Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

Air Operation Permit – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **CEMEX Cement, Inc.**
2. Site Name: **Brooksville Cement Plant**
3. Facility Identification Number: **0530010**
4. Facility Location...
   Street Address or Other Locator: **16301 Ponce De Leon Boulevard**
   City: **Brooksville** County: **Hernando** Zip Code: **34614-0849**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Steven C. Cullen, P.E.**
2. Application Contact Mailing Address...
   Organization/Firm: **Koogler & Associates, Inc.**
   Street Address: **4014 NW 13th Street**
   City: **Gainesville** State: **Florida** Zip Code: **32609**
3. Application Contact Telephone Numbers...
   Telephone: **(352) 377-5822** ext. **19** Fax: **(352) 377-7158**
4. Application Contact Email Address: sculllen@kooglerassociates.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

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4. Facility Location... Street Address or Other Locator: **16301 Ponce De Leon Boulevard** City: **Brooksville** County: **Hernando** Zip Code: **34614-0849**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Steven C. Cullen, P.E.**
2. Application Contact Mailing Address... Organization/Firm: **Koogler & Associates, Inc.** Street Address: **4014 NW 13th Street** City: **Gainesville** State: **Florida** Zip Code: **32609**
3. Application Contact Telephone Numbers... Telephone: **(352) 377-5822** ext. **19** Fax: **(352) 377-7158**
4. Application Contact Email Address: sculllen@kooglerassociates.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☒ Air construction permit.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Application for an air construction permit for a proposed 3850 tons per day clinker (30-day rolling average) cement kiln system at an existing cement plant. The project is subject to Prevention of Significant Deterioration (PSD) review.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
No ID	Raw Materials Handling & Storage	AC1A	$7500
No ID	Raw Mill System		
No ID	In-line Raw Mill/Kiln		
No ID	Clinker Cooler		
No ID	Clinker Handling & Silo		
No ID	Finish Mill Feed		
No ID	Finish Mill		
No ID	Cement Silos & Loadout		
No ID	Coal/Coke Mill		
No ID	Fugitive Emissions from Vehicle Travel		

Application Processing Fee

Check one: ☒ Attached - Amount: **$7500** ☐ Not Applicable

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name: **Michael Gonzales – Plant Manager**	
2. Owner/Authorized Representative Mailing Address... Organization/Firm: **CEMEX Cement, Inc.** Street Address or Other Locator: **16301 Ponce De Leon Boulevard** City: **Brooksville** State: **Florida** Zip Code: **34614-0849**	
3. Owner/Authorized Representative Telephone Numbers... Telephone: **(352) 796-7241** ext. Fax: **(352) 754-9836**	
4. Owner/Authorized Representative Email Address: michaelanthony.gonzales@cemexusa.com	
5. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.*	
Signature	Date 10/26/2006

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name: **Not Applicable – Construction Permit Only**

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   ____________________ ________________
   Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Steven C. Cullen, P.E.** Registration Number: **45188**	
2. Professional Engineer Mailing Address... Organization/Firm: **Koogler & Associates, Inc.** Street Address: **4014 NW 13th Street** City: **Gainesville** State: **Florida** Zip Code: **32609**	
3. Professional Engineer Telephone Numbers... Telephone: **(352) 377-5822** ext. **19** Fax: **(352) 377-7158**	
4. Professional Engineer Email Address: sculllen@kooglerassociates.com	

5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

[signature] 10/23/06

Signature Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates Zone **17** East (km) **356.1** North (km) **3169.3**		2. Facility Latitude/Longitude Latitude (DD/MM/SS) **28/38/41** Longitude (DD/MM/SS) **82/28/20** new stack	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **32**	6. Facility SIC(s): **3241**
7. Facility Comment: **UTM coordinates are for new kiln stack.**			

Facility Contact

1. Facility Contact Name: **Charlie Walz – Environmental Manager**
2. Facility Contact Mailing Address... Organization/Firm: **CEMEX Cement, Inc.** Street Address: **16301 Ponce De Leon Boulevard** City: **Brooksville** State: **Florida** Zip Code: **34614-0849**
3. Facility Contact Telephone Numbers: Telephone: **(352) 799-2011** ext. Fax: **(352) 754-9836**
4. Facility Contact Email Address: charles.walz@cemexusa.com

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name: **Not Applicable – Construction Permit Only**
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1.	☐	Small Business Stationary Source	☒ Unknown
2.	☐	Synthetic Non-Title V Source	
3.	☒	Title V Source	
4.	☒	Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5.	☐	Synthetic Minor Source of Air Pollutants, Other than HAPs	
6.	☒	Major Source of Hazardous Air Pollutants (HAPs)*	
7.	☐	Synthetic Minor Source of HAPs	
8.	☒	One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9.	☐	One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10.	☒	One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11.	☐	Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	

12. Facility Regulatory Classifications Comment:
***Presumed major for HAPS**

Proposed new emissions units will be subject to:

- **NSPS Subpart Y**
- **NESHAP Subpart LLL**

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	**A**	**N**
PM10	**A**	**N**
NOX	**A**	**N**
SO2	**A**	**N**
CO	**A**	**N**
VOC	**A**	**N**
DIOX	**B**	**N**
H114	**B**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
Not Applicable					

7. Facility-Wide or Multi-Unit Emissions Cap Comment: **None**

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **Plot Plan** ☐ Previously Submitted, Date:________
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **Process flow diagrams** ☐ Previously Submitted, Date:
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **UPM Precautions** ☐ Previously Submitted, Date:__

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: ☒ Attached, Document ID: **PSD Report**
2.	Description of Proposed Construction or Modification: ☒ Attached, Document ID: **PSD Report**
3.	Rule Applicability Analysis: ☒ Attached, Document ID: **PSD Report**
4.	List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☒ Attached, Document ID: **PSD Report**
5.	Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): ☒ Attached, Document ID: **Within Application**
6.	Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.): ☒ Attached, Document ID: **PSD Report**
7.	Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.): ☒ Attached, Document ID: **PSD Report**
8.	Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): ☒ Attached, Document ID: **PSD Report**
9.	Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): ☒ Attached, Document ID: **PSD Report**
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:_________ ☒ Not Applicable

Additional Requirements for FESOP Applications

☒ **Not Applicable to this Application**

1.	List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID:________ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

☒ **Not Applicable to this Application**

1.	List of Insignificant Activities (Required for initial/renewal applications only): ☐ Attached, Document ID:________ ☐ Not Applicable (revision application)
2.	Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought): ☐ Attached, Document ID:________ ☐ Not Applicable (revision application with no change in applicable requirements)
3.	Compliance Report and Plan (Required for all initial/revision/renewal applications): ☐ Attached, Document ID:________ Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4.	List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only): ☐ Attached, Document ID:________ ☐ Equipment/Activities On site but Not Required to be Individually Listed ☐ Not Applicable
5.	Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) : ☐ Attached, Document ID:__________ ☐ Not Applicable
6.	Requested Changes to Current Title V Air Operation Permit: ☐ Attached, Document ID:__________ ☐ Not Applicable

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Raw Materials Handling and Storage

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

This emissions unit addresses raw materials and additives delivery, handling and storage. The additives include, <u>but are not limited to</u>, sand, mill scale, bauxite, and fly ash. Other materials potentially used for making cement include slag, clay, loam, bottom ash, feldspar, shale, iron ore, and glass. Any non-hazardous sources of aluminum, iron, and silicon that will not impact emissions are potential raw materials. Includes hoppers and transfer points.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouses** **Sand/mill scale reception hopper PS61** **Bottom ash reception hopper PS62** **Limestone silo and Clay silo PS65** **Ash/mill scale/sand bins PS63**
2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **306 TPH and 2,680,560 TPY**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: **Not Applicable** million Btu/hr	
4. Maximum Incineration Rate: **Not Applicable** pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	days/week **8760** hours/year
6. Operating Capacity/Schedule Comment: **306 tph rate is a 30-day rolling average**	

$$\underline{8.8}\ g/s = 306\frac{t}{yr} \times \frac{1\,yr}{31556926\,s} \times \frac{907184.74}{1\,ton}$$

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Baghouses**	2. Emission Point Type Code: **3**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **See table**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**	

5. Discharge Type Code:	6. Stack Height: Feet	7. Exit Diameter: Feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %

11. Maximum Dry Standard Flow Rate: Dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment: **None**	

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS61	356.24	3169.36	12	1.50	120	4875	2	4352
PS62	356.22	3169.33	12	1.50	120	4875	2	4352
PS65	355.95	3169.22	90	1.50	122	5000	2	4448
PS63	356.15	3169.23	90	1.50	120	5000	2	4463
								17614

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Raw Material Unloading**		
2. Source Classification Code (SCC): **3-05-006-07**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **306**	5. Maximum Annual Rate: **2,680,560**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **306 tph rate is a 30-day rolling average. Includes additives and onsite materials.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Raw Material Transfer**		
2. Source Classification Code (SCC): **3-05-006-12**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **306**	5. Maximum Annual Rate: **2,680,560**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **306 tph rate is a 30-day rolling average. Includes additives and onsite materials.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.51** lb/hour **6.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ____ to ____ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**

8. Calculation of Emissions:

0.01 gr/dscf x 17614 dscfm x 60 min/hr x 1/7000 gr/lb = 1.51 lb/hr
at 8760 hr/year = 6.6 TPY

$$0.19 \frac{g}{s} = 1.51 \frac{lb}{hr} \times \frac{1 hr}{3600 s} \times \frac{454 g}{1 lb}$$

9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **1.51** lb/hour **6.6** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.06** lb/hour **4.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ____ to ____ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 17614 dscfm x 60 min/hr x 1/7000 gr/lb = 1.06 lb/hr** **at 8760 hr/year = 4.6 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

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modeling2.xls
PointSources

Area	Description	ID	Type	X	Y	Base El	Rate (TPH)	Flow (acfm)	Temp (F)	Temp C	Temp R	Temp K	H2O	Flow (dscfm)	PM Total Emissions Factor	Units	lb/hour	TPY	PM10 Total Emissions Factor	Units	lb/hour	TPY
Raw material	Sand/mill scale reception hopper	PS61	0	356241	3169358	0		4,875	120	49	580	322	2	4352	0.01	gr/dscf	0.37	1.6	0.007	gr/dscf	0.26	1.1
Raw material	Bottom ash reception hopper	PS62	0	356220	3169328	0		4,875	120	49	580	322	2	4352	0.01	gr/dscf	0.37	1.6	0.007	gr/dscf	0.26	1.1
Raw material	Limestone silo and Clay silo	PS65	0	355951	3169219	0		5,000	122	50	582	323	2	4448	0.01	gr/dscf	0.38	1.7	0.007	gr/dscf	0.27	1.2
Raw mill #3	Ash/mill scale/sand bins	PS63	0	356152	3169227	0		5,000	120	49	580	322	2	4463	0.01	gr/dscf	0.38	1.7	0.007	gr/dscf	0.27	1.2
Raw mill #3	Additive Bins - Feeders	PS64	0	356127	3169227	0		5,000	120	49	580	322	2	4463	0.01	gr/dscf	0.38	1.7	0.007	gr/dscf	0.27	1.2
Raw mill #3	Additive Transfer Point	PS64A	0	356079	3169221	0		2,000	120	49	580	322	2	1785	0.01	gr/dscf	0.15	0.7	0.007	gr/dscf	0.11	0.5
Raw mill #3	Additive Transfer Point	PS64AA	0	356077	3169271	0		2,000	120	49	580	322	2	1785	0.01	gr/dscf	0.15	0.7	0.007	gr/dscf	0.11	0.5
Raw mill #3	Hoppers to mill transfer (1 of 2)	PS61A	0	356141	3169354	0		2,000	120	49	580	322	2	1785	0.01	gr/dscf	0.15	0.7	0.007	gr/dscf	0.11	0.5
Raw mill #3	Hoppers to mill transfer (2 of 2)	PS62A	0	356140	3169334	0		7,915	120	49	580	322	2	7065	0.01	gr/dscf	0.61	2.7	0.007	gr/dscf	0.42	1.9
Raw mill #3	Cyclones to feeding silo	PS66	0	356095	3169288	0		5,000	120	49	580	322	2	4463	0.01	gr/dscf	0.38	1.7	0.007	gr/dscf	0.27	1.2
Blending silo #3	Bottom of bucket elevator to blending silo	PS69	0	356074	3169289	0		5,000	156	69	616	342	2	4202	0.01	gr/dscf	0.36	1.6	0.007	gr/dscf	0.25	1.1
Blending silo #3	Blending silo	PS70	0	356072	3169301	0		10,000	156	69	616	342	2	8405	0.01	gr/dscf	0.72	3.2	0.007	gr/dscf	0.50	2.2
Blending silo #3	Weigh hopper after blending silo	PS71	0	356073	3169299	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Blending silo #3	Air slide after weigh hopper to bucket elevator (1 of 2)	PS72	0	356074	3169296	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Blending silo #3	Air slide after airslide to bucket elevator (2 of 2)	PS72A	0	356078	3169328	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Blending silo #3	Air slide after bucket elevator to preheater	PS73	0	356074	3169327	0		2,500	122	50	582	323	2	2224	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Preheater kiln, cooler	Clinker cooler	PS74	0	356118	3169377	0	160.4	219,816	392	200	852	473	1.6	134096	0.1	lb/ton clinker	16.04	70.3	0.080	lb/ton clinker	12.83	56.2
Main dust collector	**Kiln Baghouse**	**PS67**	0	356100	3169335	**0**	**160.4**	**407,000**	**392**	**200**	**852**	**473**	**7.6**	**233147**	**0.153**	**lb/ton clinker**	**24.54**	**107.5**	**0.153**	**lb/ton clinker**	**24.54**	**107.5**
Main dust collector	Filter dust hopper	PS68	0	356114	3169316	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Clinker feeding	Clinker transfer deep pan conveyor	PS75	0	356093	3169418	0		5,000	156	69	616	342	2	4202	0.01	gr/dscf	0.36	1.6	0.007	gr/dscf	0.25	1.1
Clinker feeding	Clinker silo	PS76	0	356110	3169448	0		5,000	120	49	580	322	2	4463	0.01	gr/dscf	0.38	1.7	0.007	gr/dscf	0.27	1.2
Clinker feeding	Truck unload clinker buffer	PS77	0	356128	3169448	0		5,000	156	69	616	342	2	4202	0.01	gr/dscf	0.36	1.6	0.007	gr/dscf	0.25	1.1
Cement feeding/Mill #3	Finish mill feed	PS78	0	356149	3169445	0		7,916	120	49	580	322	2	7066	0.01	gr/dscf	0.61	2.7	0.007	gr/dscf	0.42	1.9
Cement feeding/Mill #3	Finish mill	PS79	0	356186	3169439	0		400,233	203	95	663	368	2	312518	0.01	gr/dscf	26.79	117.3	0.007	gr/dscf	18.75	82.1
Cement feeding/Mill #3	Cement transfer	PS80	0	356183	3169457	0		2,500	156	69	616	342	2	2101	0.01	gr/dscf	0.18	0.8	0.007	gr/dscf	0.13	0.6
Slag & Lime dust	Gypsum silo	PS78G	0	356129	3169454	0		2,500	120	49	580	322	2	2232	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Slag & Lime dust	Slag silo	PS78S	0	356138	3169452	0		2,500	120	49	580	322	2	2232	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Slag & Lime dust	Limestone dust silo	PS78L	0	356142	3169441	0		2,500	120	49	580	322	2	2232	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Slag & Lime dust	Gypsum transfer from silo	PS78GO	0	356129	3169454	0		1,500	120	49	580	322	2	1339	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Slag & Lime dust	Slag transfer from silo	PS78SO	0	356139	3169452	0		1,500	120	49	580	322	2	1339	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Slag & Lime dust	Limestone dust transfer from silo	PS78LO	0	356143	3169442	0		1,500	120	49	580	322	2	1339	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Cement storage & loading	Cement from bucket elevator to belt conveyor	PS81	0	356169	3169512	0		3,000	120	49	580	322	2	2678	0.01	gr/dscf	0.23	1.0	0.007	gr/dscf	0.16	0.7
Cement storage & loading	Quadrate silo #8	PS82A	0	356143	3169513	0		2,500	120	49	580	322	2	2232	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Cement storage & loading	Quadrate silo #9	PS83A	0	356160	3169513	0		2,500	120	49	580	322	2	2232	0.01	gr/dscf	0.19	0.8	0.007	gr/dscf	0.13	0.6
Cement storage & loading	Loadout spout, #8 side	PS82	0	356143	3169512	0		2,800	120	49	580	322	2	2499	0.01	gr/dscf	0.21	0.9	0.007	gr/dscf	0.15	0.7
Cement storage & loading	Loadout spout, #9 side	PS83	0	356160	3169512	0		2,800	120	49	580	322	2	2499	0.01	gr/dscf	0.21	0.9	0.007	gr/dscf	0.15	0.7
Petcoke/coal mill #3	Coke/coal transfer to mill	PS84	0	356063	3169216	0		1,650	120	49	580	322	2	1473	0.01	gr/dscf	0.13	0.6	0.007	gr/dscf	0.09	0.4
Petcoke/coal mill #3	Coke/coal transfer to mill	PS84A	0	356065	3169351	0		1,650	120	49	580	322	2	1473	0.01	gr/dscf	0.13	0.6	0.007	gr/dscf	0.09	0.4
Petcoke/coal mill #3	Coke/coal mill	PS87	0	356065	3169365	0		69,356	183	84	643	357	2	55841	0.01	gr/dscf	4.79	21.0	0.007	gr/dscf	3.35	14.7
Petcoke/coal mill #3	Pulverized fuel bin (1 of 2)	PS88	0	356070	3169374	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Petcoke/coal mill #3	Pulverized fuel bin (2 of 2)	PS89	0	356062	3169374	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Petcoke/coal mill #3	Coke/coal bin	PS85	0	356061	3169350	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
Petcoke/coal mill #3	Coke/coal bin	PS86	0	356070	3169349	0		1,500	122	50	582	323	2	1334	0.01	gr/dscf	0.11	0.5	0.007	gr/dscf	0.08	0.4
																	Total =	358.2			Total =	290.0
																	Road =	43.7			Road =	8.5
																		402				**299**

			lbs/hr	TPY		tons/day
PM				**402**	Includes roads	0.00
PM10				**299**	Includes roads	0.00
SO2	0.2	lb/ton clinker	32.08	**141**	4.04208	0.38
NOx	1.95	lb/ton clinker	312.78	**1370**	39.41028 g/s	3.75
CO	2.9	lb/ton clinker	465.16	**2037**	58.61016 g/s	5.58
VOC	0.12	lb/ton clinker	19.25	**84**	2.43 g/s	0.23
Mercury	190	lb/yr	0.02	**0.06**	0.003 g/s	0.00
SAM						
Fluorides	0.0009	lb/ton clinker	0.14	**0.6**		
Lead	7.50E-05	lb/ton clinker	0.01	**0.05**		
	2.40E-05	lb/ton clinker	0.00	**0.02**		

