

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

B155969891

<b>FACILITY:</b> St Marys Cement Charlevoix Plant		<b>SRN / ID:</b> B1559
<b>LOCATION:</b> 16000 BELLS BAY RD, CHARLEVOIX		<b>DISTRICT:</b> Gaylord
<b>CITY:</b> CHARLEVOIX		<b>COUNTY:</b> CHARLEVOIX
<b>CONTACT:</b> Laurie Leaman , Environmental Supervisor, Alternative Fuel Special		<b>ACTIVITY DATE:</b> 11/02/2023
<b>STAFF:</b> Rob Dickman	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> On site inspection and records review of this major source.		
<b>RESOLVED COMPLAINTS:</b>		

St. Marys Cement, Inc. (US) is a cement manufacturing facility located on the shores of Lake Michigan at 16000 Bells Bay Road in Charlevoix, Charlevoix County, Michigan. Cement manufacturing has been occurring at this site since circa 1966. In April 2005 St. Mary's Cement, Inc. (US) purchased the operations from CEMEX. The total area of the facility, including the quarry is approximately 1370 acres. The actual production and shipping facilities occupy approximately 80 acres.

The plant operates one dry process rotary kiln. The kiln typically operates 24 hours per day, 7 days a week, for approximately 300 days in the year. The kiln uses a combination of coal, petroleum coke, alternative fuels, and propane as a fuel source. Raw materials are ground and mixed including various materials from on-site and off-site sources. The requirements for the process include approximately 80 percent calcium oxides, 10 percent aluminum oxides, 5 percent iron oxide and 5 percent silica oxide. These oxides are typically derived from limestone, shale, bottom ash, fly ash, bauxite, mill scales, slags, various sands, numerous iron sources, clay, overburden, and other sources. The majority of raw materials are obtained on-site from St. Mary's Cement, Inc. (US) quarrying operations; all offsite materials are brought to the site by trucks and ships/barges.

The site includes: the quarry operations, conveying and storage systems for raw materials, grinding and blending the raw materials, the preheater tower (precalciner), the kiln, clinker cooler, clinker conveying, clinker storage, clinker grinding (finish mills), cement storage systems, and shipping facilities. Particulate from the kiln process is controlled by baghouses on both the main and bypass exhaust systems. Dust collectors, engineered controls, and/or dust suppression systems have been installed at various locations throughout the facility to control particulate matter from other processes.

In 2016, the facility underwent a major retrofit beginning with securing Permit to Install (PTI) Numbers 140-15 and 115-15. Included in this retrofit was installation of a new inline kiln, blending silo, calciner, and finish mill along with other significant changes.

A modification to PTI 140-15; 140-15B, was approved in March of 2021. This included a change in the PM, PM10, PM 2.5, and opacity limits for the kiln exhaust in 140-15. It also included addition of HCl, D/F, Hg, OHAP, and PM (metal HAP surrogate) limits on the kiln exhaust as established in PC-MACT. Where applicable, permit conditions were added and/or updated to reflect compliance with PC-MACT.

The facility entered Consent Order 2021-09 on May 17, 2021, as a resolution to several violations. Information regarding the facility's compliance with this order is contained in this report.

The Renewable Operating Permit (ROP) for this facility (MI-ROP-B1559-2014) is currently in the renewal process and will contain all of the new permitting and other applicable information listed above.

Recordkeeping and reporting for this facility is extensive. On August 10, 2023, an email was sent to Laurie Lehman, Environmental Manager at the facility, requesting required records. A 12-month period of July 2022 through June of 2023 was requested. A catastrophic cyber event at the facility delayed the submission of these records causing them to be received on October 6, 2023. For daily and weekly required records, three days were selected at random. Those days were March 31, 2023, January 5, 2023, and August 11, 2022. If the records were weekly, the weeks that those random days fall in were submitted. Also included in the records submissions was a monthly summary of all visible emissions observations on equipment subject to visible emissions limitations.

Testing and reporting from the facility has been previously reviewed and documented. Therefore, unless otherwise noted, these items are not addressed in this report. Any item noted as "NA" (not applicable) indicates there is no permit or other applicable condition(s) associated with that item. Following are the findings of this inspection.

**MI-ROP-B1559-2014**

**Source-Wide Conditions**Emission Limits

NA

Material Limits

NA

Process or Operational Restrictions

The facility is required to have a source wide Malfunction Abatement Plan (MAP). The most recent version of this on file is dated December of 2018 and was approved July of 2020.

The facility is also required to have a source wide Fugitive Emissions Plan (FEP). This plan is dated November of 2017 and was approved December of 2017.

Design or Equipment Parameters

NA

Monitoring and/or Recordkeeping Requirements

Records of all repairs initiated as a result of inspections pursuant to the MAP are required. SMC uses Route Orders issued via an electronic Maintenance Management System, for scheduling and recording routine maintenance tasks. Upon completion of the Route Order, the paperwork is returned to the maintenance clerk and the work order is closed out as part of the maintenance process.

The facility is also required to keep records specified in the fugitive emissions plan. Records of Vacuum Truck, Sweeper Truck, Water Truck, and Broce Broom operations are kept monthly and indicate at least monthly operation, generally, several times per month. These records, while kept by hand, appear complete and compliant with the FEP at the facility.

Stack/Vent Restrictions

NA

Other Requirements

The facility is required to comply with the MAP. This includes inspection of the many dust collectors on site and recordkeeping of any maintenance performed on them. A review of records indicates the facility appears in compliance with the MAP.

The facility is required to comply with the FEP. At the time of inspection, roadways appeared in good condition. Storage piles appeared in good condition and no visible emissions from them were noted. Records associated with the FEP indicate compliance.

The facility had agreed to a consent decree with EPA, Consent Decree Case No. 1:06-cv-607. The facility has completed all requirements of this order and the Consent Decree was terminated in April of 2017.

**EUPORTABLECRUSH** - This emission unit consists of a 100 ton per hour portable nonmetallic mineral crushing facility consisting of a crusher and associated process equipment including grinding mills, loading operations, and any other material handling equipment operated at the site. Control is by spray water bars or enclosure.

