

B2169
MARION

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B216967966

FACILITY: CARMEUSE LIME Inc, RIVER ROUGE OPERATION		SRN / ID: B2169
LOCATION: 25 MARION AVE, RIVER ROUGE		DISTRICT: Detroit
CITY: RIVER ROUGE		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 06/29/2023
STAFF: Stephen Weis	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection of the Carmeuse Lime River Rouge facility in River Rouge.. The Carmeuse facility is scheduled for inspection in FY 2022.		
RESOLVED COMPLAINTS:		

Location:

Carmeuse Lime, Inc. (SRN B2169)
25 Marion Avenue
River Rouge

Date of Activity:

Thursday, June 29, 2023

Personnel Present:

Steve Weis, EGLE-AQD Detroit Office
Raymond Rummel, Environmental Area Manager, Carmeuse
Reza Eizadkhah, Site Operations Manager, Carmeuse River Rouge
Alex Pogasic, Process Engineer, Carmeuse River Rouge

Purpose of Activity

A self-initiated inspection of the Carmeuse Lime, Inc. facility (hereinafter "Carmeuse" or "the River Rouge facility") was conducted on Thursday, June 29, 2023. Carmeuse was on my list of sources targeted for an inspection during FY 2023. The purpose of this inspection was to determine compliance of operations at the Carmeuse 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 No. MI-ROP-B2169-2013, and Permit to Install Nos. 193-14A and 128-17.

Facility Site Description

The Carmeuse River Rouge facility is located on the north side of Marion Street, just east of Jefferson Avenue. The facility property is bounded on the north by the Rouge River, along which Carmeuse has docking and off-loading infrastructure in place to allow for raw material delivery (limestone, coal) via ship. The areas to the north and east of Carmeuse contain some of the area's notable heavy industrial facilities - the Great Lakes Water Authority's Water Resource Recovery Facility lies across the Rouge River to the north of Carmeuse; Zug Island, on which the EES Coke's coke oven operates and which contains some of U.S. Steel's operations (blast furnaces) and other activities associated with steelmaking, lies about ¾ mile to the east and northeast. BP's River Rouge Terminal is located directly to the east of Carmeuse along Marion Ave., and DTE Energy's River Rouge Power Plant property is located further to the east, about ¾ mile from Carmeuse. US Steel's facility in Ecorse is about one mile to the south/southeast. U.S. Gypsum is located on the west side of Jefferson Ave. opposite from the Carmeuse property.

The area directly to the south of Carmeuse is a residential area. The closest residential properties are located along Anchor Street, backing up to Marion Ave., and are approximately 100 yards from Carmeuse's lime kilns.

Facility Operations

Carmeuse is a Belgian company with North American operations, operating as a subsidiary named Carmeuse Americas, based in Pittsburgh, PA. According to the company's website (www.carmeuse.com), "Carmeuse is a global manufacturer of lime and limestone products used in a variety of applications...". Among the lime products that the company produces are high calcium quicklime, dolomitic quicklime, high calcium hydrated lime, dolomitic hydrated lime, lime slurry and lime kiln dust (LKD). The River Rouge facility is one of over three dozen production facilities that are currently operating in the eastern U.S., Canada and Latin America. The River Rouge facility produces calcium oxide (quicklime), high calcium lime and LKD as a by-product. According to Carmeuse's website, the calcium oxide product is used in the steel making process, in pulp and paper production, for flue gas treatment or flue gas desulfurization, for water and wastewater treatment, and in the construction industry.

The lime product is produced at the River Rouge facility in two counter-flow horizontal rotary kilns, in which limestone is heated in a process referred to as calcining. Each kiln is 300 feet long, with a drum diameter of 10.6 feet. The kilns are currently fueled by a combination of pulverized coal, natural gas and used oil. Carmeuse has a Permit to Install application that is currently undergoing AQD review to allow for the use of coke oven gas from the EES Coke facility as a fuel in the kilns.

The kilns are counter-flow kilns – with this configuration, the limestone is fed on the opposite end of the kiln that the coal is fed, and it "flows" towards the firing end. The kilns are heated to temperatures ranging from 1100 to 1300°F at the end in which the limestone is fed, and up to 2375°F at the fuel end. The heating of the limestone constitutes the calcining process, through which the limestone (calcium carbonate, CaCO_3) is thermally broken down into high calcium lime (CaO) and carbon dioxide. Each kiln has a maximum production capacity of approximately 500 tons of lime product per day. The lime product is conveyed from the kilns to lime product storage silos. The lime product is pneumatically loaded from the storage tanks to trucks and rail cars for delivery to customers.

The exhaust gases from the two kilns are sent to a baghouse, which vents to a single stack that releases emissions 120 feet above grade. The stack was constructed per the requirements of Permit to Install No. 193-14A, which was drafted as part of the development of Michigan's 1-hour SO_2 non-attainment state implementation plan (SIP). The primary purpose of the baghouse unit is to control emissions of particulate matter, but due to the resultant coating of limestone-derived material on the filtering media in the baghouse, it also provides some measure of control for other pollutants produced by the lime production process, namely sulfur dioxide and hydrogen chloride.