ID	type	x (m)	y (m)	base el	emission (g/s)	height	temperat	velocity (m/s)	diameter (m)
PS61	0	####	####	0	0.0329	3.7	322.0	0.01	0.5
PS62	0	####	####	0	0.0329	3.7	322.0	0.01	0.5
PS65	0	####	####	0	0.0336	27.4	323.2	0.01	0.5
PS63	0	####	####	0	0.0337	27.4	322.0	0.01	0.5
PS64	0	####	####	0	0.0337	27.4	322.0	0.01	0.5
PS64A	0	####	####	0	0.0135	27.4	322.0	0.01	0.3
PS64A	0	####	####	0	0.0135	27.4	322.0	0.01	0.3
PS61A	0	####	####	0	0.0135	15.2	322.0	0.01	0.3
PS62A	0	####	####	0	0.0534	25.9	322.0	0.01	0.6
PS66	0	####	####	0	0.0337	11.0	322.0	0.01	0.5
PS69	0	####	####	0	0.0318	72.2	342.0	0.01	0.5
PS70	0	####	####	0	0.0635	72.2	342.0	0.01	0.6
PS71	0	####	####	0	0.0101	14.9	323.2	0.01	0.3
PS72	0	####	####	0	0.0101	12.8	323.2	0.01	0.3
PS72A	0	####	####	0	0.0101	11.0	323.2	0.01	0.3
PS73	0	####	####	0	0.0168	112.2	323.2	0.01	0.3
PS74	0	####	####	0	1.6168	50.6	473.2	12.42	3.3
PS67	0	####	####	0	3.0922	97.2	473.2	13.44	4.3
PS68	0	####	####	0	0.0101	23.2	323.2	0.01	0.3
PS75	0	####	####	0	0.0318	3.7	342.0	0.01	0.5
PS76	0	####	####	0	0.0337	46.3	322.0	0.01	0.5
PS77	0	####	####	0	0.0318	7.0	342.0	0.01	0.5
PS78	0	####	####	0	0.0534	45.4	322.0	0.01	0.6
PS79	0	####	####	0	2.3626	46.9	368.2	13.21	4.3
PS80	0	####	####	0	0.0159	18.9	342.0	0.01	0.3
PS78G	0	####	####	0	0.0169	31.1	322.0	0.01	0.3
PS78S	0	####	####	0	0.0169	27.7	322.0	0.01	0.3
PS78L	0	####	####	0	0.0169	27.7	322.0	0.01	0.3
PS78G	0	####	####	0	0.0101	9.4	322.0	0.01	0.3
PS78S	0	####	####	0	0.0101	9.4	322.0	0.01	0.3
PS78L(	0	####	####	0	0.0101	9.4	322.0	0.01	0.3
PS81	0	####	####	0	0.0202	64.6	322.0	0.01	0.4
PS82A	0	####	####	0	0.0169	64.6	322.0	0.01	0.3
PS83A	0	####	####	0	0.0169	64.6	322.0	0.01	0.3
PS82	0	####	####	0	0.0189	12.5	322.0	0.01	0.4
PS83	0	####	####	0	0.0189	12.5	322.0	0.01	0.4
PS84	0	####	####	0	0.0111	9.1	322.0	0.01	0.3
PS84A	0	####	####	0	0.0111	28.0	322.0	0.01	0.3
PS87	0	####	####	0	0.4222	50.9	357.0	12.47	1.8
PS88	0	####	####	0	0.0101	28.0	323.2	0.01	0.3
PS89	0	####	####	0	0.0101	28.0	323.2	0.01	0.3
PS85	0	####	####	0	0.0101	33.2	323.2	0.01	0.3
PS86	0	####	####	0	0.0101	33.2	323.2	0.01	0.3
RL1	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL2	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL3	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL4	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL5	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL6	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL7	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	
RL8	**1**	**####**	**####**	**0**	**0.00327**	**1**	**13.6**	**1.84**	

RL61	1	####	####	0	0.00327	1	13.6	1.84
RL62	1	####	####	0	0.00327	1	13.6	1.84
RC1	1	####	####	0	0.00121	1	6.8	1.84
RC2	1	####	####	0	0.00121	1	6.8	1.84
RC3	1	####	####	0	0.00121	1	6.8	1.84
RC4	1	####	####	0	0.00121	1	6.8	1.84
RC5	1	####	####	0	0.00121	1	6.8	1.84
RC6	1	####	####	0	0.00121	1	6.8	1.84
RC7	1	####	####	0	0.00121	1	6.8	1.84
RC8	1	####	####	0	0.00121	1	6.8	1.84
RC9	1	####	####	0	0.00121	1	6.8	1.84
RC10	1	####	####	0	0.00121	1	6.8	1.84
RC11	1	####	####	0	0.00121	1	6.8	1.84
RC12	1	####	####	0	0.00121	1	6.8	1.84
RC13	1	####	####	0	0.00121	1	6.8	1.84
RC14	1	####	####	0	0.00121	1	6.8	1.84
RC15	1	####	####	0	0.00121	1	6.8	1.84
RC16	1	####	####	0	0.00121	1	6.8	1.84
RC17	1	####	####	0	0.00121	1	6.8	1.84
RC18	1	####	####	0	0.00121	1	6.8	1.84
RC19	1	####	####	0	0.00121	1	6.8	1.84
RC20	1	####	####	0	0.00121	1	6.8	1.84
RC21	1	####	####	0	0.00121	1	6.8	1.84
RC22	1	####	####	0	0.00121	1	6.8	1.84
RC23	1	####	####	0	0.00121	1	6.8	1.84
RC24	1	####	####	0	0.00018	1	6.8	1.84
RC25	1	####	####	0	0.00018	1	6.8	1.84
RC26	1	####	####	0	0.00018	1	6.8	1.84
RC27	1	####	####	0	0.00018	1	6.8	1.84
RC28	1	####	####	0	0.00018	1	6.8	1.84
RC29	1	####	####	0	0.00018	1	6.8	1.84
RC30	1	####	####	0	0.00018	1	6.8	1.84
RC31	1	####	####	0	0.00018	1	6.8	1.84
RC32	1	####	####	0	0.00018	1	6.8	1.84
RC33	1	####	####	0	0.00018	1	6.8	1.84
RC34	1	####	####	0	0.00018	1	6.8	1.84
RC35	1	####	####	0	0.00018	1	6.8	1.84
RC36	1	####	####	0	0.00018	1	6.8	1.84
RC37	1	####	####	0	0.00103	1	6.8	1.84
RC38	1	####	####	0	0.00103	1	6.8	1.84
RA1	1	####	####	0	0.00042	1	6.8	1.84
RA2	1	####	####	0	0.00042	1	6.8	1.84
RA3	1	####	####	0	0.00042	1	6.8	1.84
RA4	1	####	####	0	0.00042	1	6.8	1.84
RA5	1	####	####	0	0.00042	1	6.8	1.84
RA6	1	####	####	0	0.00042	1	6.8	1.84
RA7	1	####	####	0	0.00042	1	6.8	1.84
RA8	1	####	####	0	0.00042	1	6.8	1.84
RA9	1	####	####	0	0.00042	1	6.8	1.84
RA10	1	####	####	0	0.00042	1	6.8	1.84
RA11	1	####	####	0	0.00042	1	6.8	1.84
RA12	1	####	####	0	0.00042	1	6.8	1.84

RL9	1	####	####	0	0.00327	1	13.6	1.84
RL10	1	####	####	0	0.00327	1	13.6	1.84
RL11	1	####	####	0	0.00327	1	13.6	1.84
RL12	1	####	####	0	0.00327	1	13.6	1.84
RL13	1	####	####	0	0.00327	1	13.6	1.84
RL14	1	####	####	0	0.00327	1	13.6	1.84
RL15	1	####	####	0	0.00327	1	13.6	1.84
RL16	1	####	####	0	0.00327	1	13.6	1.84
RL17	1	####	####	0	0.00327	1	13.6	1.84
RL18	1	####	####	0	0.00327	1	13.6	1.84
RL19	1	####	####	0	0.00327	1	13.6	1.84
RL20	1	####	####	0	0.00327	1	13.6	1.84
RL21	1	####	####	0	0.00327	1	13.6	1.84
RL22	1	####	####	0	0.00327	1	13.6	1.84
RL23	1	####	####	0	0.00327	1	13.6	1.84
RL24	1	####	####	0	0.00327	1	13.6	1.84
RL25	1	####	####	0	0.00327	1	13.6	1.84
RL26	1	####	####	0	0.00327	1	13.6	1.84
RL27	1	####	####	0	0.00327	1	13.6	1.84
RL28	1	####	####	0	0.00327	1	13.6	1.84
RL29	1	####	####	0	0.00327	1	13.6	1.84
RL30	1	####	####	0	0.00327	1	13.6	1.84
RL31	1	####	####	0	0.00327	1	13.6	1.84
RL32	1	####	####	0	0.00327	1	13.6	1.84
RL33	1	####	####	0	0.00327	1	13.6	1.84
RL34	1	####	####	0	0.00327	1	13.6	1.84
RL35	1	####	####	0	0.00327	1	13.6	1.84
RL36	1	####	####	0	0.00327	1	13.6	1.84
RL37	1	####	####	0	0.00327	1	13.6	1.84
RL38	1	####	####	0	0.00327	1	13.6	1.84
RL39	1	####	####	0	0.00327	1	13.6	1.84
RL40	1	####	####	0	0.00327	1	13.6	1.84
RL41	1	####	####	0	0.00327	1	13.6	1.84
RL42	1	####	####	0	0.00327	1	13.6	1.84
RL43	1	####	####	0	0.00327	1	13.6	1.84
RL44	1	####	####	0	0.00327	1	13.6	1.84
RL45	1	####	####	0	0.00327	1	13.6	1.84
RL46	1	####	####	0	0.00327	1	13.6	1.84
RL47	1	####	####	0	0.00327	1	13.6	1.84
RL48	1	####	####	0	0.00327	1	13.6	1.84
RL49	1	####	####	0	0.00327	1	13.6	1.84
RL50	1	####	####	0	0.00327	1	13.6	1.84
RL51	1	####	####	0	0.00327	1	13.6	1.84
RL52	1	####	####	0	0.00327	1	13.6	1.84
RL53	1	####	####	0	0.00327	1	13.6	1.84
RL54	1	####	####	0	0.00327	1	13.6	1.84
RL55	1	####	####	0	0.00327	1	13.6	1.84
RL56	1	####	####	0	0.00327	1	13.6	1.84
RL57	1	####	####	0	0.00327	1	13.6	1.84
RL58	1	####	####	0	0.00327	1	13.6	1.84
RL59	1	####	####	0	0.00327	1	13.6	1.84
RL60	1	####	####	0	0.00327	1	13.6	1.84

RA13	1	####	####	0	0.00042	1	6.8	1.84
RA14	1	####	####	0	0.00042	1	6.8	1.84
RA15	1	####	####	0	0.00042	1	6.8	1.84
RA16	1	####	####	0	0.00042	1	6.8	1.84
RA17	1	####	####	0	0.00042	1	6.8	1.84
RA18	1	####	####	0	0.00042	1	6.8	1.84
RA19	1	####	####	0	0.00042	1	6.8	1.84
RA20	1	####	####	0	0.00042	1	6.8	1.84
RA21	1	####	####	0	0.00042	1	6.8	1.84
RA22	1	####	####	0	0.00042	1	6.8	1.84
RA23	1	####	####	0	0.00042	1	6.8	1.84
RA24	1	####	####	0	0.00042	1	6.8	1.84
RA25	1	####	####	0	0.00042	1	6.8	1.84
RA26	1	####	####	0	0.00042	1	6.8	1.84
RA27	1	####	####	0	0.00042	1	6.8	1.84
RA28	1	####	####	0	0.00042	1	6.8	1.84
RA29	1	####	####	0	0.00042	1	6.8	1.84
RA30	1	####	####	0	0.00042	1	6.8	1.84
RA31	1	####	####	0	0.00042	1	6.8	1.84
RA32	1	####	####	0	0.00036	1	6.8	1.84
RA33	1	####	####	0	0.00036	1	6.8	1.84
RA34	1	####	####	0	0.00036	1	6.8	1.84
RA35	1	####	####	0	0.00006	1	6.8	1.84
RA36	1	####	####	0	0.00006	1	6.8	1.84
RA37	1	####	####	0	0.00006	1	6.8	1.84

RA1 – RA31

.000359 0.000063

00013 0.00072 - Mode 3

Paved Road Emissions Estimation

~~No truck traffic expected between 8 pm and 4 am~~

	Mode 1: Cement trucks - empty		Mode 2: Cement trucks - loaded		Mode 3: Raw material trucks - loaded		Mode 4: Raw material trucks - empty		
	PM10	PM	PM10	PM	PM10	PM	PM10	PM	
E = PM10 (lb/VMT)	0.0242	0.1238	0.1383	0.7088	0.1383	0.7088	0.0242	0.1238	
k = base emission factor for particle size	0.016	0.082 PM	0.016	0.082 PM	0.016	0.082 PM	0.016	0.082 PM	
sL = surface silt loading (g/m^2)	0.14	From Florida Rock	0.14	From Florida Rock	0.14	From Florida Rock	0.14	From Florida Rock	
W = average weight of vehicles (tons)	12.5		40		40		12.5		
Road segments for this mode	RL1-RL62, RC1-RC36		RL1-RL62, RC1-RC23, RC37-RC38		RL1-RL62, RA1-RA31, RA32-RA34		RL1-RL62, RA1-RA31, RA35-RA37		
Customer roads, length (ft)	7680	Paved	7152	Paved	7584	Paved	7584	Paved	
Road segments	160	48' equivalents	149	48' equivalents	158	48' equivalents	158	48' equivalents	
Length per segment	48		48		48		48		
Rate, (tph)	178.9		178.9		59.0		59.0		
Capacity (tons) per truck	27.5		27.5		27.5		27.5		
Number of vehicles per hour	6.5		6.5		2.1		2.1		
Hours per year	8760		8760		8760		8760		
Vehicle miles traveled per hour for this mode	9.46		8.81		3.08		3.08		
Vehicle miles traveled per year for this mode	82891	PM	77193	PM	26995	PM	26995	PM	214074 VMT/year
Emission rate (lb/hr)	0.23	1.17	1.22	6.25	0.43	2.18	0.07	0.38	
Emission rate (tpy)	1.00	5.13	5.34	27.36	1.87	9.57	0.33	1.67	8.53 43.73
Emission rate (g/sec)	0.0288		0.1536		0.0537		0.0094		PM10, tpy PM,tpy
Emission rate per segment for this mode	0.00018	PER 14.62m (48') SINGLE PASS	0.0010	PER 14.62m (48') SINGLE PASS	0.00034	PER 14.62m (48') SINGLE PASS	0.000059	PER 14.62m (48') SINGLE PASS	
Cross check	0.00018		0.0010		0.00034		0.000059		

160

Sand
Mill Scale
Gypsum

RL 1-62
Length of side = 58.48 m
RC + RA
29.24
OK.

Coal
Limestone

29.45523
9 x 357534.31
3170907.25

59 TPH of raw materials

Total Raw 306 TPH
30 Day Roll

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **1.06** lb/hour **4.6** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 10% Exceptional Conditions: 10% Maximum Period of Excess Opacity Allowed: 0 min/hour	
4. Method of Compliance: **Method 22, monthly 1-minute**	
5. Visible Emissions Comment: **40CFR63.1348**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 5% Exceptional Conditions: 5% Maximum Period of Excess Opacity Allowed: 0 min/hour	
4. Method of Compliance: **Method 9, in lieu of Method 5 for baghouses annual 30-minute**	
5. Visible Emissions Comment: **62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Flow diagram** ☐ Previously Submitted, Date ________

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels**

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ ☒ Waiver Requested	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ___________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Raw Mill System

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

Raw mill system, from raw material and additive storage to preheater. This emissions unit includes a 55 MMBtu/hour air heater for use when additional raw material drying capacity is required. Emissions from the air heater and raw mill are addressed with the In-Line Raw Mill/Kiln emissions unit.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouses**

Additive Bins - Feeders	**PS64**
Additive Transfer Point	**PS64A**
Additive Transfer Point	**PS64AA**
Hoppers to mill transfer (1 of 2)	**PS61A**
Hoppers to mill transfer (2 of 2)	**PS62A**
Cyclones to feeding silo	**PS66**
Bottom of bucket elevator to blending silo	**PS69**
Blending silo	**PS70**
Weigh hopper after blending silo	**PS71**
Air slide after weigh hopper to bucket elevator (1 of 2)	**PS72**
Air slide after airslide to bucket elevator (2 of 2)	**PS72A**
Air slide after bucket elevator to preheater	**PS73**
Filter dust hopper	**PS68**

2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **306 tons per hour wet raw material to mill**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **55 million Btu/hr for air heater**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr	tons/day	
5. Requested Maximum Operating Schedule:	hours/day	days/week
	weeks/year	**8760** hours/year
5. Operating Capacity/Schedule Comment: **306 tph is a 30-day rolling average.** **The preheater feed rate will be 260 TPH, 30-day rolling average.**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **See Field 3**		2. Emission Point Type Code: **3**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
Additive Bins - Feeders		**PS64**
Additive Transfer Point		**PS64A**
Additive Transfer Point		**PS64AA**
Hoppers to mill transfer (1 of 2)		**PS61A**
Hoppers to mill transfer (2 of 2)		**PS62A**
Cyclones to feeding silo		**PS66**
Bottom of bucket elevator to blending silo		**PS69**
Blending silo		**PS70**
Weigh hopper after blending silo		**PS71**
Air slide after weigh hopper to bucket elevator (1 of 2)		**PS72**
Air slide after airslide to bucket elevator (2 of 2)		**PS72A**
Air slide after bucket elevator to preheater		**PS73**
Filter dust hopper		**PS68**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **The air heater described in this section exhausts through the PM control device of Emissions Unit 3 of 10: In-Line Raw Mill/Kiln.**		
5. Discharge Type Code: **H**	6. Stack Height: **N/A** Feet	7. Exit Diameter: **N/A** feet
8. Exit Temperature: **See Table** °F	9. Actual Volumetric Flow Rate: **See Table** acfm	10. Water Vapor: **See Table** %
11. Maximum Dry Standard Flow Rate: **See Table** dscfm		12. Nonstack Emission Point Height: **See Table** feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **Table** North (km): **Table**		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**
15. Emission Point Comment: **None**		