This emission unit was removed from the facility approximately nine years ago and is not anticipated to return. Any necessary crushing that would require a portable crusher is being performed by an outside contractor. This emission unit is being removed from the ROP renewal.

**FGQUARRY** - This Flexible Group consists of equipment used in the mining and crushing of limestone. Included here are the drilling, blasting, and hauling of the limestone in the quarry; the crushing of the limestone in the primary and secondary crushers; and handling of dust including fugitive emissions from the quarry and dust from the secondary crusher. This

group consists of EUHAMMER, EUQUARRYFUGITIVE, and EUSECONDARYCRUSH. Control is by fabric filters on the rock drill associated with EUQUARRYFUGITIVE and a baghouse on EUSECONDARYCRUSH. In addition to state rules, EUHAMMER is subject to 40 CFR, Part 60, Subpart OOO.

#### Emission Limits

Visible emissions from EUHAMMER of this group are limited to 15% opacity. At the time of the inspection, this unit was not in operation. If a chunk of rock is too big for the throat of the primary crusher, this is used to break and/or move it. Use of this equipment is infrequent and emissions from it when in use are negligible.

Visible emissions from EUQUARRYFUGITIVE are limited to 5% opacity. At the time of the inspection, no fugitive emissions were noted from the quarry. The primary crusher was not in operation.

Visible emissions from EUSECONDARYCRUSH are limited to 20% opacity. This unit was not in operation at the time of the inspection. No emissions were noted from the building housing the secondary crusher.

#### Material Limits

NA

#### Process or Operational Restrictions

NA

#### Design or Equipment Parameters

NA

#### Monitoring and/or Recordkeeping Requirements

Visible emissions observation using USEPA Method 22 are required to be conducted on EUQUARRYFUGITIVE, EUHAMMER, and EUSECONDARYCRUSH. 1-minute non-certified visible emissions readings are to be taken at each emission unit to demonstrate compliance with opacity limits. These limits are:

Unit	Limit
EUHAMMER	15%
EUQUARRYFUGITIVE	5%
EUSECONDARYCRUSH	20%

The frequency of these readings can vary depending to the results of the readings and can be as infrequent as semi-annually if six consecutive monthly readings indicate zero emissions. However, the facility performs these readings monthly regardless of the results. Records for the entire reporting period were submitted and zero opacity was demonstrated for all readings. These records appeared complete and in compliance.

#### Stack/Vent Restrictions

NA

#### Other Requirements

EUHAMMER is required to comply with all applicable requirements of the New Source Performance Standards for Nonmetallic Mineral Processing Plants as specified in 40 CFR, Part 60, Subpart OOO. This equipment is essentially a large jackhammer. As stated above, use of this equipment is very infrequent and when in use, emissions are negligible as it is used to primarily break and move rock that will not fit in to the throat of the primary crusher.

**FGKILNRAWMILLS** - This group was in operation until April of 2018 after which the equipment was replaced with new equipment as listed in Permit to Install 140-15B. Findings of the inspection relating to this new equipment are addressed later in this report.

**FGFINISHMILLS** - This Flexible Group deals with pulverizing the cooled clinker after it has left the kiln and cooling areas. The clinker is ground in the mills-which are horizontal steel tubes filled with steel balls. As the tubes rotate, the steel balls tumble and crush the clinker into a superfine gray powder known as Portland Cement. A small amount of gypsum is added during the final grinding to control the set. Emission units for this group include EUFINISHMILL1, EUFINISHMILL2, and EUFINISHMILL3 and control is through baghouses.

#### Emission Limits

Emissions for the individual units in this group are limited to 10% opacity based on a six-minute average. Compliance with this limit is through daily non-certified visible emissions readings and recordkeeping, and a once annually three-hour certified test. The last annual test was performed in September of 2022 and demonstrated an average of 0% opacity for all three finish mills. New annual testing has been recently performed and the results are pending. Daily visible emissions records for the three random dates were requested and demonstrated that daily records are being kept and no visible emissions from any of the Finish Mills.

#### Material Limits

NA

#### Process or Operational Restrictions

An Operation and Maintenance Plan (OMP) and a Startup, Shutdown, Malfunction Plan (SSMP) are required for operation of this equipment. The most recent OMP is dated September of 2009 and the most recent SSMP is dated October of 2007. There is no requirement that these plans be approved, only that the facility drafts and maintains them.

#### Design or Equipment Parameters

NA

#### Monitoring and/or Recordkeeping Requirements

To demonstrate compliance with the 10% opacity limit on these mills, daily 6-minute visible emissions test of each emission unit in FGINISHMILLS are performed in accordance with Method 22. The last annual test was performed in September of 2022 and demonstrated an average of 0% opacity for all three finish mills. New annual testing has been recently performed and the results are pending. Daily visible emissions records for the three random dates were requested and demonstrated that daily records are being kept and no visible emissions from any of the Finish Mills. At the time of inspection, no visible emissions were noted from these units.

#### Stack/Vent Restrictions

Stacks for this process are limited to a maximum diameter of 98.5 in and a minimum height of 141 feet. These stacks appear to meet this criterion and do not appear to have been recently modified.

#### Other Requirements

This group is required to comply with the National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry as specified in 40 CFR, Part 63, Subparts A and LLL (PCMACT). Review of this subpart indicates that if the facility is in compliance with the applicable conditions of this section, they are in compliance with this subpart. There is a requirement to comply with the OMP and SSMP at all times. Deviations from this plan are reported as part of semiannual reporting. This reporting was previously reviewed and documented.

**FGNONKILNFACILITY** - This group was in operation until April of 2018 after which the equipment was replaced with some new equipment as listed in Permit to Install 140-15B. Findings of the inspection relating to this new equipment are addressed later in this report.

**FGALTSAND/SOIL** - This flexible group contains equipment for the extraction and screening of alternative sand/soils from the former City of Charlevoix landfill located in the Quarry (alternative sand/soils) and the use of the alternative sand/soils as raw feed to the kiln. Emission Units include EUQUARRYFUGITIVE, EUPRIMARYCRUSH, EUSECONDARYCRUSH, EURAWMILLS, EUKILN. Control is by fabric filters on the rock drill associated with EUQUARRYFUGITIVE and a baghouse on EUSECONDARYCRUSH.

