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

N572436160

FACILITY: CITY OF ST. LOUIS		**SRN / ID:** N5724
LOCATION: 412 N. MILL ST., SAINT LOUIS		**DISTRICT:** Lansing
CITY: SAINT LOUIS		**COUNTY:** GRATIOT
CONTACT: Keith Risdon , Director of Public Services		**ACTIVITY DATE:** 08/18/2016
STAFF: Michelle Luplow	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Announced, scheduled compliance inspection to determine City of St. Louis' compliance with opt-out permit 546-95B.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow
Personnel Present: Kurt Giles (kgiles@stlouismi.com), City Manager
Keith Risdon (krisdon@stlouismi.com), Director of Public Services

Purpose: Conduct an announced, scheduled compliance inspection by determining compliance with City of St. Louis' Permit to Install (PTI) No. 546-95B. In addition to determining compliance with the permit, special attention was paid to whether or not the City of St. Louis had taken actions to address the non-compliance issues with the stack heights of permitted engines 1 & 7 from the June 2014 site visit, and also to have discussions on the current state of the engines (overhauls, RICE MACT NESHAP compliance, etc). This inspection is was conducted as a partial compliance evaluation (PCE) as part of a full compliance evaluation (FCE).

Facility Background/Regulatory Overview: The City of St. Louis (St. Louis) was a 208a registered source prior to Rule 208a being rescinded. It was determined during the January 2015 inspection an opt-out permit would be the best option to replace their 208a status, as their potential to emit (PTE) was greater than major source thresholds for NOx: the two PTI's (546-95 and 546-95A) combined allowed NOx emissions greater than 100 tons per year. These engines are also not considered emergency engines by the RICE MACT NESHAP Subpart ZZZZ; therefore, they are not limited to 500 hours per year and this limit therefore cannot be used in determining the facility's PTE. St. Louis' opt-out permit was issued July 20, 2015.

They currently have 6 electric generators that are used as backup in instances when the local power plant is not able to generate enough electricity to meet demand (peak shaving), and they are occasionally run for maintenance and readiness testing. The operation of the engines will include providing power for the thermal in-situ remediation of the Velsicol Superfund site in St. Louis.

During the 2014 inspection I learned that engines 1, 7, 8 and 9 were upgraded with DOCs/Silencers (catalytic oxidation controls) for RICE MACT NESHAP ZZZZ. The updates inadvertently resulted in the stack heights of engines 1 and 7 being lower than the permitted requirements. It was determined that engines 1 and 7 did not meet their minimal stack height requirements of 39 feet each. The total height of the stack from silencer to exhaust stack exit was determined to be 34' each. A violation notice was issued for this in January 2015.

Also during the RICE MACT NESHAP ZZZZ upgrades, they found that engine 1 had lubrication oil leaking to the DOC oxidation catalyst, rendering the catalyst ineffective. Because of this finding K. Giles said that engines 7, 8 and 9 were also inspected to make sure that this problem would not occur on these as well. They determined that all 4 engines would have to be overhauled. The overhaul, K. Risdon and K. Giles explained, was to rebore the cylinder heads and install sleeves on all cylinders to create a tight seal that the oil would minimally leak through, thus preventing the catalyst from being poisoned. The engines were overhauled in the following order: 7, 1, 8, 9. K. Risdon said the overhauls took place between April 2016 and July 2016, with engine 9's overhaul taking place the first week of July. After each overhaul was completed, St. Louis tested the engines to ensure they were operating properly; however, engine 9 had a bearing problem. K. Risdon showed me where the bearing shaft had been removed from engine 9; a new bearing shaft is on order and they have plans to install it in October. Once they can show that engine 9 is properly operating, they will have Fairbanks Morse (FME) come and work on the engines to do any necessary work on them required to meet the RICE NESHAP; this will include a preliminary RICE NESHAP evaluation to ensure compliance with the RICE NESHAP, and increasing the stack heights on engines 1 and 7 to their permit-required heights of 39' above ground level.

The engines are currently subject to the area source RICE MACT NESHAP Subpart ZZZZ and Michigan has the delegated authority from the EPA to enforce this regulation.

I made St. Louis aware that once the engines go online, they must conduct a reconstruction analysis to demonstrate that the fixed capital cost of the new components does not exceed 50% of the fixed capital cost (capital needed to provide all the depreciable components of an existing source) that would be required to construct a comparable new source. If reconstruction is triggered this may result in St. Louis' engines becoming subject to New Source Performance Standards (NSPS).

