

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

B147754622

<b>FACILITY:</b> Holcim (US) Inc. DBA Lafarge Alpena Plant		<b>SRN / ID:</b> B1477
<b>LOCATION:</b> 1435 Ford Avenue, ALPENA		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> ALPENA		<b>COUNTY:</b> ALPENA
<b>CONTACT:</b> Travis Weide , Area Environmental & Public Affairs Manager		<b>ACTIVITY DATE:</b> 08/13/2020
<b>STAFF:</b> Kurt Childs	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> 2020 PCE 2 and FCE.		
<b>RESOLVED COMPLAINTS:</b>		

**2020 FCE Partial Compliance Evaluation (PCE) No.2: Site inspection and records review of FG FUEL HAND, FG KG5, FG KG6, and FG CLINK COOL, FG CLINKER SYS, FG FINISH MILL, FG CMT STR LOAD, FG CKD HAND SYS, FG MERCURY, and FG COLDCLEANERS.**

**MI-ROP-B1477-2012c**

### Introduction

This activity report covers the second PCE for the 2020 Full Compliance Evaluation of the Holcim (US) d/b/a Lafarge Alpena (Lafarge) Cement Plant. Emission groups covered by this PCE are; FG FUEL HAND – fuel storage (piles) transportation, processing and firing; FG KG5 – Kilns 19,20,21 and associated air pollution control devices; FG KG6 – Kilns 22 and 23 and associated air pollution control devices; FG CLINK COOL – Clinker coolers for each kiln and the associated air pollution control devices. FG CLINKER SYS - transfer, storage and blending of clinker prior to finish grinding; FG FINISH MILL - grinding of blended clinker into Portland cement; FG CMT STR LOAD - storage and bulk loading of Portland cement for ship, rail and truck transportation; FG CKD HAND SYS - transfer, storage, re-use and disposal of collected cement kiln dust; FG MERCURY- mercury emission limits and requirements for specific emission units at the facility; and the air pollution control devices associated with each Flexible Group.

On August 13, 2020 AQD staff Kurt Childs met with Travis Weide of Lafarge Alpena to conduct the PCE of the source. Due to the Covid-19 public health crisis, this was an announced inspection in order to coordinate State and company health and safety protocols. Prior the inspection AQD staff made observations from off-site. The weather was clear, around 80 degrees with light winds. We observed the Kiln stacks and many of the dust collector stacks and vents throughout each area of the plant as well as building openings. Each of the five kilns was operating with the exception of Kiln 20 which had been shut down and was being preheated to resume operation. There was an attached water vapor plume from the KG6 wet FGD stack that was rising but no visible emissions were noted from any of the kiln stacks. We also observed other areas of the plant such as the raw mill, finish mill, fuel mills and clinker coolers. Some fugitive emissions were observed related to plant traffic due to the hot and dry conditions. A water truck was in operation throughout the inspection treating the plant roadways.

Specific records for each Flexible Group were requested and provided prior to the inspection. Required reporting has been reviewed as it was received throughout the

year. The pertinent recordkeeping and reporting information is addressed in the relevant sections of this report

### FG FUEL HAND:

The fuel handling system receives, stores, transports, and pulverizes the fuel used to fire the kilns. Fuels are delivered and stockpiled outdoors from where the fuel is transported by heavy equipment to the indirect firing system which includes the fuel pulverizers. Dust suppression is used on the fuel piles and the fuel pulverizers are equipped with dust collectors. We observed fuel handling activities in operation including building of the fuel pile (loaders, conveying, drop points) and loading, hauling, unloading of fuel from the pile to the kilns. No visible emissions were observed except for minor emissions from the loader bucket.

### Emission Limits:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions fr Source Recordkeepin Testing
1. Visible Emissions	20% opacity	Six-minute average	FG FUEL HAND	No opacity from any of the stacks/vents.	NA
2. PM-10	1.8 pounds per hour <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 19, EU FUEL PULV 20, EU FUEL PULV 21	NA	See testing section.
3. PM-10	8.0 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU FUEL PULV 19, EU FUEL PULV 20, EU FUEL PULV 21	NA	2.9 tpy or les (see attache records)
4. PM-10	2.9 pounds per hour <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 22, EU FUEL PULV 23	NA	See testing section.
5. PM-10	12.8 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU FUEL PULV 22, EU FUEL PULV 23	NA	2.8 tpy or les (see attache records)
6. PM	0.15 pound per 1000 pounds of exhaust gases, calculated on a dry basis <sup>2</sup>	Test Protocol <sup>a</sup>	EU FUEL PULV 19, EU FUEL PULV 20, EU FUEL PULV 21, EU FUEL PULV 22, EU FUEL PULV 23	NA	See testing section.

## II. Material Use Limits

NA

## III. Process/Operational Limits

1. At the time of the inspection the dust collectors appeared to be operating properly. Each of the kilns was operating yet no visible emissions were observed from the FG FUEL HAND control equipment.

## IV. Design Parameters

1. Minimize emissions from fuel pile, coal blending. Water is used as a dust suppressant as needed. The fuel pile sprinkler system is in place no visible emissions were observed.

## V. Testing/Sampling

Once every five years, verification of PM10 emission rates. 2017 test results:

EU	PM10 Limit (lbs./hr.)	2017 test result	PM Limit (lbs./1000lb dry)	2017 test result
EU FUEL PULV 19	1.8	0.8	0.15	0.01
EU FUEL PULV 20	1.8	0.3	0.15	0.01
EU FUEL PULV 21	1.8	0.8	0.15	0.03
EU FUEL PULV 22	2.9	0.8	0.15	0.01
EU FUEL PULV 23	2.9	0.4	0.15	0.00

## VI. Monitoring/Recordkeeping

Monthly and 12-month rolling time period PM10 emission calculation records using the most recent stack test results demonstrate PM10 emissions are below the 12.8 ton per year limit in Section I (see attached records).

Monitor and record the pressure drop across each dust collector associated with FG FUEL HAND SYS, on a daily basis. Records are maintained by the DAHS and are

available. The attached DP trend for each of the fuel pulverizer baghouses indicates the DP averaged between 0.2 and 0.4 inches H<sub>2</sub>O, except for periods coinciding with Kiln downtime for maintenance.

## VII. Reporting

NA

## VIII. Stack/Vent Restrictions

Stack & Vent ID	Maximum Exhaust Dimensions Diameter (inches)	Minimum Height Above Ground (feet)
1. SV613-01 (36-K19) EU FUEL PULV 19	30 <sup>2</sup>	60 <sup>2</sup>
2. SV623-01 (36-K20) EU FUEL PULV 20	30 <sup>2</sup>	60 <sup>2</sup>
3. SV633-01 (36-K21) EU FUEL PULV 21	30 <sup>2</sup>	60 <sup>2</sup>
4. SV6A3-01 (36-K22) EU FUEL PULV 22	40 <sup>2</sup>	60 <sup>2</sup>
5. SV6B3-01 (36-K23) EU FUEL PULV 23	40 <sup>2</sup>	60 <sup>2</sup>

During this inspection, the fuel pulverizer stacks were not evaluated for compliance with the diameter and height requirements but there have not been any changes to their configuration since they were permitted.

## IX. Other

NA

### FG KG5

Kilns 19, 20 and 21 each controlled by a main baghouse, SNCR, and DAA. Kiln 20 was not operating at the time of the inspection but was preheating to resume operation. No visible emissions were evident from any of the main stacks. We

observed each of the kilns and baghouses as well as the SNCR system and DAA system.

