cleaning of the dust collector. This is demonstrated through weekly non-certified VE's. Records of these are being kept and are attached.

**II. Material Limits:**

There are no material limits associated with EUDISAEWETDC.

**III. Process/Operational Restrictions:**

The wet dust collector was in operation at the time of the inspection with a flow rate of 178 gallons per minute (gpm). The MAP specifies a normal operating range of 100 – 300 gpm and the CAM Plan requires 150 – 275 gpm. Operation of the emission unit is also limited to 6,000 hours per year. The attached records indicate a 12-month rolling average of 5,519 hours.

**IV. Design/Equipment Parameters:**

A device to measure flow through the collector was installed and was operating properly as demonstrated by compliant flow rate and no visible emissions present.

**V. Testing/Sampling:**

The facility performed stack testing June 16 – 18, 2015, which demonstrated PM-10 emissions were 0.019 pounds per 1000 pounds exhaust gases. The facility is also required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

The facility is required to continuously monitor and record the liquid flow rate once per day through the collector during operation. Inspection of the emission unit concluded that the monitor was installed and operating and records indicate that the flow rate is recorded. Flow rate through this collector averages around 178 gpm. Based on the records reviewed, no malfunctions, excursions or exceedances of the monitoring data were documented. The records are attached.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. Reporting associated with CAM is being performed properly and was previously reviewed and documented. No monitor downtime, excursions or exceedances were reported to the DEQ within the past year of this inspection report. Test protocols were submitted to the DEQ within required timeframes. VIII. Stack/Vent Restrictions: Stack parameters at the facility have not been modified and appear correct.

**IX. Other Requirements:**

There has been no need to modify the existing CAM plan.

**FGDISALINE:** This Flexible Group includes the: Hunter line mold cooling, shakeout, return mold sand system, and sandmulling (associated with EUHUNTERDUSTAR); Disamatic line pouring, mold cooling, and sand mulling operations (associated with EUDISADUSTAR); and sample shot blast unit (associated with EUOTHERDUSTAR). This flexible group is controlled by the Dustar Baghouse.

**I. Emission Limits:**

The ROP emission limits for PM-10 are 0.0205 pound per 1,000 pounds of exhaust gases, calculated on a dry gas basis and 7.5 tpy for EUDISALINE, 6.5 tons of PM-10 per year for EUDISASUSTAR, and 3.6 tons of PM-10 per year for EUOTHERSTAR. The emission limits for VOCs are 14.0 pounds per hour and 42 tpy for EUDISASTAR. The emission limits for Formaldehyde were 2.0 milligrams per cubic meter. Demonstration of compliance is through stack testing, through calculations using emission factors derived from stack testing, and via non-certified visible emissions readings. The facility performed stack testing June 16 – 18, 2015, which demonstrated PM-10 emissions were 0.0066 pounds per 1000 pounds of exhaust gases. The stack testing had no detection of formaldehyde emissions, and demonstrated the VOC emissions were 3.87 pounds per hour. Based on the records reviewed, VOC emissions were 18.4 tpy.

The Dostar Baghouse controls emissions from FGDISALINE. Opacity from the Dostar Baghouse is limited to 5% during normal operation. This is demonstrated through weekly non-certified VE's. Records of these are being kept and are attached.

**II. Material Limits:**

There are no material limits associated with FGDISALINE.

**III. Process/Operational Restrictions:**

The Dostar Baghouse was in operation at the time of the inspection with a differential pressure between 4.2 and 4.3 inches wc. The MAP specifies a normal operating range of 0.2 to 7.0 inches wc and the CAM Plan indicates proper function of the baghouse between 1.0 inches to 6.0 inches wc. Based on the records reviewed between May 2017 through May 2018, the Dostar Baghouse ranged between 3.3 to 6.0 inches wc.

**IV. Design/Equipment Parameters:**

A device to measure the differential pressure across the baghouse was installed and was operating properly as demonstrated by compliant differential pressure readings and no visible emissions present.

**V. Testing/Sampling:**

The facility performed stack testing June 16 – 18, 2015, which demonstrated PM-10 emissions were 0.0066 pounds per 1000 pounds exhaust gases. The facility is also required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

The facility is required to continuously monitor and record the differential pressure once per day across the baghouse. Inspection of the emission unit concluded that the gauge was installed and operating and records indicate that the differential pressure is recorded. Based on the records reviewed, no malfunctions, excursions or exceedances of the monitoring data were documented.

Records associated with PM-10, VOC and formaldehyde emission calculations are maintained and demonstrate compliance with the emission limits. The records are attached.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. Reporting associated with CAM is being performed properly and was previously reviewed and documented. No monitor downtime, excursions or exceedances were reported to the DEQ within the past year of this inspection report. Test protocols were submitted to the DEQ within required timeframes.

**VIII. Stack/Vent Restrictions:**

Stack parameters at the facility have not been modified and appear correct.

**IX. Other Requirements:**

There has been no need to modify the existing CAM plan.

**FGCLEAN&FINISH:** This Flexible Group includes Shot blast machine used to clean castings prior to finishing (associated with EUCLEANING) and casting finishing process using grinding wheels (associated with EUFINISH). This flexible Group is controlled by the AAF baghouse.

**I. Emission Limits:**

PM-10 emissions are limited to 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Compliance with this emission limit is ensured by proper installation, operation and maintenance of the AAF baghouse.

**II. Material Limits:**

There are no material limits associated with FGCLEAN&FINISH.

**III. Process/Operational Restrictions:**

The ROP requires that the baghouse be installed and operating properly and that the differential pressure across the baghouse is within the normal operating range. At the time of the inspection, the differential pressure of the AAF baghouse was 4.0 inches wc, which is within the approved range specified in the MAP of 0.2 to 7.0 inches of water and 1 to 6 inches in the CAM plan.

**IV. Design/Equipment Parameters:**

A device to measure pressure drop was installed and appeared to be operating properly.

**V. Testing/Sampling:**

The facility is required to perform non-certified visible emissions observations on a weekly basis when the emission unit is operating and conduct Method 9 readings if visible emissions are detected. Records of visible emissions readings are maintained and indicate that no visible emissions were observed. I observed no visible emissions during the inspection.

**VI. Monitoring/Recordkeeping:**

The differential pressure gauge was installed and operating at the time of the inspection. Records reviewed between May 2017 through May 2018, demonstrate that the differential pressure is recorded at least once per day during operation as required by the ROP. The pressure drop averages 3.0 – 6.0 inches wc. At the time of the inspection the differential pressure was 4.0 inches wc.

**VII. Reporting:**

Semi-annual deviation reports and annual certifications of compliance were previously reviewed and documented. Reporting associated with CAM is being performed properly and was previously reviewed and documented. No monitor downtime, excursions or exceedances were reported to the DEQ within the past year of this inspection report. Test protocols and completed test reports were submitted to the DEQ within required timeframes.

**VIII. Stack/Vent Restrictions:**

There are no stack/vent restrictions associated with FGCLEAN&FINISH.

**IX. Other Requirements:**

There has been no need to modify the existing CAM plan.

**FGCOLDCLEANERS:**

There are two small cold cleaners at the facility. These are owned and serviced by an outside contractor. At the time of the inspection, these appeared in good repair and the covers on them were closed. Associated MSDS information for them was available.

**FGRULE290:**

This flexible group covers EURIAPPLICATION, EUPATTERNMAKING, EUSHELLCORE, EURULE290, EUCOREWASH. GLC maintains material VOC content and use records (example attached) that demonstrate emissions for each emission unit are below the Rule 290 thresholds.

NAME Cauph Owens DATE 8/19/18 SUPERVISOR SN