

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor Joseph P. Bindbeutel, Acting Director

www.dnr.mo.gov

Mr. Michael Johnson
CEO and President
14755 North Outer Forty Drive, Suite 514
Chesterfield, MO 63017

RE: Permit Amendment Request for 173-0001
Project Number: 2008-01-017
Permit Number: 072007-008A

Dear Mr. Johnson:

The Air Pollution Control Program received your application to amend the permit (072007-008) for your cement manufacturing plant (173-0001) in Ralls County (S2, T56N, R4W) to change existing permit limits (e.g. clinker hourly production rate, limestone hauling rate, etc.) and to add new emission sources (e.g. natural gypsum truck delivery, limestone fines truck delivery, etc.). Enclosed with this letter is your permit amendment. The attached special conditions replace the special conditions in Construction Permit 072007-008. The document entitled "Review of Permit Amendment Request" is part of the permit and should be kept with Construction Permit 072007-008 in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. Please be aware that a revision to your Part 70 operating permit is still required within one (1) year of startup of the original equipment. If you have any questions regarding this permit, please do not hesitate to contact Chai-Wei Young at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kyra L. Moore,
Permits Section Chief

KLM: cwyl

Enclosures

c: Northeast Regional Office
PAMS File: 2008-01-017

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Continental Cement Company, L.L.C.
Ralls County, S2, T56N, R4W

1. Superseding Condition

The conditions of this permit supersede all special conditions found in the previously issued construction permits (Nos. 032005-024, 092002-022, 072006-003 and 072007-008) from the Air Pollution Control Program.

2. Shut Down of Existing Emission Units and Operations at Installation

A. Continental Cement Company, L.L.C. shall render inoperable by removing the starters, motors or drive devices of the equipment listed below before the date all shake down related activities for the new preheater/precalciner (PH/PC) kiln system (KP-8) have been completed and the new kiln system becomes fully operational. However, in no instance, may this shake down period for the new kiln system exceed 180 days from the initial start-up date of the new kiln system. The emission units and operations listed below may not be operated after the new kiln system becomes fully operational without first undergoing New Source Review from the Air Pollution Control Program.

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	CG-01B	Barge unloading (clinker)
2.	CG-04	Coal storage pile (rail)
3.	CG-07	Gypsum stockpile – stockhouse 5
4.	CG-9A	Coal unloading at rail hopper
5.	CG-09D	Truck gypsum unloading at hopper
6.	CG-9G	Coal transfer rail
7.	CG-10	Coal transfer from MBC2 to trucks
8.	CG-11	Coal transfer rail – elevator to truck
9.	CG-12, 12A	Coal transfer – elevator to coal conveyors MBE-1/MBC-3/MBC-4
10.	CG-13	Coal transfer – MBC-4 to coal silo
11.	SG-3	Indoor synthetic gypsum storage pile
12.	SG-12	Reclaim hopper loading
13.	RM-06	Clay storage pile in stockhouse 5
14.	RM-11	Limestone reclaim hopper
15.	RM-12	Belt conveyor to silos – raw material conveyor
16.	RM-13	Crushed raw material storage pile
17.	RM-13A	Crushed raw material conveyor transfer
18.	RM-14	Raw material storage silos
19.	RM-14A	Limestone storage silos

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 20. RM-14B Clay storage silos
- 21. RM-15 Secondary crusher – limestone
- 22. RM-16 Transfer point limestone
- 23. RM-17 Raw material grinding and drying
- 24. RM-18 Secondary crusher – clay
- 25. RM-19 Transfer point clay
- 26. KP-01, 01A Cement kiln, cement kiln auxiliary fuel
- 27. KP-02A Endloader transfer
- 28. CM-01 Clinker cooler
- 29. CM-01A Clinker discharge via screw conveyor
- 30. CM-02 Clinker transfer drag to belt conveyor
- 31. CM-02A Clinker discharge to apron pan
- 32. CM-05 Clinker storage pile – stockhouse 5
- 33. CM-10B Finish mills #1 and #2 cement coolers
- 34. SH-06 Cement handling – bag packing

B. Continental Cement Company, L.L.C. shall notify the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 15 days after the following events occur:

- 1) The date of initial start-up of the new PH/PC kiln system (KP-8),
- 2) The date the shake down period ends and the new kiln system becomes fully operational or 180 days after initial start-up of the new kiln system, whichever is sooner, and
- 3) The date each unit listed in Special Condition 2.A is rendered inoperable.

3. Cessation of Transport of Materials on Existing Haul Roads

A. Continental Cement Company, L.L.C. shall cease transport of the stated material on the haul roads listed below before the date all shake down related activities for the new PH/PC kiln system (KP-8) have been completed and the new kiln system becomes fully operational. However, in no instance, may this shake down period for the new kiln system exceed 180 days from the initial start-up date of the new kiln system. The haul roads listed below may not be used to transport the listed materials after the new kiln system becomes fully operational without first undergoing New Source Review from the Air Pollution Control Program.

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	CG-02A	Unpaved haul road – trucks to coal/coke stockpiles
2.	CG-02B	Paved haul road – trucks to coal/coke stockpiles
<u>3.</u>	<u>CG-03A</u>	<u>Unpaved haul road – clinker from stone entrance to stockhouse 5</u>
4.	CG-03B	Paved haul road – clinker from stone entrance to stockhouse 5
5.	CG-03C	Unpaved haul road – clinker truck to hopper
<u>6.</u>	<u>CG-03D</u>	<u>Unpaved haul road – coal to stockhouse 5</u>
7.	CG-03E	Paved haul road – coal to stockhouse 5

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

8. CG-05 Unpaved haul road – coal from stockpile to hopper
9. CG-06A Unpaved haul road – gypsum from stone entrance to stockhouse 5
10. CG-06B Paved haul road – gypsum from stone entrance to stockhouse 5
11. CG-08 Unpaved haul road – gypsum from stockhouse 5 to hopper
12. CG-18 Unpaved haul road – Syngyp from entrance to syngyp building
13. CG-20 Haul road unpaved – outdoor syngyp storage pile to syngyp building
14. RM-05A Haul road – clay from plant entrance to stockhouse 5
15. RM-05B Haul road – clay from plant entrance to stockhouse 5
16. RM-07 Haul road – clay from stockhouse 5
17. RM-24 Paved Road - iron ore from entrance to storage building
18. CM-06 Unpaved haul road – clinker/fines from stockhouse 5 to hopper
19. CM-14 Unpaved haul road – clinker outside stockpile to stockhouse 5
20. KP-04 Unpaved haul road – waste dust to landfill
21. AS-1B Paved haul road – entrance to offsite soils pile
22. AS-1A Unpaved haul road – entrance to offsite soils pile

- B. Continental Cement Company, L.L.C. shall notify the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 15 days after the following events occur:
 - 1) The date each haul road listed in Special Condition 3.A ceases to transport the material listed.
4. Restriction on the Maximum Amount of Clinker Production Allowed From the New PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall not produce over 3,700 tons of clinker from the new kiln system (KP-8) per day.
 - B. Continental Cement Company, L.L.C. shall not produce over 1,204,500 tons of clinker from the new kiln system (KP-8) per year, on a twelve (12) month rolling average.
 - C. Continental Cement Company, L.L.C. shall maintain an accurate record of clinker production from the new kiln system (KP-8). The installation shall record the daily and annual totals of clinker production from this emission unit.
5. Allowable Fuels for PH/PC Kiln System

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- A. Continental Cement Company, L.L.C. is allowed to only combust the following fuels only in the new PH/PC kiln system:
- 1) Coal
 - 2) Petroleum coke
 - 3) Solid hazardous waste derived fuel (SHWDF)
 - 4) Liquid hazardous waste derived fuel (LHWDF)
 - 5) Natural gas (start-up/malfunction only)
 - 6) Synthetic gas
 - 7) Alternative non-hazardous waste fuels, including chipped tires, shredded plastics, plastic-backed paper, autoplant sludge, automobile fluff, wastewater sludges, industrial resins, furniture manufacturing sawdust and wood waste, plastic and starch abrasives, shredded shingles, wood waste, tank bottoms, spent carbon, off-spec industrial products, mixed industrial debris and other residential residues.
- B. Continental Cement Company, L.L.C. shall control emissions of mercury, semi-volatile and low volatile metals when utilizing any of the alternative non-hazardous waste fuels listed in Special Condition 5.A.7) by following the provisions outlined below:
- 1) Stack emissions shall not exceed the following limits:
 - a) Mercury - 120 micrograms per dry standard cubic meter ($\mu\text{g}/\text{dscm}$) corrected to 7 percent oxygen.
 - b) Lead and Cadmium - 180 $\mu\text{g}/\text{dscm}$, combined emissions, corrected to 7 percent oxygen.
 - c) Arsenic, beryllium and chromium - 54 $\mu\text{g}/\text{dscm}$, combined emissions, corrected to 7 percent oxygen.
 - 2) Compliance with emission limits shall be determined through stack testing during regularly scheduled comprehensive performance testing for compliance with the HWC MACT. Each fuel listed under Special Condition 5.A.7) must undergo stack testing.
 - 3) In lieu of stack testing, Continental Cement Company, L.L.C. may conduct all of the activities from a) through d) **and** either e) **or** f) listed below:
 - a) Prior to feeding the material, an analysis of each feedstream must be completed. A feedstream analysis plan must be developed and made available to Department of Natural Resources' employees upon request. The feedstream analysis plan must specify:
 - (i) The parameters used to analyze each feedstream,
 - (ii) The method that will be used for the analysis,
 - (iii) How the analysis will be used to document