Since the last FCE the kilns have become subject to the PC MACT and new CEMS have been installed and certified for NO<sub>x</sub>, CO, SO<sub>2</sub>, HCL, PM, Mercury, O<sub>2</sub>, CO<sub>2</sub> and Flowrate. Each kiln stack is also equipped with an opacity monitor.

### I. Emission Limits

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
VE	20% opacity <sup>2</sup>	Six-minute average	FG KG5  (The limit applies to each individual kiln.)	19. 0% 20. 0% 21. 0%	Not collected.
PM	0.25 pound per 1,000 pounds of exhaust gas calculated on a dry gas basis <sup>2</sup>	Test Protocol <sup>a</sup>	FG KG5  (The limit applies to each individual kiln.)	NA	See test section
SO <sub>2</sub>	4.07 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each kiln operating day	EU KILN 19	1 lb./ton clinker	2019 Quarter EER; no exceedance emissions
NO <sub>x</sub>	4.72 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each operating day	EU KILN 19	4 lb./ton clinker	2019 Quarter EER; no exceedance emissions
CO	284 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month.	EU KILN 19	Not observed.	2019 Quarter EER; no exceedance emissions
SO <sub>2</sub>	4.09 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each operating day	EU KILN 20	Not operating.	2019 Quarter EER; no exceedance emissions
NO <sub>x</sub>	4.91 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each operating day	EU KILN 20	Not operating	2019 Quarter EER; no exceedance emissions

CO	280 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month.	EU KILN 20	Not operating	2019 Quarter EER; no exce emissions
SO <sub>2</sub>	3.93 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each operating day	EU KILN 21	1 lb./ton clinker	2019 Quarter EER; no exce emissions
NOx	4.48 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each operating day	EU KILN 21	1 lb./ton clinker	2019 Quarter EER; no exce emissions
CO	279 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month.	EU KILN 21	Not observed.	2019 Quarter EER; no exce emissions

## II. Material Use Limits

Material	Limit	Time Period/ Operating Scenario	Records
Plastics	65,375 tons per year <sup>2, a</sup>	12-month rolling time period	None
Clean wood	39,432 tons per year <sup>2, b</sup>	12-month rolling time period	None
Shingles	26,240.5 tons per year <sup>2, c</sup>	12-month rolling time period	1,117 tons all kilns (MAERS)

4. – 6. Plastic, wood, shingle fuel use 25%,10%, 10% respectively.

7. Plastic fuel quality requirements, non-chlorinated, non-halogenated (<2.0%). Resin codes 1,2,4,5,6,7 only.

8. Wood fuel quality. Clean leaf, bark, grass wood.

9. Shingle fuel quality. Shredded/chipped asphalt roof shingle only.

The use of alternative fuels, plastics, clean wood, and shingles is limited to 65,375 TPY, 39,432 TPY, and 26,240.5 TPY of each, respectively. Company records (attached) indicate 1,117 tons of shingles were used in 2019. No alternate fuels were delivered in 2019, on-site or being used as fuel at the time of the inspection.

### III. Process/Operational Limits

1. SNCR, DAA, baghouses and dust collectors are installed, maintained, and operated in a satisfactory manner.

Control	Kiln 19	Kiln 20	Kiln 21
SNCR feed rate (gpm)			
DAA feed rate (pph)			
Baghouse DP 0.01 kPa to 2.49 kPa			

Not observed during this inspection due to Covid-19 precautions.

All pollution control equipment appeared to be installed and operating properly. Each kiln is equipped with NOx, CO, SO<sub>2</sub>, HCL, PM, Mercury, O<sub>2</sub>, CO<sub>2</sub> and Flowrate CEMS and a COM which are calibrated, maintained, and operated in accordance with the applicable performance specifications. Air emissions are controlled by a large baghouse on each kiln for particulate control as well as Selective Non-Catalytic Reduction (SNCR) and Dry Absorbent Addition (DAA) systems for the control of NOx and SO<sub>2</sub>, respectively. The baghouses consist of 12 sections, bags are replaced in 2 of the sections each shutdown on a rotating basis. Baghouse differential pressure and stack opacity are continuously monitored. The SNCR system uses the same infrastructure as FG KG6 and ammonia flow rate to the kiln is continuously monitored. The DAA system now uses trona as the absorbent and the amount of trona used per hour is monitored.

4. Alternate fuels procurement plan.

Certificate of analysis, each delivery. No deliveries in 2019.

Monthly sampling and analysis of each supplier's deliveries. NA, 2019. Lafarge Alpena notified the AQD of the intent to resume shingle fuel use as NHSM. A small amount of remaining shingle fuels (<1% of fuels) were used in the three kilns in 2019.

### IV. Design Parameters

1. Baghouse DP reading continuously monitored in Control Room: see table in Section III.

2. SNCR, DAA operating parameters continuously monitored in Control Room: see table in Section III.

3. SNCR NH<sub>3</sub>STGTANK equipped with vacuum breaker and relief valve set at 25 psi  $\pm$  5 psi. Mr. Weide has stated this is true.

## V. Testing

### 1. Annual COMS Audit.

### 2. 5 yr. PM testing. Last test 2016.

EU	LIMIT	TEST RESULT
EU KILN 19	0.25 pound per 1,000 pounds of exhaust gas	0.02
EU KILN 20	0.25 pound per 1,000 pounds of exhaust gas	0.02
EU KILN 21	0.25 pound per 1,000 pounds of exhaust gas	0.01

**PC MACT emission limit and monitoring testing conducted in 2020 to demonstrate compliance with 0.70 lb./ton clinker emission rate and establish operating parameters for PM CPMS. Excess emissions were discovered through testing of EU KILN 20 due to baghouse malfunctions. Repairs were made and retesting was conducted eventually demonstrating compliance. Violation notice issued 6/30/20.**

**Required PM, HCL, Mercury, Dioxin/Furan, THC and CEMS RATA testing were all conducted in 2019. Stack test protocols, tests and test results were reviewed as they occurred and documented in MACES. The test results are used in the calculations for compliance with the emission limits in FG KG 6.**

## VI. Monitoring/Recordkeeping

**1. Monitor, record, and calculate: the daily kiln feed rates in tons, and the daily clinker production rates in tons. Kiln feed rate and clinker production are monitored and recorded by the plant's data acquisition system.**

**2. Monitor and record the visible emissions. Each of the kilns is equipped with a continuous opacity monitor that was operating at the time of the inspection. Two incidents of monitor downtime occurred during the review period. Violation notices were issued for each incident and were addressed by the company.**

**5. Monitor and record the SO<sub>2</sub>, NO<sub>x</sub> and CO emissions. SO<sub>2</sub>, NO<sub>x</sub> and CO are monitored using CEMS with readouts of one-minute averages available in the control room (see Emission Limits section above). Records of past emissions are also maintained.**

**6. Calculate CO emissions in tons per 12-month rolling time-period basis each month. CO emissions are tracked and reported annually, no excess CO emissions have been reported.**

**8. Calculate SO<sub>2</sub> and NO<sub>x</sub> emissions in pound per ton clinker including SSM on a 30-day rolling average as required by ROP. SO<sub>2</sub> and NO<sub>x</sub> emissions are calculated on a pound per ton clinker 30-day rolling average basis and maintained. Excess**



**SO2 emissions from EU KILN 20 were noted by Lafarge Alpena on 11/27/2019 due to an O2 monitor fault. Corrective actions were taken to restore the monitor.,**