Emission Limits

NA

Material Limits

This material was not used during the review period. This material has been completely extracted from the old Charlevoix Landfill. It is anticipated it will take years to begin to consume this material given current usage rates.

Process or Operational Restrictions

A Materials Screening Plan (MSP) is required for the extraction of this material. The facility does have a plan in place. However, this material has been completely extracted and this plan is no longer applicable.

Design or Equipment Parameters

NA

Testing and Sampling Requirements

This material was not used during the review period. This material has been completely extracted from the old Charlevoix Landfill. It is anticipated it will take years to begin to consume this material given current usage rates.

Monitoring and/or Recordkeeping Requirements

Records of the amount of alternative material extracted each week are to be kept and available for review. All of the material intended to be extracted from this area has been extracted. No records relating to this group are required until the facility resumes using this material.

Stack/Vent Restrictions

NA

Other Requirements

There are criteria listed in the permitting regarding the content of the Materials Screen Plan including addressing disposing of unusable material such as large pieces of wood or metal, barrels, batteries, etc. The plan appears to address these items.

**FGMACTZZZZEMERGENCY** - This flexible group includes one compression ignition (CI) existing emergency stationary reciprocating internal combustion engine (RICE) that has a maximum site rating below 500 brake horsepower (HP) (68HP) at a major source of hazardous air pollutants (HAPs) and that are subject to 40 CFR, Part 63, Subpart ZZZZ (40 CFR 63.6580-6675), the "RICE MACT". Emission units including EUEMERGENCYGEN. EUKILNDONKEY were part of this group but have been dismantled and removed from the facility. EUEMERGENCYGEN2 was installed in 2018. These changes are being addressed in the ROP renewal.

Emission Limits

NA

Material Limits

NA

Process or Operational Restrictions

There are no time limitations on the emergency operation of this engine. It has an autorun feature that activates for approximately 20 minutes once weekly for a total of approximately 17 hours per year. For maintenance and readiness checks, the facility is limited to operating it less than 100 hours. For operation outside of emergency, maintenance, and readiness checks, the facility can operate each engine for up to 50 hours each with the operation time counting towards the 100-hour limit. Compliance with these conditions is through installation of a non-resettable hour meter and

recordkeeping. As of November 2023, the generator had operated a total of 175 hours since installation in 2018. For the review period, it has only run for maintenance and readiness checks, not for emergency purposes.

#### Design or Equipment Parameters

As mentioned above, the engine is required to be, and is equipped with, a non-resettable hour meter. As of November 2023, the generator had operated a total of 175 hours since installation in 2018.

#### Monitoring and/or Recordkeeping Requirements

A number of records must be kept including occurrence and duration of malfunctions, maintenance, hours of operation regarding the conditions listed above. Maintenance performed is documented per the facility work order system and these records were available for review. This facility does not use an oil analysis program. This engine was load bank tested and maintained by an outside contractor in April of 2019 and continues to be maintained by an outside contractor.

#### Stack/Vent Restrictions

NA

#### Other Requirements

The facility is required to comply with 40 CFR 63, Subpart ZZZZ. Review of this subpart indicates that if the facility is in compliance with the applicable conditions of this section, they are in compliance with this subpart.

**FGCOLDCLEANERS** - Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

There is a total of three small parts washers located at the facility. All are serviced by an outside contractor. These were not inspected on site. The last date of service for each was as follows:

- 8/8/23 – Oiler Shop
- 8/23/23 – Main Maintenance Shop
- 7/26/23 – Mobile Maintenance Garage

**PERMIT TO INSTALL (PTI) NUMBER 140-15B** – This permit is the latest modification of PTI 140-15 for the installation of new equipment at the facility including a new in line kiln, calciner, and coke mill process. Construction of this equipment began in 2016 and was completed in April of 2018. In February of 2018, the facility, per 40 CFR 60.2790, notified the AQD that they would be ceasing the burning of non-hazardous waste as fuel and the new kiln would not be subject to 40 CFR 60, Subpart DDDD (CISWI) but rather would be subject to 40 CFR 63, Subpart LLL (PC-MACT). Notification that the facility was able to operate at capacity was sent September 4, 2018. 140-15B was issued in March of 2021 for changes in Main Stack parameters, changes in PM10 limits, and incorporation of PC-MACT for the entire facility, as applicable.

**EUSOLIDFUELSYSTEM** - Solid fuel processing mill to allow for a higher throughput for processing properly sized solid fuels due to increased production capacity. The processed fuel will then be transported to the existing two solid fuel storage silos.

#### Emission Limits

Opacity from this equipment is limited to 10%. Particulate matter emissions are limited to 0.010 gr/dscf, PM-10 emissions are limited to 3.93 pounds per hour and PM-2.5 emissions are limited to 1.86 pounds per hour. Compliance with of these limits is through performance testing and visible emissions readings or alternatively through visible emissions monitoring. The bag leak detection system (BLDS) installed on the unit provides continuous visible emissions monitoring. A catastrophic cyber event in August and September 2023 made data unavailable for that time, however, the alarm system was not impacted. The missing data was recovered and no alarms with the system were noted in the last 12 months.

Performance testing was last performed in September of 2018 and demonstrated compliance. This testing will be repeated in November of 2023. Visible emissions performance testing was last performed in September of 2022 and demonstrated an average of 0% opacity. This testing will also be repeated concomitantly with performance testing.

Material Limits

NA

Process or Operational Restrictions

This unit is required to have an associated MAP. The most recent version of this on file is dated November of 2018 and was approved August of 2020.

Design or Equipment Parameters

The baghouse controlling this equipment is required to have a bag leak detection system (BLDS). This baghouse is so equipped. It is required to be operated per the MAP. Associated records for this unit indicate the facility is following the MAP.

Monitoring and/or Recordkeeping Requirements

The facility is required to keep records of maintenance activities associated with this unit. Records of all repairs initiated as a result of inspections are required. This facility maintains a work order system that stores records of all inspections and repairs made. For the review period, these records were included. Per those records, column "B" is a work order number for corrective action taken.

The facility must either perform testing or alternative monitor to verify compliance with emission rates. This facility utilizes output from the BLDS for compliance.