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The permittee is authorized to construct and operate subject to the following special conditions:

- compliance with the emission limits above,
 - (iv) The test methods used to obtain the analyses,
 - (v) The sampling method used to obtain a representative sample of each feedstream to be analyzed, and
 - (vi) The frequency with which the initial analysis of the feedstream will be repeated to ensure that the analysis is accurate and up to date.
 - b) Determine the feedrate of mercury, semi-volatile metals and low volatile metals from all feedstreams.
 - c) Determine the stack gas flowrate using a continuous monitoring system.
 - d) Calculate a maximum theoretical emissions concentration (MTEC) for each metal by dividing the feedrate by the gas flowrate, assuming all mercury, semi-volatile metals and low volatile metals, less system removal efficiency (SRE) as defined in 40 CFR 63, from all feedstreams is emitted. After the calculations of MTEC, the installation may do either Special Condition (e) or (f).
 - e) Continuously calculate and record the MTEC and interlock the MTEC to the automatic waste feed cutoff to stop feed of hazardous waste or non-hazardous waste to the kiln.
 - f) Establish a minimum gas flowrate limit and a maximum feedrate limit of mercury, semi-volatile metals and low volatile metals to ensure that the MTEC is below the emission standards above. The flowrate limit and the feedrate limit should be interlocked to the automatic waste feed cutoff to stop feed of hazardous waste or alternate non-hazardous waste fuel to the kiln.

6. Haul Road and Stockpile PM₁₀ Controls at Continental Cement Company (non-BACT controls)

A. Unpaved Haul Roads/Vehicular Activity Areas

- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the vehicular traffic areas of the following storage piles and unpaved haul roads so as to achieve 90 percent control of PM₁₀ by documented watering or the application of chemical dust suppressant:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	RM-21	Cave Clay Storage Pile
2.	RM-22	Clay Storage Pile
3.	CM-15	Outside Clinker Storage Pile
4.	RM-23	Clay from Cave to Primary Crusher Haul Road
5.	RM-04A	Quarries to Primary Crusher – A1 Haul Road
6.	RM-04B	Quarries to Primary Crusher – Sims Haul Road
7.	RM-20B	Clay from Entrance to Cave Storage Haul

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

		Road
8.	SF-34	Waste Fuel Delivery to Fuel Prep Haul Road
9.	SF-37	LWDF from Rail to Tanks Haul Road

- 2) Chemical Dust Suppressant
 - a) The suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) shall be applied in accordance with the manufacturer's suggested application rate and re-applied as necessary to achieve control of fugitive emissions from these areas.
 - b) Continental Cement Company, L.L.C. shall keep records of the time, date, and the amount of material applied for each application of chemical dust suppressant agent on these areas.
- 3) Documented Watering
 - a) Water shall be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads/vehicle activity areas as necessary to achieve control of fugitive emissions from these areas.
 - b) Continental Cement Company, L.L.C. shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on days the areas are in use (e.g., meteorological situations, precipitation events, freezing, etc.).
 - c) Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the areas are in use, may be substituted for water application until such time as conditions warrant application of water.
 - d) Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. Continental Cement Company, L.L.C. shall record a brief description of such events in the same log that documents the watering.

B. Paved Haul Roads

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the following haul roads so as to achieve 95 percent control of PM₁₀ by periodically watering and washing its surface:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	SH-10	Cement Product Out Haul Road
2.	SF-33	Waste Fuel Delivery to Fuel Prep Haul Road
3.	SF-36	LWDF from Rail to Tanks Haul Road
4.	SF-53	Solid Fuel Feed Carts Haul Road

- 2) Maintenance and/or repair of the surfaces will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.

- C. Continental Cement Company, L.L.C. shall not process clay in the clay storage cave (RM-21) and the outdoor clay storage pile (RM-22) concurrently. Continental Cement Company, L.L.C. shall maintain an accurate record of clay handling to insure that material is not being processed concurrently from RM-21 and RM-22.

7. Point Source Control of PM₁₀ Emissions (non-BACT controls) – Crusher Building

- A. Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the crusher building by holding the building under negative pressure and venting the primary crusher (RM-9) and two transfer points (RM-10.1, 10.2) to a baghouse (LDC-4). The negative pressure should be maintained such that no visible emissions [zero percent (0%) opacity] are allowed to occur from the three points (RM-9, RM-10.1 and RM-10.2) except those gases being drawn into the baghouse intake for each point.

- B. In lieu of performing visible emissions checks on each emission point, Continental Cement Company, L.L.C. may demonstrate negative building pressure by using a visual indicator such as streamers, talc puff test, etc. at building openings that are not closed during normal operations, i.e., conveyor openings, etc. Each opening in the building must indicate the presence of negative pressure for compliance.

- C. Continental Cement Company, L.L.C. shall perform a visible emissions check on each of the three emissions points (RM-9, RM-10.1 and RM-10.2) or a visual indicator check on the building at least once in every 24-hour period, while crushing equipment is in operation. Continental Cement Company, L.L.C. shall keep records of the results of the daily checks.

8. Control of Nitrogen Oxides (NO_x) Emissions (non-BACT controls)

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- A. Continental Cement Company, L.L.C. shall control the emissions of NO_x from the new PH/PC kiln system (KP-08) by installing a multi-stage preheater and a low-NO_x calciner.
- B. The preheater and calciner must be in use at all times when the new PH/PC kiln system is in operation, and shall be operated and maintained in accordance with the manufacturer's specifications.

9. Standards of Performance for Best Available Control Technology (BACT) for PM₁₀

A. Unpaved Haul Roads/Vehicular Activity Areas

- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the vehicular traffic areas of the following storage piles and unpaved haul roads so as to achieve 90% control of PM₁₀ by **either** documented watering or the application of chemical dust suppressant:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	RM-4C	Hi-Mag Quarry to Crusher Haul Road
2.	RM-24A	Iron Ore from Entrance to Storage Building Haul Road
3.	RM-30	Shale Quarry Haul Road
4.	RM-60	Raw Material Storage – Limestone
5.	RM-61	Raw Material Storage – Shale
6.	RM-62	Raw Material Storage – Clay
7.	RM-63	Raw Material Storage – Iron Ore
8.	CM-30	Clinker Storage Pile - Cave
9.	CM-31/ 32/31A/ 32A	Clinker from Outside Stockpile to Cave Haul Road
10.	KP-04A	Waste Dust Baghouse to Artificial Soils Haul Road
11.	CG-02AA	Trucks to Coal/Coke Stockpiles Haul Road
12.	CG-18A	Syn Gyp from Entrance to Syn Gyp Building Haul Road
13.	AS-1AA	Entrance to Offsite Soils Pile Haul Road
14.	RM-69	Alkali Clay from Bulk Carrier Entrance to Stockhouse 5
15.	RM-70	Alkali Clay from Stockhouse 5 to Primary Crusher
16.	RM-72	Lime Fines from Church Entrance to Quarry
17.	CG-26B	Gypsum from Entrance to Rail Hopper

- 2) Chemical Dust Suppressant

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- a) The suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) shall be applied in accordance with the manufacturer's suggested application rate and re-applied as necessary to achieve control of fugitive emissions from these areas.
- b) Continental Cement Company, L.L.C. shall keep records of the time, date, and the amount of material applied for each application of chemical dust suppressant agent on these areas.
- 3) Documented Watering
 - a) Water shall be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads as necessary to achieve control of fugitive emissions from these areas.
 - b) Continental Cement Company, L.L.C. shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on days the areas are in use (e.g., meteorological situations, precipitation events, freezing, etc.).
 - c) Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the areas are in use, may be substituted for water application until such time as conditions warrant application of water.
 - d) Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. Continental Cement Company, L.L.C. shall record a brief description of such events in the same log that documents the watering.
- B. Paved Haul Road
 - 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the Lime Haul Road (LM-01) and the Gypsum Haul Road (CG-26A) so as to achieve 95 percent control of PM₁₀ by periodically watering and washing its surface.
 - 2) Maintenance and/or repair of the surfaces will be conducted as

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The permittee is authorized to construct and operate subject to the following special conditions:

necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.