Raw materials – limestone and coal - are received at the facility via ship and stored on site. The coal is transferred from the storage piles to feed bins, from which it is conveyed to a rolling mill for pulverizing/sizing, after which it is fed to the kilns. Limestone is offloaded to storage piles in the northern portion of the Carmeuse property. The limestone comes from various Carmeuse quarries in Michigan and Canada, including Rogers City, Drummond Island and Port Calcite (near Gulliver), MI and Manitoulin Island, Ontario. The limestone is conveyed from the storage piles via feeders

under the piles to transfer stations, where the limestone is screened and sized prior to being conveyed to the kilns.

Carmeuse's Renewable Operating Permit defines Emission Units and Flexible Groups that represent the various processes that occur at the River Rouge facility. These Emission Units and Flexible Groups are described below.

- EUKILNNUMBER1 – a horizontal rotary lime kiln identified as Kiln No. 1. The kiln is 300 feet long with a 10.6-foot diameter. Exhaust from the kiln is vented through a positive pressure reverse air baghouse that currently vents to the ambient air via a monovent-type ambient discharge.
- EUKILNNUMBER2 – a horizontal rotary lime kiln identified as Kiln No. 2. The kiln is 300 feet long with a 10.6-foot diameter. Exhaust from the kiln is vented through a positive pressure reverse air baghouse that currently vents to the ambient air via a monovent-type ambient discharge.
- EUCONVEYOR/ELEV – the conveyors, elevators and rescreening operations for the finished lime product. There are three baghouse units associated with this equipment to control potential particulate emissions.
- EULIMELOADOUT – lime load out equipment for transferring finished lime product from storage silos to truck and rail vehicles. There are two baghouse units associated with this equipment to control potential particulate emissions.
- EUFLUEDUSTTANK - a storage tank for lime kiln dust (LKD). There is a baghouse unit associated with this equipment to control potential particulate emissions.
- EUFUGITIVE – this Emission Unit covers potential fugitive dust associated with open storage piles of materials (limestone, coal) and facility roadways. These potential fugitive emissions are controlled by water sprays, dust suppressant, and/or sweeping.
- EUNO6BINVENT – a lime fines handling operation that is vented through a baghouse.
- EUFDLOADOUT – flue dust load out equipment that vents through the same baghouse as EUFLUEDUSTTANK to control potential particulate emissions.
- EUPSHFUGITIVE – equipment used for handling limestone after the limestone bin, and prior to the lime kilns. The processed stone handling (PSH) equipment includes all conveyors prior to the lime kilns for which the only emissions are fugitive dust emissions.
- FG-MACT-AAAAA-LIME MANUFACTURING PLANTS – this Flexible Group consists of the Emission Units that are subject to the Federal NESHAP (National Emission Standards for Hazardous Air Pollutants) for Lime Manufacturing Plants, 40 CFR Part 63 Subpart AAAAA. This Flexible Group consists of EUKILNNUMBER1, EUKILNNUMBER2 and EUPSHFUGITIVE.

The facility typically operates three shifts, 7 days a week.

Inspection Narrative

I arrived at the River Rouge facility at about 10am. I checked in at the facility's office, and I was met by the Environmental Area Manager, Ray Rummel. I began the visit by watching the facility's safety video. After completing the video, I proceeded to the conference room and met with Ray, Reza Eizadkhah and Alex Pogasic.

We began by discussing facility operations. We discussed the hours of operation of the facility, and we discussed the fuels that are being used to fire the kiln. I was told that used oil has been hard to get recently. Carmeuse has VOC restrictions and testing requirements for the used oil that is accepted for use in the kilns.

We then spent time discussing the applicable permits and regulations relating to facility operations. We discussed the facility's compliance with the conditions of the facility's ROP. As we reviewed the ROP, Carmeuse staff referenced facility records. I was provided with copies of some records during the site visit, and others were sent to me electronically after the site visit. We discussed the Source Wide conditions. Carmeuse staff told me that if visible emissions are observed, a Method 9 reading is performed. I was told that several staff are certified in Method 9.

We discussed the truck wheel wash and the roadway water washing requirements, and I was told that these tasks are not performed when the air temperature is below freezing. The company has been documenting the dates when these tasks are not performed in their semi-annual ROP deviation reports. We discussed the fugitive dust SIP Order that is referenced throughout the Source Wide conditions. I was provided with some information regarding the cleaning of the paved roads at the facility and told that the cleaning is performed by a company called Kleenway out of New Baltimore. We further discussed how the paved roads associated with the facility are swept and flushed with water. We discussed the requirements for the lime kilns in the ROP. I was provided with limestone feed rate records. I was told that the facility's feed rate monitoring system can take readings in increments to the second (this data is in the system), and the system records the information every 5 minutes. We discussed the facility's compliance with the Permits to Install. Carmeuse had a question about the applicability of 40 CFR Part 60 Subpart Y, which can apply to coal handling operations. Subpart Y puts forth a 20 percent opacity limit on coal processing and handling operations at the facility. I mentioned this can be addressed and analyzed as part of the PTI and ROP review process.

A summary of the compliance status of the River Rouge facility with the ROP and the PTIs is found in the next section of this report.

After discussing the permits, Ray, Alex and I walked around the facility. We first stopped at the product loading area. It was pointed out that the two large silos in the southeast side of the facility store limestone (west silo) and coal (east silo). We looked at the truck and railcar loading area. I asked how the area (including the ground and the building and bins surfaces and walkways) is cleaned. I was told that the material on the ground is cleaned and placed in a bunker. The building and bin surfaces are cleaned as needed. I was told that once per shift, the material on top is cleaned, swept and pushed with a broom. I took a couple of pictures of the loading area, which are attached to this report.