A logbook is to be maintained for the following information. This facility maintains an electronic logbook of these records.

- Maintenance and inspection activities – these records are kept through the facility work order system and are available for review. A summary of these records was submitted for review.
- The amount of and type of fuel is to be recorded monthly. This information is recorded. Records submitted indicated 40,612 tons of coal and 145,814 tons of pet coke used during the requested review period.
- The facility does not purchase any water or other chemical stabilizers for dust control on this unit.
- Monthly verification of operation of dust suppressants – not applicable, baghouse
- BLDS parameters
  - Records of output - these were available for review
  - Date and time of alarms – no alarms noted in the last 12 months
  - Causes and actions taken after alarms – no alarms noted

The baghouse has an associated bag leak detection system (BLDS). Output for the system is a millivolt number established at installation. At the time of the inspection most readings were less than 5 with an alarm trigger of 30. No alarms for this system have been recorded in the last 12 months.

Reporting Requirements

Notification that this emission unit was able to operate at capacity was sent September 4, 2018.

Stack/Vent Restrictions

The coke mill stack is to be no less than 119 feet above ground and no greater than 63 inches in diameter. The stack appears in compliance and does not appear to have been modified.

Other Requirements

This unit is required to comply with the applicable parts of 40 CFR 60, Subpart Y, Standards of Performance for Coal Preparation and Processing Plants. A review of the subpart indicates that if the facility is in compliance with the conditions listed in this section, they are in compliance with the applicable conditions of the subpart.

**EUINLINEKILN** – The in-line Raw Mill kiln system uses a proportioning system for grinding and mixing sources of iron, silica, calcium, and alumina. These raw materials are added to the Raw Mill where the material is ground, and heated creating a Kiln Feed mixture, which is conveyed to EUBLENDASILO for blending and storage. Kiln Feed is transferred from EUBLENDASILO via the kiln feed belt scale, elevator, and fed to upper stages of the pre-heating tower. The Kiln Feed is calcined in the preheater tower, the source of heat for this reaction is generated in both the Calciner and Kiln, the Kiln is the location where the feed is heated to a point where the calcined feed is melted and then cooled to start the formation of clinker. A tertiary duct transfers hot exhaust gases from the clinker cooler to the calciner portion of the preheater tower.

Control equipment associated with in-line kiln system includes conditioning towers prior to downstream equipment (for modulating temperatures), SNCR, the main stack baghouse, bypass stack baghouse and other smaller baghouses. The bypass process has been blanked off since July of 2019 and is nonoperational at this time.

The calciner and kiln have been designed to use traditional solid and liquid fuels and various alternative fuels including asphalt flakes, plastic and small quantities of cellulose fibers. While permitted to do so, connections to feed alternative fuels to the new kiln have not yet been made.

It should be noted that the bypass stack has not been operational in the last 12 months. Requirements associated were not evaluated as part of this inspection.

### Emission Limits

Particulate Matter (PM) emissions are limited to 0.25 pounds per 1000 pounds exhaust gas for the main stack. Compliance with this limit is through stack testing, a Continuous Parametric Monitoring System (CPMS), and recordkeeping. Performance testing for this was last completed in July of 2023 and demonstrated 0.001 pounds per 1000 pounds exhaust gas. This testing was previously reviewed and documented. Certification and quality assurance testing for the CPMS has been previously reviewed, documented, and demonstrated compliance.

PM less than 10 microns (PM-10) emissions are limited to 4,800 lb/day with the raw mill on and 7,200 lb/day with the raw mill off. Compliance with this is demonstrated through stack testing and recordkeeping. Performance testing for PM-10 was last performed in July of 2023 and demonstrated emission factors of 0.282 #/ton clinker mill on and 1.37 #/ton clinker mill off. The facility will use these factors and production data to determine compliance. This testing was previously reviewed and documented.

PM less than 2.5 microns (PM-2.5) emissions are limited to 4,800 lb/day with the raw mill on and 7,200 lb/day with the raw mill off. Compliance with this is demonstrated through stack testing and recordkeeping. Performance testing for PM-2.5 was last performed in July of 2023 and demonstrated emission factors of 0.282 #/ton clinker mill on and 1.37 #/ton clinker mill off. The facility will use these factors and production data to determine compliance. This testing was previously reviewed and documented.

Sulfur Dioxide (SO<sub>2</sub>) emissions are limited to 1175 pph and 7.5 pounds per ton of clinker produced as the average of each calendar day's emissions over the time of operation. Compliance with this is demonstrated through a Continuous Emissions Monitor System (CEMS). Certification and quality assurance testing for the CEMS has been previously reviewed, documented, and demonstrated compliance. Excess emissions and excess monitor downtime for this CEMS is reported, reviewed, and documented quarterly.

Nitrogen oxides (NO<sub>x</sub>) emissions are limited to 700 pph as the average of each calendar day's emissions over the time of operation. Also, 2.8 pounds per ton of clinker produced based on a 30-day rolling average and 2.4 pounds per ton of clinker produced based on a 12-month average. Compliance with this is demonstrated through CEMS. Certification and quality assurance testing for the CEMS has been previously reviewed, documented, and demonstrated compliance. Excess emissions and excess monitor downtime for this CEMS is reported, reviewed, and documented quarterly.

Dioxin and Furan (D/F) emissions are limited to 0.2 ng/dscm (TEQ) corrected to 7% oxygen. Compliance with this limit is through performance testing and continuous temperature monitoring at the baghouse inlet. This testing was last performed in April of 2021 and the results demonstrated compliance. This testing has been previously reviewed and documented. Testing was performed in October of 2023 and the results are pending. Temperature limits are determined during performance testing at Raw Mill on and off conditions. During testing, temperature at the baghouse inlet averaged 245.7 degrees F with the roller mill on and 398.8 with the roller mill off. Data from this system is compiled by the same system as the CEMS. The CEMS program continually calculates the temperature rolling average for either Raw Mill up or Raw Mill off conditions. A temperature exceedance triggers an alarm and also sends an automatic email to production staff. Any alarms noted are reported semiannually. This information has been previously reviewed and documented.