- C. SHWDF Storage Pile Requirements
- 1) The Kiln Burner Building (BB-1) that houses the SHWDF storage pile (SF-61) shall be held under negative pressure and vented by the secondary air fans at the clinker cooler to the kiln whenever the kiln is in operation.
 - 2) When the kiln is not operating, back-up fans will vent emissions to an activated carbon system.
 - 3) These fans shall be equipped with monitors, which shall monitor the vacuum on the fans. The monitors shall be located such that Department of Natural Resources' employees may easily observe them.
 - 4) Continental Cement Company, L.L.C. shall cease operations at the BB-1 Building should negative pressure no longer exist at the fans. Operations at the BB-1 Building may resume upon restoration of negative pressure.
- D. Point Sources Requirement – Continental Cement Company, L.L.C. shall enclose and vent each PM₁₀ point source listed in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices*, using baghouses or cartridge filters, as specified in Table 6. The enclosure of the emissions units shall be constructed and maintained such that no visible emissions [zero percent (0%) opacity from the enclosure] are allowed to occur from these sources except through the gases exiting from the baghouses or cartridge filters.
- 1) Continental Cement Company, L.L.C. shall not emit more than 0.007 grains per dry standard cubic foot (gr/dscf) of filterable PM₁₀ from any baghouse or cartridge filter except the main stack baghouses (316BF1 and 326BF1) and the clinker cooler stack baghouse (356BF1).
 - 2) Continental Cement Company, L.L.C. shall not emit more than 0.01 gr/dscf of filterable PM₁₀ from the clinker cooler stack baghouse (356BF1).
 - 3) Continental Cement Company, L.L.C. shall not emit more than 0.0069 gr/dscf of total PM₁₀ from the main stack baghouses (316BF1 and 326BF1). Total PM₁₀ consists of both condensable and filterable fractions.
 - 4) Compliance Testing for Grain Loading

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- a) Continental Cement Company, L.L.C. shall test each of the following baghouses subject to this emission limitation for initial compliance demonstration.
 - (i) Main stack – cement kiln (316BF1 and 326BF1)
 - (ii) Clinker cooler stack (356BF1)
 - (iii) Finish mill air separator (546BF1)
- b) Continental Cement Company, L.L.C. shall test ten percent by group (listed below) of the baghouses/cartridge filters (not specifically listed above) subject to this emission limitation for initial compliance demonstration.
 - (i) Group 1 – All units with flow rates less than 2,000 standard cubic feet per minute (scfm),
 - (ii) Group 2 – All units with flow rates equal to or exceeding 2000 scfm but less than or equal to 5,000 scfm,
 - (iii) Group 3 – All units with flow rates exceeding 5,000 scfm.
- 5) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average. These limits are for total PM₁₀, consisting of both condensable and filterable fractions.
 - a) When using 100 percent Burlington limestone, emission shall not exceed 0.28 pounds of total PM₁₀ per ton of clinker.
 - b) When 0% < raw mix <= 20% Kimmswick limestone, emissions shall not exceed 0.33 pounds of total PM₁₀ per ton of clinker.
 - c) When 20% < raw mix <= 40% Kimmswick limestone, emissions shall not exceed 0.37 pounds of total PM₁₀ per ton of clinker.
 - d) When 40% < raw mix <= 60% Kimmswick limestone, emissions shall not exceed 0.42 pounds of total PM₁₀ per ton of clinker.
 - e) When 60% < raw mix <= 80% Kimmswick limestone, emissions shall not exceed 0.47 pounds of total PM₁₀ per ton of clinker.
 - f) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.516 pounds of total PM₁₀ per ton of clinker.
- 6) Compliance Demonstration

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- a) The installation shall demonstrate compliance with each tiered limit by performing compliance testing within 90 days of initiating the use of a raw material mix constituting a new tier for which a compliance demonstration has not yet been performed (e.g., within 90 days of beginning to use a 40% < Kimmswick <= 60% raw material mix).
 - b) An annual compliance demonstration shall be performed for any raw material mix tier group utilized for more than 12 consecutive months. When making a change from one raw material tier group to another, Continental Cement Company, L.L.C. shall document the tier groups being switched from and to, and the date and time the switch was made.
 - c) Each compliance demonstration shall be made using stack testing results from at least three 1-hour runs.
- E. Emergency Generator
- 1) Continental Cement Company, L.L.C. shall not emit more than 0.33 pounds of total PM₁₀ per hour of operation from the emergency generator (MS-7) in order to meet BACT.
 - 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.
10. Standards of Performance for BACT for Sulfur Oxides (SO₂)
- A. Kiln/Coal Mill Preheater
- 1) Continental Cement Company, L.L.C. shall control the emissions of SO₂ from the new PH/PC kiln system (KP-08) by installing spray drying systems (towers) on the alkali bypass stream and on the stream that normally vents to the raw mill, when the raw mill is not in operation (raw mill bypass stream) in order to meet BACT.
 - a) The alkaline spray tower on the alkali bypass line must be in use at all times when kiln exhaust is routed to the alkali bypass line.
 - b) The raw mill bypass lime spray tower must be in use at all times that the raw mill is not in operation.
 - 2) The spray towers shall be operated and maintained in accordance with the manufacturer's specifications.
 - 3) Emissions from the main stack of the new PH/PC kiln system (stack

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.

- a) When using 100% Burlington limestone, emission shall not exceed 0.63 pounds of SO₂ per ton of clinker.
 - b) When 0% < raw mix <= 20% Kimmswick limestone, emissions shall not exceed 0.89 pounds of SO₂ per ton of clinker.
 - c) When 20% < raw mix <= 40% Kimmswick limestone, emissions shall not exceed 1.15 pounds of SO₂ per ton of clinker.
 - d) When 40% < raw mix <= 60% Kimmswick limestone, emissions shall not exceed 1.41 pounds of SO₂ per ton of clinker.
 - e) When 60% < raw mix <= 80% Kimmswick limestone, emissions shall not exceed 1.67 pounds of SO₂ per ton of clinker.
 - f) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 1.93 pounds of SO₂ per ton of clinker.
- 4) To document the amount of each type of limestone utilized, Continental Cement Company, L.L.C. will record the mass of limestone delivered to the process from each quarry area. The respective mass of Kimmswick and Burlington limestones placed into the process can be measured.
 - 5) Continental Cement Company, L.L.C. shall operate continuous SO₂ emission monitors (CEMS) to measure, record and report SO₂ emissions compliance.

B. Emergency Generator Control

- 1) Continental Cement Company, L.L.C. shall not emit more than 0.01 pounds of SO₂ per hour of operation from the emergency generator (MS-7) in order to meet BACT.
- 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Organic Compounds (VOC)

A. Kiln/Coal Mill Preheater

- 1) Continental Cement Company, L.L.C. shall use good combustion practices at all times for the new PH/PC kiln system (KP-8) and the coal mill preheater (CG-25) in order to meet BACT.
- 2) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.
 - a) When using 100% Burlington limestone, emission shall not exceed 1.38 pounds of CO per ton of clinker.
 - b) When $0\% < \text{raw mix} \leq 20\%$ Kimmswick limestone, emissions shall not exceed 1.82 pounds of CO per ton of clinker.
 - c) When $20\% < \text{raw mix} \leq 40\%$ Kimmswick limestone, emissions shall not exceed 2.27 pounds of CO per ton of clinker.
 - d) When $40\% < \text{raw mix} \leq 60\%$ Kimmswick limestone, emissions shall not exceed 2.71 pounds of CO per ton of clinker.
 - e) When $60\% < \text{raw mix} \leq 80\%$ Kimmswick limestone, emissions shall not exceed 3.16 pounds of CO per ton of clinker.
 - f) When $\text{raw mix} > 80\%$ Kimmswick limestone, emissions shall not exceed 3.60 pounds of CO per ton of clinker.
- 3) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.
 - a) When using 100% Burlington limestone, emission shall not exceed 0.03 pounds of VOC per ton of clinker.
 - b) When $0\% < \text{raw mix} \leq 20\%$ Kimmswick limestone, emissions shall not exceed 0.05 pounds of VOC per ton of clinker.
 - c) When $20\% < \text{raw mix} \leq 40\%$ Kimmswick limestone, emissions shall not exceed 0.07 pounds of VOC per ton of clinker.
 - d) When $40\% < \text{raw mix} \leq 60\%$ Kimmswick limestone, emissions shall not exceed 0.084 pounds of VOC per ton of clinker.
 - e) When $60\% < \text{raw mix} \leq 80\%$ Kimmswick limestone,

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

emissions shall not exceed 0.10 pounds of VOC per ton of clinker.