C. EMISSION POINT (STACK/VENT) INFORMATION (CONTINUED)

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS64	356.13	3169.23	90	1.50	120	5000	2	4463
PS64A	356.08	3169.22	90	1.00	120	2000	2	1785
PS64AA	356.08	3169.27	90	1.00	120	2000	2	1785
PS61A	356.14	3169.35	50	1.00	120	2000	2	1785
PS62A	356.14	3169.33	85	2.00	120	7915	2	7065
PS66	356.10	3169.29	36	1.50	120	5000	2	4463
PS69	356.07	3169.29	237	1.50	156	5000	2	4202
PS70	356.07	3169.30	237	2.00	156	10000	2	8405
PS71	356.07	3169.30	49	0.85	122	1500	2	1334
PS72	356.07	3169.30	42	0.85	122	1500	2	1334
PS72A	356.08	3169.33	36	0.85	122	1500	2	1334
PS73	356.07	3169.33	368	1.10	122	2500	2	2224
PS68	356.11	3169.32	76	0.85	122	1500	2	1334
								41516

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 4

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Raw Material Transfer**		
2. Source Classification Code (SCC): **3-05-006-12**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **306**	5. Maximum Annual Rate: **2,680,560**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **306 tph is a 30-day rolling average**		

Segment Description and Rate: Segment 2 of 4

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Raw Material Grinding**		
2. Source Classification Code (SCC): **3-05-006-13**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **306**	5. Maximum Annual Rate: **2,680,560**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **306 tph is a 30-day rolling average.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 3 of 4

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Distillate Oil : Air Heater**		
2. Source Classification Code (SCC): **3-90-005-02**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **0.393**	5. Maximum Annual Rate: **3441**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **1.0**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **140**
10. Segment Comment: **This segment is for No. 2 or No. 4 oil in the air heater** **Distillate oil heat value: 140,000 Btu/gal = 140 MMBtu/10^3 gal** **55 MMBtu/hr at 140 MMBtu/10^3 gal = 0.393 (10^3 gal)/hr = 393 gallons/hour** **At 8760 hr/year = 3441 (10^3 gal)/year**		

Segment Description and Rate: Segment 4 of 4

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Natural Gas : Air Heater**		
2. Source Classification Code (SCC): **3-90-006-02**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.052**	5. Maximum Annual Rate: **459**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment: **Natural gas heat value: 1050 Btu/cf = 1050 MMBtu/MMCF** **55 MMBtu/hr at 1050 MMBtu/MMCF = 0.052 MMCF/hr** **At 8760 hr/year = 459 MMCF**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**
SO2	**None**	**None**	**EL**
NOx	**None**	**None**	**EL**
CO	**None**	**None**	**EL**
VOC	**None**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **3.56** lb/hour **15.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 41516 dscfm x 60 min/hr x 1/7000 gr/lb = 3.56 lb/hr** **at 8760 hr/year = 15.6 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **3.56** lb/hour **15.6** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **2.49** lb/hour **10.9** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 41516 dscfm x 60 min/hr x 1/7000 gr/lb = 2.49 lb/hr at 8760 hr/year = 10.9 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **2.49** lb/hour **10.9** tons/year
5. Method of Compliance: **Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **See In-Line Raw Mill/Kiln** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from air heater will be effectively limited by BACT emissions for the In-Line Raw Mill/Kiln emissions unit.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEM**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emissions for the air heater are dictated by BACT for the In-Line Raw Mill/Kiln.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **See In-Line Raw Mill/Kiln** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from air heater will be effectively limited by BACT emissions for the In-Line Raw Mill/Kiln emissions unit.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEM**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emissions for the air heater are dictated by BACT for the In-Line Raw Mill/Kiln.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **See In-Line Raw Mill/Kiln** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from air heater will be effectively limited by BACT emissions for the In-Line Raw Mill/Kiln emissions unit.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

<u>**Allowable Emissions**</u> Allowable Emissions <u>1</u> of <u>1</u>

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEM**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emissions for the air heater are dictated by BACT for the In-Line Raw Mill/Kiln.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **See In-Line Raw Mill/Kiln** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from air heater will be effectively limited by BACT emissions for the In-Line Raw Mill/Kiln emissions unit.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

<u>Allowable Emissions</u> Allowable Emissions <u>1</u> of <u>1</u>

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEM (VOC as THC)**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emissions for the air heater are dictated by BACT for the In-Line Raw Mill/Kiln.**	

20 rings 720 receptors

224 receptors

Department added receptors

25 m or less apart from highest impact of 27.26 along fenceline

→ result

46
29.3
+
29.76

29.46 w/out tires
.3

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **Method 22, monthly 1-minute**	
5. Visible Emissions Comment: **40CFR63.1348**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **5%** Exceptional Conditions: **5%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **Method 9, in lieu of Method 5 for baghouses** **Annual 30-minute**	
5. Visible Emissions Comment: **62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **See In-Line Raw Mill/Kiln emissions unit**	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Flow diagram** ☐ Previously Submitted, Date ________
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)
6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ____________ ☒ Waiver Requested

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ____________ ☒ Not Applicable
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ____________ ☒ Not Applicable
3. Alternative Methods of Operation ☐ Attached, Document ID: ____________ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ____________ ☒ Not Applicable
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☒ Not Applicable

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   In-Line Raw Mill/Kiln

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

In-Line Raw Mill/Kiln from the preheater to clinker cooler. Alternate fuels such as rice hulls, cotton gin, sugarcane bagasse, wood chips, vegetative fuels, corn husks, and other biomass; are requested for conditional inclusion. This would allow use after compliance demonstrations.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: • **High-Temperature Baghouse** • **Selective Non-Catalytic Reduction (SNCR)**
2. Control Device or Method Code(s): **016, 107**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **160.4 tons per hour clinker 30-day rolling average**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **550 million Btu/hr**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr	tons/day	
5. Requested Maximum Operating Schedule:	hours/day	days/week
	weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment: **Clinker production and heat input are 30-day rolling averages.**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **PS67**		2. Emission Point Type Code: **2**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **The air heater of the raw mill system exhausts through this emission point.**		
5. Discharge Type Code: **V**	6. Stack Height: **319** feet	7. Exit Diameter: **14** feet
8. Exit Temperature: **392**°F	9. Actual Volumetric Flow Rate: **407,000** acfm	10. Water Vapor: **7.6**%
11. Maximum Dry Standard Flow Rate: **233,147** dscfm		12. Nonstack Emission Point Height: **N/A** Feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **356.1** North (km): **3169.3**		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**
15. Emission Point Comment: **None**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 8

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Preheater/Precalciner Kiln**		
2. Source Classification Code (SCC): **3-05-006-23**	3. SCC Units: **Tons Clinker**	
4. Maximum Hourly Rate: **160.4**	5. Maximum Annual Rate: **1,405,104**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **160.4 tph is a 30-day rolling average**		

Segment Description and Rate: Segment 2 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Coal : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **21.2**	5. Maximum Annual Rate: **185,308**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **26**
10. Segment Comment: **Coal heat value: 13,000 Btu/lb = 26 MMBtu/ton** **550 MMBtu/hr at 26 MMBtu/ton = 21.2 tons/hr** **At 8760 hr/year = 185,308 tons/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 3 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Natural Gas : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-006-02**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.524**	5. Maximum Annual Rate: **4589**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment: **Natural gas heat value: 1050 Btu/cf = 1050 MMBtu/MMCF** **550 MMBtu/hr at 1050 MMBtu/MMCF = 0.524 MMCF/hr** **At 8760 hr/year = 4589 MMCF/year**		

Segment Description and Rate: Segment 4 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Distillate Oil : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-005-02**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **3.929**	5. Maximum Annual Rate: **34,414**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **1.0**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **140**
10. Segment Comment: **This segment is for No. 2 or No. 4 oil** **Distillate oil heat value: 140,000 Btu/gal = 140 MMBtu/10^3 gal** **550 MMBtu/hr at 140 MMBtu/10^3 gal = 3.929 (10^3 gal)/hr = 3929 gallons/hour** **At 8760 hr/year = 34,414 (10^3 gal)/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 5 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Coke : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-008-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **20.68**	5. Maximum Annual Rate: **181,128**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **26.6**
10. Segment Comment: **Coke heat value: 13,300 Btu/lb = 26.6 MMBtu/ton** **550 MMBtu/hr at 26.6 MMBtu/ton = 20.68 tons/hr** **At 8760 hr/year = 181,128 tons/year**		

Segment Description and Rate: Segment 6 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Tires** **Supplemental Fuel at up to 15% of heat value (82.5 MMBtu/hour)**		
2. Source Classification Code (SCC): **3-90-012-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **3.44**	5. Maximum Annual Rate: **30,113**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **24**
10. Segment Comment: **Tires heat value: 12,000 Btu/lb = 24 MMBtu/ton** **82.5 MMBtu/hr at 24 MMBtu/ton = 3.44 tons/hr** **At 8760 hr/year = 30,113 tons/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 7 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Used Oil**		
2. Source Classification Code (SCC): **3-90-013-89**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **4.231**	5. Maximum Annual Rate: **37,062**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **130**
10. Segment Comment: **This segment is for on-spec or off-spec used oil** **Used oil heat value: 130,000 Btu/gal = 130 MMBtu/10^3 gal** **550 MMBtu/hr @ 130 MMBtu/10^3 gal = 4.231 (10^3 gal)/hr = 4231 gallons/hour** **At 8760 hr/year = 37,062 (10^3 gal)/year**		

Segment Description and Rate: Segment 8 of 8

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Alternate fuels such as: rice hulls, cotton gin, sugarcane bagasse, wood chips, vegetative fuels, corn husks, other biomass.**		
2. Source Classification Code (SCC): **3-90-999-99**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Alternate fuels such as rice hulls, cotton gin, sugarcane bagasse, wood chips, vegetative fuels, corn husks, other biomass, are requested for conditional inclusion. Use will be allowed after compliance demonstration.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	016	None	EL
PM10	016	None	EL
SO2	None	None	EL
NOx	107	None	EL
CO	None	None	EL
VOC	None	None	EL
H114	None	None	EL
DIOX	None	None	EL

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions
Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **24.54** lb/hour **107.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.153 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.153 lb/ton of clinker x 160.4 ton/hr clinker = 24.54 lb/hr** **at 8760 hr/year = 107.5 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: N/A
3. Allowable Emissions and Units: **0.153 lb/ton of clinker**	4. Equivalent Allowable Emissions: **24.54** lb/hour **107.5** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: N/A
3. Allowable Emissions and Units: **0.30 lb/ton of dry feed**	4. Equivalent Allowable Emissions: ~**78** lb/hour ~**342** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **40CFR63.1343(c)(1); 40CFR60.62(a)(1) [superseded]; 62-296.407(2)(a), FAC** **The emission limitation for BACT, based on clinker production, will be more stringent than this NESHAP/NSPS/FAC limitation. Applicant requests that emissions limitations be based on clinker production only.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **24.54** lb/hour **107.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.153 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.153 lb/ton of clinker x 160.4 ton/hr clinker = 24.54 lb/hr** **at 8760 hr/year = 107.5 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: N/A
3. Allowable Emissions and Units: **0.153 lb/ton of clinker**	4. Equivalent Allowable Emissions: **24.54** lb/hour **107.5** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **32.08** lb/hour **140.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.2 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.2 lb/ton of clinker x 160.4 ton/hr clinker = 32.08 lb/hr at 8760 hr/year = 140.5 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.2 lb/ton of clinker**	4. Equivalent Allowable Emissions: **32.08** lb/hour **140.5** tons/year
5. Method of Compliance: **CEMS, 24-hour averaging requested**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT** **Applicant requests that emissions limitations be based on clinker production only. No sulfur limitations in fuels are requested.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **312.78** lb/hour **1370** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **1.95 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **1.95 lb/ton of clinker x 160.4 ton/hr clinker = 312.78 lb/hr at 8760 hr/year = 1370 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **NOx emission rate is a 30-day rolling average**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **1.95 lb/ton of clinker**	4. Equivalent Allowable Emissions: **312.78** lb/hour **1370** tons/year
5. Method of Compliance: **CEM, 30-day averaging requested**	
6. Allowable Emissions Comment (Description of Operating Method): **None**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **465.16** lb/hour **2037.4** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **2.9 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **2.9 lb/ton of clinker x 160.4 tons/hr clinker = 465.16 lb/hr** **@ 8760 hr/year = 2037.4 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **CO emission rate is a 30-day rolling average rate**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **2.9 lb/ton of clinker**	4. Equivalent Allowable Emissions: **465.16** lb/hour **2037.4** tons/year
5. Method of Compliance: **CEM, 30-day averaging requested**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **19.25** lb/hour **84.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.12 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.12 lb/ton of clinker x 160.4 tons/hr clinker = 19.25 lb/hr at 8760 hr/year = 84.3 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **VOC emission rate is a 30-day block average rate**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.12 lb/ton of clinker**	4. Equivalent Allowable Emissions: **19.25** lb/hour **84.3** tons/year
5. Method of Compliance: **CEM, 30-day average**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **THC, 50 ppmvd as propane**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEM**	
6. Allowable Emissions Comment (Description of Operating Method): **40CFR63.1343(c)(4)** **Concentration-based standard only.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **H114**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour **0.095** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **190 lbs/year** Reference: **Material Balance**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **190 lbs/year = 0.095 tons/year**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **190 lb/year**	4. Equivalent Allowable Emissions: lb/hour **0.095** tons/year
5. Method of Compliance: **Analysis of raw materials and fuels.**	
6. Allowable Emissions Comment (Description of Operating Method): **Not a PSD pollutant**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **DIOX**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.4 ng/dscm TEQ at 7% O_2** Reference: **40CFR63.1343(c)(3)**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **Concentration-based standard only**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.4 ng/dscm TEQ at 7% O_2**	4. Equivalent Allowable Emissions:* lb/hour tons/year
5. Method of Compliance: **Method 23**	
6. Allowable Emissions Comment (Description of Operating Method): **40CFR63.1343(c)(3)(ii)** ***NOTE: Concentration based standard**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20%** Exceptional Conditions: **20%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **COM**	
5. Visible Emissions Comment: **40CFR63.1343(c)(2)**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **COM**	
5. Visible Emissions Comment: **Proposed as BACT**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 5

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **COM required by NESHAP, 40CFR63.1350(c)**	

Continuous Monitoring System: Continuous Monitor 2 of 5

1. Parameter Code: **EM**	2. Pollutant(s): **SO2, NOx, CO**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **BACT**	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 3 of 5

1. Parameter Code: **EM**	2. Pollutant(s): **THC**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required by NESHAP, 40CFR63.1350(h)**	

Continuous Monitoring System: Continuous Monitor 4 of 5

1. Parameter Code: **TEMP**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Inlet of control device, 40CFR63.1350(f)**	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 5 of 5

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **None**	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: __________
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☐ Previously Submitted, Date: _______
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☐ To be Submitted, Date (if known): ___________
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ________ **[Available after construction]**	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.) ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit. ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one) ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent). ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions. ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.				
2. Description of Emissions Unit Addressed in this Section: **Clinker Cooler**				
3. Emissions Unit Identification Number: **No ID**				
4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No
9. Package Unit: **Not Applicable** Manufacturer: Model Number:				
10. Generator Nameplate Rating: **Not Applicable** MW				
11. Emissions Unit Comment: **Clinker Cooler**				

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **High-Temperature Baghouse PS74**
2. Control Device or Method Code(s): **016**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **160.4 tons per hour clinker**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **Not Applicable**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr	tons/day	
5. Requested Maximum Operating Schedule:	hours/day	days/week
	weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment: **160.4 tph is a 30-day rolling average.**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **PS74**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **166** feet	7. Exit Diameter: **10.7** feet
8. Exit Temperature: **392**°F	9. Actual Volumetric Flow Rate: **292,816** acfm	10. Water Vapor: **1.6**%
11. Maximum Dry Standard Flow Rate: **134,096** dscfm		12. Nonstack Emission Point Height: **N/A** Feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **356.1** North (km): **3169.4**		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**
15. Emission Point Comment: **None**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Clinker Cooler**		
2. Source Classification Code (SCC): **3-05-006-14**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **160.4**	5. Maximum Annual Rate: **1,405,104**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **160.4 tph is a 30-day rolling average**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**016**	**None**	**EL**
PM10	**016**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **16.04** lb/hour **70.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.1 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.1 lb/ton of clinker x 160.4 ton/hr clinker = 16.04 lb/hr at 8760 hr/year = 70.3 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

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F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: N/A
3. Allowable Emissions and Units: **0.1 lb/ton of clinker**	4. Equivalent Allowable Emissions: **16.04** lb/hour **70.3** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: N/A
3. Allowable Emissions and Units: **0.1 lb/ton of dry feed**	4. Equivalent Allowable Emissions: **~26** lb/hour **~114** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **40CFR63.1345(a)(1); 40CFR60.62(b)(1) [superseded]; 62-296.407(2)(b), FAC** **The emission limitation for BACT, based on clinker production, will be more stringent than this NESHAP/NSPS/FAC limitation. Applicant requests that emissions limitations be based on clinker production only.**	

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F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **12.83** lb/hour **56.2** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.08 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.08 lb/ton of clinker x 160.4 ton/hr clinker = 12.83 lb/hr** **at 8760 hr/year = 56.2 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.08 lb/ton of clinker**	4. Equivalent Allowable Emissions: **12.83** lb/hour **56.2** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **BACT** **Applicant requests that emissions limitations be based on clinker production only.**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **COM**	
5. Visible Emissions Comment: **40CFR63.1345(a)(2) ; proposed as BACT**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **COM required by NESHAP, 40CFR63.1350(d)**	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels**

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: __________
   Test Date(s)/Pollutant(s) Tested: ____

   ☐ Previously Submitted, Date: _______
   Test Date(s)/Pollutant(s) Tested: ____

   ☐ To be Submitted, Date (if known):__________
   Test Date(s)/Pollutant(s) Tested: ____

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ **[Available after construction]**	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: __________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: __________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: __________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Clinker Handling & Silo

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

Clinker handling from the clinker cooler to the clinker silo. Includes truck unloading of clinker.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouses**