**9. Calculate and keep records of CO, PM, PM10, PM2.5, and SO2 emission rates from each emission unit of FG KG5, in tons per year on a calendar year basis (when burning alternative fuels). Alternative fuels are used in accordance with an approved Alternative Fuels Procurement Plan. No alternative fuels were being fired at the time of the inspection. There were no alternative fuels observed on site at the time of the inspection.**

**10. PM and PM10 emissions in TPY on a calendar year (2017) basis. This requirement expired January 21, 2018.**

**11. Alt fuel supplier certificates of analysis. No deliveries 2019 but plans to resume.**

**12. Alt fuel usage, monthly and 12-mos rolling. Limited use of old stock in 2019 401.17 tons.**

**13. Alt fuel usage percentage of each fuel used on a heat input basis. 2019 usage was less than 1% for each kiln.**

**SNCR, Baghouse, and Wet FGD control device operating parameters are monitored in accordance with the MAP and readings are available in the control room.**

## **VI. Reporting**

**The following reports are required for FG KG5:**

**1. ROP annual and Semi-annual reports.**

**Annual, Semi-annual 1 and Semi-annual 2 reports were submitted on time during the review period and were complete.**

**2. CEMS EER and QA quarterly.**

**Quarter reports were submitted in a timely manner and were reviewed as they were received. Several instances of excess emissions and excessive monitor downtime were reported during the reporting period. Violation notices were sent and responded to by the company.**

**PC MACT Operations and Maintenance Plant semi-annual summary reports have been received and were reviewed at that time.**

**3. Annual report of CO, PM, PM10, PM2.5 and SO2 emissions if actual emissions exceed the baseline actual emissions by a significant amount or pre-construction projected emissions (PSD compliance for alternative fuels increase).**

**Alternative fuels were not a significant source of fuel in 2019 for Lafarge. No report is expected.**

**4. Notifications: Testing notifications, Alternative fuel supplier, Alternate fuels procurement plan, MAP.**

Test notifications for 2019 and 2020 were provided in accordance with the ROP timelines. No alternate fuel supplier certification records were required in 2019.

Semi-annual CAM excursion/exceedance and monitor downtime reports have been submitted and were reviewed at the time they were received.

FG KG5 has a MAP for the SNCR, DAA and Main Baghouse that was updated and approved on 1/20/2016.

#### VIII. Stack/Vent Restrictions

FG KG5 includes one stack for each kiln (SV25-289, SV25-290, and SV25-291) Stack parameters for each are a maximum diameter of 156 inches and minimum height of 220 feet. Actual dimensions were not verified during this PCE but the stacks dimensions have not been altered during the review period.

#### IX. Other

1. COM Monitoring Plan.
2. SO<sub>2</sub>, NO<sub>x</sub>, CO Monitoring/QAQC plan.

Lafarge has approved versions of the required Monitoring Plan/QAQC Plan, MAP, and CAM. During the review period the kilns at the facility became subject to the PC MACT on 6/13/2019 which required the installation and testing of multiple CEMS. CEMS compliance demonstration date was 12/13/2020. All CEMS were certified.

#### FG KG 6

Kilns 22 and 23 both have emissions controlled by separate SNCR injection systems, baghouses, and a single wet Flue Gas Desulfurization (FGD) scrubber. The SNCR systems inject ammonia directly into the kilns from two storage tanks equipped with a vapor balance system. The baghouses are two large identical units constructed of concrete and containing multiple sections. The baghouses have been reconfigured to flow in the opposite direction from how they were originally designed due the addition of the wet FGD and the need to duct the exhaust from the baghouses over to the Wet FGD and its stack. The old KG6 stack is no longer in use.

FG KG6 is now subject to the PC MACT which has added additional emission limits and emissions monitoring requirements.

At the time of the inspection alternative fuels (plastics, shingles, wood) were not being burned and none were stored on-site at that time. Lafarge Alpena has notified the AQD that they intend to resume burning shingle fuels in the future.

#### I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions fr Source Recordkeepin Testing
1. VE	20% opacity <sup>2</sup>	Six-minute average	FG KG6	0%	NA

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions fr Source Recordkeepin Testing
2. PM	0.25 pound per 1000 pounds of exhaust <sup>3</sup>  0.07 lb./tn clinker	Test Protocol <sup>a</sup>	FG KG6	NA	See testing section
3. NOx	5.47 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each kiln operating day	EU KILN 22	5 lbs/tn clinker	2019 Quarter EER; no exce emissions
4. CO	537 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU KILN 22	Not observed	2019 Quarter EER; no exce emissions
5. SO <sub>2</sub>	1.98 pounds per ton of clinker <sup>2c</sup>	30-day rolling average, as determined at the end of each kiln operating day	FG KG6  (Applies when both kilns operate simultaneously or either kiln operates individually.)	Not observed.	2019 Quarter EER; 2 <sup>nd</sup> quar excess SO2 emissions due pH probe failu
6. NOx	5.69 pounds per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each kiln operating day	EU KILN 2	6 lb./tn clinker instantaneous	2019 Quarter EER; no exce emissions
7. CO	539 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU KILN 23	Not observed.	2019 Quarter EER; no exce emissions

**II. Material Use Limits**

Material	Limit	Time Period/ Operating Scenario	Equipment	Observed/Recorded

Plastics	70,822 tons per year	12-month rolling time period	FG KG6	None
Clean wood	42,719 tons per year	12-month rolling time period	FG KG6	None
Shingles	28,432 tons per year	12-month rolling time period	FG KG6	429 tons all kilns

4. – 6. Plastic, wood, shingle fuel use 0%,0%, <1% respectively.

7. Plastic fuel quality requirements, non-chlorinated, non-halogenated (<2.0%). Resin codes 1,2,4,5,6,7 only. No plastics fueled.

8. Wood fuel quality. Clean leaf, bark, grass wood. No wood fueled.

9. Shingle fuel quality. Shredded/chipped asphalt roof shingle only. Only processed shingles are used.

The use of alternative fuels, plastics, clean wood, and shingles is limited to 70,822 TPY, 42,719 TPY, and 28,432 TPY of each, respectively. None were delivered in 2019, on-site or being used as fuel at the time of the inspection.

### III. Process/Operational Limits

Operating Parameter	Reading
Booster fan inlet pressure (0 - -5 hPa)	
Scrubber Dp (0.15 – 2.5 hPa)	
Stack outlet temp (40 – 60 deg. C)	
Scrubber outlet flow (>100 kscfm)	
PH (4.0 – 7.0)	
Spray pump pressure (> 15 kPa)	

Not observed during this inspection due to Covid-19 precautions.

1. SNCR, Wet FGD, baghouses and dust collectors are installed, maintained, and operated in a satisfactory manner.

All pollution control equipment appeared to be installed and operating properly. Each kiln is equipped with SO<sub>2</sub>, NO<sub>x</sub> and CO CEMS which are calibrated, maintained,

and operated in accordance with the applicable performance specifications. The Wet FGD operating parameters are monitored as required by the ROP and MAP.

CEMS for PM, Mercury, O<sub>2</sub>, CO<sub>2</sub> and Flowrate have also been installed for PC MACT compliance. HCL CEMS had been installed and certified but were determined to be inaccurate and have been replaced with SO<sub>2</sub> surrogate monitoring in accordance with the PC MACT.