Equipment located onsite

Engine #	HP	Fuel	Federal Regulation
1	1920	Natural gas & diesel	Area source RICE MACT NESHAP ZZZZ
2	1000	Diesel only	Area source RICE MACT NESHAP ZZZZ
3	1400	Diesel only	Area source RICE MACT NESHAP ZZZZ
7	1600	Natural gas & diesel	Area source RICE MACT NESHAP ZZZZ
8	1920	Diesel only	Area source RICE MACT NESHAP ZZZZ
9	2095	Diesel only	Area source RICE MACT NESHAP ZZZZ

Inspection: This was an announced compliance inspection. At approximately 1:00 p.m. on August 18, 2016 I met with Kurt Giles and Keith Risdon at St. Louis' City Hall. We then walked to the electric generating station. During the May 2014 inspection I had provided K. Giles with a DEQ "Environmental Inspections: Rights and Responsibilities" brochure.

FGENGINES1237: Engine units 1, 2, 3, 7
K. Risdon and K. Giles said that they have no plans to operate engines 2 and 3 and that they will be working on making engines 2 and 3 inoperable by removing them from the switching gear. I told them that this would be an acceptable way of rendering them inoperable in order to get them removed from the permit, even if the engines are still located onsite.

Process/Operational Restrictions
St. Louis is required to submit a PM/MAP to the district within 30 days of the engines coming online. I reminded K.Giles and K. Risdon of this requirement. They said there are plans for the engines go online by February 2017.

Monitoring/Recordkeeping
St. Louis is required to maintain a record of the diesel fuel maximum total sulfur content in wt% for each shipment of fuel. K. Risdon provided me with a chemical property sheet of the diesel that they use which indicates that the diesel contains a maximum of 15 ppm (0.0015%) sulfur. The Material Limits specified in the permit is 0.50 wt%.

Records are required to be kept on a monthly and 12-month rolling time period basis for both diesel usage and natural gas usage for engines 1, 2, 3 and 7. K. Risdon provided me with an Excel spreadsheet that contains this information on a monthly basis (attached), but not on a 12-month rolling. I calculated the 12-month rolling usage rates based on St. Louis' monthly usage data for each fuel and will inform K. Risdon that 12-month rolling records must also be kept to meet permit requirements for these 4 engines and ensure that he understands that the 12-month rolling for these engines is a separate 12-month rolling calculation from that required for engines 8 and 9. Only engines 1 and 7 out of this flexible group were operated during the 12-month rolling period of August 2015 – July 2016. The 12-month rolling for total diesel used was 5,750 gallons. The 12-month rolling total natural gas usage was 1,856,000 scf. The permit has a material limit of 13,267,000 scf natural gas usage per 12-month rolling time period.

CO and NOx emission calculations are also required to be kept on a monthly and 12-month rolling basis, and the emission factors to be used to calculate these emissions should be obtained from vendor data or stack testing, according to Appendix A of the PTI. If neither vendor nor stack testing data is available, St. Louis must get approval from the AQD District Supervisor prior to using the emission factor. Per Appendix A, St. Louis is also required to document the source of each emission factor used. I will provide a follow-up report once K. Risdon is able to find the documents he used for the emission factors presented in their emission calculations spreadsheet.The limit is 4.3 tpy (12-month rolling) CO and 39.0 tpy (12-month rolling) NOx. Table 1 contains 12-month rolling CO and NOx emissions from each engine and a collective total.

Table 1. CO and NOx emissions totals across Engines 1, 2, 3, 7

Engines	**NOx lbs (tons) (Aug '15 – Jul '16)**	**CO lbs (tons) (Aug '15 – July '16)**
Engine 1	4,016.7 (2.0)	709.6 (0.4)
Engine 2	0.0	0.0
Engine 3	0.0	0.0
Engine 7	3,710.7 (1.8)	697.9 (0.35)
Totals (tons)	3.8	0.8

Reporting
The City of St. Louis was required to notify the AQD District Supervisor within 7 days following the completion of testing for the overhauls; however, they did not notify us. Notifying me during the inspection of overhaul completion is sufficient for meeting this condition.

St. Louis is also required to notify the AQD District Supervisor within 7 days of completion of adjusting the stack heights on engines 1 and 7. I will remind K. Risdon that he must notify me in writing within 7 days of this activity being completed.

Stack/Vent Restrictions
The 39' stack height requirement for engines 1 and 7 is not required until after testing has been completed for the engine overhauls and normal operation (readiness testing and engines run to supply power to the grid) resumes. Based on the quantity of fuel used for engines 1 and 7 during the past 12 months, I will follow up with K. Risdon to gain an understanding on why the engines were operating long enough to burn the quantities of fuel reported. At the inspection, K. Risdon said that engine 1 was operated for 100 hours within the past 12 months where engines 7, 8 and 9 were operated for 50 hours each during the past 12 months.