Clinker transfer deep pan conveyor	**PS75**
Clinker silo	**PS76**
Truck unload clinker buffer	**PS77**

2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **160.4 TPH from cooler**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **Not Applicable**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr	tons/day	
5. Requested Maximum Operating Schedule:	hours/day	days/week
	weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment: **Clinker rate of 160.4 tph is a 30-day rolling average**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Clinker silo**

2. Emission Point Type Code: **3**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:

Clinker transfer deep pan conveyor PS75
Clinker silo PS76
Truck unload clinker buffer PS77

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**

5. Discharge Type Code: **H**

6. Stack Height: **Table** feet

7. Exit Diameter: **Table** Feet

8. Exit Temperature: **Table** °F

9. Actual Volumetric Flow Rate: **Table** acfm

10. Water Vapor: **Table** %

11. Maximum Dry Standard Flow Rate: **Table** dscfm

12. Nonstack Emission Point Height: **N/A** feet

13. Emission Point UTM Coordinates...
Zone: **17** East (km): **Table**
North (km): **Table**

14. Emission Point Latitude/Longitude...
Latitude (DD/MM/SS) **See Field 13**
Longitude (DD/MM/SS) **See Field 13**

15. Emission Point Comment: **Information in table below for baghouses.**

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS75	356.09	3169.42	12	1.50	156	5000	2	4202
PS76	356.11	3169.45	152	1.50	120	5000	2	4463
PS77	356.13	3169.45	23	1.50	156	5000	2	4202
								12868

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Clinker Transfer**		
2. Source Classification Code (SCC): **3-05-006-16**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **160.4**	5. Maximum Annual Rate: **1,405,104**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Clinker from cooler at 160.4 tph is a 30-day rolling average**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Clinker Silos**		
2. Source Classification Code (SCC): **3-05-006-15**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **160.4**	5. Maximum Annual Rate: **1,405,104**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **SCC refers to clinker piles – clinker will be stored in an enclosed silo, not piles. 160.4 tph is a 30-day rolling average.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.10** lb/hour **4.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 12868 dscfm x 60 min/hr x 1/7000 gr/lb = 1.10 lb/hr at 8760 hr/year = 4.8 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS (CONTINUED)

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **1.10** lb/hour **4.8** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **0.77** lb/hour **3.4** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 12868 dscfm x 60 min/hr x 1/7000 gr/lb = 0.77 lb/hr** **at 8760 hr/year = 3.4 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS (CONTINUED)

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **0.77** lb/hour **3.4** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **Method 22, monthly 1-minute**	
5. Visible Emissions Comment: **40CFR63.1348**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **5%** Exceptional Conditions: **5%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **Method 9, in lieu of Method 5, annually 30-minute**	
5. Visible Emissions Comment: **62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor __ of __

1. Parameter Code: **N/A**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ______

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ______
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ______
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ______
   Test Date(s)/Pollutant(s) Tested: ______

   ☐ Previously Submitted, Date: ______
   Test Date(s)/Pollutant(s) Tested: ______

   ☐ To be Submitted, Date (if known): ______
   Test Date(s)/Pollutant(s) Tested: ______

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ___________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.) ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit. ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one) ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent). ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions. ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.				
2. Description of Emissions Unit Addressed in this Section: **Finish Mill Feed**				
3. Emissions Unit Identification Number: **No ID**				
4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No
9. Package Unit: **Not Applicable** Manufacturer:		Model Number:		
10. Generator Nameplate Rating: **Not Applicable** MW				
11. Emissions Unit Comment: **Finish mill feed from the clinker silo and the additive silos (slag, gypsum, limestone).**				

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouses**

Finish mill feed	**PS78**
Gypsum silo	**PS78G**
Slag silo	**PS78S**
Limestone dust silo	**PS78L**
Gypsum transfer from silo	**PS78GO**
Slag transfer from silo	**PS78SO**
Limestone dust transfer from silo	**PS78LO**

2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **198 TPH**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **Not Applicable**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr		
	tons/day	
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment:		
Cement mill rate of 198 tph is a 30-day rolling average		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Baghouses**	2. Emission Point Type Code: **3**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:

Finish mill feed	**PS78**
Gypsum silo	**PS78G**
Slag silo	**PS78S**
Limestone dust silo	**PS78L**
Gypsum transfer from silo	**PS78GO**
Slag transfer from silo	**PS78SO**
Limestone dust transfer from silo	**PS78LO**

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**

5. Discharge Type Code: **H**	6. Stack Height: **Table** Feet	7. Exit Diameter: **Table** Feet
8. Exit Temperature: **Table** °F	9. Actual Volumetric Flow Rate: **Table** acfm	10. Water Vapor: **Table** %

11. Maximum Dry Standard Flow Rate: **Table** dscfm	12. Nonstack Emission Point Height: **N/A** feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **Table** North (km): **Table**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**

15. Emission Point Comment: **Information in table below for baghouses.**

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS78	356.15	3169.44	149	2.00	120	7916	2	7066
PS78G	356.13	3169.45	102	1.10	120	2500	2	2232
PS78S	356.14	3169.45	91	1.10	120	2500	2	2232
PS78L	356.14	3169.44	91	1.10	120	2500	2	2232
PS78GO	356.13	3169.45	31	0.85	120	1500	2	1339
PS78SO	356.14	3169.45	31	0.85	120	1500	2	1339
PS78LO	356.14	3169.44	31	0.85	120	1500	2	1339
								17778

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Clinker Transfer**		
2. Source Classification Code (SCC): **3-05-006-16**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **198**	5. Maximum Annual Rate: **1,734,480**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Clinker and additives to finish mill. 198 tph is a 30-day rolling average.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.52** lb/hour **6.7** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 17778 dscfm x 60 min/hr x 1/7000 gr/lb = 1.52 lb/hr at 8760 hr/year = 6.7 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS (CONTINUED)

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **1.52** lb/hour **6.7** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.07** lb/hour **4.7** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 17778 dscfm x 60 min/hr x 1/7000 gr/lb = 1.07 lb/hr at 8760 hr/year = 4.7 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS (CONTINUED)

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **1.07** lb/hour **4.7** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 10% Exceptional Conditions: 10% Maximum Period of Excess Opacity Allowed: 0 min/hour	
4. Method of Compliance: **Method 22, monthly 1-minute**	
5. Visible Emissions Comment: **40CFR63.1348**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 5% Exceptional Conditions: 5% Maximum Period of Excess Opacity Allowed: 0 min/hour	
4. Method of Compliance: **Method 9, in lieu of Method 5, annually 30-minute**	
5. Visible Emissions Comment: **62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor __ of __

1. Parameter Code: **N/A**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ________

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: __________
   Test Date(s)/Pollutant(s) Tested: ______________________________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ______________________________

   ☐ To be Submitted, Date (if known): __________
   Test Date(s)/Pollutant(s) Tested: ______________________________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ___________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Finish Mill

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment: **None**

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouse** **Finish mill PS79** ✓
2. Control Device or Method Code(s): **017**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **Not applicable**	
2. Maximum Production Rate: **198 tons per hour cement**	
3. Maximum Heat Input Rate: **Not Applicable**	
4. Maximum Incineration Rate: **Not Applicable** pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	 days/week **8760** hours/year
6. Operating Capacity/Schedule Comment: **Portland cement and masonry cement. 198 tph is a 30-day rolling average.**	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Finish mill**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Finish mill PS79**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **154** Feet	7. Exit Diameter: **14** feet
8. Exit Temperature: **203** °F	9. Actual Volumetric Flow Rate: **400,233** acfm	10. Water Vapor: **2** %
11. Maximum Dry Standard Flow Rate: **312,518** dscfm		12. Nonstack Emission Point Height: **N/A** feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **356.2** North (km): **3169.4**		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**
15. Emission Point Comment: **None**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Clinker Grinding**		
2. Source Classification Code (SCC): **3-05-006-17**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **198**	5. Maximum Annual Rate: **1,734,480**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Clinker plus additives. 198 tph is a 30-day rolling average.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**017**	**None**	**EL**
PM10	**017**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **26.79** lb/hour **117.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 312,518 dscfm x 60 min/hr x 1/7000 gr/lb = 26.79 lb/hr at 8760 hr/year = 117.3 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **26.79** lb/hour **117.3** tons/year
5. Method of Compliance: **Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **18.75** lb/hour **82.1** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 312,518 dscfm x 60 min/hr x 1/7000 gr/lb = 18.75 lb/hr at 8760 hr/year = 82.1 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **18.75** lb/hour **82.1** tons/year
5. Method of Compliance: **Method 5 for PM, initial and prior to permit renewal**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **Method 22, daily 6-minute** **Method 9, annually 60-minute**	
5. Visible Emissions Comment: **40CFR63.1347, and proposed as BACT**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ________

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report**	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ____________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ____________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ____________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ____________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ____________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:____________ ☐ Previously Submitted, Date:__________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Cement Silos & Loadout

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment: **None**

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

Cement transfer	**PS80** ✓
Cement from bucket elevator to belt conveyor	**PS81** ✓
Quadrate silo #8	**PS82A** ✓
Quadrate silo #9	**PS83A** ✓
Loadout spout, #8 side	**PS82** ✓
Loadout spout, #9 side	**PS83** ✓

2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **500 tons per hour loadout**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **Not Applicable**		
4. Maximum Incineration Rate: **Not Applicable** pounds/hr	tons/day	
5. Requested Maximum Operating Schedule:	hours/day weeks/year	days/week **8760** hours/year
6. Operating Capacity/Schedule Comment: **None**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Cement silos**	2. Emission Point Type Code: **3**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:

Cement transfer	**PS80**
Cement from bucket elevator to belt conveyor	**PS81**
Quadrate silo #8	**PS82A**
Quadrate silo #9	**PS83A**
Loadout spout, #8 side	**PS82**
Loadout spout, #9 side	**PS83**

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**

5. Discharge Type Code: **H**	6. Stack Height: **See Table** feet	7. Exit Diameter: **See Table** feet
8. Exit Temperature: **See Table** °F	9. Actual Volumetric Flow Rate: **See Table** acfm	10. Water Vapor: **See Table** %

11. Maximum Dry Standard Flow Rate: **See Table** dscfm	12. Nonstack Emission Point Height: **N/A** feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **Table** North (km): **Table**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**

15. Emission Point Comment: **Information in table below for baghouses.**

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS80	356.18	3169.46	62	1	156	2500	2	2101
PS81	356.17	3169.51	212	1.2	120	3000	2	2677.94
PS82A	356.14	3169.51	212	1.1	120	2500	2	2231.61
PS83A	356.16	3169.51	212	1.1	120	2500	2	2231.61
PS82	356.14	3169.51	41	1.2	120	2800	2	2499.41
PS83	356.16	3169.51	41	1.2	120	2800	2	2499.41
								14241

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Cement Silos**		
2. Source Classification Code (SCC): **3-05-006-18**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **198**	5. Maximum Annual Rate: **1,734,480**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Silo loading from finish mill** **198 tons/hr x 8760 hr/year = 1,734,480 tons/year. 198 tph is a 30-day rolling average.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Cement Loadout**		
2. Source Classification Code (SCC): **3-05-006-19**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **500**	5. Maximum Annual Rate: **1,734,480**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Maximum annual rate is limited by cement produced.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **1.22** lb/hour **5.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 14241 dscfm x 60 min/hr x 1/7000 gr/lb = 1.22 lb/hr at 8760 hr/year = 5.3 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **1.22** lb/hour **5.3** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **0.85** lb/hour **3.7** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 14241 dscfm x 60 min/hr x 1/7000 gr/lb = 0.85 lb/hr** **at 8760 hr/year = 3.7 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **0.85** lb/hour **3.7** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **Method 22, monthly 1-minute**	
5. Visible Emissions Comment: **40CFR63.1348**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **5%** Exceptional Conditions: **5%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **Method 9, in lieu of Method 5, annually 30-minute**	
5. Visible Emissions Comment: **Baghouses, 62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor __ of __ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ________

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: ____________
☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: ____________
☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
☐ Attached, Document ID: __________
Test Date(s)/Pollutant(s) Tested: ______________________

☐ Previously Submitted, Date: _______
Test Date(s)/Pollutant(s) Tested: ______________________

☐ To be Submitted, Date (if known):__________
Test Date(s)/Pollutant(s) Tested: ______________________

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ___________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Coal/Coke Mill

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

Coal/coke handling from storage to the pulverized fuel bins.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Baghouses**

Coke/coal transfer to mill	**PS84** ✓
Coke/coal transfer to mill	**PS84A** ✓
Coke/coal mill	**PS87** ✓
Pulverized fuel bin (1 of 2)	**PS88** ✓
Pulverized fuel bin (2 of 2)	**PS89** ✓
Coke/coal bin	**PS85** ✓
Coke/coal bin	**PS86** ✓

2. Control Device or Method Code(s): **018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **45 tons per hour coal/coke to mill**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: **Not Applicable**	
4. Maximum Incineration Rate: **Not Applicable** pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	days/week **8760** hours/year
6. Operating Capacity/Schedule Comment: **45 tph is a 30-day average rate**	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Coal/Coke mill**	2. Emission Point Type Code: **3**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:

Coke/coal transfer to mill	**PS84**
Coke/coal transfer to mill	**PS84A**
Coke/coal mill	**PS87**
Pulverized fuel bin (1 of 2)	**PS88**
Pulverized fuel bin (2 of 2)	**PS89**
Coke/coal bin	**PS85**
Coke/coal bin	**PS86**

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**

5. Discharge Type Code: **Table**	6. Stack Height: **Table** Feet	7. Exit Diameter: **Table** feet
8. Exit Temperature: **See Table** °F	9. Actual Volumetric Flow Rate: **See Table** acfm	10. Water Vapor: **See Table** %

11. Maximum Dry Standard Flow Rate: **See Table** dscfm	12. Nonstack Emission Point Height: **N/A** feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **See Table** North (km): **See Table**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**

15. Emission Point Comment: **Information in table below for baghouses.**

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
PS84	356.06	3169.22	30	0.9	120	1650	2	1473
PS84A	356.06	3169.35	92	0.9	120	1650	2	1473
PS87	356.06	3169.37	167	6.0	183	69356	2	55841
PS88	356.07	3169.37	92	0.9	122	1500	2	1334
PS89	356.06	3169.37	92	0.9	122	1500	2	1334
PS85	356.06	3169.35	109	0.9	122	1500	2	1334
PS86	356.07	3169.35	109	0.9	122	1500	2	1334
								64125

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Mineral Products: Coal Cleaning : Material Handling : Crushing**		
2. Source Classification Code (SCC): **3-05-010-10**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **45**	5. Maximum Annual Rate: **394,200**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Coal or petroleum coke**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**018**	**None**	**EL**
PM10	**018**	**None**	**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **5.50** lb/hour **24.1** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 64125 dscfm x 60 min/hr x 1/7000 gr/lb = 5.50 lb/hr at 8760 hr/year = 24.1 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **5.50** lb/hour **24.1** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.031 gr/dscf**	4. Equivalent Allowable Emissions: **14.84** lb/hour **65.0** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Coal mill only** **40CFR60.252(a)(1). BACT is more stringent than this NSPS Subpart Y limitation.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: **3.85** lb/hour **16.9** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 64125 dscfm x 60 min/hr x 1/7000 gr/lb = 3.85 lb/hr** **at 8760 hr/year = 16.9 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **3.85** lb/hour **16.9** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20%** Exceptional Conditions: **20%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment: **40CFR60.252(a)(2), and 40CFR60.252(c)** **Coal mill, coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **5%** Exceptional Conditions: **5%** Maximum Period of Excess Opacity Allowed: **0 min/hour**	
4. Method of Compliance: **Method 9, in lieu of Method 5, 30-minute annually**	
5. Visible Emissions Comment: **62-297.620(4), FAC**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code: **TEMP**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... **To be supplied after construction** Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Required by NSPS, 40CFR60.253**	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ________

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **PSD Report**

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________
   ☒ Not Applicable (construction application)

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:________ ☐ Previously Submitted, Date:________ ☒ Not Applicable	

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application. for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification ☒ **Not Applicable**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Fugitive emissions from vehicle travel

3. Emissions Unit Identification Number: **No ID**

4. Emissions Unit Status Code: **A**	5. Commence Construction Date: **N/A**	6. Initial Startup Date: **N/A**	7. Emissions Unit Major Group SIC Code: **32**	8. Acid Rain Unit? ☐ Yes ☒ No

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment:

This section addresses paved road emissions from raw material and cement hauling associated with the new kiln.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: • **Vacuum/Sweeper for paved road**
2. Control Device or Method Code(s): **N/A**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **Not Applicable**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: **Not Applicable** million Btu/hr	
4. Maximum Incineration Rate: **Not Applicable** pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	days/week **8760** hours/year
6. Operating Capacity/Schedule Comment: **None**	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Travel areas**	2. Emission Point Type Code: **4**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **F**	6. Stack Height: **N/A** feet	7. Exit Diameter: **N/A** feet
8. Exit Temperature: 77°F	9. Actual Volumetric Flow Rate: **N/A** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** Dscfm	12. Nonstack Emission Point Height: 0 feet	
13. Emission Point UTM Coordinates...**N/A** Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **None**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Other Not Classified: Paved Road**		
2. Source Classification Code (SCC): **3-05-006-99**	3. SCC Units: **Vehicle Miles Traveled (VMT)**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **N/A**	6. Estimated Annual Activity Factor: **214,074**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **None**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**None**	**None**	**NS**
PM10	**None**	**None**	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **0** to **44** tons/year	
6. Emission Factor: **See spreadsheet** Reference: **AP-42 Section 13.2.1, 13.2.2**	7. Emissions Method Code: **3**
8. Calculation of Emissions: **Paved ~44 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **0** to **9** tons/year	
6. Emission Factor: **See spreadsheet** Reference: **AP-42 Section 13.2.1, 13.2.2**	7. Emissions Method Code: **3**
8. Calculation of Emissions: **Paved ~9 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **None**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___ ☒ **Not Applicable**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of __ ☒ **Not Applicable**

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of __ ☒ **Not Applicable**

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___ ☒ **Not Applicable**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **N/A** ☐ Previously Submitted, Date ________

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No fuels** ☐ Previously Submitted, Date ________

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **No controls** ☐ Previously Submitted, Date ________

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________ ☐ Previously Submitted, Date ________
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ________ ☐ Previously Submitted, Date ________
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: ___________ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications ☒ **Not Applicable**

1. Identification of Applicable Requirements ☐ Attached, Document ID: ___________ ☒ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: ___________ ☒ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: ___________ ☒ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: ___________ ☒ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID:___________ ☐ Previously Submitted, Date:_________ ☒ Not Applicable	

Additional Requirements Comment

None

REPORT IN SUPPORT OF
AN APPLICATION FOR A PSD
CONSTRUCTION PERMIT REVIEW

CEMEX, INC.
Kiln 3 Project
Brooksville Cement Plant
Hernando County, Florida

October 12, 2006

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TABLE OF TABLES

* Table follows Section 6.