Mercury emissions are limited to 106 pounds per year based on a 12-month rolling time period and 55 lbs/million tons of clinker produced. Compliance with this is demonstrated through CEMS. Certification and quality assurance testing for the CEMS has been previously reviewed, documented, and demonstrated compliance. Excess emissions and excess monitor downtime for this CEMS is reported, reviewed, and documented semi-annually.

Organic Hazardous Air Pollutant (OHAP) emissions are limited to 12 ppmvd corrected to 7% oxygen based on a 30-day rolling average. Compliance with this limit is through performance testing and Total Hydrocarbon (THC) CEMS. This testing was last performed in May of 2023 and the results were 10.79 ppmvd OHAP. This testing has been previously reviewed and documented. During testing, a Source Specific Operating Limit (SSOL) for THC is established in conjunction with compliant OHAP emissions. THC is then monitored by CEMS. The tested SSOL for THC indicating compliant OHAP emissions is less than or equal to 109 ppm. THC emissions have not exceeded the SSOL in the last 12 months.

Hydrogen Chloride (HCl) emissions are limited to 3 ppmvd corrected to 7% oxygen based on a 30-day rolling average. Compliance with this is demonstrated through CEMS. Certification and quality assurance testing for the CEMS has been previously reviewed, documented, and demonstrated compliance. Excess emissions and excess monitor downtime for this CEMS is reported, reviewed, and documented semi-annually.

Material Limits

The facility is allowed to use colored glass, aluminum-based refractory, coal, petroleum coke, recyclable plastics, cellulose fibers, asphalt flakes, fuel oil, and propane in this unit. The facility will not use glass or asphalt as it adversely impacts product quality. Currently only plastics are used as alternative fuel. Coal and petroleum coke are the primary fuel for the kiln. Propane and fuel oil are not utilized for production. Rather they are used to cure replaced refractory brick inside the kiln. No asbestos containing materials are used.

Process or Operational Restrictions

The facility is not allowed to produce more than 6300 tons of clinker per day based on a 30-day rolling average determined at the end of each day nor more than 6,000 tons of clinker per day based on a 12-month rolling time period as determined at the end of each calendar month. Records regarding this are being kept and were available for review. At the time of the inspection, the facility was averaging 240 tons of clinker per hour which equates to 5800 tons per day.

The facility must operate this unit per the MAP. The most recent version of this on file is dated November of 2018 and was approved August of 2020. Required records associated with the MAP indicate compliance.

Temperature of the stack gas at the baghouse inlet must be monitored and compared to temperatures established during performance testing for D/F's. This performance testing was last performed in April of 2021. At that time, temperature at the baghouse inlet averaged 245.7 degrees F with the roller mill on and 398.8 with the roller mill off. Data from this system is compiled by the same system as the CEMS. The CEMS program continually calculates the temperature rolling average for either Raw Mill up or Raw Mill off conditions. A temperature exceedance triggers an alarm and also sends an automatic email to production staff. Any alarms noted are reported semiannually. This information has been previously reviewed and documented. At the time of the inspection, with the Raw Mill off, temperature at the inlet was 367 degrees F.

The facility is required to operate the kiln on alternative fuels per an approved Fuel Procurement and Monitoring Plan (FPMP). This plan was received on 5/5/21 and approved on 1/25/22. Plan requires batch sampling (at least once every 5000 tons for each alternative fuel). Fuel specifications, load identification, and laboratory analyses are to be recorded and kept by the facility. Records provided by the facility indicate these procedures are being followed.

Design or Equipment Parameters

CEMS for NOx, SO<sub>2</sub>, Mercury, THC, PM, and HCl have to be installed and operating correctly. This equipment is installed. Quality assurance procedures performed on the CEMS ensure proper operation. Certification and quality assurance testing for the CEMS has been previously reviewed, documented, and demonstrated compliance. Excess emissions and excess monitor downtime for this CEMS is reported, reviewed, and documented quarterly or semiannually as applicable.

Instant CEM readings taken on site were as follows:

<u>Parameter</u>	-	-	
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			<u>SSOL (if applicable)</u>
CPMS	2.5 mV		20 mV
O2 Dry	9.42%		
O2 Wet	8.48%		
THC	74.1 ppm		108 ppm
NOx	2.4 #/ton clinker	439 #/hr	
SOx	2.48 #/ton clinker	297 #/hr	
HCl	2.43 ppm		

Mercury CEMS is actually sampling through carbon capture collection and then analyzed to determine emissions. No instant readings are available for this CEMS.

The Selective Non-Catalytic Reduction (SNCR) System for NOx emissions reduction is required to be operated in a satisfactory manner. This system is maintained pursuant to the MAP and is operated in conjunction with the NOx CEMS. Compliant NOx emissions indicate this system is operating properly. SNCR ammonia feed at the time of the inspection was approximately 2.9 gallons per minute and demonstrated compliant NOx emissions.

A system for monitoring the baghouse inlet temperature is in place. This system assures compliance with D/F emissions limits. Data from this system is compiled by the same system as the CEMS. The CEMS program continually calculates the temperature rolling average for either Raw Mill up or Raw Mill off conditions. A temperature exceedance triggers an alarm and also sends an automatic email to production staff. Any alarms noted are reported semiannually. This information has been previously reviewed and documented. At the time of the inspection, with the Raw Mill off, temperature at the inlet was 367 degrees F, the upper limit for this is 398 degrees F based on testing.

#### Monitoring and/or Recordkeeping Requirements

Records of the kiln feed rate in dry feed per hour are to be kept. These records were submitted for the three random days requested and indicated an average of approximately 406 tons per hour over the requested 12-month period. At the time of inspection, dry feed rate was approximately 380 tons per hour.

Clinker production is to be tracked hourly and daily. These records were submitted and indicated an average of approximately 241 tons per hour and 5800 tons per day. At the time of inspection, clinker production was approximately 224 tons per hour.

Calibration of the scales used to measure clinker is to be performed quarterly. The facility does not measure clinker directly but rather measures raw feed and applies a conversion factor. The scales used to measure raw feed are calibrated quarterly. Records of this are kept as part of the work order system at the facility and were submitted.

The CPMS system for ensuring compliance with particulate emissions limits is tested using quality assurance procedures at least annually. The system was last tested in July of 2023. Results demonstrated compliance. At no time in the last 12 months were the average operating values of the CPMS exceeded causing a retest of the equipment.