We walked to the storage area on the northern portion of the facility property. We looked at the coal and limestone storage piles. There is a smaller pile of waste lime material. I was told that the material is watered as needed to prevent dust, and the material is landfilled for disposal. A couple of pictures that were taken of the storage area are attached to this report.

We walked through the kiln area, and to the baghouses. There are two baghouses (one for each kiln), each having two compartments. The kiln 1 baghouse is the northern baghouse. I was told that the bags in the kiln 1 baghouse were changed in August, and the kiln 2 baghouse is scheduled for a bag changeout in 2024. We looked at an area on the ground under the ductwork upstream from the baghouse and heat exchanger. Carmeuse staff provided that dust (which consists of unburned coal and lime) impacts the wall of the ductwork – most of the dust is drawn through the kiln exhaust system, and a small amount falls out via a screw conveyor. The dust is periodically scooped out and landfilled. I took a picture of the area where the dust is dropped, which is attached. It was explained that the LKD hits the heat exchanger at the bottom of the baghouse, and it is directed to the LKD tank/silo.

After completing our walk, we went back to the conference room. We summarized the items that we discussed during the visit and the records that I need to perform a compliance review. We then discussed the requirement in the Lime MACT (40 CFR Part 63 Subpart AAAAA) to install, maintain and operated a COMS unit on the kiln baghouse exhaust during periods of start up and shut down.

This requirement has been discussed with Carmeuse earlier in the year as part of the coke oven gas Permit to Install review process. Carmeuse staff provided that they have started the process for obtaining a COMS. The described the process, which starts with engineering/design of the network requirements, location, and installation, then obtaining estimates, ordering the equipment, and installation. They said that the bag leak detection system (BLDS) has been in place since the new baghouse and stack configuration was constructed and came online in 2018. The BLDS has alarm set points that indicate the presence of particulate matter. I was told that there have been two bag replacements over the past two years, and that the company keeps records of all maintenance on the baghouse, including dye tests and bag replacements. They provided that the BLDS is triggered by the presence of particulate in the exhaust, which is a much lower threshold than the 15 percent opacity limit in the Lime MACT that would be the standard by which the COMS would assess the kiln exhaust. The COMS requirement will be discussed in further detail in the next section of the report as part of the discussion regarding Subpart AAAAA.

After we concluded our discussion, I left the facility at 1:40pm.

Permits/Orders/Regulations

Permits

The primary sources for the regulatory air requirements that are currently applicable to the operations at the Carmeuse facility are the facility's permits – Renewable Operating Permit No. MI-ROP-B2169-2013, which became effective on January 15, 2013, and two Permits to Install (PTI) - No. 193-14A, which was issued via correspondence from AQD to Carmeuse dated March 24, 2016 and addressed the new baghouse and stack configuration and put forth a new SO₂ emission rate, and PTI No. 128-17, which was issued via correspondence from AQD to Carmeuse dated April 25, 2018 and addresses the use of used oil as an alternate fuel for the kilns, and a 90 day trial burn of processed biosolids to fuel the kilns.

A PTI application that was assigned application number APP-2022-0107 was received by EGLE-AQD on April 4, 2022. The purpose of the application was to submit a request and gain approval to add coke oven gas from EES Coke as an additional fuel in the lime kilns. The application was eventually replaced by APP-2023-0028, which was received on January 24, 2023.

The following subsections address the Carmeuse facility's compliance with the permits that are currently effective at the facility.

1) ROP No. MI-ROP-B2169-2013

The following paragraphs provide a description of Carmeuse's compliance with the terms and conditions put forth by the ROP, with the headings representing the sections of the ROP.

Source-Wide Conditions

The Source-Wide Conditions table in the ROP addresses fugitive dust at the Carmeuse facility. Most of the requirements in this section of the ROP cite **Consent Order SIP No. 22-1993** 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. Carmeuse was issued the Consent Order referred to as SIP No. 22-1993.

In the Source-Wide Conditions section of the ROP, the Emission Limits table contains a couple of opacity limits – 20 percent for sources of fugitive dust other than storage piles, and 5 percent for material storage piles. The compliance method for the opacity limits is put forth in Special Condition VI.2, which requires that Carmeuse River Rouge staff do the following:

1. Perform visible emission (VE) readings from roads, lot and storage piles on a weekly basis (method 9 readings should be taken when VEs are observed).
2. Perform VE readings from fugitive dust sources other than roads, lots or storage piles on a weekly basis (method 9 readings should be taken when VEs are observed).

I was shown a logbook that contains records of the required visible emission readings during my site visit. I requested copies of the most recent “Weekly Environmental Compliance Requirements” logs, which is a weekly record that Carmeuse maintains to track some of the air and water requirements at the River Rouge facility, including the VE readings in question. I received copies of the logs for the weeks of June 19 and 26, 2023, which are attached to this report for reference. The logs show that opacity readings were performed on Monday of both weeks, and that no VEs were observed (and thus Method 9 readings were not necessary to be performed).

Special Conditions III.1, VI.1, and all of the conditions in the “IX. Other Requirements” section directly list the Consent Order as the applicable requirement. During our discussion, Carmeuse staff told me that calcium chloride is applied to unpaved surfaces on the River Rouge property at least every 6 weeks by Kleenway out of New Baltimore, MI. This is **in compliance** with 3.D.2 of Exhibit A of the Consent Order, and Appendix 4 of the ROP. Carmeuse provided me with copies of the invoices for the two most recent calcium chloride applications at the facility (May 22 and June 6, 2023), which are attached to this report for reference.