TABLE OF ATTACHMENTS

* Table follows Section 6.

1. Introduction

This report is in support of an application for an air construction permit. In order to meet the increasing demand for cement, CEMEX proposes to expand their existing Brooksville Cement Plant by adding a new cement kiln line, which will have a nominal kiln feed rate of 260 tons per hour, 30-day rolling average, resulting in a nominal clinker production of 3,850 tons per day, 30-day rolling average.

A dry process preheater/precalciner kiln system is proposed to produce various types and grades of Portland cement and masonry cement. The cement will be stored in silos and will be packed in bulk by trucks and railcars.

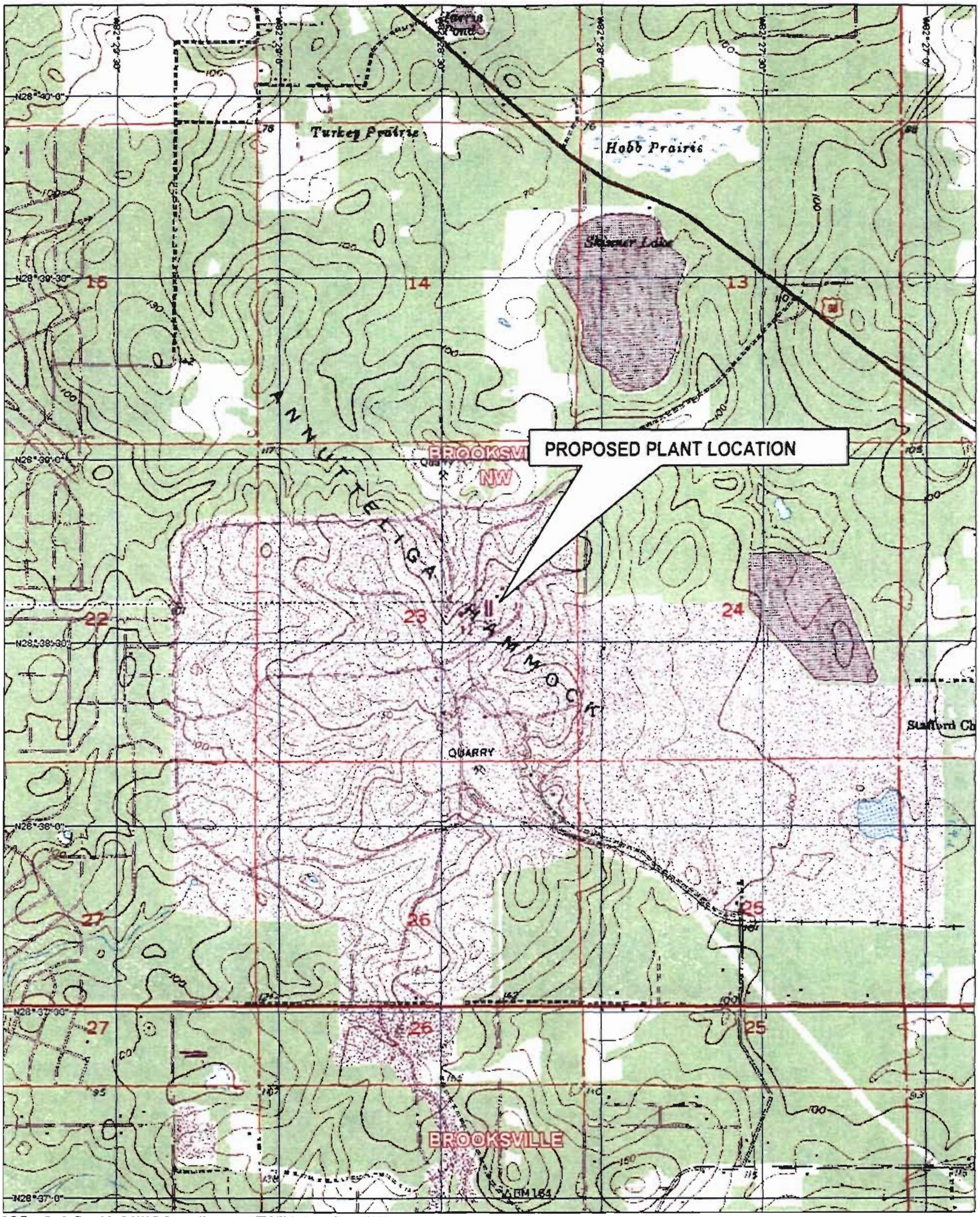
1.1 Applicant

Michael Gonzales, Plant Manager
CEMEX, Inc.
16301 Ponce De Leon Boulevard
Brooksville, Florida 34614-0849

1.2 Area Map Showing Facility Location

This report provides the relevant portion of a USGS topographic map (Brooksville NW Quadrangle) showing the location of the Brooksville Cement Plant in relation to residences, roads, and other features of the surrounding area.

The cement plant will be located west of and off US Highway 98, north of Brooksville, Hernando County, Florida. The UTM coordinates of the new kiln stack are Zone 17, 356.1 km East and 3169.3 km North. See Figure 1 – Site Location Map.



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS

750 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84

FIGURE 1 – SITE LOCATION MAP

2. Description of Proposed Construction

This section of the report provides a detailed description of the proposed project.

2.1 Proposed New Emissions Units

This section includes a description of the nature, location, design capacity, and projected operations of each proposed new emissions unit. The following is a list of the major new equipment, replacements and new emission controls included in this project:

1) A new raw mill and associated equipment;
2) A new preheater/precalciner kiln (Kiln No.3) system equipped with state-of-the-art baghouses on the main and the clinker cooler stacks;
3) A new finish mill equipped with a high efficiency separator and associated equipment;
4) New cement silos and an expanded cement packhouse and shipping facility;
5) SNCR will also be installed on the new Kiln No.3;
6) A continuous emissions monitoring system (CEMS), similar to the ones on existing Kiln No.1 and Kiln No.2, will be installed on the new Kiln No.3 to measure oxides of nitrogen (NOx), sulfur dioxide (SO2) and carbon monoxide (CO); and
7) Opacity monitors will be installed on the new kiln No.3 main stack and clinker cooler stack.

2.1.1 Raw Materials Handling & Storage

This emissions unit addresses additives handling and storage, from delivery to storage. The additives include, but are not limited to, mill scale, iron ore, bauxite, sand, clay and flyash. Dozens of suitable materials are available as additives for cement manufacturing and will be used as material availability and the target chemistry of the cement dictate.

Basic components for raw meal are limestone, sand and iron and aluminum sources, with other materials added as necessary to adjust to the chemical composition.

Limestone is received by belt conveyor from the existing onsite quarry, and stored in an expanded enclosed building that supplies limestone to existing Kiln No.1 and Kiln No.2 and to the proposed Kiln No.3. When it is reclaimed, it is conveyed up the limestone incline belt. The limestone feeding system to Kiln No.1 and Kiln No.2 will remain unchanged. CEMEX will install a new belt conveyor to deliver the limestone to the new Kiln No.3 feeder bins. From the feeder bins the limestone is metered onto the Raw Mill No.3 feeder belt conveyor, which delivers it to Raw Mill No.3.

Sand will be delivered by truck and stored in an expanded, enclosed building. When it is reclaimed, it will travel up the sand incline belt to the belt conveyor to the No.3 feeder bins, from which it is metered onto the Raw Mill No.3 feeder belt.

Other raw materials will be stored in a new enclosed structure. They will be reclaimed with an automatic system, and conveyed to the feed bins with a new belt conveyor system. These materials will also be metered onto the Raw Mill No.3 feeder belt, along with limestone and clay, for transport to Raw Mill No.3. Baghouses control dust emissions from limestone and additive transfers.

2.1.2 Raw Mill System

This proposed emissions unit is the raw mill system, from raw material and additive storage to the preheater. The materials will be transported to the raw mill from raw materials storage. The raw mill will be equipped with a high efficiency air separator. The product of the raw mill is called the raw meal. The raw meal will be collected in cyclones, and conveyed via air slides to an airlift. An induced draft fan will provide draft. Heat for raw material drying will be provided by the preheater exhaust gases and by an air heater. The particulate matter collected in the kiln/raw mill baghouse and the raw mill product will be conveyed to the blend silo or directly to the preheater.

This emissions unit includes a 55 MMBtu/hour air heater for use when additional raw material drying capacity is required. Emissions from the air heater and raw mill are addressed with the In-line Raw Mill/Kiln emissions unit.

The materials are metered from the No.3 Feeder Bins, and fed to Raw Mill No.3 by the Raw Mill No.3 feeder belt. The Raw Mill No.3 raw meal is transported by airflow to a high efficiency cyclone system that separates the coarse meal from the fine meal. The coarse raw meal is returned to Raw Mill No.3 for further milling. The fine raw meal is extracted from the cyclones with a screw conveyor, and discharged into an air slide that transports it to a bucket elevator. The Raw Meal Transfer Baghouse (PS-66) controls dust on this enclosed transfer system, and the No.3 Raw Meal Bucket Elevator Baghouse (PS-69) captures particulate at the base of the bucket elevator transfer. The bucket elevator transports the raw meal to the top of Blending Silo No.3, where the Blending Silo No.3 Baghouse (PS-70) captures emissions from the raw meal discharge into the silo. Inside Blending Silo No.3 the raw meal is thoroughly mixed to provide a consistently homogenous material, called "kiln feed," with the desired physical and chemical properties for calcining.

The homogenized kiln feed is extracted from Blending Silo No.3 through a distribution box, from where the kiln feed is transported by means of air slides to a bucket elevator that discharges into the preheater.

2.1.3 In-Line Raw Mill/Kiln

This emissions unit is the In-line Raw Mill/Kiln, from the preheater to the clinker cooler. The heart of the Portland cement manufacturing process is the rotary kiln pyroprocessing system. This system transforms the raw mix into clinker, the intermediate product in cement manufacturing. Clinker is a gray, glass-hard, spherical nodule. The chemical reactions and physical processes that constitute the transformation are quite complex, but basically result in conversion of calcium carbonate and various silicates into compounds of calcium silicates.

The kiln feed from the blend silo will be conveyed to the preheater airlift. Fuels will be burned in the precalciner and at the main burner at the discharge end of the kiln. Combustion air for the calciner will be provided through a tertiary air duct from the clinker cooler. Through counter-stream flow, the combustion gases from the kiln aid in drying and calcining the kiln feed as it descends through the preheater. The material is discharged from the preheater into the riser duct, which serves as an intermediate combustion zone and is located between the preheater tower and kiln inlet shelf. The material then drops through the kiln shelf and into the rotary kiln. Here, the chemical process that produces clinker is completed as the kiln feed travels through the kiln's combustion zone. Exhaust gas exits the preheater and kiln though the Kiln No.3 Main Stack Baghouse (PS-67), which collects particulate matter from the gas stream before releasing it into the atmosphere.

Rotary kilns are cylindrical, slightly inclined furnaces lined with refractory brick to protect the steel shell and retain heat within the kiln. Kiln feed enters the kiln from the preheater at the elevated end, and approximately 40 percent of the fuels are introduced into the lower end of the kiln in a countercurrent manner. The kiln feed is continuously and slowly moved to the lower end by rotation of the kiln. As it moves down the kiln, the kiln feed is changed physically and chemically to cementitious or hydraulic minerals by the increasing temperatures it encounters moving to and through the "combustion zone" near the lower end of the kiln. The most commonly used kiln fuels are petroleum coke and coal, which are supplemented with natural gas during start-up. Alternate fuels will include natural gas, distillate oil, used oil, and whole waste tires. Alternate fuels such as rice hulls, cotton gin, sugarcane bagasse, wood chips, vegetative fuels, corn husks, other biomass, are requested for conditional inclusion. Use will be allowed after compliance demonstration.

This emissions unit will be located between the proposed raw mill and the proposed clinker silo. The projected operations are 3850 tons per day of clinker to the clinker cooler. The requested maximum operating schedule is 8760 hours/year. The maximum heat input rate is 550 million Btu/hr; or 3.4 mmBTU per ton of clinker. This heat input rate will allow for fluctuations in the heat required to clinker the kiln feed.

The particulate matter control device will be a fabric filter (baghouse). Selective non-catalytic reduction (SNCR) is proposed to achieve the BACT emissions limitation for nitrogen oxides. Management practices, plant design, and materials management are proposed as BACT for SO_2, CO and VOC.

2.1.4 Clinker Cooler

This emissions unit is the clinker cooler. The intermediate product, clinker, drops from the rotary kiln into the clinker cooler for rapid air-cooling. In the clinker cooler, ambient air is blown through the bedded material to enhance the cooling process. Hot air from the clinker cooler, pre-filtered by a cyclone, is transported to the No.3 Coal/Coke Mill where it is used to dry the coal and petroleum coke. An air duct draws another portion to the riser duct in the preheater as combustion air. Residual air is induced through an air-to-air heat exchanger to reduce air volume, and then passed through the Clinker Cooler No.3 Baghouse (PS-74) to remove particulate matter before being released to the atmosphere.

2.1.5 Clinker Handling & Silo

This emissions unit is clinker handling from the clinker cooler discharge to the clinker silo. This emissions unit addresses clinker and additives from storage conveyed to the finish mill.

Clinker is moved from Clinker Cooler No.3 by a deep pan conveyor, which delivers it to a new clinker storage silo via one transfer point. The Clinker Cooler No.3 Roller Crusher/Drag Chain Baghouse (PS-75) controls emissions from the clinker drop to the pan conveyor. The Clinker Cooler No.3 Transfer Silo Baghouse (PS-76) controls emissions at the intermediate transfer point.

This emissions unit will be located between the clinker cooler and the finish mill. The projected operations are 3850 tons per day of clinker from the clinker cooler with a requested maximum operating schedule of 8760 hours/year.

2.1.6 Finish Mill

Weigh feeders drop metered amounts of clinker and gypsum and process additives onto feeder conveyors to the finish mills. The air stream containing the finished product, cement, is swept through the Finish Mill Baghouse (PS-79) to recover product and control emissions.

This emissions unit will be located between the clinker silos and the cement silos. The projected operations are 198 tons per hour of cement, 30-day average, to the cement silos, with a requested maximum operating schedule of 8760 hours/year.

2.1.6 Cement Silos & Loadout

This emissions unit includes cement conveyed into silos, the cement packhouse and cement loadout to trucks and railcars from the cement silos. Cement is transported via screw conveyors to a belt conveyor. The Cement Transfer Baghouse (PS-80) controls particulate matter emissions from this transfer. The cement is then conveyed via enclosed belts to the cement bucket elevator, which delivers the cement into the new storage silos via a distribution box. The Cement Silo Feed Baghouse (PS-81) controls emissions from the bucket elevator-to-cement silo transfer. Cement withdrawal will occur through rotary shut-off valves, flow control valves, and air slides to vented retractable loading spouts. There will be a truck scale under the proposed silos.

Cartridge dust collectors located at each of the shipping scales control emissions from cement loading into trucks and railcars. Loadout Spout Baghouses (PS-82 and PS-83) capture emissions from cement loading at the new shipping silo.

This emissions unit will be located between the finish mill and the plant entrance road. The projected operations are 500 tons per hour of cement to trucks or railcars, with a requested maximum operating schedule of 8760 hours/year.

2.1.7 Coal/Coke Mill

This emissions unit is coal/coke handling from storage to the pulverized coal/coke bin. The kiln system uses the combustion of solid fuels such as coal and/or petroleum coke (petcoke) as the heat source for the calcining reactions necessary to manufacture Portland cement. Natural gas is also used in small quantities during kiln start up. Solid fuel is delivered to the site primarily via rail car.

The coal and petcoke is reclaimed from enclosed storage by belt conveyor. The Coke Belt Transfer Baghouse (PS-84) controls emissions at the belt transfer point to the Mill. The coal and petcoke storage bins are controlled by baghouses. The coal and petcoke is metered to the mill by a weigh feeder, and then transferred by conveyer belt to the Coal/Coke Mill. Hot air from Clinker Cooler No.3 provides energy efficient drying of the fuels. Particulate is removed from the mill exhaust by the Coal/Coke Mill Baghouse (PS-87). The pulverized fuels will be transported by screw conveyor to two bins. From these bins, fuel is pneumatically fed to both the main kiln burner and the calciner burner.

The projected grinding rate of coal and/or coke is 45 tons per hour, 30-day average, with a requested maximum operating schedule of 8760 hours/year.

2.2 Fugitive Emissions Identification

This section identifies fugitive emissions, which are also addressed and quantified in a specific Emissions Unit Information Section of the application form. This section addresses paved road emissions from raw materials hauling (inbound), cement hauling (outbound), and employee vehicle traffic. Raw material and fuel storage areas are under cover and typically handle moist materials. The facility proposes to operate and maintain a vacuum sweeper truck to limit the silt loading on the paved road.

2.3 Precautions to Prevent Emissions of Unconfined Particulate Matter

This section proposes precautions to prevent emissions of unconfined particulate matter. The precautions will be applicable to the proposed new emissions units.

The material handling activities at the plant covered by this protocol include loading and unloading, storage and conveying of:

- Limestone and overburden
- Iron source (coal ash, iron ore, or other)
- Silica (sand, or other)
- Alumina (coal ash, bauxite or other)
- Gypsum
- Coal/coke/fuel oil.

Raw Mill?

Reasonable precautions include the following:

- Paving and maintenance of roads, parking areas and yards;
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing;
- Application of asphalt, water, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities;
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne;
- Landscaping or planting of vegetation;
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter;
- Confining abrasive blasting where possible; and
- Enclosure or covering of conveyor systems.