#### IV. Design Parameters

1. - 3. The KG6 main baghouses were equipped with differential pressure monitoring equipment. The Wet FGD is equipped with method of measuring liquid flow rate (spray pump pressure), pressure differential and outlet temperature.

4. SNCR NH<sub>3</sub>STGTANK equipped with vacuum breaker and relief valve set at 25 psi  $\pm$  5 psi. Mr. Weide has stated this is true.

#### V. Testing

1. Annual PM testing. Last test date: 2017

Result: 0.1647 lbs/1000 lbs exhaust. Limit: 0.25 lbs/1000 lbs exhaust.

Required PM, HCL, and Mercury (6/25/2014) testing have been completed. Additional compliance testing for PC MACT has also been completed for initial compliance (due 12/13/2019).

#### VI. FG KG6 Monitoring/Recordkeeping

1. Monitor, record, and calculate: the daily kiln feed rates in tons, and the daily clinker production rates in tons, for each kiln. Kiln feed rate and clinker production are monitored and recorded by the plant's data acquisition system.

2. Monitor and record the SO<sub>2</sub> (combined stack), NO<sub>x</sub>, and CO emissions from EU KILN 22 and EU KILN 23 on a continuous basis. The WGS is equipped with CEMS and the pollutants are monitored (see above). SO<sub>2</sub>, NO<sub>x</sub> and CO are monitored using CEMS with readouts of one minute to 24-hour averages available in the control room (see Emission Limits section above). Records of past emissions are also maintained.

3. Calculate CO emissions in tons per 12-month rolling time-period basis each month. CO emissions are tracked and reported annually, no excess CO emissions have been reported.

4. Calculate SO<sub>2</sub> and NO<sub>x</sub> emissions in pound per ton clinker including SSM on a 30-day rolling average as required by ROP. SO<sub>2</sub> and NO<sub>x</sub> emissions are calculated on a pound per ton clinker 30-day rolling average basis and maintained. As mentioned above, an incident of excess SO<sub>2</sub> emissions occurred due to failure of the pH probe. Repairs were made in a timely manner.

5. Calculate and keep records of CO, PM, PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub> emission rates from each emission unit of FG KG5, in tons per year on a calendar year basis. (when burning alternative fuels). Alternative fuels are used in accordance with an approved Alternative Fuels Procurement Plan. No alternative fuels were being

fired at the time of the inspection. There were no alternative fuels observed on site at the time of the inspection.

**8. Alt fuel supplier certificates of analysis. Alternative fuels are used in accordance with an approved Alternative Fuels Procurement Plan**

**9. Alt fuel usage, monthly and 12-mos rolling. As previously stated, no alternative fuels were being fired at the time of the inspection. There were no alternative fuels on site at the time of the inspection.**

**10. Alt fuel usage percentage of each fuel used on a heat input basis for plastic, wood, and shingles. Usage during the review period were 0%, 0%, <1% respectively.**

## **VII. Reporting**

The following reports are required for FG KG6:

**1. ROP annual and Semi-annual reports.**

**Annual, Semi-annual 1 and Semi-annual 2 reports were received on time and complete and were reviewed at the time they were received.**

**2. CEMS EER and QA quarterly.**

**The required quarterly CEMS reports have been received and were reviewed at that time. During the 2019 3<sup>rd</sup> quarter no QA/QC was conducted on the HCL CEM and excess monitor downtime occurred for the THC and HCL monitor in the 4<sup>th</sup> quarter of 2019. Also, excess HCL emissions occurred during the 4<sup>th</sup> Quarter. Excess PM and HCL emissions also occurred in the 1st quarter of 2020. These issues have been addresses through the issuance of violation notices.**

**3. Annual report of CO, PM, PM10, PM2.5 and SO2 emissions if actual emissions exceed the baseline actual emissions by a significant amount or pre-construction projected emissions (PSD compliance for alternative fuels increase). Alternative fuels were not a significant source of fuel in 2019 for Lafarge. No report is expected.**

**4. Notifications: Testing notifications, Alternative fuel supplier, Alternate fuels procurement plan, MAP. Test notifications for 2019 and 2020 were provided in accordance with the ROP timelines. No alternate fuel supplier certification records were required in 2019.**

**Semi-annual CAM excursion/exceedance and monitor downtime reports have been submitted and were reviewed at the time they were received.**

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

**FG KG6 has one stack (SV26-292A) that is shared between the two kiln processes. Exhaust from each baghouse is combined into one duct which leads to the Wet FGD which is exhausted out SV26-292A. Stack parameters for SV26-292A are a maximum diameter of 100 inches and minimum height of 250 feet. Actual dimensions were not verified during this PCE but the stack appears to be within these specifications and no alterations have taken place since installation.**

## IX. Other

### 1. SO<sub>2</sub>, NO<sub>x</sub>, CO Monitoring/QAQC plan.

Lafarge has approved versions of the required Monitoring Plan/QAQC Plan, MAP, and CAM. A PC MACT Operations and Maintenance plan has also been submitted and approved.

#### FG CLINK COOL

During the inspection we observed the clinker coolers and dust collectors, handling conveyors and dust collectors, and the off-spec clinker handling elevator and dust collector. We inspected the clinker coolers for all 5 kilns which are addressed in FG CLINK COOL. The clinker coolers receive clinker directly from the kilns and use forced air to cool the material. The clinker cooler dust collector stacks are equipped with PM Continuous Parameter Monitoring System (CPMS) monitors to detect PM emissions.

Each of the clinker coolers serving KG6 has two dust collectors one for the cooler emissions and one for clinker handling (conveyors). There were no visible emissions and the dust collectors appeared to be operating properly.

The FG KG5 coolers (3) are controlled by one large dust collector (plant id no. 25-507) that has two stacks (emissions from half the baghouse sections go to one stack and emissions from the other sections go to the second). Each of these stacks is equipped with a PM CPMS referred to as Fan 92 and Fan 93. The baghouse was installed and operating and there were no visible emissions at the time of the inspection.

The PM CPMS were installed and operating. These units include a display that reads out in micrograms/cubic meter but have not been certified for this type of use (PM CEMS). They are currently used as PM CPMS which relay a milliamp reading to the plant computer system as monitored in the control room. This reading has been correlated to PM emissions testing most recently conducted in 2020 to set an operating limit not to exceed. Operating limit trend data (attached) indicates compliance with the operating limits except for an exceedance on FG KG5 coolers in January that required retesting.

There is also one dust collector serving the off-spec clinker handling elevator which handles clinker from both coolers.

We did not observe any visible emissions from this equipment.

#### I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
PM	109.0 tons per year <sup>2</sup>	12-month rolling time period as determined	FG CLINK COOL	NA	16.7 tons (MAERS)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
		at the end of each calendar month			
PM	0.07 pound per ton clinker <sup>2</sup>	30-day rolling average, as determined at the end of each kiln operating day	FG CLINK COOL  Applies individually	NA	See test section V.

## II. Material Limits

There are no applicable material limits.

## III. Process/Operational Restrictions

FG CLINK COOL is equipped with the required dust collectors which were equipped with PM CPMS and appeared to be operating properly. A MAP for FG CLINK COOL was most recently approved on 1/20/ 2016.

### CPMS System Operation

PROCESS/CONTROL DEVICE	CPMS READING (ma) Observed During Inspection
92 FAN	
93 FAN	
EU CLINK COOL 22	
EU CLINK COOL 23	

Not observed during the inspection due to Covid-19 precautions. See attached mA trend data for 2020.