SC VI.2 requires that records be kept of visible emissions readings of the roads, lots and storage piles, as well as other fugitive dust sources on site. These records are maintained via the previously mentioned “Weekly Environmental Compliance Requirements” log. For the air portion of the log, records are kept relating to the maintenance of all of the identified fugitive dust sources on site, required equipment inspections, visible emission and opacity readings, and parametric monitoring. These records indicate that all of the visible emission and opacity observations required by Special Condition VI.2 are being performed, and that the fugitive dust control measures that are required by the SIP Order are being adhered to. The information and records that I was provided indicate that Carmeuse is **in compliance** with the requirements in the Source-Wide Conditions section.

EUCONVEYOR/ELEV, EULIMELOADOUT, EUFLUEDUSTTANK, EUNO6BINVENT, and EUFDLOADOUT

All of these Emission Units have been grouped together for the purposes of this compliance discussion because in the current ROP, these Emission Units all have, essentially, the same permit requirements. In addition, the compliance demonstrations for these Emission Units are grouped

together. EUCONVEYOR/ELEVATOR represents lime product conveyors, elevators and rescreening equipment. EULIMELOADOUT represents the loading of lime product to trucks. EUFLUEDUSTTANK represents the flue dust bin. EUNO6BINVENT represents #6 bin vent, which handles lime fines. EUFDLOADOUT represents flue dust rail loadout or flue dust rescreening. The rail loadout portion of this Emission Unit is no longer in operation.

All of these Emission Units have a particulate matter emission limit with Michigan Administrative Rule 331 as the applicable requirement. The emission limits all have the same monitoring/testing method – the requirement that a particulate matter emission test may be required (Special Condition V.1 in all five Emission Unit tables), and identical requirements under section “VI. Monitoring/Recordkeeping” to:

1. Conduct regular inspections of the operating condition of the baghouses associated with the Emission Units;
2. Perform weekly monitoring and recording of the pressure drop across the baghouses;
3. Perform daily VE readings to determine the presence or absence of visible emissions (i.e., an EPA Method 22 reading).

The weekly monitoring of the pressure drop, as required by Special Condition VI.2, and the daily visible emission readings, as required by Special Condition VI.3, are accomplished via the aforementioned Weekly Environmental Compliance Requirements log sheet. The examples from the facility log sheet that are attached to this report show the daily visible emission readings, and recording of the various pressure drops, which are currently typically taken on Thursday. The baghouse inspections are logged in Carmeuse’s central maintenance data system. This system allows Carmeuse staff to log the results of equipment inspections, and to request and log any repairs and maintenance that is performed. Carmeuse staff showed me some outputs from the central maintenance data system, and I was provided with screen shots from the central maintenance data system via email that shows some of the maintenance and repairs that have been performed over the past few years. A printout of the screen shots that I received is attached to this report for reference.

Carmeuse appears to be in compliance with the permit conditions associated with EUCONVEYOR/ELEV, EULIMELOADOUT, EUFLUEDUSTTANK, EUNO6BINVENT, and EUFDLOADOUT.

FG-MACT-AAAAA-LIME MANUFACTURING PLANTS

This Flexible Group includes the permit requirements for EUKILNNUMBER1, EUKILNNUMBER2, and EUPSHFUGITIVE. The equipment covered by these Emission Units is subject to the requirements of 40 CFR Part 63, Subpart AAAAA, the National Emission Standards for Hazardous Air Pollutants for Lime Manufacturing Plants (hereinafter “the Lime MACT”). This Flexible Group is meant to present the applicable requirements of the Lime MACT. The Flexible Group description in the ROP states, in part, that the Lime MACT “...covers the existing lime kilns and their associated coolers, and PSH operations located at a lime manufacturing plant that is a major source.”

The paragraphs that follow provide a summary of Carmeuse’s compliance with the Special Conditions in this Flexible Group.

I. Emission Limits

The Emission Limits table contains emission limits for PM, opacity and sulfur dioxide. The Monitoring/Testing Method for the PM and sulfur dioxide emission limits is the stack testing requirements put forth in Special Conditions V.1 and V.2 for PM and sulfur dioxide, respectively. The most recent stack tests to the date of the site visit were performed on December 4, 2018 and February 12-13, 2019. The test results showed the following:

- The December 4, 2018 testing was the initial/first compliance emissions testing performed after the lime kiln exhaust was switched from separate exhaust systems for Kiln 1 and 2, with each kiln's exhaust venting through its own separate baghouse and monovalent ambient discharge, to a system through which the two kilns vent to a baghouse, with emissions vented to the ambient air via a common stack with an ambient discharge point 120 feet above grade. The test results showed measured PM from the lime kilns of 0.0056 lb/ton of stone feed (tsf), versus the permitted limit of 0.12 lb/tsf. The measured SO₂ emissions from the lime kilns was 198.20 ppm corrected to 50% excess oxygen (vs. the permitted limit of 300 ppm corrected to 50% excess air), and 0.45 lb/MMBTU (vs. the permitted limit of 2.4 lb/MMBTU).
- The February 12-13, 2019 testing was performed as required by Permit to Install No. 128-17. The test was required to measure PM, PM₁₀, PM_{2.5} and SO₂ emission rates after the kilns at the River Rouge facility had commenced the use of used oil as a supplemental fuel in the kilns. The results of the February testing showed a three-run average for PM emissions of 0.02 lb/tsf, (versus the permitted limit of 0.12 lb/tsf). The measured SO₂ emissions from the lime kilns was 254 ppm corrected to 50% excess oxygen (vs. the permitted limit of 300 ppm corrected to 50% excess air), and 0.6 lb/MMBTU (vs. the permitted limit of 2.4 lb/MMBTU).