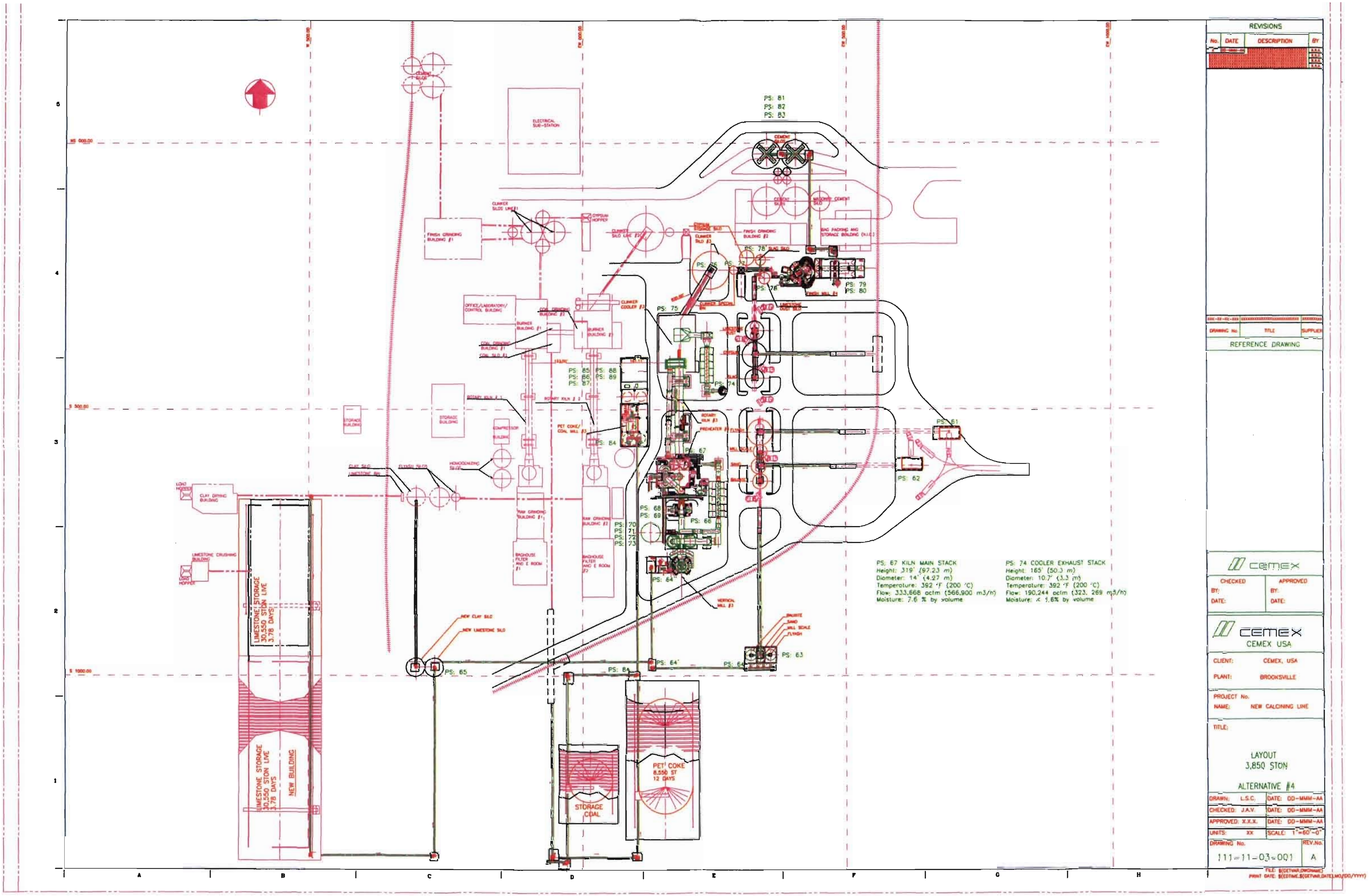
Additional reasonable precautions applicable to this facility are:

- All materials, coal and petroleum coke at the plant shall be stored under roof on compacted clay or concrete, or in enclosed vessels;

- Water supply lines, hoses and sprinklers shall be located near all materials, coal and petroleum coke stockpiles;
- All plant operators shall be trained in basic environmental compliance and shall perform visual inspections of materials, coal and petroleum coke regularly and before handling. If the visual inspections indicate a lack of surface moisture, the materials, coal and petroleum coke shall be wetted with sprinklers. Such wetting shall continue until the potential for unconfined particulate matter emissions are minimized;
- The manufacturing area and the access roadways for the facility shall be paved with asphalt or concrete; and
- Vacuum Sweeper shall be used on paved roads.

2.4 Facility Plot Plan

This report provides a plot plan of the facility showing the location of proposed manufacturing processes, control equipment, stacks, vents, identifiable sources of fugitive emissions and principal buildings. The plot plan is drawn to scale, shows the precise location of the new emissions units and their emission points, includes at least one UTM coordinate point, and shows the compass direction. The plot plan also provides corner locations and heights of any buildings or structures that may affect dispersion of pollutants from the new emissions units. These building dimensions were used for air quality modeling studies performed by the applicant in support of the air construction permit application.


REVISIONS
No.
DATE
DESCRIPTION
BY
DRAWING No.
TITLE
SUPPLIER
REFERENCE DRAWING
PS: 81
PS: 82
PS: 83
ELECTRICAL SUB-STATION
FINISH GRINDING BUILDING #1
OFFICE/LABORATORY/ CONTROL BUILDING
PS: 75
PS: 79
PS: 80
PS: 85
PS: 86
PS: 87
PS: 88
PS: 89
PS: 84
PS: 67
PS: 68
PS: 69
PS: 66
PS: 70
PS: 71
PS: 72
PS: 73
PS: 61
PS: 62
PS: 63
PS: 64
PS: 65
PS: 67 KILN MAIN STACK
Height: 319' (97.23 m)
Diameter: 14' (4.27 m)
Temperature: 392 °F (200 °C)
Flow: 333,668 acfm (566,900 m3/h)
Moisture: 7.6 % by volume
PS: 74 COOLER EXHAUST STACK
Height: 165' (50.3 m)
Diameter: 10.7' (3.3 m)
Temperature: 392 °F (200 °C)
Flow: 190,244 acfm (323, 269 m3/h)
Moisture: < 1.6% by volume
LIMESTONE STORAGE
30,550 STON LIVE
3.78 DAYS
NEW BUILDING
STORAGE COAL
PET COKE
8,550 ST
12 DAYS
NEW CLAY SILO
NEW LIMESTONE SILO
CEMEX
CHECKED
BY:
DATE:
APPROVED
BY:
DATE:
CEMEX
CEMEX USA
CLIENT: CEMEX, USA
PLANT: BROOKSVILLE
PROJECT No.
NAME: NEW CALCINING LINE
TITLE:
LAYOUT
3,850 STON
ALTERNATIVE #4
DRAWN: L.S.C.
DATE: DD-MMM-AA
CHECKED: J.A.V.
DATE: DD-MMM-AA
APPROVED: X.X.X.
DATE: DD-MMM-AA
UNITS: XX
SCALE: 1"=60'-0"
DRAWING No.
111-11-03-001
REV.No.
A
A
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D
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F
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H
1
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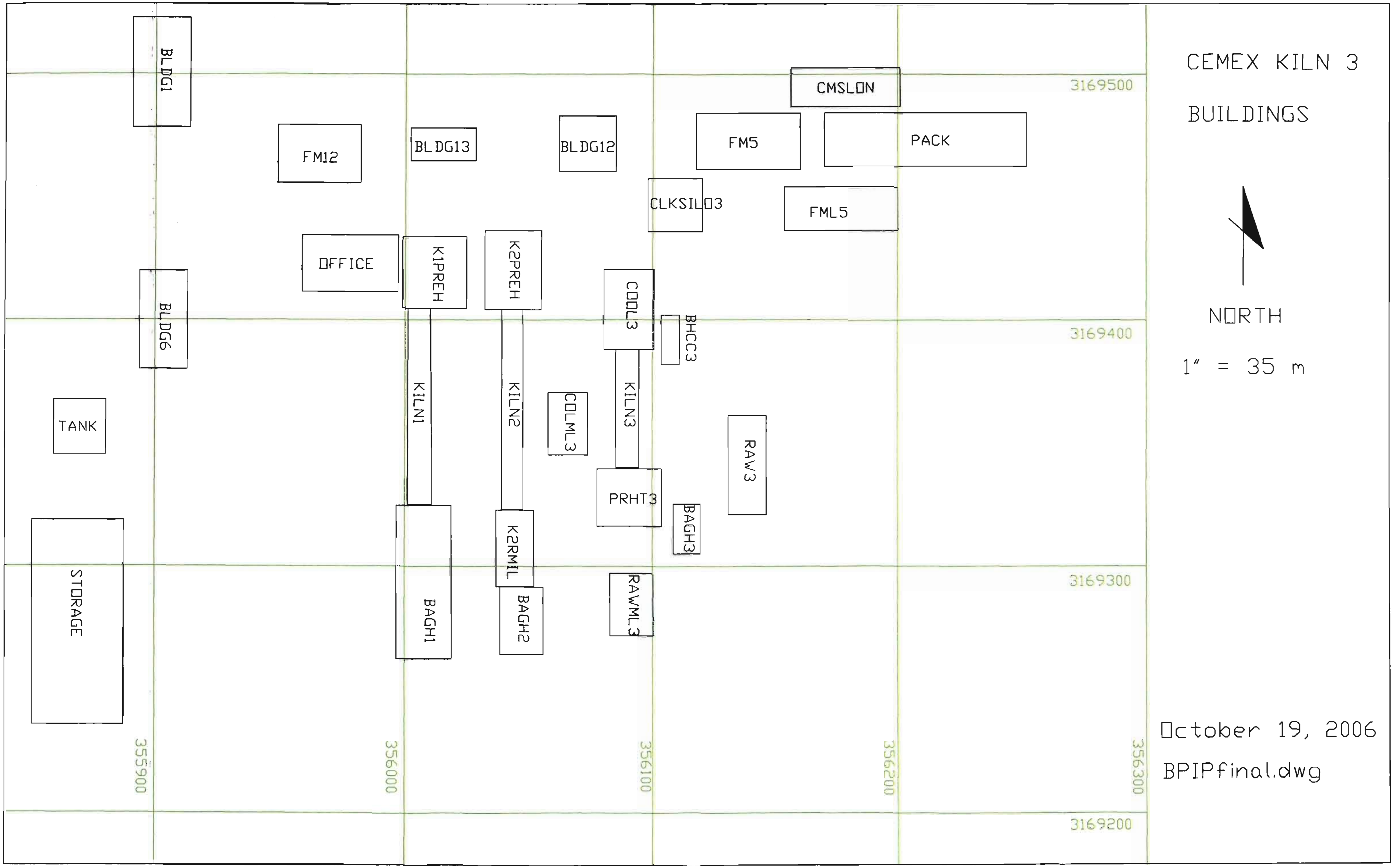
CEMEX KILN 3
BUILDINGS
NORTH
1" = 35 m
October 19, 2006
BPIPfinal.dwg
BLDG1
FM12
BLDG13
BLDG12
CMSLON
FM5
PACK
CLKSILO3
FML5
OFFICE
K1PREH
K2PREH
COOL3
BHCC3
BLDG6
KILN1
KILN2
COLML3
KILN3
RAW3
TANK
PRHT3
BAGH3
K2RMIL
STORAGE
BAGH1
BAGH2
RAWML3
3169500
3169400
3169300
3169200
355900
356000
356100
356200
356300

Provide additional information in case the matters relate to actions by previous owners of the assets.

Response: This question seeks information outside of the scope of FDEP statutes and rules. Further the permit application is for a facility that is not comparable, in many respects, to other CEMEX facilities. The question seeks "any violations," which could include violations of even the most minor, technical and irrelevant nature. Moreover, in contravention of Section 403.0875, Florida Statutes, the department's RAI does not cite any regulatory authority for the question. The information contained in the permit application, including the responses to the department's RAI provide sufficient reasonable assurances for the permit to be issued.

14. The meteorological data used for the modeling associated with the CEMEX Kiln 3 project was from Tampa, years 1986-1990. The Department has more recent (1991-1995) data. The most recent data set should be used for all modeling associated with this project. Please submit updated resu lts to the Department.

Response: The more recent meteorological data set was received from the Department. The attached CD includes all of the updated modeling associated with this project. The updated modeling also considers the other Department comments.

Updated tables from the PSD report are included below.

TABLE 6 – SIGNIFICANT AMBIENT AIR QUALITY IMPACTS FOR CLASS II AREAS

Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
SO_2	1 $\mu g/m^3$	5 $\mu g/m^3$	--	25 $\mu g/m^3$	--
PM_{10}	1 $\mu g/m^3$	5 $\mu g/m^3$	--	--	--
NO_2	1 $\mu g/m^3$	--	--	--	--
CO	--	--	500 $\mu g/m^3$	--	2000 $\mu g/m^3$

The following table shows the SIA for each year and averaging period for each pollutant.

TABLE 7 – EVALUATION OF SIGNIFICANT IMPACTS FOR CLASS II AREAS

		1991	1992	1993	1994	1995
SO_2	Annual	Less than significant: Maximum impact = 0.05589 $\mu g/m^3$ [1991]				
	24-Hour	Less than significant: Maximum impact = 0.98564 $\mu g/m^3$ [1995]				
	3-Hour	Less than significant: Maximum impact = 3.52061 $\mu g/m^3$ [1993]				
PM_{10}	Annual	2.5 km	2.2 km	2.2 km	2.4 km	2.2 km
	24-Hour	3.5 km	4.5 km	4.5 km	7 km	5 km

Nelson, Deborah

From: Steve Cullen [scullen@kooglerassociates.com]
Sent: Tuesday, March 13, 2007 3:26 PM
To: Nelson, Deborah
Subject: Hauling
Attachments: modeling.xls; P95FGR.OUT

Hi Debbie:

Please find two attachments:

1. An excel spreadsheet called "modeling.xls"
2. An ISC output file called P95FGR.OUT

Spreadsheet
The spreadsheet has been cleaned up a bit, and now includes 3.4 tons per hour of tires added in to the raw material deliveries. The worksheet is called "Paved Roads". I have included emission factors for both 48' road segments (RA and RC segments) and for 96' road segments (RL segments). Below the mode descriptions are rows for every road segment, with an emission factor if that mode is used for that segment. Basically, the entrance road sees all trucks (empty and loaded), so the emission factor is the sum of the emission factors for the various one-way modes. Other road segments will just see certain trucks (RA = raw materials/tires; RC = cement); and maybe loaded, empty, or both conditions.

As an example, here is how the 0.00327 grams/second for RL1 is calculated.

RL1 = 96' road segment

Mode 1 - Cement trucks empty =	0.00036 per (96') single pass
Mode 2 – Cement trucks loaded =	0.00206 per (96') single pass
Mode 3 – Raw mat'l/Tires loaded =	0.00072 per (96') single pass ✓
Mode 4 – Raw mat'l/Tires trucks empty =	0.00013 per (96') single pass
	0.00327 grams/second for RL1

ISC Output File
I re-ran the regulatory-high run (1995 inventory with fine-grid) with the slightly higher emission rates (as a result of tires). The 24-hour H2H impact rose only slightly, from 27.1 ug/m3 to 27.4 ug/m3. The output file is attached for your use.

Please let me know if I can answer any more questions for you.

Regards,

Steve

--

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Internal Virus Database is out-of-date.
Checked by AVG Free Edition.
Version: 7.1.405 / Virus Database: 268.11.1/421 - Release Date: 8/16/2006

Teresa
Cemex

Dated
Next
Fri

Nelson, Deborah

From: George, Larry
Sent: Tuesday, June 13, 2006 10:02 AM
To: Nelson, Deborah; Rogers, Tom
Cc: Vielhauer, Trina
Subject: RE:

EPA's final 8-hour ozone implementation rule, Nov. 29, 2005, amends the PSD rule, as underlined, to provide that "a major source that is major for volatile organic compounds or NOx shall be considered major for ozone"; and under the definition of significant emissions increase "Ozone: 40 tpy of volatile organic compounds or NOx"; and under the ambient air quality impact analysis "No de minimis air quality level is provided for ozone. However, any net emissions increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis..." We have not yet made these changes to our PSD rules; we are waiting for the final PM2.5 implementation rule to come out (due any day now) and address both at the same time. Our deadline for making the 8-hour ozone changes is April 2007. I believe the changes require that the ozone impact be addressed but not necessarily modeled, the same way we would currently handle a 100-tpy increase in VOC.

From: Nelson, Deborah
Sent: Monday, June 12, 2006 2:34 PM
To: Rogers, Tom; George, Larry
Subject:

Do either one of you know of a new or proposed rule stating that stationary sources coming in with a PSD application for NOx over 100 TPY needs to model ozone (or at least address it)?

Thanks,

Debbie

Debbie Nelson
Meteorologist
Air Permitting South
850-921-9537
deborah.nelson@dep.state.fl.us

4.0 CONCLUSIONS

A revised set of analyses have been presented to show that the DC project will have no adverse visibility impacts (regional haze), on the five Federal Class I areas and one designated Tribal Class I area located within 200 km of the project. The six areas which have been analyzed are: Sycamore Canyon Wilderness Area, Mazatzal Wilderness Area, Pine Mountain West Wilderness, Grand Canyon National Park, Superstition Wilderness and the Yavapai-Apache Reservation (designated Class I parcel only). Several site-specific parameters were selected for the full CALPUFF analysis of the Sycamore Canyon Wilderness Area to provide a realistic, yet conservative assessment of the potential visibility impairment. This analysis shows that the maximum receptor change in light extinction coefficient is less than 5% for the 3 calendar years analyzed (1990, 1992 and 1996).

This result is achieved because the DC project has elected to adopt the most recent "state of the art" control measures for NO_x, in the pyroprocessing system consisting of an energy efficient 6 stage preheater, Low NO_x burner, Low NO_x calciner with "multi-stage" or "stage-less" combustion. These measures will be used in combination with Selective Non-Catalytic Reduction (SNCR) as an add-on control. For this project the proposed emission limit of NO_x is 95 lb/hr, which is equivalent to approximately 1.14 lb/ton of clinker. These represent the most stringent NO_x emission limits in the country for a Portland cement kiln. Based on agency BACT review, the next-lowest permitted emission rate found is 1.95 lb/ton clinker for an expanded facility proposed in the State of Florida.

In addition, the DC project incorporates a stringent limit on SO_2. This will be achieved in large part due to the low levels of sulfur found in the raw materials that will be used (either local quarry or shipped in) and use of low-sulfur western coal. As has been recognized in prior permits for Portland cement plants, an "in-line" configuration of the raw material mill offers substantial dry scrubbing capability inherent to the pyroprocessing system. The proposed DC emission limit of SO_2 is 5 lb/hr, equivalent to approximately 0.06 lb/ton of clinker. Again, this level is the most stringent SO_2 emission limit in the country for a similar Portland cement kiln, for which recent BACT review indicates that next lowest value is 0.14 lb/ton for the proposed facility in the State of Florida.