CEMS for NOx, SO2, Mercury, HCL, PM, and THC (OHAP surrogate) have been certified and quality assurance testing has been performed. Review of these procedures have been previously reviewed and documented.

PM10/2.5 emissions records based on most recent testing. These records are kept daily and were included in the records submission for the three random days requested. The highest value noted for the requested recordkeeping period was 7142 pounds. Limit is 7200 pounds. Most days are 2000-3000 pounds.

Currently, only non-chlorinated plastics, paper, and nylon are used as alternative fuels. Verification of these fuels through chemical analysis has been performed per the Fuel Procurement and Management Plan (FPMP). Samples of these analysis were included in the records submission for the facility. Records review indicates the amount of alternative fuel received and used is being recorded per the FPMP. The facility also indicated that samples from individual suppliers are analyzed daily to ensure the quality of fuel.

#### Stack/Vent Restrictions

The main stack is required to be 323 feet above ground and have a maximum diameter of 93 inches. This stack appears to meet this criterion.

#### Other Requirements

This equipment is required to comply with all applicable requirements of National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry as specified in 40 CFR Part 63, Subpart A and Subpart LLL; Standards of Performance for Portland Cement Plants as specified in 40 CFR Part 60, Subpart A and Subpart F; and Regional Haze Regulations requiring Best Available Retrofit Technology (BART) effective January 1, 2017. By complying with the conditions in this PTI, they are considered in compliance with these subparts. Submittal of required reporting for BART is performed quarterly. This information has been previously reviewed and documented.

**EUCLINKCOOL** - The new clinker cooler consists of equipment associated with the cooling of clinker and the treatment of the cooler gases, including clinker cooler, clinker heat exchanger, and baghouse.

#### Emission Limits

PM emissions are limited to 0.02 pounds per ton of clinker throughput. Compliance with this limit is through performance testing and CPMS. This testing was last performed in July of 2023 after a failed PM test and replacement of baghouse bags. Results were 0.0005 pounds per ton of clinker throughput. This information has been previously reviewed and documented.

PM10/2.5 emissions are limited to 5.0 pounds per hour. Compliance with this limit is through performance testing. This testing was last performed in September of 2019 and demonstrated emissions of 1.5 pounds per hour. This information has been previously reviewed and documented.

#### Material Limits

NA

#### Process or Operational Restrictions

The facility is required to develop a CPMS plan. This plan was developed and the CPMS was evaluated in September of 2018. Testing to verify the CPMS is completed annually. Quality assurance procedures are performed on this system annually. This information has been previously reviewed and documented.

The facility must operate this unit per the MAP. The most recent version of this on file is dated November of 2018 and was approved August of 2020. Maintenance records and review of quality assurance procedures indicate this system is being operated properly.

The facility also must operate this unit per the OMP. This plan is dated December 2018 and was approved in July of 2020. Maintenance records and review of quality assurance procedures indicate this system is being operated properly.

#### Design or Equipment Parameters

A PM CPMS is to be installed on the process. This system is installed, certified, and quality assured per federal standards. At the time of the inspection, an instant reading of 1.18 mV was taken, the SSOL for this unit is 4.05 mV.

A baghouse is required to be installed and operating. This baghouse is installed and was operating at the time of the inspection. Proper operation of the baghouse and CPMS ensures compliance with emission limits.

#### Monitoring and/or Recordkeeping Requirements

The CPMS is required for the monitoring of PM emissions. This system is installed and operating. In 2022, verification of the CPMS demonstrated a violation of the PM emissions limit. After investigation, the facility changed out all of the bags in the baghouse in April of 2023 and retested in May of 2023. This testing demonstrated compliance with emissions limits. At the time of the inspection, an instant reading of 1.18 mV was taken, the SSOL for this unit is 4.05 mV.

Clinker production in clinker per hour and clinker per day are being tracked. These records were submitted and indicated an average of approximately 241 tons per hour and 5800 tons per day. At the time of inspection, clinker production was approximately 224 tons per hour.

Calibration of the scales used to measure clinker is to be performed quarterly. The facility does not measure clinker directly but rather measures raw feed and applies a conversion factor. The scales used to measure raw feed are calibrated quarterly. Records of this are kept as part of the work order system at the facility and were submitted.

#### Stack/Vent Restrictions

The stack for the clinker cooler is required to be 134 feet above ground and have a maximum diameter of 132 inches. This stack appears compliant with these parameters and does not appear to have been recently modified.

#### Other Requirements

This unit is to comply with all applicable requirements of the federal Standards of Performance for Portland Cement Plants as specified in 40 CFR Part 60 Subparts A and F, and with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry as specified in 40 CFR Part 63, Subparts A and LLL. By complying with the conditions listed in this section, the facility is in compliance with these subparts.

**EUFINISHMILL4** - Horizontal finish mill used to grind clinker with gypsum and other additives to produce cement products.

#### Emission Limits

Opacity from this mill is limited to 10%, compliance with this is through non-certified visible emissions readings and recordkeeping. Daily visible emissions records for three random dates requested demonstrated no visible emissions from any of the Finish Mills. At the time of the inspection, no visible emissions were noted.

PM emissions are limited to 0.15 #/1000# exhaust gases and PM 10/2.5 emissions are limited to 6.24 pounds per hour. Compliance with these limits is through stack testing. This testing was last performed in September of 2019. PM emissions tested at 0.003 #/1000# exhaust gases and PM 10/2.5 emission tested at 0.92 pounds per hour.

#### Material Limits

NA

#### Process or Operational Restrictions

The facility is required to have a source wide Malfunction Abatement Plan (MAP). The most recent version of this on file is dated November of 2018 and was approved August of 2020.

#### Design or Equipment Parameters

The baghouse associated with this unit was in operation at the time of the inspection. A review of the associated records would indicate compliant operation of this control equipment.

#### Monitoring and/or Recordkeeping Requirements

Opacity from this mill is limited to 10%, compliance with this is through non-certified visible emissions readings and recordkeeping. Daily visible emissions records for the three random dates requested and demonstrated no visible emissions from any of the Finish Mills.