Based on stack test results, the measured emissions of PM and SO₂ are in compliance with the permitted limits. The next compliance emissions testing is scheduled for Fall of 2023.

II. Material Limits

The conditions in the Material Limits table address the usage of alternative fuels to fire the kilns. The use of glycerin and syngas was analyzed and allowed by Permit to Install No. 330-07D, which was incorporated into the ROP.

During the last few inspections, including this one, I was told that Carmeuse has not used either of these fuels for some time, and there are no immediate plans to use them. Carmeuse has not had any throughputs of these materials, so there is no material to track or records to keep for glycerin and syngas usage. The facility is **in compliance** with these permit conditions.

III. Process/Operational Restrictions

Special Condition:

III.1 – Compliance. The Carmeuse facility's compliance with the emission limits in this Flexible Group were described under the Emission Limits heading. The emission and operating limits are met in accordance with the requirements of this condition, which provides an exception during periods of startup, shutdown or malfunction.

III.2 – Compliance. The facility maintains and operates the kiln baghouses when the kilns are operating.

III.3 – Compliance. When the facility changed the kiln exhaust configuration in 2018, constructing a new baghouse and stack, a bag leak detection system (BLDS) was installed and has operated ever since. In addition, Carmeuse staff continue to perform VE observations to check compliance with

the 15% opacity limit referenced in the condition and the Lime MACT as an option. I was provided with copies of the log sheets titled “Visible Emission Observation Evaluation” through which Carmeuse keeps track of the visible emission/opacity observations of the lime kiln baghouse for June 28 and 29, 2023, which are attached to this report for reference.

III.4 – Compliance. Carmeuse demonstrated compliance with the Lime MACT opacity limits associated with EUPSHFUGITIVE.

III.5 – Compliance. Carmeuse submitted an Operations, Maintenance and Monitoring (OM&M) Plan and a Startup Shutdown Malfunction Plan (SSMP) with the ROP renewal application materials. The plans were updated to reflect the new baghouse and stack. Carmeuse staff presented their copy of the OM&M Plan during the inspection. The plan will be updated to reflect the installation and operation of a COMS, which will be discussed later in this section of the report.

III.6 – Compliance. Carmeuse has developed a written startup, shutdown and malfunction plan for the River Rouge facility. It was available for review during the inspection.

III.7 – Compliance. Carmeuse complies with Special Condition III.7.b. by operating the lime kiln baghouse in accordance with the OM&M Plan referenced in Special Condition III.5.

III.8 – Compliance. The River Rouge facility is currently firing coal in the kiln, with natural gas used during startup. Glycerin and syngas are not currently in use. The facility also fires used oil, which was permitted by EGLE-AQD via PTI No. 128-17, which will be discussed in more detail later in this section of the report.

IV. Design/Equipment Parameters

There are no permit conditions in this section.

V. Testing/Sampling

Special Condition:

V.1 – Compliance. As referenced during the discussion of the Emission Limits, Carmeuse conducted approved particulate matter emissions tests in 2018 and 2019.

V.2 – Compliance. As referenced during the discussion of the Emission Limits, Carmeuse conducted approved sulfur dioxide emissions tests in 2018 and 2019.

V.3-5 – These Special Conditions address testing, monitoring and sample analysis associated with the use of glycerin and syngas. These fuels are not being used, so these conditions are not currently applicable.

V.6 – Compliance. Carmeuse samples the coal used at the River Rouge facility for analysis. Coal is sampled for both BTU analysis and monthly Greenhouse Gas (GHG) sampling. Carmeuse staff collect a composite sample of coal from around the coal piles after each coal delivery by ship, from which an ultimate analysis is performed, as well as a determination of the ash fusion temperature. Carmeuse showed me an example record of a coal analysis. I was also provided with a copy of some coal analysis information for shipments delivered to the facility from July 2022 up to the most recent delivery on June 14, 2023. This information is attached to this report for reference.

VI. Monitoring/Recordkeeping

Special Condition:

VI.1 – **Compliance.** The air pollution control devices (capture/collection and closed vent system) are inspected at least once each year. Carmeuse staff told me that this task is performed during the annual outage for each kiln. I was provided with copies of some work orders from the past year, as well as an internal email summarizing maintenance and repairs on lime processing and handling equipment at the facility, including the lime kiln baghouse. The email references yearly inspections and leak checks of the kiln baghouses. This information is attached to this report for reference.

VI.2 – **Compliance.** Carmeuse is keeping records of all of the deviations, notifications and records required by the Lime MACT.

VI.3 – **Compliance.** According to Carmeuse staff, they are operating and maintaining the continuous parameter monitoring system (CPMS) in accordance with the OM&M Plan. The parameters that are monitored are temperature, pressure drop and lime feed rate.