## IV. Design/Equipment Parameters

NA

## V. Testing



Lafarge Alpena conducted PM emissions testing on the Clinker Coolers in 2020. After several revisions of the test report, the test results have been reviewed and approved by AQD. The emissions data and PM CPMS operating parameters cited are from the most recent approved testing. Additional testing was conducted in July and August to reset the mA operating limit but results were not received at the time of this report.

#### 1. Annual PM testing. Last test date: July 2020

PROCESS/CONTROL DEVICE	Test Result (lb./ton clinker)	CPMS Limit from 2020 Test (ma)
92 FAN	Results pending	
93 FAN	Results pending	
EU CLINK COOL 22	0.014	4.35
EU CLINK COOL 23	Results pending	

#### VI. Monitoring/Recordkeeping

The requirement for COMS was removed in the re-permitting under PTI 171-15 since the CPMS monitoring systems were installed. The CPMS monitors have been correlated to PM emission rates during stack testing. The CPMS were operating at the time of the inspection and readings (in milli amps) are available on the control room screen. The PM CPMS were satisfying the requirement for continuous PM compliance monitoring. The attached record of 2020 CPMS reading trends also indicates the Clinker Cooler 22 and 23 as well as the 93 fan operating ranges appear to have been in the range of the limits established during stack testing with the exception of the KG5 coolers January exceedance.

7. Calculate the PM emissions in tons per year on a monthly and 12-month rolling time period basis as determined at the end of each calendar month. 16.7 tons per year, see Section I.

#### VII. Reporting

The following reports are required for FG CLINK COOL:

1. ROP annual and Semi-annual reports. Annual, Semi-annual 1 and Semi-annual 2 reports were received on time and complete.
2. PCMACT Annual and Semi-annual reports. These are PM CPMS monitor reports submitted through CEDRI.

#### VIII. Stack/Vent Restrictions

During the inspection, we observed each of the CC stacks and they appear to meet the permitted limits. CC 19, 20, and 21 vent through one baghouse with two stacks (SV25-507 and SV25-507A) each stack is limited 84 inches in diameter and must be taller than 50 feet. CC22 and CC23 each have their own baghouse and the stacks are square and must have maximum cross-sectional area of 215 square inches and a minimum height of 27.5 feet.

#### IX. Other Requirements

This section simply requires the Permittee to comply with the PC MACT and NSPS.

##### FG CLINKER SYS:

The clinker handling system encompasses clinker transport and storage from the clinker coolers to either storage or to FG FINISH. Gypsum, Limestone and CKD can be added to the clinker as needed during this process. As a result, this process consists mainly of conveyors, transfer points, and storage bins and silos. Particulate matter is the air pollutant of concern and emissions are controlled by various dust collectors.

At the time of the inspection visible emissions were present from the KG5 clinker cooler drag conveyor and from the head pulley of the clinker transport belt at the discharge to the storage silos. Plant personnel investigated and determined that a door on the covered drag conveyor was open allowing dust to escape. Closing the door resolved the problem. The cause of the other visible emissions was determined to be due to obstructed airflow to the dust collector due to dust buildup. This problem was remedied by clearing out the draw pipe. Similar visible emissions were noted during the last FCE in 2018.

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
VE	10 percent opacity <sup>2</sup>	Six-minute average	FG CLINKER SYS	VE exceeded 10% from open doors on the drag conveyor and at the top of the head pulley to silo	Not reviewed due to Covid- precautions
PM	0.02 grain per dry standard cubic foot <sup>2</sup>	Test Protocol	FG CLINKER SYS	NA	Testing not required this review period

PM	0.10 pound Per 1,000 pounds of exhaust gases calculated on a dry gas basis <sup>2</sup>	Test Protocol	EU CLINK AD/PROP	NA	Testing not required this review period
PM	13.8 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU CLINK AD/PROP	NA	0.17 to 0.29 tons

**II. MATERIAL LIMITS**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. Dust collectors and covered clinker conveyers are installed, maintained, and operated in a satisfactory manner, with the exception of conveyor cover door that was open and the obstruction of the draw pipe for dust collection on the head pulley (41-421?) transfer. Both issues were reviewed and addressed by plant personnel following the inspection.

Dust Collector	VE/Reading (% opacity)
EU BLD FUEL PILE: 40-100	0
40-110	0
40-120	0
309DC9	0
309DC10	0
EU CLINK AD/PROP: 41-352	0
41-356	0

41-439	0
41-427	0
41-447	0

2. An approved O&M plan dated November 2, 2017 is on file at the Cadillac District office.

3. Clinker appears to be stored on-site per PC MACT/O&M Plan including appropriate control measures. Clinker is not stored in open piles.

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

The clinker conveyors, associated with FG CLINKER SYS, were equipped and maintained with covers to minimize fugitive emissions from the conveyors except as noted in III.1 above.

#### **V. TESTING/SAMPLING**

1. Opacity tests of FG CLINKER SYS were conducted in accordance with 40 CFR Part 63, Subparts A and LLL in April 2002. Copies of the test results are on file at the Cadillac District office.

#### **VI. MONITORING/RECORDKEEPING**

1. Visible emissions Method 22 and Method 9 (if necessary) monitoring for FG CLINKER SYS (storage bins, conveying system transfer points, bulk loading and unloading systems) is conducted as specified in Appendix 3.5 Testing frequency has been reduced to annual in accordance with Appendix 3.5.

2. Method 9 visible emissions readings have not been necessary.

3. and 4. PM and PM10 emission calculations are maintained and are provided upon request (see attached records) or through the MAERS submittal.

#### **VII. REPORTING**

5. The permittee shall submit records of PM and PM10 emissions from FG CLINKER SYS in tons per calendar year to both the AQD Permit Section Supervisor and the AQD District Supervisor within 60 days following the end of each calendar year, if both of the following apply (until January 21, 2018):

a. The calendar year actual emissions of either PM and PM10 exceed the baseline actual emissions by a significant amount (see Appendix 7.2); and

b. The calendar year actual emissions of either PM and PM10 differ from the pre-construction projection. The pre-construction projection is the sum of the projected actual emissions from each emission unit included in the Actual to Projected Actual Test used for FG CLINKER SYS (see Appendix 7.2). (R 336.2802(4)(c), R 336.2818(4))

This reporting has not been necessary PM and PM10 emissions have not exceeded the baseline amount. The reporting requirement has now expired.

#### VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions Diameter (inches)	Minimum Height Above Ground (feet)
SV40-120 EU CLINK STR BLD	56.4 <sup>2</sup>	63 <sup>2</sup>
SV40-100 EU CLINK STR BLD clinker reclaim belt	559 (square inches) <sup>2</sup>	54 Orientation is not unobstructed vertically up <sup>2</sup>
SV 40-110 EU CLINK STR BLD clinker belt transfer	346 (square inches) <sup>2</sup>	121 Orientation is not unobstructed vertically up <sup>2</sup>
EU CLINK AD/PROP SV25-825	437 (square inches) <sup>2</sup>	21.3 Orientation is not unobstructed vertically up <sup>2</sup>
EU CLINK AD/PROP SV26-825	437 (square inches) <sup>2</sup>	55.3 Orientation is not unobstructed vertically up <sup>r</sup>

The stacks/vents appeared to meet these specifications at the time of the inspection.