- f) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.12 pounds of VOC per ton of clinker.
 - 4) To document the amount of each type of limestone utilized, Continental Cement Company, L.L.C. will record the mass of limestone delivered to the process from each quarry area. The respective mass of Kimmswick and Burlington limestones placed into the process can be measured.
 - 5) Continental Cement Company, L.L.C. shall operate continuous CO emission monitors to measure, record and report CO emissions compliance.
 - 6) Continuous CO emission monitors shall be used as a surrogate for VOC limitations compliance.
- B. Emergency Generator**
- 1) Continental Cement Company, L.L.C. shall not emit more than 2.08 pounds of CO per hour of operation from the emergency generator (MS-7) in order to meet BACT.
 - 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.
 - 3) Continental Cement Company, L.L.C. shall develop an Operating and Maintenance Manual for the emergency generator (MS-7) based on manufacturer's specifications and recommendations for unit operation to ensure that good combustion practice of ultra low sulfur diesel fuel occurs as a routine operating practice. This manual shall be finalized prior to commencement of operation of the generator.
 - a) System operators shall be provided training on those procedures prior to operation of the generator.
 - b) A written record will be maintained detailing the names of employees, date of the initial training, and dates of subsequent review of the good combustion practice procedures.

C. LHWDF Storage Tanks

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Continental Cement Company, L.L.C. shall vent all vapors emanating from the LHWDF tanks (SF-3C and SF-3D) to a carbon adsorption bed.

12. PH/PC Kiln System Operating Conditions

A. Sulfur-to-Alkali Ratio

- 1) Continental Cement Company, L.L.C. shall maintain sulfur-to-alkali ratio in the kiln, as established in Special Condition 12.B below.
- 2) The installation shall keep a log containing test results of the ratio on a daily basis for compliance.
- 3) The evaluation procedure may be repeated and the sulfur-to-alkali ratio may be re-established as needed.

B. Continental Cement Company, L.L.C. shall perform an evaluation of the impact of fuel sulfur content on SO₂ emissions from the new PH/PC kiln system's (KP-8) main stack to establish a sulfur-to-alkali ratio in the kiln in accordance with the procedures outlined below.

- 1) The difference between the upper and lower points of the sulfur-to-alkali range shall span less than 0.4 (i.e. 0.8 to 1.2, 1.1 to 1.5, etc.)
- 2) Fuels with a representative range of sulfur content should be evaluated, including fuel containing the maximum fuel sulfur content Continental Cement Company, L.L.C. intends to utilize in the new kiln system. Each evaluation period shall last for a minimum of twenty-four (24) hours. There must be, at a minimum, one evaluation period per 1.0% increase in fuel sulfur content (e.g. 0% sulfur, 1% sulfur, 2% sulfur)
- 3) SO₂ emissions shall be recorded using CEMS for each evaluation period.
- 4) The evaluation shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this rated capacity, not to include periods of start-up, shutdown, or malfunction.
- 5) Two (2) copies of a written report of the evaluation results must be submitted to the Air Pollution Control Program's Compliance Section within ninety (90) days of completion of the evaluation. The report must include copies of the CEMS data, test results for fuel and raw material sulfur content and the recorded values for each operating parameter detailed below. The report must contain a statistical analysis of the CEMS readings.
 - a) Fuel Sulfur Content – Continental Cement Company, L.L.C. shall test the sulfur content of the fuel used during each evaluation period. The fuel sulfur content must be recorded and remain constant during each evaluation period.
 - b) Raw material sulfur content – Continental Cement Company,

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- A. The baghouses and cartridge filters specified in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices*, must be in use at all times when that associated piece of equipment is in operation, and shall be operated and maintained in accordance with the manufacturer's specifications. These baghouses/cartridge filters shall be equipped with a gauge, meter or indicator which indicates the pressure drop across the control device. These gauges, meters or indicators shall be located such that the Department of Natural Resources' employees may easily observe them.
- B. Pressure Drop Monitoring
 - 1) Continental Cement Company, L.L.C. shall monitor and record the operating pressure drop across the baghouses/cartridge filters at least once in every 24-hour period when the associated equipment is in operation.
 - 2) Alternatively, Continental Cement Company, L.L.C. may install an alarm system which checks a pressure drop sensing device for each baghouse during each system start-up. If the system remains in continuous operation, the alarm check will be initiated every 24 hours. If the operating pressure drop across the baghouse does not meet the setting required for proper operation, an alarm will be activated at the operator's console. Each alarm event will be recorded in the operating record, and corrective action will be initiated within the hour.
- C. Appropriate replacement filters for each baghouse/cartridge filter shall be kept on hand at all times. These replacement filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
- D. Continental Cement Company, L.L.C. shall maintain an operating and maintenance log for each baghouse/cartridge filter specified in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices* which shall include the following:
 - 1) Incidents of malfunction including the dates and duration of the event, the probable cause, any corrective actions taken and the impact on emissions due to the malfunction,
 - 2) Any maintenance activities conducted on the unit, such as parts replacement, replacement of equipment, etc., and
 - 3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- A. Continental Cement Company, L.L.C. shall not emit more than 79.55 pounds of total PM₁₀ per hour from the main stack. This limit is for total PM₁₀, consisting of both condensable and filterable fractions. The installation shall demonstrate compliance with this limit through annual compliance demonstration, consisting of at least three 1-hour runs.
 - B. Continental Cement Company, L.L.C. shall not emit more than 550 pounds of SO₂ per hour from the main stack based on a 3-hour rolling average. The installation shall demonstrate compliance with this condition using the SO₂ monitoring system established in Special Condition 10.A.5).
 - C. Continental Cement Company, L.L.C. shall not emit more than 297.60 pounds of SO₂ per hour from the main stack based on a 24-hour rolling average. The installation shall demonstrate compliance with this condition using the SO₂ monitoring system established in Special Condition 10.A.5).
 - D. Continental Cement Company, L.L.C. shall not emit more than 1,300 pounds of CO per hour, based on a 1-hour rolling average. The installation shall demonstrate compliance with this condition using the CO monitoring system established in Special Condition 11.A.5).
16. Restriction of Operations Resulting from Ambient Air Quality Analysis
- A. Continental Cement Company, L.L.C. shall not process/handle more than 465 tons per day of clay in any piece of equipment from hauling into the plant through load-in to the clay storage piles (RM-20A, RM-20B, RM-21 and RM-22).
 - B. Continental Cement Company, L.L.C. shall not process/handle more than 1,800 tons per day of clay in any piece of equipment from load-out from the clay storage piles to the primary raw materials crusher (RM-21, RM-22 and RM-23).
 - C. Continental Cement Company, L.L.C. shall not process/handle more than 1,800 tons per day of shale from truck loading through hauling to the primary raw materials crusher (RM-29 and RM-30).
 - D. Continental Cement Company, L.L.C. shall not process/handle a

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The permittee is authorized to construct and operate subject to the following special conditions:

combined total of shale and clay more than 3,600 tons per day, alkali clay more than 600 tons per day and limestone more than 7,500 tons per day from the truck unloading at the primary raw materials primary crusher through unloading at the raw material storage building (RM-8, RM-9, RM-10.1, RM-10.2, RM-31, RM-54, RM-55, RM-56, RM-60, RM-61 and RM-62).

- E. Continental Cement Company, L.L.C. shall not process/handle more than 300 tons per day of iron ore from hauling into plant through unloading at the raw material storage building (RM-24A and RM-63).
- F. Under no circumstances may Continental Cement Company, L.L.C. store ash, or any other clay substitute, in the outdoor clay storage pile (RM-22).
- G. Continental Cement Company, L.L.C. shall not process/handle more than 3,500 tons per day of limestone from the A1 Quarry (RM-01A, RM-03A and RM-04A).
- H. Continental Cement Company, L.L.C. shall not process/handle more than 7,500 tons per day of limestone each from the Sims Quarry or Hi-Mag Quarry (RM-01B, RM-01C, RM-03B, RM-03C, RM-04B and RM-04C).
- I. Continental Cement Company, L.L.C. shall not process/handle more than 7,500 tons per day of limestone, 1,800 tons per day of shale, 1,800 tons per day of clay and 600 tons per day of alkali clay from the hopper (RM-50) through unloading at the raw material storage building (RM-51, RM-51-1, RM-51-2, RM-51.3, RM-52-1, RM-52-2, RM-53 and RM-60).
- J. Continental Cement Company, L.L.C. shall not haul more than a combined total of 800 tons per day of gypsum (synthetic or natural) on the haul road (CG-18A) in and out of the plant.
- K. Continental Cement Company, L.L.C. shall not process/handle more than 325 tons per day of natural gypsum (CG-9B, CG-9E, CG-9F, CG-14, CG-14A, CG-14B, CG-14C, CG-14D and CG-16).
- L. Continental Cement Company, L.L.C. shall not haul more than 60 tons per day of lime into the plant on the haul road (LM-1).
- M. Continental Cement Company, L.L.C. shall not process/handle more than a combined total of more than 900 tons per day of coal and pet coke from barge unloading or truck hauling offsite to the coal/coke storage pile (CG-1A, CG-02AA and CG-17).
- N. Continental Cement Company, L.L.C. shall not haul (SF-33/34 or SF-