VI.4 and VI.5 – **Compliance.** According to Carmeuse staff, the flow measurement devices and pressure measurement devices are compliant with the Lime MACT.

VI.6 – **Compliance.** Carmeuse is performing the required visible emission/opacity readings associated with the processes in EUPSHFUGITIVE. The information is recorded and maintained by facility staff, and presented on the previously mentioned Weekly Environmental Compliance Requirements form.

VI.7 – **Compliance.** The daily limestone feed rate is continuously monitored and recorded. During the site visit, I was told that the limestone feed rate is logged every 5 minutes, and the data is recorded every 1/10 of a minute. I was provided with data for June 2023. A printout of the first two pages of the log - showing the limestone feed rates for kilns 1 and 2 at 5-minute intervals, the total limestone feed rate for both kilns, and a SO₂ calculation based on the stack test results – is attached to this report for reference.

VI.8 and VI.9 – **Compliance.** Carmeuse tracks and records the BTU/hour heat input rate of coal to the lime kilns, as well as the coal consumption rate. This information is also tracked by the facility's internal system, which shows the coal usage in each kiln. As described by Carmeuse staff, a daily inventory of production and fuel usage is compiled each day. Via their internal tracking system, Carmeuse can determine the BTU's used to produce lime. I was provided with records for June 2023 and 2023 year to date, which are attached to this report for reference.

VI.10, VI.11, VI.12, and VI.13 – these conditions address monitoring and recordkeeping requirements associated with glycerin and syngas usage. These two fuels are not being used at the facility, so the requirements of these conditions are not currently applicable.

VII. Reporting

SCs VII.1 through VII.4 – **Compliance.** Carmeuse is complying with the reporting requirements in this section. These reports are required by either the ROP (VII.1, 2 and 3) or the Lime MACT (VII.4).

VIII. Stack/Vent Restrictions

The stack/vent parameters as described in this section are no longer applicable in the time since Carmeuse changed their method of venting their baghouse to the ambient air, in accordance with the requirements of Permit to Install No. 193-14A. The facility is in compliance with stack/vent parameter parameters requirements put forth by EGLE-AQD.

IX. Other Requirements

SC IX.1 –Carmeuse demonstrated compliance with the applicable provisions of the initial version of 40 CFR Part 63, Subpart AAAAA (the Lime MACT) by the regulation’s compliance date. Subpart AAAA was revised on January 20, 2021, and the facility is not in compliance with some provisions of the revised MACT. A Violation Notice was issued to Carmeuse dated July 27, 2023 This issue will be discussed in further detail later in this section of the report.

SC IX.2 – **Compliance.** Carmeuse is demonstrating compliance with the applicable provisions of 40 CFR Part 60, Subpart Y (Standards of Performance for Coal Preparation and Processing Plants). Subpart Y applies to the coal processing and conveying equipment, coal storage system, or coal transfer and loading systems at the facility.

2) Permit to Install No. 193-14A

This Permit to Install was issued on March 18, 2016. PTI No. 193-14 was initially issued in support of the 1-hour SO₂ National Ambient Air Quality Standards, and as part of Michigan’s SO₂ Non-attainment SIP Plan. Permit 193-14 requires that Carmeuse construct a new stack. The Permit also requires that, upon completion of the new stack configuration, Carmeuse establish a new SO₂ emission rate for the combined exhaust of Kiln Nos. 1 and 2. Additional modeling for SO₂ revealed that the stack height required in PTI No. 193-14 would not result in attainment of the SO₂ standard. Carmeuse and EGLE-AQD determined, via air dispersion modeling, that a stack height of 120 feet would result in compliant SO₂ emissions. PTI No. 193-14A was issued to put forth the updated stack height requirement. The requirements of PTI No. 193-14A became applicable on and after October 1, 2018, when Carmeuse was required to begin compiling hourly SO₂ emission rate calculations, and continuously monitor and record the total hourly limestone feed rates to each kiln. Carmeuse was required to perform a SO₂ emission test to determine the SO₂ emission rate no later than April 1, 2019.

The requirements of this PTI are contained in a Flexible Group table named FG-KILNS1&2, which addresses both lime kilns. The paragraphs that follow provide a summary of Carmeuse’s compliance with the PTI No. 193-14A.

I. Emission Limits

The Emission Limits table puts forth a SO₂ emission limit of 470 pounds per hour. The footnotes associated with the emission limit provide the method by which the SO₂ emissions are to be calculated. The compliance testing was performed on December 4, 2018, the results providing a SO₂ emissions estimate, in units of pounds of SO₂ per tons of limestone feed, of 1.843337. Carmeuse combines this measured emission rate with the monitoring limestone feed rate to calculate an estimate of the hourly SO₂ emission rate.

II. Material Limits

There are no requirements in the Material Limits section in the PTI.

III. Process/Operational Restrictions

There are no requirements in the Process/Operational Restrictions section in the PTI.

IV. Design/Equipment Parameters

There are no requirements in the Design/Equipment Parameters section in the PTI.

V. Testing/Sampling

SC V.1 requires that an emissions test to determine an emission rate of SO₂ from the kilns no later than April 1, 2019 to determine an emission factor for SO₂ in pounds per ton of stone feed. The testing was performed in December 2018. SC V.1 requires that subsequent testing be performed no less than every 5 years for the purpose of updating the emission factor. The facility is in compliance with the requirements of this condition.