## **FG FINISH MILLS**

Finish Mills use ball mills and roll presses to convert clinker, gypsum, limestone and CKD to Portland cement. Cement finishing operations are enclosed in a separate large building within the plant property. The building contains six separate finishing lines (13-15 and 19-21), each centered on a rotating ball mill. Ball mills 20 and 21 are each preceded by a roller press and followed by a separator. Finishing line 19 does not have a roller press but does include a separator. Finish lines 13-15 do not include roller presses and the ball mill and separators are one unit on these lines. Dust control points within the finishing lines include each ball mill and separator and the roller press and lower roller press system (material transfer from conveyor to elevator). Separators are used collect and reclaim the Portland cement. During the inspection we identified and observed each dust collector stack. At that time there were no visible emissions from any of the stacks.

### **I. EMISSION LIMITS**

<b>utant</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Emissions observed during inspection</b>	<b>Emissions fro Source Recordkeepir Testing</b>
<b>VE</b>	<b>10% opacity<sup>2</sup></b>	<b>Six-minute average</b>	<b>FG FINISH MILLS</b>	<b>0%</b>	<b>VE Monitorir Records 0% opacity recorded ir records sampled.</b>
<b>PM-10</b>	<b>1.0 pound per hour<sup>2</sup></b>	<b>Test Protocol</b>	<b>EU BALL MILL 20 Mill Vent  EU BALL MILL 21 Mill Vent  (Limit applies to each individual emission unit.)</b>	<b>NA</b>	<b>Visible emission observation demonstrat compliance, stack testin required duri review perio</b>
<b>PM-10</b>	<b>10.0 pounds per hour<sup>2</sup></b>	<b>Test Protocol</b>	<b>EU BALL MILL 20 Separator  EU BALL MILL 21-Separator</b>	<b>NA</b>	<b>Visible emission observation demonstrat compliance, stack testin</b>

			(Limit applies to each individual emission unit.)		required duri review perio
PM-10	4.1 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU BALL MILL 20 Mill Vent	NA	< 1 ton
PM-10	4.5 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU BALL MILL 21 Mill Vent	NA	< 1 ton
PM-10	44.0 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU BALL MILL 20 Separator EU BALL MILL 21 Separator (Limit applies to each individual emission unit.)	NA	Visible emission observation demonstrat compliance, stack testin required duri review perio
PM	0.15 pounds per 1000 pounds of exhaust gases, calculated on a dry basis <sup>2</sup>	Test Protocol	EU BALL MILL 20 Mill Vent EU BALL MILL 20 Separator EU BALL MILL 21 Mill Vent EU BALL MILL 21 Separator (Limit applies to each	NA	Proper operation o control devic demonstrate compliance, stack testin required duri the review period.

			individual emission unit.)		
<b>PM</b>	<b>0.07 pounds hour<sup>2</sup></b>	<b>Test Protocol</b>	<b>EU Roll Press 20 (43-271)  and EU Roll Press 21  (44-271)</b>	<b>NA</b>	<b>Proper operation o control devic demonstrate compliance, stack testin required duri the review period.</b>

## II. Material Limits

NA

## III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Dust collectors are installed, maintained, and operated in a satisfactory manner. Each stack was observed during operation and there were no visible emissions.

Dust Collector	VE/Reading (% opacity)
<b>Ball Mill 13, 45-261</b>	<b>0</b>
<b>Ball Mill 14, 45-262</b>	<b>0</b>
<b>Ball Mill 15, 45-264</b>	<b>0</b>
<b>Ball Mill 19, 49-011</b>	<b>0</b>
<b>Ball Mill 19, 49-265</b>	<b>0</b>
<b>Ball Mill 19, 49-269</b>	<b>0</b>
<b>Ball Mill 19, 49-270</b>	<b>0</b>
<b>Ball Mill 20, 43-011</b>	<b>0</b>
<b>Ball Mill 20, 43-269</b>	<b>0</b>



Ball Mill 20, 43-270	0
Ball Mill 21, 44-011	0
Ball Mill 21, 44-269	0
Ball Mill 21, 44-270	0
Roll Press 20, 43-271	0
Roll Press 20, 43-272	0
Roll Press 21, 44-271	0
Roll Press 21, 44-272	0

2. An approved O&M plan dated November 2, 2017 is on file at the Cadillac District office.

#### IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

#### V. TESTING/SAMPLING

1. Opacity tests of FG FINISH MILLS were conducted in accordance with 40 CFR Part 63, Subparts A and LLL in April 2002. Copies of the test results are on file at the Cadillac District office. PM/PM10 emission testing is no longer required for this emission unit.

#### VI. MONITORING/RECORDKEEPING

1. Method 22 and Method 9 (if necessary) visible emissions monitoring and CAM compliance. Method 22 monitoring as specified in Appendix 3.5. VE readings are conducted annually in accordance with Appendix 3.5.

2,3,6,7,10,11. CAM daily Method 22 monitoring for compliance with the PM10 limit. Daily monitoring is conducted there were no visible emissions, or the equipment was not operating at the time of the observations and therefore no CAM excursions or exceedences. The records are maintained.

4,5,9. PM and PM10 emission calculations are maintained and are provided upon request or through the MAERS submittal.

#### VII. REPORTING

Reports were reviewed as they were received throughout the FCE period.

### VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)
1. SV43-269 EU BALL MILL 20 mill vent	80 <sup>2</sup>	108 <sup>2</sup>
2. SV43-270 EU BALL MILL 20 separator	80 <sup>2</sup>	108 <sup>2</sup>
3. SV44-269 EU BALL MILL 21 mill vent	80 <sup>2</sup>	108 <sup>2</sup>
4. SV44-270 EU BALL MILL 21 separator	80 <sup>2</sup>	108 <sup>2</sup>

The mill vent stacks are located inside the separator stacks and both exit on the roof of the finish grind building and appear to meet the height limit.

### IX. OTHER REQUIREMENT(S)

FG FINISH MILLS appears to be in compliance with the requirements of the PC MACT and NESHAP based on emissions information, testing, recordkeeping and reporting.

### FG CEMENT STR LOAD

Cement Storage and Bulk Loading of Portland Cement to boats, rail cars, and trucks. EU STORE UNIT 2, Storage Unit 2, various silos that store the cement including transfers of cement to EU BULK LD TRUCK via pump. EU STORE UNIT 3, Storage Unit 3, various silos that store the cement including transfers of the cement to EU BULK LD TRUCK via pump. EU STORE UNIT 4, a set of 30 storage silos that store, transfer and load cement onto ships and railcars. The cement storage and loading system includes the pneumatic transportation of cement from the finish mills to the cement storage silos and loading of ships, trains, and trucks. Dust collection points include the storage units and loading processes. Storage units 2, 3, and 4 are sets of storage silos and each storage unit has dust control on the silo vents. Loading operations are controlled by cartridge type dust collectors on each loading rig. Controls are on both the conveyor and the loading spout. At the time of the

inspection no trains were being loaded but a ship was in port and was being actively loaded and truck loading was also taking place. We observed these operations and did not detect any visible emissions from any of the loading rigs.