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 36/37) more than 600 tons per day of supplemental fuels into the plant.
- O. Continental Cement Company, L.L.C. shall not haul (SF-53) more than 200 tons per day of waste fuel from fuel prep to solid waste storage.
 - P. Continental Cement Company, L.L.C. shall not load more than 250 tons per day of cement kiln dust into trucks per day (KP-3).
 - Q. Continental Cement Company, L.L.C. shall not haul more than 300 tons per day of waste associated with the artificial soils project on the offsite haul road (AS-1AA).
 - R. Continental Cement Company, L.L.C. shall not unload more than 100 tons per day each of ash, biosolids or carbon source waste (including yard waste, sawdust or ground wood) associated with the artificial soils project (AS-2A, AS-2B and AS-2D).
 - S. Continental Cement Company, L.L.C. shall not load more than the following listed amounts of cement on a daily basis:
 - 1) River Cement Silos (SH-7) – 10,000 tons of cement per day,
 - 2) Barge Loading (SH-8, SH-9) – 30,000 tons of cement per day, combined, and
 - 3) Bulk Truck Loading (SH-4) – 4,500 tons of cement per day.
 - T. Continental Cement Company, L.L.C. shall not haul more than 1,200 tons per day of alkali clay from offsite to stockhouse 5 on haul road RM-69 and more than 600 tons per day of alkali clay from stockhouse 5 to the primary crusher on haul road RM-70.
 - U. Continental Cement Company, L.L.C. shall not haul more than 1,000 tons of limestone fines into the plant on haul road RM-72.
 - V. Continental Cement Company, L.L.C. shall not haul more than 325 tons of natural gypsum into the plant on haul road CG-26.
 - W. Continental Cement Company, L.L.C. shall not haul more than 400 tons per day of synthetic gypsum blend material from the synthetic gypsum storage building to the clinker reclaim hopper on haul road SG-11A.
 - X. Continental Cement Company, L.L.C. shall not haul more than 250 tons per day of Cement Kiln Dust (CKD) offsite on haul road SF-33.
 - Y. Continental Cement Company, L.L.C. shall maintain an accurate record of

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

raw materials handling, limestone handling, fuel handling, gypsum handling, cement kiln dust handling, waste handling associated with the artificial soils project and cement loadout. The installation shall record the daily total of the materials processed in order to verify compliance with the limits established above.

17. Continuous Emission Monitoring System (CEMS) – PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall install, certify, operate, calibrate, test and maintain CEMS for SO₂ and CO and any necessary auxiliary monitoring equipment in accordance with all applicable regulations. If there are conflicting regulatory requirements, the more stringent shall apply.
 - B. Continental Cement Company, L.L.C. shall install and operate a data acquisition and handling system to calculate emissions in terms of the emission limitations specified in this permit.
 - C. Compliance with the SO₂ and CO emission limits for the new PH/PC kiln system shall be demonstrated through the use of the required CEMS.
18. Stack Testing Requirements – New PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall conduct performance testing on the new PH/PC kiln system's (KP-8) main stack sufficient to quantify the emission rates of filterable, condensable and total PM₁₀, SO₂, NO_x, VOC and CO from this source. These tests shall be done in accordance with the procedures outlined below.
 - B. A completed Proposed Test Plan (form enclosed) must be submitted to the Air Pollution Control Program's Compliance Section at least 30 days prior to the proposed test date of any such performance tests so that a pretest meeting may be arranged, if necessary, and to assure that the test date is acceptable for an observer to be present. The Proposed Test Plan must include specification of test methods to be used and be approved by the Director prior to conducting the above-required emissions testing.
 - C. Within 60 days of achieving the maximum production rate of the new

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

PH/PC kiln system, and in any case, no later than 180 days after initial start-up, the owner/operator shall have conducted the required performance tests. If one or more of the above air pollutants for which testing is required by Special Condition 18.A is also required to be tested to demonstrate compliance with another applicable rule (such as 40 CFR Part 63 Subpart LLL, National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry), then Continental Cement Company, L.L.C. may conduct the performance testing according to the time frames indicated by the applicable regulation.

- D. Any required performance testing shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this rated capacity, not to include periods of start-up, shutdown, or malfunction. However, if a new performance testing is conducted at a production rate which is less than 90% of the maximum rated capacity of the equipment, then ten percent (10%) above the production rate at which the performance test was conducted shall become the new maximum allowable hourly production rate for the unit.
- E. Two (2) copies of a written report of the performance test results must be submitted to the Air Pollution Control Program's Compliance Section within 90 days of completion of the performance testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required Environmental Protection Agency (EPA) Method for at least one (1) sample run for each air pollutant tested.
- F. No later than thirty (30) days after the performance test results are submitted, Continental Cement Company, L.L.C. shall provide the Director with a report that establishes the potential emissions of each air pollutant tested in Special Condition 18.A. This report shall report the potential emission rates in pounds per hour, tons per year and pounds per ton of clinker produced from the new PH/PC kiln system (KP-8) in order that the Air Pollution Control Program may verify the potential emissions from this project.
- G. If the results of the performance testing shows that the emission rates for NO_x are greater than those used in the emissions analysis herein, then Continental Cement Company, L.L.C. shall evaluate what effects these higher emission rates would have had on the permit applicability of this project. Continental Cement Company, L.L.C. shall submit the results of any such evaluation in a timely manner for Air Pollution Control Program review and approval.
- H. The above time frames associated with this performance testing condition

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

may be extended upon request of Continental Cement Company, L.L.C. and approval by the Director.

19. **Restriction of Public Access – Fencing or Physical Barrier to Restrict Public Access to Property**
Continental Cement Company, L.L.C. shall preclude public access to property that is considered within the non-ambient air zone with respect to the air quality impact analysis conducted for this permit. Installation and maintenance of a fence or other physical barrier shall be the means to preclude public access. A map showing property boundary (precluded areas) can be found in Figure 4, entitled “Continental Cement – Property Boundary” of the Ambient Air Quality Impact Analysis modeling memo. Continental Cement Company, L.L.C. shall complete construction of the physical barrier to prior to commencing operation of the new PH/PC kiln system.
20. **Record Retention Requirements**
Continental Cement Company, L.L.C. shall maintain all records required by this permit, on-site, for the most recent 60 months of operation and shall make such records available immediately to any Missouri Department of Natural Resources’ personnel upon request.
21. **Notification Requirement**
Continental Cement Company, L.L.C. shall report to the Air Pollution Control Program’s Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records required by this permit indicate that the source exceeds the limitations established in the Special Conditions above.
22. **Requirements for Future Alterations**
Continental shall notify the Air Pollution Control Program before initial startup of any modifications to the facility design that could impact the release parameters or emission rates as specified in the Memorandum from the Modeling Unit titled “Ambient Air Quality Impact Analysis (AAQIA) for the Continental Cement Company (Continental Cement)-Prevention of Significant Deterioration (PSD) Modeling – January 10, 2008 Submittal.” In the event that the Program determines that the changes are significant, Continental shall submit an updated Ambient Air Quality Impact Analysis (AAQIA) to the Program that continues to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PDS) increment standards.

REVIEW OF PERMIT AMENDMENT REQUEST

Project Number: 2008-01-017
Installation ID Number: 173-0001
Permit Number: 072007-008A

Installation Location:
Continental Cement Company, L.L.C.
10107 Highway 79 South
Hannibal, MO 63401

Complete: January 10, 2008

Parent Company:
Continental Cement Company, L.L.C.
14755 North Outer Forty Drive, Suite 514
Chesterfield, MO 63017

Ralls County (S2, T56N, R4W)

Review Summary

- Continental Cement Company, LLC has applied for authority to amend their recent Prevention of Significant Deterioration (PSD) permit (no. 072007-008) to change existing permit limits (i.e. clinker production rate, limestone hauling rate, etc.) and to add new emission points (natural gypsum truck delivery, limestone fines truck delivery, etc).
- Hazardous Air Pollutant (HAP) emissions are expected from the installation. HAPs of concern from the cement manufacturing processes are hydrogen chloride, benzene, fluorides, and compounds of lead, beryllium, mercury, arsenic and selenium. However, the HAP emitting units at the installation are governed by the requirements of a Maximum Achievable Control Technology (MACT) standard; Therefore, a Missouri Section (9) review is not required.
- Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, of the New Source Performance Standards (NSPS) applies to some of the equipment at this installation. Subpart Y, *Standards of Performance for Coal Preparation Plants*, applies to some of the coal handling equipment.
- The following MACT standards, 40 CFR Part 63, apply to some of the equipment of this installation.
 - ✧ Subpart LLL, *National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry*,
 - ✧ Subpart XX, *National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations*, and
 - ✧ Subpart EEE, *National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors*.