NO_2	Annual	Less than significant: Maximum impact = 0.69925 µg/m^3 [1991]
CO	8-Hour	Less than significant: Maximum impact = 34.87725 µg/m^3 [1995]
	1-Hour	Less than significant: Maximum impact = 113.91212 µg/m^3 [1994]

Sulfur dioxide, nitrogen dioxide and carbon monoxide were determined to have less than significant impacts in the Class II area. This demonstrates compliance with ambient air quality standards and PSD increments for these pollutants. No further dispersion modeling was performed for these pollutants in the Class II area.

The ambient air concentrations of PM_{10} for all periods were below the Class II significance levels within a 7-kilometer radius of the facility. Refined dispersion modeling was conducted for PM_{10} to demonstrate compliance with the PSD increments and the AAQS. The following table shows the estimated concentrations resulting from a fine-grid (50-meter spacing) centered on the regulatory high value receptors from coarse-grid increment modeling.

TABLE 12 – CLASS II AREA INCREMENT ANALYSIS [PM_{10}]

	1991	1992	1993	1994	1995
Annual H1H < 17 µg/m^3	4.5 µg/m^3	3.9 µg/m^3	3.6 µg/m^3	4.2 µg/m^3	3.9 µg/m^3
24-Hour H2H < 30 µg/m^3	24.4 µg/m^3	21.6 µg/m^3	23.9 µg/m^3	25.2 µg/m^3	27.1 µg/m^3

The proposed facility is shown to not exceed any applicable Class II area PSD increments, by showing that such increments were not exceeded when the facility's emissions were modeled with the PSD inventory (20-D inventory).

The background concentrations were added to the modeled concentrations to evaluate compliance with the AAQS. The ambient air concentrations from the proposed cement plant, including the 20-D inventory, plus the background concentrations, were evaluated with respect to the applicable AAQS. This was accomplished by adding the background concentrations from the Quick Look reports to the concentrations from the fine grid PSD modeling. For simplicity and conservatism, the 24-hour H2H impacts for each year were used instead of the 5-year H6H.

TABLE 13 – NAAQS ANALYSIS [PM_{10}]

	1991	1992	1993	1994	1995
Annual H1H < 50 µg/m^3 Background = 20	24.5 µg/m^3	23.9 µg/m^3	23.6 µg/m^3	24.2 µg/m^3	23.9 µg/m^3

Response: The nearest boundary at Chassahowitzka NWR to the proposed Kiln 3 stack is at a distance of 14.8 kilometers. The farthest boundary point is at a distance of 25.9 kilometers.

18. The PM10 increment modeling analysis includes existing CEMEX sources. When modeling with the more recent meteorological data, please verify that the emission rate for source "PMINV15" is correct. The current modeling shows that this source has an emission rate of 1.134. Table 11 in the application shows an emission rate of 4.54 for this source.

Response: The emission limit for the inventory source PMINV15 (CEMEX Emission Unit 005, Finish Mills #1 & #2 With Two Dust Collectors) has been addressed in other recent permitting with the Department. This is addressed specifically in an August 15, 2006 letter to Trina Vielhauer. Consistent with that letter, the emission rate for the inventory source has been revised to 2.27 grams/second. ← check in the modeling OK

19. Attachment 2 of the application states that there will be "no truck traffic expected between 8pm and 4am." Was the emission calculations for cement and raw material trucks submitted based on this statement, limiting the facility to only 16 hours of truck activity? Please show how 59 tons per year of raw materials being transported by truck was calculated.

Response: That statement was in error for this project. The emission calculations for cement and raw material trucks were based on continuous operation (24 hours per day).

59 tons per hour of raw materials will be transported by truck. This was calculated from the raw material target mix of approximately 81% onsite materials and 19% of the materials being trucked from offsite. The total raw material rate is 306 tons per hour.

20. The application states that there will be 500 tons per hour of cement "loadout." The modeling shows that there will be 179 tons per hour of cement "loadout" on trucks. Will the remaining 321 tons be on rail?

Response: The 500 tons per hour of cement loadout is a short-term maximum process rate (i.e., hourly). The 179 tons per hour is the long-term average cement loadout process rate (i.e., daily). The difference is that individual cement trucks can be loaded at a higher rate, but the total annual cement loaded out cannot exceed the cement produced. Although rail is projected to be available at the new cement silos, it was more conservative to model all the cement production as being shipped by truck.

21. How was the Initial Vertical Dimension calculated for the volume sources?

Response: The value of 1.84 meters for the initial vertical dimension (init vert) was developed in accordance with the *User's Guide For The Industrial Source Complex (Isc3) Dispersion Models Volume II - Description Of Model Algorithms.*

The initial vertical dimensions (init vert) for surface-based sources are determined by dividing the vertical dimension of the source by 2.15. The vertical dimension of each volume source is the height of the trucks, assumed as 13 feet (3.96 m).

$$3.96 \text{ m} \div 2.15 = \underline{\textbf{1.84 meters}}$$

22. The PLUVUE II model was used to model visibility impacts. This model allows for input of one emission source. Only the main source for this project was modeled. The application states that there is "no recommended procedure for conducting analyses of multiple sources." The Fish and Wildlife Service has received the application for the new Kiln and may still comment regarding this issue.

Response: No specific response is required for this item.

23. According to the application, PLUVUE II, entry code 5: Mixing Height was set to zero, vertical mixing is not limited. Is this option the most conservative or a worst case scenario?

Response: The mixing height value of 0 meters is assumed to be conservative after evaluation. The model was run several more times using the parameters that resulted in the highest reported regulatory values, but altering the mixing height.

The highest impacts were previously observed with the 113° angle, 14.8 kilometers downwind receptor on December 21, at 9 am. These parameters were modeled again, with 4 different mixing height inputs including stack height and rural mixing height values from the 10-year metdata set (1986-1995) for this day and time.

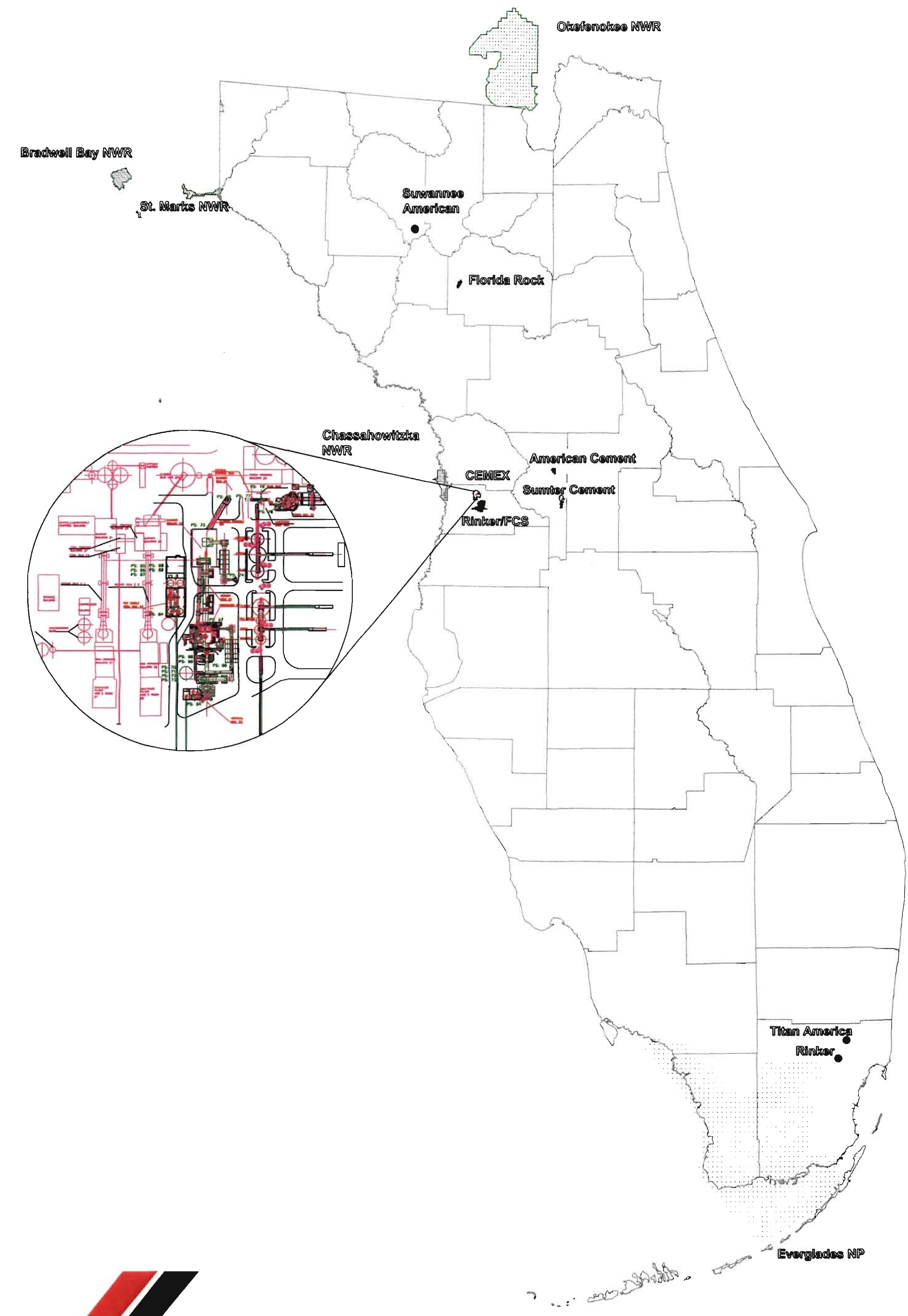
- Mixing height set to 97.2 meters (stack height)
- Mixing height set to 170.9 meters (minimum from metdata)
- Mixing height set to 411.5 meters (average from metdata)
- Mixing height set to 957.2 meters (maximum from metdata)

No effect was observed on the contrast (0.0142) or extinction (0.7271) previously reported, with the various mixing height values.

24. In the application, please indicate which plot plan shows the location of the roads that are included in the modeling analysis.

Response: A plot plan showing the location of the roads and the road volume sources is included with this response.

We are hopeful that this response letter and its attachments will make the permit application complete. If further information is required, Please contact me.


Okefenokee NWR
Bradwell Bay NWR
St. Marks NWR
Suwannee
American
Florida Rock
Chassahowitzka
NWR
American Cement
CEMEX
Sumter Cement
Rinker/FCS
Titan America
Rinker
Everglades NP

CEMEX

Cemex Cement, Inc
Brooksville Cement Plant
Proposed BACT for Kiln No. 3

PM/PM10 - Proposed BACT

The cement kiln, raw mill and the auxiliary raw mill heater will exhaust through a baghouse and the clinker cooler will exhaust through a separate baghouse. Baghouses will also be used to control particulate matter emissions from all material handling activities.

The kiln/raw mill baghouse is proposed to operate at a PM/PM10 emission rate of 0.153 pounds per ton of clinker (all assumed to be PM10) and the cooler baghouse is proposed to operate at a PM/PM10 emission rate of 0.10/0.08 pounds per ton of clinker.

The baghouses for material handling activities will operate with proposed PM/PM10 discharge concentrations of 0.01 grains of PM per dry standard cubic foot and 0.007 grains of PM_{10} per dry standard cubic foot.

SO2 - Proposed BACT

The proposed SO_2 emission limit for the kiln and raw mill is **0.20 pounds per ton of clinker, 24-hour average**. The proposed control technique is inherent absorption of SO_2 by the limestone and alkalis in the raw material, raw material management to avoid materials with organic or pyritic sulfur and good operating practices.

NOx - Proposed BACT

The proposed BACT for NO_x from the cement kiln is **1.95 lb/ton clinker, 30-day rolling average** which will be met using Selective Non-Catalytic Reduction (SNCR), low-NOx burners and kiln design. The kiln burner will be a multi-channel, low-NOx burner and the calciner burner will be supplied by KHD. This BACT limit and the associated technology has been applied to five cement plants recently permitted in Florida and the limit is the lowest established BACT limit for NOx in the U.S. There have been no operations at any plant that has demonstrated a lower limit is achievable long-term.

CO - Proposed BACT

The CO emission limit proposed as BACT is **2.9 pounds per ton of clinker, 30-day rolling average.** This will be achieved by good combustion practices, plant design, and raw materials management.

VOC - Proposed BACT

The proposed BACT limit for VOCs is **0.12 pounds per ton of clinker**, which is among the lowest BACT limits imposed in the U.S. This limit will be achieved by plant design, good combustion practices, and material management to avoid raw materials with VOC precursors.

Mercury - Proposed Limit

Mercury emissions will be limited to **190 pounds per year or to 0.00014 pounds per ton of clinker**. This mercury emission rate was established by considering the total potential mercury content of all of the raw materials and all fuels introduced to the plant and assuming all of the mercury input to the plant is released to the atmosphere through the kiln/raw mill/cooler stack. This is an overly conservative assumption because studies have shown that some mercury exits the kiln in the clinker and is incorporated into the cement product.

BACT LIMITS FOR RECENTLY PERMITTED FLORIDA CEMENT PLANTS

(All limits Expressed as pounds per ton of Clinker)

PLANT	POLLUTANT						
	PM/PM10			SO2	NOx	CO	VOC
	Kiln	Cooler	BH (gr/dscf)				
American Cement	0.153 (Kiln & Cooler)		0.01/0.007	0.20	1.95	2.9	0.12
Sumter Cement	0.153 (Kiln & Cooler)		0.01/0.0085	0.20	1.95	2.9	0.115
Rinker/FCS	0.136/0.118 (K & C)		0.01/0.007	0.23	1.95	3.6	0.12
SAC No. 2	0.17 (Kiln & Cooler)		0.0085	0.20	1.95	2.9	0.12
FRI No. 2	0.13/0.11	0.10/0.08	0.01/0.007	0.28	1.95	3.6	0.12
CEMEX	**0.153/0.153**	**0.10/0.08**	**0.01/0.007**	**0.20**	**1.95**	**2.9**	**0.12**

Trucks

All Paved

Flyash	Mill Scale	Sand
3626	1425	986

Bauxite
1425

$PM_{2.5}$ Local Conditions (88101) µg/m^3 (25 C) (001)

Site	POC	Method Code	# Obs	1st MAX	2nd MAX	3rd MAX	4th MAX	98th Percentile Value	Wtd Arith Mean	Cert
Z0530009	1	118	101	37.3 (09/16)	21.5 (09/13)	21.3 (09/04)	20.2 (10/16)	21.3	**9.78***	N

Note: The * indicates that the mean does not satisfy summary criteria.

35

Quick Look Report
2006

Report Criteria
Date Range:1/01/2006 00:00 to 12/31/2006 23:59

Site	Parameter	Interval	Valid Readings	Readings Expected
Z0530004	PM10M	001d	57	61
Z0530005	PM10M	001d	58	61
Z0530009	PM10M	001d	60	61
	PM25M	001d	116	365

Report Created:03/23/2007 13:19

PM_{10} Total 0-10um (81102) µg/m³ (25 C) (001)

Site	POC	Method Code	# Obs	Days Required	Valid Days	% Obs	1st MAX	2nd MAX	3rd MAX	4th MAX	Days Max>150	Est Days>150	Wtd Arith Mean	Cer
Z0530004	1	063	59	61	59	97%	30 (07/27)	24 (04/22)	24 (07/09)	23 (01/28)	0	0.0	15.2	Y
Z0530005	1	063	49	61	49	80%	36 (09/13)	32 (07/27)	28 (03/29)	26 (04/04)	0	0.0	**15.8***	Y
Z0530009	1	063	60	61	60	98%	36 (07/27)	36 (09/13)	30 (04/22)	27 (02/21)	0	0.0	17.8	Y

Note: The * indicates that the mean does not satisfy summary criteria.

PM_{10} Total 0-10um (81102) µg/m^3 (25 C) (001)

Site	POC	Method Code	# Obs	Days Required	Valid Days	% Obs	1st MAX	2nd MAX	3rd MAX	4th MAX	Days Max>150	Est Days>150	Wtd Arith Mean	Cer
Z0530004	1	063	57	61	57	93%	54 (08/03)	34 (11/13)	29 (04/29)	25 (03/18)	0	0.0	17.8	Y
Z0530005	1	063	58	61	58	95%	60 (08/03)	58 (11/13)	33 (05/05)	31 (04/05)	0	0.0	19.2	Y
Z0530009	1	063	60	61	60	98%	54 (08/03)	28 (03/18)	27 (06/16)	27 (08/09)	0	0.0	18.9	Y

9/5

+1,625

$PM_{2.5}$ Local Conditions (88101) µg/m^3 (25 C) (001)

Site	POC	Method Code	# Obs	1st MAX	2nd MAX	3rd MAX	4th MAX	98th Percentile Value	Wtd Arith Mean	Cert
Z0530009	1	118	116	20.0 (08/03)	19.1 (05/08)	16.7 (05/29)	16.5 (06/10)	16.7	**9.11***	N

Note: The * indicates that the mean does not satisfy summary criteria.

Quick Look Report
2005

Report Criteria
Date Range: 1/01/2005 00:00 to 12/31/2005 23:59

Site	Parameter	Interval	Valid Readings	Readings Expected
Z0530004	PM10M	001d	59	61
Z0530005	PM10M	001d	49	61
Z0530009	PM10M	001d	60	61
	PM25M	001d	101	365

Report Created:03/23/2007 13:19

NOx for the annual averaging period and PM10 for the 24-hour averaging period were modeled with appropriate inventories. The estimated impacts are less than the PSD increments and no further review for compliance with Class I PSD increments is required.

15. EPA's final 8-hour ozone implementation rule, 70 FR 71612 dated Nov. 29, 2005, amends the PSD rule, as underlined, to provide that "a major source that is major for volatile organic compounds or NOx shall be considered major for ozone." The proposed new kiln will increase NOx by 1370 TPY. Please perform or otherwise address the ambient air quality analysis for ozone.

Response: Ozone formation results from a series of reactions between NOx and VOC in the presence of sunlight. Since the potential increase in NOx emissions due to the proposed project is 1,370 TPY, the ozone ambient air quality analysis is addressed below.

NOx emissions are primarily emitted from combustion sources, such as power plants and motor vehicles. Emissions are primarily in the form of NO and are oxidized in the atmosphere to form NO_2. NO_2 concentrations in Florida during 2004 were less than 35 percent of the annual average AAQS. This is in spite of the substantial growth that Florida, and specifically, Hernando County, has experienced. Manufacturing establishments in Hernando County have increased from 19 in 1977 to 74 in 2003.