#### I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
1. VE	10% opacity <sup>2</sup>	Six-minute average	FG CMNT STR LOAD	0% except	Not reviewed due to Covid- precautions
2. PM	0.05 pound per 1000 pounds of exhaust gas, calculated on a dry gas basis <sup>2</sup>	Test Protocol	EU STORE UNIT 2	NA	Not reviewed due to Covid- precautions
3. PM	0.15 pound per 1000 pounds of exhaust gas, calculated on a dry gas basis <sup>2</sup>	Test Protocol	EU STORE UNIT 3	NA	Not reviewed due to Covid- precautions
4. PM-10	0.2 pound per hour <sup>2</sup>	Test Protocol	EU STORE UNIT 4, Rail  (The limit applies to each individual dust collector of East, Middle, and West)	NA	Not reviewed due to Covid- precautions

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Emissions observed during inspection</b>	<b>Emissions from Source Recordkeeping Testing</b>
<b>5. PM-10</b>	<b>0.8 ton per year<sup>2</sup></b>	<b>12-month rolling time period as determined at the end of each calendar month</b>	<b>EU STORE UNIT 4, Rail  (The limit applies to each individual dust collector of East, Middle, and West)</b>	<b>NA</b>	<b>AP-42 Emission calculations</b>
<b>6. PM</b>	<b>0.15 pound per 1000 pounds of exhaust gases, calculated on a dry basis <sup>2</sup></b>	<b>Test Protocol</b>	<b>EU STORE UNIT 4, Rail  (The limit applies to each individual dust collector of East, Middle, and West)</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>
<b>7. PM</b>	<b>0.15 pound per 1000 pounds of exhaust gas, calculated on a dry gas basis <sup>2</sup></b>	<b>Test Protocol</b>	<b>EU STORE UNIT 4, Boat</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>
<b>8. PM-10</b>	<b>1.5 pounds per hour<sup>2</sup></b>	<b>Test Protocol</b>	<b>EU BULK LD TRUCK  (Dust collector EU-46-710B)</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>
<b>9. PM-10</b>	<b>6.4 tons per year<sup>2</sup></b>	<b>12-month rolling time period as determined at the end of each calendar month</b>	<b>EU BULK LD TRUCK  (Dust collector EU-46-710B)</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>
<b>10. PM</b>		<b>Test Protocol</b>		<b>NA</b>	

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
	0.15 pound per 1000 pounds of exhaust gases, calculated on a dry basis <sup>2</sup>		EU BULK LD TRUCK (Dust collector EU-46-710B)		Not reviewed due to Covid-precautions
11. PM	2.33 pounds per hour <sup>2</sup>	Test Protocol	EU BULK LD TRUCK	NA	Not reviewed due to Covid-precautions
12. PM	2.4 tons per year <sup>2</sup>	12-month rolling time period as determined at the end of each calendar month	EU BULK LD TRUCK	NA	Calculation: using AQD approved EI

**II. MATERIAL LIMIT(S)**

NA

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. Dust collectors are installed, maintained, and operated in a satisfactory manner.

Dust Collector	VE/Reading
EU STORE UNIT 2: Silo dust collector 50-462	Not in use.
bottom transfer dust collector 570DC01.	Not in use.
EU STORE UNIT 3: South silos dust collector SV50-701	0
north silos dust collector SV50-702	0

bottom transfer dust collector 570DC02.	0
EU STORE UNIT 4: Rail dust collectors 574DC01, 574DC02, 574DC03, 574DC04, 46-710B.	Not operating at time of inspection.
EU STORE UNIT 4: Silos 50-416 thru 50-426 Rig 1 thru 14 Telescopes DC09 thru DC22 Rig1- 14 Air Slides DC23 thru DC36	0

#### IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

#### V. TESTING/SAMPLING

1. Opacity tests of FG CMT STR LOAD were conducted in accordance with 40 CFR Part 63, Subparts A and LLL in April 2002. Copies of the test results are on file at the Cadillac District office.

#### VI. MONITORING/RECORDKEEPING

1. The permittee shall conduct monthly Method 22 and Method 9 (if necessary) visible emissions monitoring as specified in Appendix 3.5. VE readings are conducted annually in accordance with Appendix 3.5.

2. The permittee shall keep, in a satisfactory manner, all Method 22 and Method 9 visible emissions readings from the FG CMT STR LOAD. Method 9 records shall include the time of the visible emissions, cause of the visible emissions, corrective action taken and time of completion of corrective action. Records are maintained as required.

3.,4.,5.,. PM and PM10 emission calculations are maintained and are provided upon request (see attached records) or through the MAERS submittal.

#### VII. REPORTING

Reviewed as received.

#### VIII. STACK/VENT RESTRICTION(S)

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV46-710B EU BULK LD TRUCK	24 <sup>2</sup>	50 <sup>2</sup>	R 336.2803 R 336.2804
2. SV574DC01 EU STORE UNIT 4 (Air Slide 1)	6.0 <sup>2</sup>	20 <sup>2</sup>	R 336.2803 R 336.2804
3. SV574DC01 EU STORE UNIT 4 (Air Slide 1)	6.0 <sup>2</sup>	20 <sup>2</sup>	R 336.2803 R 336.2804
4. SV574DC03 EU STORE UNIT 4 (Rail Load Spout)	6.0 <sup>2</sup>	20 <sup>2</sup>	R 336.2803 R 336.2804

The observed stack parameters appear to be consistent with the stack/vent requirements.

#### **IX. OTHER REQUIREMENT(S)**

FG CMT STR LOAD appears to be in compliance with the requirements of the PC MACT and NESHAP based on emissions information, testing, recordkeeping and reporting.

#### **FG CKD HAND SYS**

The CKD handling system includes pneumatic transportation of CKD from the kiln baghouses to the pug mill where water is added to the CKD. The mixture is loaded into scraper vehicles and transported to the landfill where it is applied. Dust collection points include KG5 dust return (EU DUST RETURN), KG6 FEED (EU FEED END 6), and the CKD Pug mill (EU CKD PUGMILL).

#### **EMISSION LIMIT(S)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
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<b>Pollutant</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Emissions observed during inspection</b>	<b>Emissions from Source Recordkeeping Testing</b>
<b>VE</b>	<b>10% opacity</b>	<b>Six-Minute Average</b>	<b>FG CKD HAND SYS</b>	<b>No VE from Dust collector stacks</b>	<b>Not reviewed due to Covid- precautions</b>
<b>PM-10</b>	<b>0.02 grain per actual cubic foot of exhaust gas<sup>2</sup></b>	<b>Test Protocol<sup>a</sup></b>	<b>EU DUST RETURN 5 (This limit applies to dust tanks 31-006),  EU FEED END 6  (This limit applies to elevators 32- 131 and 32-132, and vibrating screen 32-006)</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>
<b>PM</b>	<b>0.10 pound per 1,000 pounds of exhaust gases, calculated on a dry gas basis<sup>2</sup></b>	<b>Test Protocol<sup>a</sup></b>	<b>FG CKD HAND SYS</b>	<b>NA</b>	<b>Not reviewed due to Covid- precautions</b>

**II. MATERIAL USE**

**NA**

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

**1. Baghouses and dust collectors are installed, maintained, and operated in a satisfactory manner. No visible emissions were observed from any of the stacks.**

<b>Dust Collector</b>	<b>VE/Reading</b>
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<b>EU DUST RETURN 5: 31-181</b>	<b>0</b>
<b>31-182</b>	<b>0</b>
<b>31-184</b>	<b>0</b>
<b>31-185</b>	<b>0</b>
<b>31-187</b>	<b>0</b>
<b>EU FEED END 6: 32-171</b>	<b>0</b>
<b>32-173</b>	<b>0</b>
<b>32-172</b>	<b>0</b>
<b>EU CKD PUGMILL: 33-250.</b>	<b>0</b>