- Subpart FF of the National Emission Standards for Hazardous Air Pollutants (NESHAPs), *NESHAPs for Benzene Waste Operations*, applies to this installation.
- BACT control technologies remain the same as determined in Construction Permit 072007-008 (Project 2006-11-095).
- Additional PM₁₀ sources included in this amendment also underwent BACT analysis. BACT for the new or modified PM₁₀ sources were determined to include baghouse control for point source PM₁₀ emissions and paving and/or water spray for fugitive source PM₁₀ emissions.
- Continental Cement Company, LLC is an existing major source for criteria pollutants.
- This installation is located in Ralls County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2, Number 3, *Portland Cement Plants*].
- Air quality modeling for this project was performed to determine the ambient impact of PM₁₀, SO₂, CO, Arsenic, Hydrogen Chloride, Mercury, Lead, Selenium and Benzene. The results demonstrate that this installation will not contribute to any violation of the National Ambient Air Quality Standards (NAAQS), available increment, or Risk Assessment Level (RAL) for HAPs. Ambient air quality modeling was not performed for VOC for this review because no model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.
- The installation proposes to increase the production rate of several pieces of equipment and this equipment shall be stack tested using the new throughput rate.
- Revision to the Part 70 Operating Permit is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Continental Cement Company, L.L.C. (Continental) currently operates a wet process rotary cement kiln on a 3,300-acre site three miles south of the city of Hannibal in Ralls County. Clinker production averages 620,000 tons annually. The plant operates as a hazardous waste combustor while producing Portland cement. In addition to the kiln system, the installation operates a syngyp process (synthetic gypsum mixed with cement kiln dust) and has an ongoing artificial soils project to support the production of

trees as a renewable alternative fuel source. The installation received a PSD permit

(No. 072006-003) for the replacement of the wet process kiln with a new PH/PC kiln system and a PSD permit (No. 072007-008) for the elimination of Saverton Quarry, the development of a new onsite quarry, and the increase of daily clinker production.

The existing installation is considered to be a major source of air emissions by both the Construction and Operating Permit units. Continental obtained a Part 70 operating permit on April 8, 2005 (Permit No. OP2005-009). The following construction permits have been issued to Continental from the Air Pollution Control Program.

Table 1: Previously Issued Construction Permits

Permit Number	Description
0686-002	A Section (5) permit issued on October 7, 1986, for a new waste fuels storage facility.
1086-004	A Section (5) permit issued on December 24, 1986, to add the capability to burn waste fuel in the kiln.
1086-004A	An amendment to Permit No. 1086-004 issued on February 15, 1990 for the use of a substitute raw material.
1086-004B	An amendment to Permit No. 1086-004 to alter a beryllium emission limit.
0890-008	A Section (5) permit issued on August 21, 1990, for the addition of 2 new 75,000 gallon above ground tanks for liquid fuel storage and one 200 ton capacity dry fuel storage tank and one 50 ton capacity dry fuel surge tank.
1086-004C	An amendment to Permit No. 1086-004A issued on June 11, 1996, to allow the installation to accept and burn 5,000 BTU/pound or greater solid wastes in combination with other liquid waste fuels and coal as fuel.
0198-014	A Section (5) permit issued on January 13, 1998, to install a syngyp process to manufacture synthetic gypsum and mix it with cement kiln dust.
122001-014	A Section (5) permit issued on December 21, 2001, to utilize a mixture of waste materials to create an artificial soil to support the production of trees as a renewable alternative fuel source.
092002-022	A Section (5) permit issued on October 2, 2002, for the replacement of the existing kiln system with a new kiln. This new kiln was never built. Permit 072006-003 replaced this project.
1086-004D	An amendment to Permit No. 1086-004 issued on August 6, 2003, to allow alternate feed rate limits based on future compliance testing.
072006-003	A Section (8) permit issued on July 11, 2006, to install a new PH/PC kiln system and underground mine.
072007-008	A Section (8) permit issued on July 24, 2007 for the elimination of Saverton Quarry, the development of a new onsite quarry, and the increase of daily clinker production.

PROJECT DESCRIPTION

The installation has asked for the following changes to Construction Permit 072007-008:

- Modification of existing permit limits
 - ✧ The maximum clinker production rate will be increased from 3,500 tons per day to 3,700 tons per day. The maximum annual production rate will remain at 1,204,500 tons per year.
 - ✧ Limestone hauling and crushing will be increased from 7,000 tons per day to 7,500 tons per day. The extra 500 tons per day will come from either Sims or

High Mg Quarries.

- ✘ Shale and clay hauling to the crusher will be reduced from 3,600 tons per day each to 1,800 tons per day each.
 - ✘ Iron ore delivery to the raw material storage building will be increased from 150 tons per day to 300 tons per day.
 - ✘ Natural gypsum hauling, handling and storage will decrease from 2,400 tons per day to 325 tons per day. In Construction Permit 072007-008, baghouses had been proposed as control devices for emission points associated with this limit (CG-9E, CG-9F, CG-14, CG-14A, CG-14B, CG-14C, CG-14D, CG-15 and CG-16). With the reduction in throughput, control equipment will no longer be installed.
 - ✘ Synthetic gypsum blend material delivery will be increased from 250 tons per day to 800 tons per day.
 - ✘ Synthetic gypsum will no longer be transported from the synthetic gypsum building to offsite (SG-11). This haul route will be removed.
 - ✘ Coal delivery will decrease from 1,800 tons per day to 900 tons per day.
 - ✘ Two pulverized coal bins were permitted in Construction Permit 072007-008 but only one (1) will be installed (CG-24).
 - ✘ Lime delivery will be increased from 20 tons per day to 60 tons per day.
 - ✘ Cement kiln dust hauling will increase from 100 tons per day to 250 tons per day.
 - ✘ Cement loadout to railcar (SH-5) will be removed from service. The rail loadout bay will be converted to a self-service truck loadout. Truck loadout throughput will remain at 4,500 tons per day, but now there will be three truck loadout bays.
 - ✘ The sulfur-to-alkali ratio for the kiln does not have to be maintained between 0.8 and 1.2. The facility will now be required to maintain a difference of 0.4 between the upper limit and the lower limit of sulfur-to-alkali ratio, but the upper and lower limit can be other values besides 0.8 and 1.2 (i.e. 0.4 to 0.8, 1.2 to 1.6, etc.)
- Proposed new emission units and operations.
 - ✘ Limestone fines (raw material) will be delivered by truck from an offsite quarry at a maximum rate of 1,000 tons per day. The fines will be delivered on the unpaved haul road RM-72.
 - ✘ Natural gypsum will be delivered by truck from offsite at a maximum rate of 325 tons per day. The natural gypsum will be delivered on haul road CG-9B.
 - ✘ Of the 800 tons per day of synthetic gypsum blend material trucked from offsite to the synthetic gypsum storage building, a maximum of 400 tons per day may now be hauled to the clinker reclaim hopper and conveyed directly to a storage silo. This haul road is identified as SG-11A.
 - ✘ A third loading spout will be added to barge cement loading. The spout will be designed to load a different type of barge than the existing spout can load. The spout will not be used simultaneously with either of the existing spouts and the emissions will be controlled by the existing dust collector for SH-9.
 - ✘ Alkali clay will be delivered by truck from offsite at a maximum rate of 1,200 tons per day. The alkali clay will be delivered through the bulk carrier entrance and transported on unpaved haul road RM-69 to stockhouse 5.
 - ✘ Alkali clay will be hauled at a maximum rate of 600 tons per day from stockhouse 5 to the primary crusher (RM-8) on unpaved haul road RM-70.

- ✧ Cement kiln dust will be transported offsite at a maximum rate of 250 tons per day instead of to the artificial soils/landfill.
- ✧ Continental Cement Company will be allowed the option of storing limestone and shale in surge piles (RM-74, RM-75) located near the crusher hopper.

NET EMISSIONS INCREASE ANALYSIS

Continental Cement Co. conducted a net emissions increase analysis for NO_x as part of their original permit application for Construction Permit 072006-003 (Project No. 2005-09-092). No changes to that analysis occurred due to modifications for Construction Permit 072007-008 (Project No. 2006-11-095) and no changed to that analysis occurs due to this current project. Table 2 is included as part of this amendment for reference purposes only.

Table 2: Summary of NO_x Netting Analysis Conducted for Permit No. 072006-003

Emissions Unit	Emissions Unit Description	Emission Increase or Decrease	PTE/2-Year Average Actual NO _x Emissions (tons/year)*
Estimated Increase in PM₁₀ Emissions From New Project			
KP-08	New Kiln System/Coal Mill Preheater	Increase	1626.08
MS-7	Emergency Generator	Increase	3.50
Actual NO_x Emissions From Existing Equipment Proposed to Be Removed as a Result of Project (2 Year Average)			
KP-01	Kiln	Decrease	-2122.20
Total NO_x Emissions Remaining for Project After Completion of Netting Analysis:			-492.62

*PTE = Potential to Emit

EMISSIONS/CONTROLS EVALUATION

The emission factors for calculation of PM₁₀ emissions used in this analysis were obtained from the following sections of the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition:

- Section 1.3 *Fuel Oil Combustion (9/1998),*
- Section 11.6 *Portland Cement Manufacturing (1/1995),*
- Section 11.12 *Concrete Batching (10/2001),*
- Section 11.19.2 *Crushed Stone Processing and Pulverized Mineral Processing (8/2004),*
- Section 13.2.2 *Unpaved Roads (12/2003), and*
- Section 13.2.4 *Aggregate Handling and Storage Piles (1/1995).*

Emission factors for potential PM₁₀ emissions calculations were also taken from the Factor Information Retrieval (FIRE) Data System for the following SCC numbers:

- 3-05-009-04 Shale/Clay Crushing,
- 3-05-006-14 Clinker Cooler, uncontrolled, and
- 3-05-011-08 Concrete Batching, Weigh Hopper Loading: Cement.