VI. Monitoring/Recordkeeping

SC VI.1 – Compliance. Carmeuse staff maintain records of the average hourly SO₂ emission rate based on the measured SO₂ emission rate from the kilns and the monitored limestone feed rate to the kilns. Records were shown to me during the site visit, and a selection of the records was provided to me and is attached to this report for reference.

SC VI.2 – Compliance. Carmeuse monitors and records the limestone feed rate to the kilns. Sample records are attached to this report.

VII. Reporting

Carmeuse is complying with the reporting requirements in this section. SC VII.1 addresses semi-annual reports addressing SO₂ emissions of SO₂, and periods of limestone feed rate monitoring system downtime and corrective action. This report is being submitted to AQD. Carmeuse met the notification requirement in SC VII.2.

VIII. Stack/Vent Restrictions

The stack height and diameter were not specifically verified during this site visit. The stack was constructed in accordance with the permit requirements, which were part of the SO₂ attainment plan, and they are assumed to be compliant.

IX. Other Requirements

There are no requirements in the Other Requirements section in the PTI.

3) Permit to Install No. 128-17

This Permit to Install was issued on April 25, 2018 to allow for the use of used oil as an alternate fuel for the kilns, and a 90-day trial burn using processed biosolids as a fuel.

The requirements of this PTI are contained in a Flexible Group table named FG-MACT-AAAAA, which addresses both lime kilns. The Flexible Group table includes the requirements from the FG-MACT AAAAA-LIME MANUFACTURING PLANTS Flexible Group in the facility's ROP. The paragraphs that follow provide a summary of Carmeuse's compliance with the PTI No. 128-17.

I. Emission Limits

The Emission Limits table puts forth emission limits of 23.45 pounds per hour for PM₁₀ and PM_{2.5}; the rest of the emission limits are the same as found in the facility's ROP.

II. Material Limits

SCs II.1 through 7 are the same as in the ROP and were evaluated earlier in this report. The PTI added SCs II.8 through 10 to address the used oil and processed biosolids fuel. SC II.8 limits the hourly used oil fuel usage rate on a daily average basis. I was shown and provided with records that demonstrate compliance with the requirements of this condition. SC II.9 prohibits the use of waste material or fuel in the kilns, which Carmeuse is complying with. SC II.10 limits the usage rate of processed biosolids fuel. The trial burn period was completed, and not much biosolids fuel was used, so Carmeuse complied with this condition.

III. Process/Operational Restrictions

Most of the conditions in this section are from the ROP, and the compliance evaluations in this report found that Carmeuse is in compliance with these conditions. SC III.5 lists the fuels allowed to be used in the lime kilns and includes the addition of non-waste used oil. SC III.6 puts forth the 90-day trial burn limit for the burning processed biosolids in the kilns.

IV. Design/Equipment Parameters

SCs IV.1 and 2 are from the ROP, and the compliance evaluations in this report found that the facility is in compliance with these conditions.

V. Testing/Sampling

SC V.1 requires that an emissions test be performed within 180 days after commencement of initial startup using used oil as a fuel. The testing was conducted in February of 2019.

SC V.2 addresses the testing requirements associated with the trial burn period for processing biosolids. The trial period did not last long enough to trigger the testing requirement.

VI. Monitoring/Recordkeeping

SCs VI.1 through 13 are taken from the ROP. The compliance evaluations in this report found that the facility is in compliance with the requirements of these conditions.

SC VI.14 addresses monitoring and recording the natural gas usage rate in the kilns on a monthly and 12 month rolling time period basis. I was shown records during the site visit, and provided with copies of natural gas usage records, which are attached to this report for reference.

SCs VI.15 and 16 address monitoring and recording the used oil fuel usage and keeping records of the sulfur content of the used oil. These records were shown to me during the site visit, and examples of the records were provided to me, which are attached to this report for reference.

SC VI.17 addresses recordkeeping requirements associated with the trial burn of processed biosolids as a fuel. The trial burn period was completed, and this type of fuel has not been used at the facility since, so the requirements of this condition are not applicable.

VII. Reporting

Carmeuse complied with the with the reporting requirements in this section.

VIII. Stack/Vent Restrictions

The stack height and diameter were not specifically verified during this site visit. The stack was constructed in accordance with the permit requirements, which were part of the SO₂ attainment plan, and they are assumed to be compliant.

IX. Other Requirements

SCs IX.1 and 2 are taken from the ROP. These conditions were evaluated in the discussion of the facility's ROP.

For SC IX.3, the trial burn period for the use of processed biosolids as a fuel in the kilns passed. Carmeuse has no plans to use this fuel in the kilns at this time.

Federal Regulations

The Carmeuse River Rouge facility is subject to the requirements of **40 CFR Part 63, Subpart AAAAAA**. Subpart AAAAAA, or the Lime MACT, applies to owners and operators of lime manufacturing plants (LMP) that are major sources, or located at or is part of, a major source of hazardous air pollutants. The initial version of the Lime MACT was promulgated on January 5, 2004. The requirements of Subpart AAAAAA are included in the facility's ROP.