#### Stack/Vent Restrictions

The stack for the unit is required to be 141 feet above ground and have a maximum diameter of 98.5 inches. This stack appears compliant with these parameters and do not appear to have been recently modified.

#### Other Requirements

This unit is to comply with all applicable requirements of the federal Standards of Performance for Portland Cement Plants as specified in 40 CFR Part 60 Subparts A and F, and with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry as specified in 40 CFR Part 63, Subparts A and LLL. By complying with the conditions listed in this section, the facility is in compliance with these subparts.

**FGNONKILNFACILITY** - This flexible group covers handling the materials, gases, fuels, and dust associated with the production of cement. Included are limestone, bottom ash, fly ash, sand; clinker cooler gases; coal and petroleum coke; and the finished cement product that is shipped for sale. Associated emission units include: EURAWMATHANDSTOR, EUCLINKERHAND, EUCEMENTHAND&STO, EUCOALSYSTEM, EUSOLIDFUELSYSTEM, EUCKDHANDSTOR, EUFINISHMILL4. Particulate emissions from these units is controlled be several baghouses listed as follows:

NEW009 – Raw Mill Blending Silo Extraction  
NEW0009-1 – PH Bucket Tower Inlet  
NEW010 – Top of PH Tower Feed  
NEW013 – Clinker Conveyor  
NEW014 – Clinker Conveyor Transfer  
NEW014-1 – Clinker Conveyor Transfer #2  
NEW015 – Cement Mill 4 Feed Conveyor  
NEW015-1 – Cement Mill 4 Feed Conveyor #2  
NEW015-2 – Cement Mill 4 Feed Conveyor #3  
NEW017 – Cement Air Slides to Cement Cooler  
NEW018 – Cement Silos Feed

#### Emission Limits

- Opacity from this group is limited to 10 percent.
- PM10/2.5 emissions from each #15 stack/vent (3) on EUCLINKERHAND are limited to 0.37 pounds per hour (pph).
- PM10/2.5 emissions from the #17 stack of EUCEMENTHAND&STOR are limited to 0.041 pph. PM10/2.5 emissions from the #18 stack of EUCEMENTHAND&STOR are limited to 0.016 pph.
- PM10/2.5 emissions from each the #13 and two #14 stack/vent on EUCLINKERHAND are limited to 0.0167 pounds per hour (pph).
- PM10/2.5 emissions from each the #10 and two #9 stack/vents on EUCLINKERHAND are limited to 0.042 pounds per hour (pph).

Compliance with these limits is through monthly 10-minute visible emissions readings. A summary of these records was included in the records submission for the inspection and demonstrated compliance with the majority of readings at zero percent opacity. However, at the time of the inspection, visible emissions were noted from the clinker handling and conveying equipment that was likely in excess of the limit. This issue was immediately noted by Laurie Lehmen who photographed the issue and sent notification to maintenance such that it would be addressed quickly.

#### Material Limits

NA

#### Process or Operational Restrictions

An Operation and Maintenance Plan (OMP) is required for operation of this equipment. The most recent OMP is dated September of 2009 and the most recent SSMP is dated October of 2007. There is no requirement to approve these plans, only that the facility drafts and maintains them. Also required is Fugitive Emissions Plan (FEP). The facility has a facility wide fugitive emissions plan on file and the most recent version of it is dated November of 2017 and was approved December of 2017.

The facility must operate this unit per the MAP. The most recent version of this on file is dated November of 2018 and was approved August of 2020. Maintenance for each unit is tracked via the facility work order system. Review of visible emissions records indicates compliance.

#### Design or Equipment Parameters

There is a belt conveyor used to move refractory to the kiln system. This conveyor is required to be covered. It is so equipped.

All associated fabric filter baghouses are required to be installed and operating. All were installed and visible emissions records indicate compliant operation.

#### Monitoring and/or Recordkeeping Requirements

Non-certified visible emissions readings are required to be performed monthly. A summary of these records was included in the records submission for the inspection and demonstrated compliance.

#### Stack/Vent Restrictions

Following are the stack restrictions for this group:

<u>Stack</u>	<u>Max Diameter (in.)</u>	<u>Min Height (ft.)</u>
SVNEW009	22	50
SVNEW009-1	24	24
SVNEW010	22	288
SVNEW013	14	24
SVNEW014	14	47
SVNEW014-1	14	79
SVNEW015	30	42
SVNEW015-1	30	49
SVNEW015-2	30	60
SVNEW017	24	8
SVNEW018	14	56

These stacks/vents appear in compliance with these parameters.

#### Other Requirements

This group is to comply with all applicable requirements of the federal Standards of Performance for Portland Cement Plants as specified in 40 CFR Part 60 Subparts A and F, and with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry as specified in 40 CFR Part 63, Subparts A and LLL. By complying with the conditions listed in this section, the facility is in compliance with these subparts.

**FGPROJECT2016** - Upgrades at the existing Portland cement plant to increase the production capacity. A Hybrid applicability analysis was used to determine a non-significant emission increase. Emission units include: EURAWMATHANDSTOR, EUCLINKERHAND, EUCEMENTHAND&STO, EUFINISHMILL4, EUSOLIDFUELSYSTEM, EUCKDHANDSTOR, EUCLINKERCOOL, EUINLINEKILN

#### Emission Limits

NA

#### Material Limits

NA

#### Process or Operational Restrictions

NA

#### Design or Equipment Parameters

NA.

Monitoring and/or Recordkeeping Requirements

The facility is required to keep records of annual SO2 emissions from this group on a tons per calendar year basis. Records of this are being kept and are reported as part of the facility MAERS annual reporting. SO2 emissions from units in this group other than the kiln are minimal. For calendar year 2022, SO2 emissions from this source were approximately 2500 tons.

Reporting Requirements

The facility is required to keep records of annual SO2 emissions from this group on a tons per calendar year basis. Records of this are being kept and are reported as part of the facility MAERS annual reporting. For calendar year 2022, SO2 emissions from this source were approximately 2500 tons.