Potential emissions of HAPs from the new kiln system were based on the emission factors found in the AP-42 section for Portland cement manufacturing. All other non-PM₁₀ emissions from the new kiln system, coal preheater and emergency generator were estimated from the BACT limits proposed by the applicant. Finally, VOC emissions from the burn tanks were estimated using the EPA's TANKS 4.0 program.

The EPA "Revised Draft Policy on Permit Modifications and Extensions" (July 5, 1985) provides guidance on permit modifications proposed for sources issued PSD permits. The modifications presented by Continental constitute what EPA would consider a "fundamental" change. The physical and operational changes proposed by Continental effectively render the modified plant as a whole, a different plant than originally permitted in Construction Permit 072006-003. Therefore, project potential emissions will include emissions from the entire plant, after modifications.

Potential emissions of the application represent the potential of the new and modified equipment, assuming continuous operation (8,760 hours per year). The emergency generator emissions were calculated based on 500 hours of operation annually. Existing potential emissions from the installation are major for all criteria pollutants. Actual emissions were taken from the installation's 2007 Emission Inventory Questionnaire submittal. The following table provides an emissions summary for this project.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2007 EIQ)	Potential Emissions of the Plant
PM ₁₀	15.0	Major	171.09	533.45
SO ₂	40.0	Major	191.32	1162.35
NO _x	40.0	Major	2,533.18	1629.58
VOC	40.0	Major	11.70	72.59
CO	100.0	Major	48.77	2168.62
HAPs	10.0/25.0	Major	29.32	109.78
Lead	0.6	N/D	0.06	0.0506
Mercury	0.1	N/D	N/D	0.0162
Beryllium	4E-4	N/D	N/D	4.46 x 10 ⁻⁴
Fluorides	3.0	N/D	N/D	0.608
Arsenic	10.0	N/D	N/D	0.0081
Hydrogen Chloride	10.0	N/D	N/D	94.54
Selenium	10.0	N/D	N/D	0.135
Benzene	10.0	N/D	N/D	10.80

* N/D = Not Determined

APPLICABLE REQUIREMENTS

Continental shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Control of NO_x Emissions From Portland Cement Kilns*, 10 CSR 10-6.380
- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *NSPS for Coal Preparation Plants*, 40 CFR Part 60, Subpart Y
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *NSPS for Nonmetallic Mineral Processing Plants*, 40 CFR Part 60, Subpart OOO
- *Emission Standards for Hazardous Air Pollutants*, 10 CSR 10-6.080 – *National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Benzene Waste Operations*, 40 CFR Part 61, Subpart FF
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations*, 40 CFR Part 63, Subpart XX
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants From Hazardous Waste*

Combustors, 40 CFR Part 63, Subpart EEE

- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry, 40 CFR Part 63, Subpart LLL*
- *Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260*

BACT ANALYSIS

Introduction

BACT analysis was performed for the installation during the last PSD permit review (Construction Permit 072007-008, Project No. 2006-11-095) and the results were used to determine the BACT for the new and modified sources in this amendment. Any sources that have not been changed as a result of this amendment retain the BACT that was previously determined in Construction Permit 072007-008. The BACT requirement is detailed in Section 165(a)(4) of the Clean Air Act, at 40 CFR 52.21 and 10 CSR 10-0.60(8)(B).

A BACT analysis is done on a case by case basis and is performed in general by using a “top-down” method. The following steps detail the top-down approach:

1. Identify all potential control technologies – must be a comprehensive list, it may include technology employed outside the United States and must include the Lowest Achievable Emission Rate (LAER) determinations.
2. Eliminate technically infeasible options – must be well documented and must preclude the successful use of the control option.
3. Rank remaining control technologies – based on control effectiveness, expected emission rate, expected emission reduction, energy impacts, environmental impacts, and economic impacts.
4. Evaluate the most effective controls – based on a case-by-case consideration of energy, environmental, and economic impacts.
5. Select BACT.

The BACT analysis is summarized below.

Particulate Matter Less Than 10 Microns in Diameter (PM₁₀) – Fugitive Sources

Since Continental is a named source, BACT review of fugitive emission sources is required.

Modified and new fugitive sources include the following.

- Unpaved Haul Road (RM-69) – Alkali Clay from Bulk Carrier Entrance to

Stockhouse 5.

- Unpaved Haul Road (RM-70) – Alkali Clay from Stockhouse 5 to Primary Crusher
- Alkali Clay Storage Pile (RM-71) – Load In, Load Out, Vehicular Activity
- Unpaved Haul Road (RM-72) – Lime Fines from Church Entrance to Quarry
- Limestone Fines Storage Pile (RM-73) – Load In, Load Out, Vehicular Activity
- Crusher Surge Pile (RM-74) – Load In, Load Out, Vehicular Activity
- Paved Haul Road (CG-26A) – Gypsum from Entrance to Rail Hopper
- Unpaved Haul Road (CG-26B) – Gypsum from Entrance to Rail Hopper

Modified and new point sources include the following

- Clinker Silo Vent Baghouse (CM-21C)
- Finish Mill – Roll Press/Conveyors Baghouse (CM-24)
- Finish Mill – Mill Auxiliaries/Conveyors Baghouse (CM-25)
- Clinker Storage Baghouse (CM-26A)
- Clinker Storage Baghouse (CM-26B)
- Cement Center Barge Loadout Baghouse (SH-09)

Fugitive Emission Source Control Technologies

The control options for fugitive sources are as follows:

- Water Spray and Paving
- Surfactant Spray
- Water Spray
- Paving
- Enclosures

Eliminate the Technically Infeasible Options

Water spray and paving provides the highest level of control (95 percent) of PM₁₀ emissions. However, paving of interior haul roads or storage piles is considered to be technically infeasible since the trucks used within the plant will exceed the legal weight limits for traditional roads. Interior roads (and stockpile areas) would need to be specially designed to accommodate the immense load. Additionally, some of the interior roads change over time as the mining/landfilling location changes. For these reasons, paving is infeasible. Paving of the roads providing access to the plant is feasible, since the trucks traveling on those roads will not exceed weight limitations.

Surfactant application is technically feasible on storage piles. However, continued use of surfactants can negatively affect final product quality. Use of surfactants on quarry roads, however, is technically feasible and can reduce PM₁₀ emissions by 90 percent.

An alternative to chemical surfactant use is watering of haul roads; water spray can achieve the same level of control as surfactant if applied in sufficient quantities. Water spray use for stockpile vehicular activity areas is a feasible option.

Use of enclosures for storage piles is effective and feasible. In fact, full enclosure of storage piles is considered to be the most effective method of reducing PM₁₀ from storage piles. Enclosure of haul roads is infeasible, due to their length and the complexity of erecting enclosures.

Ranking of Remaining Control Technologies

Table 4: Ranking of PM₁₀ Control Technologies by Effectiveness

Control Technology	PM ₁₀ Control Efficiency	Haul Roads	Stockpiles
Water Spray/Paving	95%	X	N/A
Surfactant Spray	90%	X	For vehicular activity areas only
Water Spray	90%	X	For vehicular activity areas only
Paving	90%	X	N/A
Enclosures	Varies	N/A	X

*X = applicable, N/A = not applicable.

Eliminate the Technically Feasible Options

Watering of material stored in storage piles may result in detrimental secondary environmental effects due to the increased moisture content of the material. Increased fuel usage would result from the need to dry materials prior to their processing. The increase in fuel usage would translate into an increase in PM₁₀, NO_x and CO emissions. The elevated moisture content levels could also negatively affect baghouse control efficiency. For these reasons, water spray of material stored in storage piles is eliminated from further consideration.

Although enclosing storage piles is the most effective means to reduce wind erosion emissions from stockpiles, it is economically infeasible. Continental conducted an economic analysis that detailed the cost effectiveness of enclosure with vents to baghouse. The cost effectiveness was determined to be \$89,000 per ton of PM₁₀ removed. Complete enclosure with venting to baghouse is eliminated due to economic infeasibility.

Selection of BACT for Fugitive PM₁₀ Sources

The following controls are BACT for the new/modified fugitive PM₁₀ sources.

- Surfactant spray used in accordance with the manufacturer's specifications and/or periodic water spray to achieve a control efficiency of 90% on the following new haul roads: RM-69, RM-70, RM-72 and CG-26B.
- Surfactant spray used in accordance with the manufacturer's specifications and/or periodic water spray to achieve a control efficiency of 90% from the vehicular activity areas for the following new stockpiles: RM-71 and RM-73.