**2. The O&M Plan/ MAP has been previously approved by the AQD and is on file at the Cadillac District office.**

#### **V. TESTING/SAMPLING**

**1. Opacity testing of FG CMNT STR LOAD in accordance with PC MACT requirements (40 CFR 63.1349(b) (2). Copies of the test results are on file at the Cadillac District office.**

#### **VI. MONITORING**

**1. The permittee shall conduct monthly Method 22 and Method 9 (if necessary) visible emissions monitoring as specified in Appendix 3.5. VE readings are conducted annually in accordance with Appendix 3.5.**

**2. The permittee shall keep, in a satisfactory manner, all Method 22 and Method 9 visible emissions readings from the FG CMT STR LOAD. Method 9 records shall include the time of the visible emissions, cause of the visible emissions, corrective action taken and time of completion of corrective action. Records are maintained as required.**

**3-5. PM/PM10 emission calculation records are maintained and are provided upon request.**

**VII. REPORTING**

6. The permittee shall submit records of PM and PM10 emissions from FG CLINKER SYS in tons per calendar year to both the AQD Permit Section Supervisor and the AQD District Supervisor within 60 days following the end of each calendar year, if both of the following apply (until January 21, 2018):
  - a. The calendar year actual emissions of either PM and PM10 exceed the baseline actual emissions by a significant amount (see Appendix 7.2); and
  - b. The calendar year actual emissions of either PM and PM10 differ from the pre-construction projection. The pre-construction projection is the sum of the projected actual emissions from each emission unit included in the Actual to Projected Actual Test used for FG CLINKER SYS (see Appendix 7.2). (R 336.2802(4)(c), R 336.2818(4))

This reporting has not been necessary PM and PM10 emissions have not exceeded the baseline amount. This reporting requirement has now expired.

**VIII. STACK/VENT RESTRICTION(S)**

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)
1. SV31-187  Serves EU DUST RETURN 5 dust tank 31-006 (Batman Tank)	24.2 <sup>2</sup>	120 <sup>2</sup>
2. SV32-171  Serves EU FEED END 6 elevators 32-131, 32-132, and vibrating screen 32-006	33.7 <sup>2</sup>	110 <sup>2</sup>

**IX. OTHER REQUIREMENT(S)**

1. and 2. Comply with PC MACT and NSPS. Vents appear to meet the specified parameters and no changes have been made.

**FG MERCURY**

Mercury emissions generated during the cement production process and emitted through the following Flex Group stacks:

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EU RAW MILL 14: SV20-270	EU CLINK COOL 20: SV25-507, SV25-507A
EU RAW MILL 15: SV21-270	EU CLINK COOL 21: SV25-507, SV25-507A
Kiln 19 SV25-289	EU CLINK COOL 22: SV26-252
EU KILN 20: Kiln 20 SV25-290	EU CLINK COOL 23: SV26-258
EU KILN 21: Kiln 21 SV25-291	EU FUEL PULV 19: SV613-01
EU KILN 22: SV26-292A (stack shared by Kilns 22 and 23)	EU FUEL PULV 20: SV623-01
EU KILN 23: SV26-292A (stack shared by Kilns 22 and 23)	EU FUEL PULV 21: SV633-01
EU CLINK COOL 19: SV25- 507, SV25-507A	EU FUEL PULV 22: SV6A3-01
EU FUEL PULV 23: SV6B3-01	

### I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Emissions observed during inspection	Emissions from Source Recordkeeping Testing
Mercury	218.0 lbs/year <sup>2</sup>	12-month rolling time period, as determined at the end of each calendar month	Limit applies to all emission units combined in FG MERCURY	NA	20.46 lbs/yr (MAERS)

**V. TESTING/SAMPLING**

**1. Before June 1, 2019, and once every five years thereafter, the permittee shall verify mercury emissions from each emission unit in FG RAW MILL SYS, FG KG5, FG KG6, and FG CLINK COOL, by testing at owner's expense, in accordance with AQD requirements.**

**Last test: June 2014**

**Results:**

<b>Emission Unit</b>	<b>Average Hg Concentration (lb./hr.)</b>
<b>RG 14</b>	<b>1.74E-06</b>
<b>RG 15</b>	<b>3.26E-06</b>
<b>K19</b>	<b>5.74E-03</b>
<b>K20</b>	<b>2.89E-03</b>
<b>K21</b>	<b>4.69E-03</b>
<b>CC22</b>	<b>2.36E-04</b>
<b>CC23</b>	<b>3.98E-04</b>
<b>CC92N</b>	<b>1.23E-05</b>
<b>CC92S</b>	<b>2.10E-05</b>
<b>WGS</b>	<b>1.31E-03</b>

**2. At a minimum of every two weeks, the permittee shall sample mercury concentrations in the fuels, raw materials, and cement kiln dust used to produce clinker per Appendix 3.2 as follows:**

- a. Every two weeks samples of the kiln raw feed used, fuels used, wasted cement kiln dust (CKD), clinker, and synthetic gypsum shall be collected during normal operating conditions.
- b. Samples of each material shall be composited and analyzed to determine the total monthly mercury concentration of the materials being processed.

- c. All sampling and methods used to determine mercury concentrations shall be in accordance with USEPA sampling and analysis protocols and approved by the AQD.

Sampling is conducted by the quality department at Lafarge and sent out for analysis. The results are used in emissions calculations. FG KG5 and FG KG6 Mercury CEMS are in place and operating and are now certified.

## **VI. MONITORING/RECORDKEEPING**

1. The permittee shall calculate, the monthly and 12-month rolling time-period, the mercury emissions from FG MERCURY using Appendix 3.2 as follows at the end of each calendar month.

$$\text{MCMi} - \text{MCMo} = \text{MCME}$$

Emissions calculations are conducted monthly in a spreadsheet. Reported emissions are well below the 218 lbs/yr. limit (see Section I).

## **VII. REPORTING**

1. Test reporting. Reviewed as received, last test on file, June 2014. Testing required every 5 years after 2019.

## **COLD CLEANERS**

Numerous small cold cleaners scattered around the plant using mineral spirits. Lafarge uses aqueous based solvent. Lids on the cleaners were closed and there were no concerns noted during the inspection.

### **PCE 2 Summary:**

This PCE addresses compliance with MI-ROP-B1477-2012c for Flexible Groups FG FUEL HAND, FG KG5, (Kilns 19, 20, and 21) FG KG6 (Kilns 22 and 23) and for FG CLINK COOL, the clinker coolers for FG KG5 and FG KG6, FG CLINKER SYS, FG FINISH MILLS, FG CEMENT STR LOAD, FG CKD HAND SYS, FG MERCURY AND FG COLDCLEANERS.. A site inspection was conducted as well as a records review to determine compliance with these requirements. Reporting was reviewed as it was received. As a result of this PCE it appears that the emission units, control devices, and monitoring equipment for FG FUEL HAND, FG KG5, FG KG6, and FG CLINK COOL are operating in compliance with the ROP requirements at the time of the inspection. Furthermore, the records and reporting necessary to demonstrate compliance have been maintained and submitted as required.

### **FCE SUMMARY:**

The 2020 FCE was conducted through two site inspection PCEs and reviews of each report as they were received throughout the review period. Overall, the facility appeared to be in compliance with the requirements of MI-ROP-B1477-2012c and the Air Pollution Control Rules following completion of the PCEs. However, violation notices have been issued during the review period and were addressed at the time of the violations. No additional violations have been cited as a result of this FCE.

NAME \_\_\_\_\_

DATE \_\_\_\_\_

SUPERVISOR\_\_\_\_\_