Stack/Vent Restrictions

NA

Other Requirements

NA

**FGPROJECTADDAF** - Project to include additional alternate fuels to the current fuel portfolio including paper, cardboard, biomass, wood chips, non-tire derived rubber, recyclable plastics, non-recyclable plastics excluding PVC and other fuels meeting the legitimacy criteria as fuels, pursuant to 40 CFR Part 241, and plant specifications. The only emission unit for this group is EUINLINEKILN.

Emission Limits

NA

Material Limits

NA

Process or Operational Restrictions

NA

Design or Equipment Parameters

NA.

Monitoring and/or Recordkeeping Requirements

The facility is required to keep records of annual SO2 emissions from this group on a tons per calendar year basis. Records of this are being kept and are reported as part of the facility MAERS annual reporting.

Reporting Requirements

The facility is required to keep records of annual SO2 emissions from this group on a tons per calendar year basis. Records of this are being kept and are reported as part of the facility MAERS annual reporting. For calendar year 2022, SO2 emissions from this source were approximately 2500 tons.

Stack/Vent Restrictions

NA

Other Requirements

NA

### **Permit to Install Number 115-15**

**EUBLENSILO** - Raw feed from the raw mill is transferred to the blending silo where it will be stored and stirred to obtain a more uniform mixture of the various ingredients before it is transferred to the kiln system (at the top of the calciner/preheater). Particulate Matter emissions are controlled by two pulse-jet baghouses at the transfer point of raw feed from the raw mill into the silo and the transfer point of blended and uniform raw feed from the silo out to the conveyance equipment which delivers the raw feed to the top of the calciner/preheater. Completion of construction of this equipment is complete and operation of it began in July of 2017.

### **Emission Limits**

Opacity from this unit is limited to 10%. Particulate matter emissions are limited to 0.15 pounds per 1000# of exhaust gases. Compliance with these limits is through non-certified visible emissions readings and BLDS output. A summary of these records was included in the records submission for the inspection and demonstrated compliance.

### **Material Limits**

NA

### **Process or Operational Restrictions**

NA

### **Design or Equipment Parameters**

The two baghouses associated with this equipment were in operation at the time of the inspection. These are equipped with a Bag Leak Detection System. An abbreviated sample of output for this type of system is attached to this report. Output for the system is a percentage of the opacity limit.

### **Monitoring and/or Recordkeeping Requirements**

Monthly 10-minute non-certified visible emissions readings are to be taken at each emission point on this unit. Records for the requested period were submitted and indicated no visible emissions from this unit. A summary of these records was included in the records submission for the inspection and demonstrated compliance.

### **Stack/Vent Restrictions**

The stack for the silo inlet is required to have a maximum diameter of 30 inches and a minimum height of 250 feet. The stack for the silo outlet is required to have a maximum diameter of 22 inches and a minimum height of 32 feet. This stack appears to meet these parameters and does not appear to have been recently modified.

### **Other Requirements**

The permittee shall comply with the applicable provisions of the Federal New Source Performance Standards as specified in 40 CFR Part 60 Subparts A and F, and 40 CFR Part 63 Subparts A and LLL as they apply each emission unit of EUBLENSILO. Review of these subparts indicates that if the facility is in compliance with the applicable conditions of this section, they are in compliance with this subpart.

At the time of the inspection, the facility appeared in compliance with currently applicable permitting and state and federal air regulations with the exception of issues noted in this report. These include compliance testing for OHAPs and PM10/2.5 from the main stack. Issues noted have been addressed.

### **AQD Consent Order Number 2021-09**

Description – This order was effective on May 17, 2021 a result of several allegations of violations at this source.

### **Rules**



On EUINLINEKILN, the OHAP limit of 12 ppmvd corrected to 7% oxygen based on a 30-day rolling average is to be complied with. Compliance with this limit is through performance testing and Total Hydrocarbon (THC) CEMS. This testing was last performed in December of 2020 and the results demonstrated compliance. This testing has been previously reviewed and documented. During testing, a Source Specific Operating Limit (SSOL) for THC is established in conjunction with compliant OHAP emissions. THC is then monitored by CEMS. The tested SSOL for THC indicating compliant OHAP emissions is less than or equal to 125 ppm. THC emissions have not exceeded the SSOL in the last 12 months. Included in this is compliance with 40 CFR 63.1343(b)(1) which is Table 1, delineating MACT emission limits for the kiln. As detailed in the EUINLINEKILN, Emission Limits, section in this report, these limits have been complied with since entry in to this order. Also included is the requirement for compliant performance testing as applicable. The facility has followed all AQD and federal guidelines regarding performance testing.

### Permit

The facility is required to comply with the following conditions of Permit to Install 140-15 as amended (now 140-15B):

- SO2 and NOx emission limits from the kiln
- PM10/2.5 emission limits from the kiln and clinker cooler
- Fugitive Emissions Plan
- Solid Fuel System recordkeeping requirements
- BLDS installation on the blend silo

As detailed in this report, the facility is currently in compliance with all of this issues and has been over the last 12 months. Reporting and records associated with these items have been previously reviewed and documented.

### Testing

PM10/2.5 and OHAP emissions from the kiln are to be tested pursuant to AQD policy and procedures. As detailed in this report, the facility has completed this testing and demonstrated compliance. All required testing procedures, including timely submission and approval of testing protocols, have been performed. Reporting and records associated with these items have been previously reviewed and documented.

### Inspections and installations

Monthly inspections of the BLDS system on the baghouse controlling the Solid Fuel System are to be performed. Verification of the BLDS data is to be verified and documented monthly. Verification of these items were included as part of quarterly reporting required by the order. This reporting has been previously reviewed and documented.

### Reports

The facility was required to send four quarterly reports beginning with March of 2021 and ending March of 2022. These reports were to contain excess emissions reporting for the HCl THC, and Mercury CEMS. This reporting was submitted in a timely manner and was reviewed and documented. Also included with this reporting, but not required, was verification of BLDS parameters from the Solid Fuel Handling System. This reporting has been previously reviewed and documented.

At the time of the inspection, this facility was in compliance with all applicable air permitting and the consent order with the exception of possible excess fugitive emissions from the clinker handling equipment. As noted in this report, upon discovery, this issue was reported to maintenance staff for repair. No further action is recommended.

NAME 

DATE 1-31-24

SUPERVISOR 