- No controls will be used to reduce emissions from the materials kept in the new storage piles (RM-71 and RM-73).
- The new gypsum haul road from entrance to rail hopper (CG-26A) must be paved and watered periodically.

Particulate Matter Less Than 10 Microns in Diameter (PM₁₀) – Point Sources

BACT for the new/modified point sources are given below.

Point Source Control Technologies

The control options for point sources are as follows:

- Fabric Filter Systems
- Electrostatic Precipitator Systems
- Wet Scrubbing Systems
- Inertial Collection Systems
- Inherent Moisture Content/Wet Suppression
- Enclosures

Eliminate the Technically Infeasible Options

These emission points are used on an intermittent basis, and the use of electrostatic precipitator systems on an intermittent basis decreases the collection efficiency substantially. Therefore, use of this technology is not well suited for those point sources. Wet scrubbers are also infeasible for the point source operations because of their intermittent operation.

Although inertial collection systems (cyclones) are a proven technology, they are most effective for larger particles. Since the point sources emit mostly fine particulate matter, baghouse (fabric filter) control is more efficient. Baghouses (fabric filters) are feasible for all the new/modified point sources at the plant

Ranking of Remaining Control Technologies

Table 5: Ranking of PM₁₀ Control Technologies by Effectiveness

Control Technology	PM₁₀ Control Efficiency
Fabric Filters	95-99+%
Electrostatic Precipitator Systems	80-98%
Wet Scrubbing Systems	90%
Inertial Collection Systems	10-90%
High Moisture Content/Wet Suppression	75-96.6%
Enclosures	Varies

Baghouses have been selected as BACT for each point source of PM₁₀ emissions that is new. This is the top control method. Construction Permit 072007-008 required that an outlet grain loading limit of 0.007 grains per dry standard cubic feet (DSCF) be used

for BACT for each of the new point sources. This limit shall now be used for the modified emission sources. This limit is among the lowest in the country according to data available on the RBLC database. A complete listing of BACT limits for point sources at the entire installation is listed in Table 6.

Table 6: Point Source Baghouse/Cartridge Filter Control Devices

Emission Point ID No.	Description	Control Device ID No.	Outlet Grain Loading (gr/dscf)
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CG-21	Coal/Coke Hopper	716BF1	0.007
CG-22	Coal/Coke Transfer/Coal/Coke Feedbin	716BF3	0.007
CG-23	Coal/Coke Mill (Vents to Main Stack 318SK1)	726BF1	0.007
CG-24	Fine Coal/Coke Silo	746BF1	0.007
RM-31	Limestone/Clay/Shale Convey Transfer Baghouse	118BF1	0.007
RM-35	Top Elevator/Conveyor Baghouse	216BF2	0.007
RM-37	Airslide Baghouse	236BF1	0.007
RM-39	Silo Vent Baghouse	286BF1	0.007
RM-40	Airslide/Feedbin/Elevator Baghouse	286BF2	0.007
RM-41	Airslide/Elevator Baghouse	286BF3	0.007
RM-51	Limestone Baghouse	122BF1	0.007
RM-52, RM-53	Limestone Transfer Baghouse	122BF2	0.007
RM-54	Limestone/Clay/Shale Conveyor Transfer 124TT1 Baghouse	122BF3	0.007
RM-55	Limestone/Clay/Shale Conveyor Transfer 124TT2 Baghouse	122BF4	0.007
RM-56	Limestone/Clay/Shale Conveyor Transfer 126TT1 Baghouse	122BF5	0.007
RM-64	Limestone/Clay/Shale Transfer to Conveyor Cartridge Filter (Underground)	134DE 1-6, 8,a, b	0.007
RM-65	Limestone/Clay/Shale Conveyor Transfer Baghouse	198BF2	0.007
RM-66	Raw Material Transfer Baghouse	136BF7	0.007
RM-67	Transfer to Dust Bin Baghouse	298BF1	0.007
RM-68, RM-68a	Kiln Feed Airslides Cartridge Filter (one unit is standby)	275DE, 275 DE2	0.007
KP-3	CKD Truck Loading from Waste Dust Tank (vents to KP-9)	326BF3/326B F4	0.007
KP-6	Cement Kiln Dust Loadout Bin/Agglomerator (added to old CKD silo)	326BF5	0.007
KP-8	Cement Kiln (Vents to Main Stack 318SK1)	316BF1	0.0069
KP-9	Cement Kiln Dust Loadout Bin	326BF3	0.007
KP-10	Alkali Bypass (Vents to Main Stack 318SK1)	326BF1	0.0069
CM-17	Clinker Cooler	356BF1	0.01
CM-18	Clinker Handling	356BF2	0.007
CM-19	Clinker Handling 2	356BF3	0.007
CM-20	Clinker Handling 3	356BF4	0.007
CM-21A	Clinker Silo Vent	356BF5	0.007
CM-21B	Clinker Silo Vent 2	356BF6	0.007
CM-21C	Clinker Silo Vent Baghouse	356BF7	0.007
CM-22	Finish Mill – SKS	546BF1	0.007
CM-23	Finish Mill – VSK Separator/Conveyors (vents to mill building stack 545SK1)	545BF2	0.007
CM-24	Finish Mill – Roll Press Conveyors (Vents to Mill Building Stack 454SK1)	545BF3	0.007
CM-25	Finish Mill – Mill Auxiliaries/Conveyors (Vents to Existing FCD-20)	548BF1	0.007
CM-26A	Clinker Storage Baghouse	360DE1	0.007
CM-26B	Clinker Storage Baghouse	360DE2	0.007
LM-2	Lime Transfer to Bin Baghouse	348BF1	0.007
SH-10	Barge Center Spout Baghouse (Vents to SH-7)	BLDC-3	0.007

Selection of BACT for the Cement Kiln

PM₁₀

Combustible sources generate condensable PM₁₀ emissions, in addition to filterable PM₁₀. The recommended method for testing condensable PM₁₀ is EPA's Method 202. Continental contends that Method 202 overestimates condensable PM₁₀ due to artifact condensable particulate matter caused by catalytic and aqueous phase reactions of SO₂ in the sampling train. The test includes the artifact formation, although this amount would not actually become condensable PM₁₀ in the ambient air.

Although Continental contends that artifact formation of condensable PM₁₀ would occur, determining the extent of that formation is not a simple matter. Continental's kiln process designers were not able to locate valid test data to determine a proposed total PM₁₀ limit. Continental believes, and the Air Pollution Control Program concurs, that the most reasonable method to determine a BACT limit for condensable PM₁₀ is by comparison with other plants similar to the proposed plant and utilizing similar raw materials.

Continental determined in their BACT analysis that the limestone most likely used at the Lehigh plant in Mason City, Iowa, has similar sulfur content (0.36%) as the Kimmswick limestone originally proposed for the new plant. The plant size and process design are also similar to the Iowa plant. The Lehigh plant has a total PM₁₀ limit of 0.516 pounds per ton (lb/ton) of clinker. The LaFarge plant in Iowa also has this limit, as well as limestone with similar sulfur content.

The Holcim plant located in Ste. Genevieve, Missouri utilizes limestone with a sulfur content of only 0.07%. The Burlington limestone that Continental now wants to utilize has a similar sulfur content (0.08%). The Holcim plant has a limit of 0.28 pounds PM₁₀ per ton of clinker, which includes both condensable and filterable PM₁₀. Continental proposes the same limit for its main stack. Although there are some recently permitted facilities in the state of Florida that contain lower BACT limits for PM/PM₁₀, those limits are for the filterable portion of PM₁₀ only.

SO₂

Emissions from the plant exiting the main stack are limited to 1.93 pounds of SO₂ per ton of clinker when utilizing the originally proposed Kimmswick limestone. When Continental uses Burlington limestone, a limit of 0.63 lb/ton clinker has been established to account for the much smaller fraction of pyritic sulfur found in that type of limestone.

VOCs and CO

Organic compounds found in the raw materials are the primary source of VOC emissions, while CO emissions are caused by incomplete combustion. Continental originally chose to utilize Kimmswick limestone. This type of limestone has high organic carbon content. Burlington limestone contains significantly less organic carbon content, resulting in a decrease in emissions, on a pound per ton of clinker basis. When utilizing 100 percent Burlington limestone, Continental believes they can meet an emission limit of 1.38 lb/ton clinker for CO and 0.03 lb/ton clinker for VOC..

AMBIENT AIR QUALITY IMPACT ANALYSIS

The ambient air quality impact analysis indicates that this project will not cause ambient air concentrations above permitting levels. For more information on the ambient air quality modeling analysis, please see memorandum dated November 21, 2008, "Ambient Air Quality Impact Analysis (AAQIA) for the Continental Cement Company (Continental Cement)-Prevention of Significant Deterioration (PSD) Modeling – January 10, 2008 Submittal."