The Lime MACT was amended on July 24, 2020, and the effective date of the provisions of the amended sections for existing LMPs, such as the Carmeuse River Rouge facility, was January 20, 2021. Among the new and revised requirements in the amended Lime MACT is the requirement in §63.7090(c) that the facility meet each applicable startup and shutdown emission limit in Table 2 to Subpart AAAAAA; the startup and shutdown emission limits in Table 2 are part of amendments to the Lime MACT. Table 2 puts forth an opacity limit of 15 percent for all new and existing lime kilns and their associated coolers that are equipped with a fabric filter during each period of startup and shutdown, and that compliance with the opacity limits is to be demonstrated via the installation, maintenance, calibration, and operation of a COMS. Table 2 puts forth the frequency at which data from the COMS is to be collected. §63.7113(a) and (g) present additional requirements relating to the installation, maintenance, calibration, and operation of a COMS that is used to monitor an add-on pollution control device at a lime manufacturing facility.

As described in this report, Carmeuse installed a new baghouse and stack as part of their efforts with relation to the 1-hour SO₂ non-attainment SIP development to address the SO₂ non-attainment area in Wayne County. Permit to Install No. 193-14A was issued to address the updated exhaust configuration for the two lime kilns at the River Rouge facility. The two kilns formerly each exhausted to their own baghouses, each of which discharged to the ambient air via separate monovent structures. The updated exhaust configuration has both kilns venting to a single baghouse that vents to the ambient air via a single stack with an ambient discharge at 120 feet above grade. A bag leak detection system (BLDS) was installed as part of the new baghouse. The installation and operation of a BLDS met the requirements of the version of the Lime MACT that was in place at the time that the updated baghouse and stack were installed, and that version of the Lime MACT did not include a COMS requirement during periods of startup and shutdown. Under the current version of the MACT, there are the aforementioned provisions in the Lime MACT that require the installation, maintenance, calibration and operation of a COMS to measure opacity from the lime kiln exhaust during periods of startup and shutdown. The BLDS still meets the continuous compliance requirements for regular operation of the kilns (i.e., periods not considered as startup and shutdown), which represents most of the operating time for the kilns.

The amended Lime MACT and the requirement to install, maintain and operate a COMS during periods of startup and shutdown was first discovered by AQD in the Fall of 2022 during the review of the PTI application that was submitted by Carmeuse to allow for the use of coke oven gas as a

fuel in the lime kilns. The matter was discussed with Carmeuse staff, and with EPA staff in March 2023. I posed questions to EPA regional staff requesting clarification of the requirements of the amended Lime MACT as they relate to the installation, maintenance, and operation of a COMS, and I presented some specifics regarding the operations at the River Rouge facility, including the installation, maintenance, and operation of a BLDS. I received a response to the questions in a March 24, 2023 email from EPA regional staff. They communicated that they consulted with staff at EPA headquarters who is familiar with the Lime MACT, and that they concluded that (to quote from the email response) "...in regards to the way the rule was written, there are no other alternatives or exceptions for meeting the opacity limit requirement during startup/shutdown, so a facility is required to maintain and operate a COMS to demonstrate compliance as indicated in Table 2 of Subpart AAAAA." A copy of the email response from EPA is attached for reference.

The COMS requirement was discussed during the June 29 site visit, and I advised that the failure to install, maintain and operate a COMS is a violation of the Lime MACT that would be cited in a Violation Notice. A Violation Notice (VN) was issued to the Carmeuse River Rouge facility dated July 27, 2023. In the time since the VN was issued, the violation was referred to EGLE-AQD's Enforcement Unit for resolution. The Enforcement Unit and Carmeuse have worked through a draft Consent Order and a civil penalty to resolve the violation of the Lime MACT. The proposed Consent Order includes requirements and associated timelines for Carmeuse to install, maintain and operate a COMS at the River Rouge facility. The terms and conditions of the proposed Consent Order, including the penalty, were agreed to by Carmeuse on December 13, 2023. The public notice documents are being prepared.

The facility is also subject to **40 CFR Part 60, Subpart Y**, as the facility has the potential to process more than 200 tons of coal per day. The requirements associated with this regulation are put forth in Special Condition IX.2 in FG-MACT AAAAA-LIME MANUFACTURING PLANTS of the facility's ROP.

In addition, the two lime kilns are subject to **40 CFR Part 60, Subpart HH**. The particulate matter emission standards put forth by the Lime MACT (Subpart AAAAA) are more stringent than the emission limits in Subpart HH. Thus, the requirements of Subpart HH are not included in Carmeuse's ROP.

Compliance Determination

Based upon the results of the June 29, 2023¹⁷ site visit and subsequent records review, the Carmeuse River Rouge facility appears to be in substantial compliance with all of the terms and conditions of the facility's Renewable Operating Permit. The facility was determined to be in non-compliance with provisions of the Lime MACT that were added as amendments to the MACT in July of 2020, and that became effective on January 20, 2021, requiring the installation, maintenance, and operation of a COMS to monitor compliance during periods of startup and shutdown of the lime kilns at the facility. Carmeuse does maintain and operate a BLDS that indicates the presence of particulate matter/dust in the baghouse chamber (a precursor for ambient opacity), providing Carmeuse with notification of an issue, their response to which should serve to minimize opacity. The violation was cited by EGLE-AQD, and Carmeuse and AQD are entering into a Consent Order to resolve the violation. The Consent Order will include requirements for Carmeuse to install, maintain and operate a COMS to monitor opacity from the lime kilns at the facility. The Order and its associated compliance plan will serve to resolve the violation of the Lime MACT at the facility.

NAME Steve Wen

DATE 1/11/24

SUPERVISOR JR