FGENGINES89: Engine units 8 and 9
Engines 8 and 9 are diesel-only fired engines subject to the RICE MACT ZZZZ area source NESHAP.

Process/Operational Restrictions
As with FGENGINES1237, FGENGINES89 are also required to have a PM/MAP to be submitted within 30 days after the engines come online. As with the other 4 engines, St. Louis' plan is to have all engines online by February 2017. I will remind K. Risdon that this must be done once the engines come online.

Monitoring/Recordkeeping
St. Louis is required to maintain a record of the diesel fuel maximum total sulfur content in wt% for each shipment of fuel. K. Risdon provided me with a chemical property sheet of the diesel that they use which indicates that the diesel contains a maximum of 15 ppm (0.0015%) sulfur. The Material Limits specified in the permit for FGENGINES89 is 0.20 wt%.

Records are required to be kept on a monthly and 12-month rolling time period basis for diesel usage in engines 8 and 9. K. Risdon provided me with an Excel spreadsheet that contains this information on a monthly basis (attached), but not on a 12-month rolling basis. I calculated the 12-month rolling based on St. Louis' monthly usage data for diesel used and will inform K. Risdon that 12-month rolling records must also be kept to meet permit requirements for FGENGINES89 (and kept separate from 12-month rolling FGENGINES1237 records). The total diesel fuel usage for engines 8 and 9 from August 2015 – July 2016 was 6,028 gallons.

NOx emission calculations are required to be kept on a monthly and 12-month rolling basis for engines 8 and 9, and the emission factors to be used to calculate NOx emissions should be obtained from vendor data or stack testing, according to Appendix A of the PTI. If neither vendor nor stack testing data is available, St. Louis must get approval from the AQD District Supervisor prior to using an emission factor other than those deemed acceptable per the permit. Per Appendix A, St. Louis is also required to document the source of each emission factor used. I will provide a follow-up report once K. Risdon is able to find the documents he used for the emission factors presented in their emission calculations spreadsheet. The NOx limit is 39.0 tpy (12-month rolling). Table 2 contains 12-month rolling NOx emissions from each engine and a collective total.

Table 2. NOx emissions totals across Engines 8 and 9

Engines	**NOx lbs (tons) (Aug '15 – Jul '16)**
Engine 8	1796.0 (0.9)
Engine 9	779.2 (0.4)
Totals (tons)	1.3

FGFACILITY
The City of St. Louis is an opt-out facility for NOx and has an annual NOx emission limit and material limit on a 12-month rolling basis.

St. Louis is required to monitor and record the total fuel usage rate for all fuel-burning equipment in FGFACILITY on a monthly and 12-month rolling basis, and should include the gallons of diesel fuel and Gasoline Gallon Equivalents (GGE) of natural gas burned.

The calculations for all gallons of diesel and GGE of natural gas is not calculated in the excel spreadsheet that K. Risdon provided; however, all the information is present to calculate the total gallons/GGE's used from August 2015 – July 2016. The total fuel burned was 26,438.3 total gallons (14,660.3 GGE natural gas + 11,778 gal diesel). The limit is 209,150 gallons per 12-month rolling time period. I will inform K. Risdon that these calculations for total gallons/GGE's used per 12-month rolling period must be done to ensure compliance with the permit in the future.

NOx emission calculations from all fuel-burning equipment throughout the facility must be calculated on a monthly and 12-month rolling basis, and stack testing emission factors or vendor data shall be used to calculate these emissions. If neither vendor nor stack testing data is available, St. Louis may use webfire or AP-42 emission rates to calculate NOx emissions. St. Louis is also required to document the source of each emission factor used. I will provide a follow-up report once K. Risdon is able to find the documents he used for the emission factors presented in their emission calculations spreadsheet. The only fuel-burning equipment onsite that I am aware of, and that K. Risdon has provided emission calculations for are the 6 engines. The 12-month rolling NOx limit is 80 tpy, the total NOx emissions from all engines from August 2015 – July 2016 was 5.1 tons.

Compliance Statement: The City of St. Louis appears to be in compliance with PTI 546-95B at this time. I will inform K. Risdon and K. Giles of the recordkeeping and reporting that must be done to ensure compliance for future compliance inspections.

NAME [signature] DATE 9/28/16 SUPERVISOR [signature]