Although there are currently no ozone monitors in Hernando, there are two monitors in one of the surrounding (to the south) counties: Pasco. The Pasco county monitors indicate that the area is in currently in attainment with the 8-hour ozone AAQS standard (average from the past three years: 2004 – 2006).

Despite the substantial industrial growth that Hernando County has experienced, it has remained and is expected to remain attainment for ozone and is well below the AAQS for NO_2. In addition, the Clean Air Interstate Rule (CAIR) is projected to decrease power plant actual NO_x emissions significantly. The proposed project's potential NO_x emissions of 1,370 TPY are relatively minor compared to the amount of NO_x emissions generated by the vehicular traffic and other combustion sources. Since Florida is in attainment for ozone and well below the AAQS for NO_2, and since NO_x emissions are expected to decrease significantly throughout Florida, the proposed new cement kiln will not significantly impact ambient ozone levels in Hernando County.

16. The fence-line receptors for the increment analysis should be no greater than 50m apart. Please add appropriate receptors to the grid and update the analysis.

Response: Fenceline receptors with 50-meter spacing were used for the updated increment analyses.

17. What is the nearest distance in kilometers between the proposed Kiln 3 stack and the closest boundary to the Chassahowitzka?

24-Hour <150 µg/m³ Background = 54	78.4 µg/m³	75.6 µg/m³	77.9 µg/m³	79.2 µg/m³	81.1 µg/m³

Same inventory check? OK. out.

The Class I Area modeling was also updated with the meteorological data provided by the Department.

The Class I Increment analysis included an initial screening analysis to determine whether the new sources will have a significant impact on air quality in the Class I area. The determination was made by comparing the estimated impacts from the sources under review to the Class I "Significance Levels" proposed by EPA, as shown in the following table.

TABLE 14 – CLASS I AREA SIGNIFICANCE

Pollutant	Averaging Period	Significance Level (µg/m³)	Maximum Modeled Concentration (µg/m³)	Significant?
PM_{10}	Annual	0.2	0.12 (1991)	No
	24-hour	0.3	1.64 (1991)	Yes
Sulfur dioxide	Annual	0.1	0.02 (1991)	No
	24-hour	0.2	0.19 (1991)	No
	3-hour	1.0	0.83 (1990)	No
Nitrogen dioxide	Annual	0.1	0.20 (1991)	Yes

Reference: 61FR38292, July 23, 1996

1/13 class I receptors

As SO2 for all averaging periods and PM10 for the annual averaging period are less than significant, no further review for compliance with Class I PSD increments is required for these pollutants for these averaging times.

PM10 was modeled with the 20-D inventory provided in the initial submittal for the Class II Area to assess 24-hour impacts and a 20-D inventory was developed for NOx and was provided in the initial submittal.

PM10 (24-hr) and NOx (annual) impacts were modeled using ISC, with the proposed new sources in combination with the inventories. These impacts were compared to the Class I Area Increment. The estimated impacts, for the specified pollutants and averaging periods, were below the applicable PSD Class I Area increments.

TABLE 16 – CLASS I AREA INCREMENT ANALYSIS

	1991	1992	1993	1994	1995
NOx Annual H1H < 2.5 µg/m³	1.3 µg/m³	1.3 µg/m³	1.2 µg/m³	1.3 µg/m³	1.3 µg/m³
PM_{10} 24-Hour H2H < 8 µg/m³	4.1 µg/m³	3.5 µg/m³	4.2 µg/m³	3.7 µg/m³	4.6 µg/m³

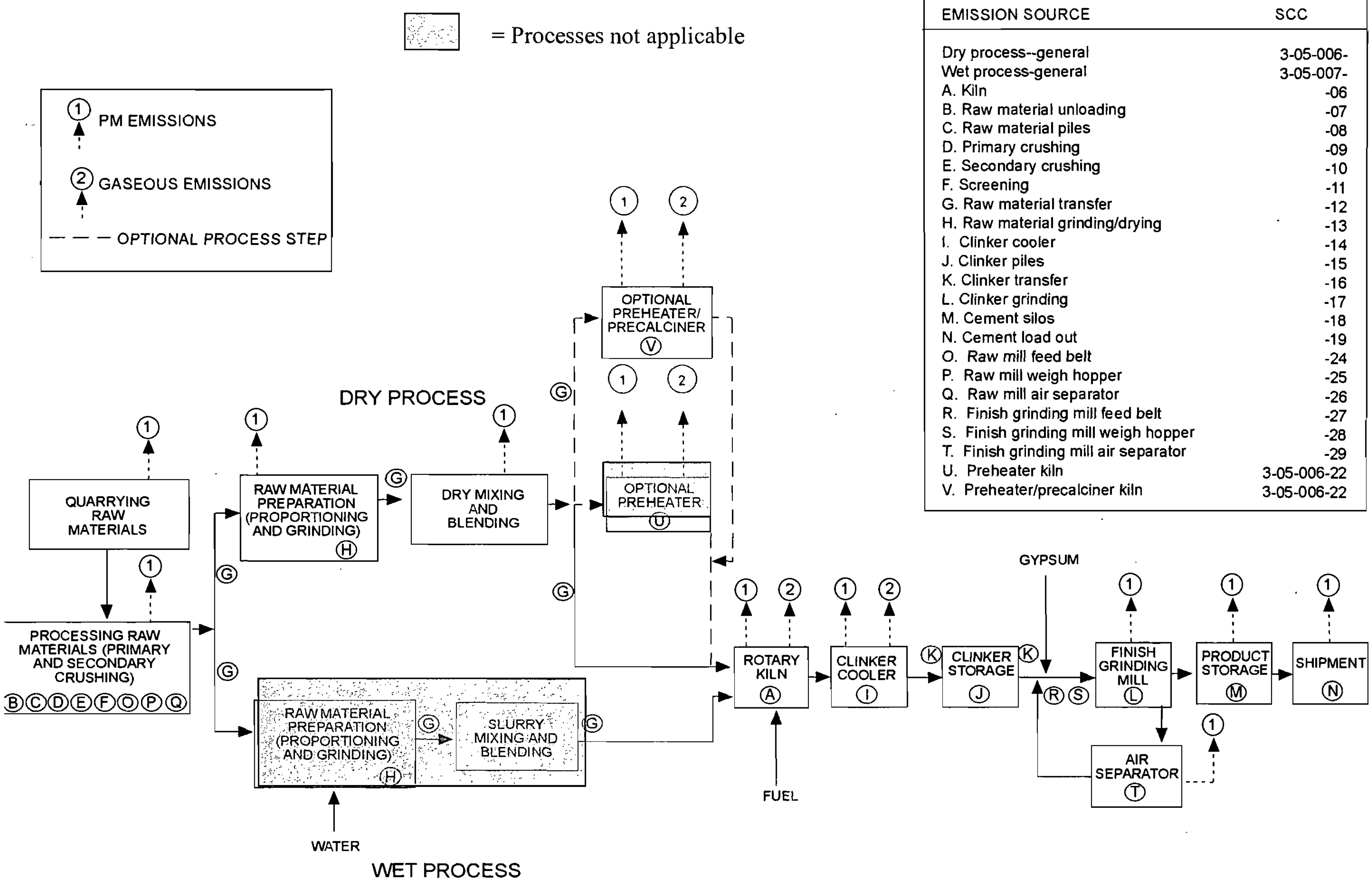
Polar
Grid
36 rings
10°
10
rings
360 total
360
500

27.25796

2.5 Process Flow Diagram

A general process flow diagram for cement manufacturing, from AP-42 section 11.6 is reproduced below.

Figure 11.6-1. Process flow diagram for portland cement manufacturing.
(SCC = Source Classification Code.)



EMISSION SOURCE	SCC
Dry process--general	3-05-006-
Wet process-general	3-05-007-
A. Kiln	-06
B. Raw material unloading	-07
C. Raw material piles	-08
D. Primary crushing	-09
E. Secondary crushing	-10
F. Screening	-11
G. Raw material transfer	-12
H. Raw material grinding/drying	-13
I. Clinker cooler	-14
J. Clinker piles	-15
K. Clinker transfer	-16
L. Clinker grinding	-17
M. Cement silos	-18
N. Cement load out	-19
O. Raw mill feed belt	-24
P. Raw mill weigh hopper	-25
Q. Raw mill air separator	-26
R. Finish grinding mill feed belt	-27
S. Finish grinding mill weigh hopper	-28
T. Finish grinding mill air separator	-29
U. Preheater kiln	3-05-006-22
V. Preheater/precalciner kiln	3-05-006-22

2.6 *Fuel Analysis or Specification*

Two emissions units include fuel combustion devices and this report provides typical fuel specifications for these fuels. The raw mill system includes an air heater, with natural gas, and distillate oil (No. 2 and No. 4) as proposed fuels. The kiln system includes coal, natural gas, distillate oil (No. 2 and No. 4), petroleum coke, tires, and used oil, as proposed fuels. Alternate fuels such as rice hulls, cotton gin, sugarcane bagasse, wood chips, vegetative fuels, corn husks, other biomass, are requested for conditional inclusion. Use will be allowed after compliance demonstration. The typical fuel specification gives the density, heat value, and percent content by weight of sulfur, nitrogen, and ash; where determined based on reasonably available information.

TABLE 1 – TYPICAL FUEL SPECIFICATIONS

Fuel	Density	Heat Value	Sulfur %	Nitrogen %	Ash %
Natural Gas[1,2]	1 lb/23.8 ft^3	1,050 Btu/ft^3	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE
Distillate Fuel Oil[A,B]	7.05 lb/gal	140,000 Btu/gal	0.2 – 1.0	<0.5	NEGLIGIBLE
Coal[A,B]	47-50 lb/ft^3	13,000 Btu/lb	0.6 – 5.4	<2	4 – 20
Used Oil[A3]	7.7 lb/gal	140,000 Btu/gal	0.0 – 4.0	<0.5	0.4 – 1.5
Petroleum Coke[A,4]	80-100 lb/ft^3	14,500 Btu/lb	1.5 – 10	<2	0.05 – 2.8
Tires[5,6]	7.4 lb/ft^3	13,500 Btu/lb	0.91 – 1.8	<0.1 – 0.3	1.5 – 25.2

2.7 *Description of Control Equipment*

2.7.1 PM/PM_{10}

Baghouses are proposed for the in-line raw mill/kiln, and for the clinker cooler. Baghouses are also proposed for the finish mill, the coal/coke mill and all material handling operations. Many

[1] AP-42, Appendix A

[2] http://www-mugc.cc.monash.edu.au/~barbie/env3627/fossilfuel.htm

[3] XERAY Systems, December 1998; Rinker, April 1996.

[4] http://pangea.stanford.edu/~lbcf/meeting/chemeng.pdf

[5] *Scrap Tire & Rubber Users Directory,* Recycling Research Institute, 1998

raw material handling operations involve material with sufficiently high moisture contents to preclude the need for add-on controls. A vacuum/sweeper truck is proposed for use at the facility to limit emissions from paved roadways.

2.7.2 NOx

Selective non-catalytic reduction (SNCR), low-NOx burners and staged combustion are proposed to achieve the BACT emissions limit for NOx.

2.7.3 SO_2, CO and VOC

Plant design, good operating practices, and materials management are proposed to control SO_2, CO and VOC emissions from the kiln/raw mill.

2.8 Description of Stack Sampling Facilities

For those proposed emissions units subject to a stack sampling requirement, the applicant will provide a description of the stack sampling facilities including sampling ports, work platforms, means of access, and equipment support structures, if required by the Department. This information, if required, will be provided after plant construction, but prior to initial compliance testing. The sampling facilities will meet the requirements of Rule 62-297.310(c), F.A.C.

3. Rule Applicability Analysis

This section identifies state, federal, and local air pollution control rules applicable to the facility and to the emissions units, based on the nature, location, design capacity, operating schedule, emissions, and other relevant information. This section also provides a detailed analysis of how the various provisions of Chapter 62-212, F.A.C. (Stationary Sources – Preconstruction Review), apply on a pollutant-by-pollutant basis, including general preconstruction review requirements, and prevention of significant deterioration (PSD) review.

---

[6] *Air Emissions Associated with the Combustion of Scrap Tires for Energy Recovery,* Malcolm Pirnie, 1991

The facility is located in an area designated as attainment for criteria air pollutants, therefore nonattainment area (NAA) new source review does not apply. The project does not include a netting analysis to avoid PSD or NAA review for one or more pollutants.

If any exemptions or special provisions of Chapter 62-212, F.A.C. apply, this section provides all information necessary for the Department to verify applicability of each such exemption or special provision.

The project does not involve relaxation of a federally enforceable limitation on the pollutant emitting capacity of the facility, and does not trigger retroactive application of PSD or NAA new source review.

3.1 Applicable Federal Requirements

The project will be subject to applicable provisions of two New Source Performance Standards (NSPS) and applicable provisions of one National Emission Standards for Hazardous Air Pollutants (NESHAP). Note also that the existing quarry is subject to NSPS; Subpart OOO: *Standards of Performance for Non-metallic Mineral Processing Plants* (40 CFR 60.670).

New Source Performance Standards (NSPS)

Subpart F: Standards of Performance for Portland Cement Plants (40CFR60.60)

- Superseded by NESHAP Subpart LLL

Subpart Y: Standards of Performance for Coal Preparation Plants (40CFR60.250)

- For coal handling and coal mills

National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP Subpart LLL: Standards of Performance for Portland Cement Plants (40CFR63.1340)

- Subject as a Greenfield major source

NOTE: The facility is presumed major for HAPS.

3.2 Rule 62-212.300 – General Preconstruction Review

This section discusses the requirements of Rule 62-212.300. This rule applies to the proposed construction of the emissions units described in the application for an air construction permit, pursuant to Rule 62-210.300(1), F.A.C.

3.2.1 Rule 62-212.300(1) – General Prohibitions

(a) Air Construction Permit Required

No emissions unit or facility subject to this rule will be constructed or modified without obtaining an air construction permit from the Department in accordance with the requirements of Rule 62-212.300(3), F.A.C. This report accompanies an application for an air construction permit.

(b) Ambient Air Quality Standards

The proposed construction of the emissions units at the facility will not cause or contribute to a violation of any ambient air quality standard. The ambient impact analysis section of this report provides all required documentation. The facility is not located in a nonattainment area or area of influence.

(c) Baseline Areas

The construction of the emissions units at the facility will not cause or contribute to an ambient concentration at any point within a baseline area that exceeds either the appropriate baseline concentration for the point plus the appropriate maximum allowable increase or the appropriate ambient air quality standard, whichever is less.

For this project the baseline area is the PSD Class II area, and the maximum allowable increases are the PSD Class II increments. The ambient impact analysis section of this report provides all required documentation.

3.2.2 Rule 62-212.300(2) – Applicability

(a) Relationship of General Preconstruction Review Requirements to Other Preconstruction Review Requirements

The requirements of Rule 62-212.300, F.A.C., apply to the proposed project in addition to other preconstruction review requirements under Rules 62-204.800(8) [NSPS] and (10) [NESHAP], as described above.

Rule 62-212.400 also applies, and compliance with the requirements is detailed below. Rules 62-212.500 and 62-212.600, F.A.C. are not applicable to the proposed project.

(b) Pollutants Subject to General Preconstruction Review

The pollutants subject to the general preconstruction review requirements of this rule are those pollutants not subject to preconstruction review under Rule 62-204.800 or 62-212.400, F.A.C.

The pollutants subject to Rule 62-204.800, F.A.C. (NSPS & NESHAPS) include PM, PM_{10}, opacity, dioxin/furan, and THC. The pollutants subject to Rule 62-212.400, F.A.C. (PSD) include PM, PM_{10}, SO_2, NOx, CO, and Ozone (VOC),

The pollutants subject to general preconstruction review include the following:

- Sulfuric acid mist
- Fluorides
- Lead
- Mercury
- Any single HAP
- Total HAP

3.2.3 Rule 62-212.300(3) – Permitting Requirements

(a) Required Information

In this report and accompanying application, the applicant for an air construction permit is providing the Department with the following information:

1. The nature and amounts of emissions from each emissions unit. This information is included in the application.

2. The location, design, construction, and operation of each emissions unit to the extent necessary to allow the Department to determine whether construction of the emissions unit would result in violations of any applicable provisions of Chapter 403, Florida Statutes, or Department air pollution rules, or whether the construction would interfere with the attainment and maintenance of any state or national ambient air quality standard. This information is included in the application and in this report.

(b) Information Required by 40 CFR 63.43(e)

This project does not include emissions units subject to 40 CFR 63.43(e), *Application Requirements for a Case-by-case MACT Determination.* This requirement is found at Rule 62-204.800**(11)**(d)2., F.A.C., not at Rule 62-204.800(10)(d)2., F.A.C.

NESHAP Subpart LLL is applicable, and obviates the need for a case-by-case determination.

3.3 Rule 62-212.400 – Prevention of Significant Deterioration

This section discusses the requirements of Rule 62-212.400(1)-(6). Please note that Rules 62-212.400(7), (8) and (9) do not contain substantive requirements for the applicant. The provisions of this rule generally apply to the construction of air pollutant emitting facilities in those parts of the state in which the state ambient air quality standards are being met. The provisions of this rule also establish various requirements for existing emissions units and facilities in such areas, including specific construction/operation permit requirements.

3.3.1 Rule 62-212.400(1) – General Prohibitions

(a) Ambient Air Quality Standards

The proposed construction of the emissions units at the facility will not cause or contribute to a violation of any ambient air quality standard. The ambient impact analysis section of this report provides all required documentation. The facility is not located in a nonattainment area or area of influence.

(b) Baseline Areas

The construction of the emissions units at the facility will not cause or contribute to an ambient concentration at any point within a baseline area that exceeds either the appropriate baseline concentration for the point plus the appropriate maximum allowable increase or the appropriate ambient air quality standard, whichever is less.

3.3.2 Rule 62-212.400(2) – Applicability

This section establishes that the proposed project is subject to the PSD preconstruction review requirements of this rule.

(a) Facility and Project Exemptions

As detailed below, the proposed project does not qualify for any of the exemptions of Rule 62-212.400(2)(a), F.A.C.

The modified facility will not be a nonprofit health or nonprofit educational institution. The proposed project is not being added, replaced, or used at an existing electric utility steam generating unit. The proposed project is not being undertaken for the purpose of complying with the hazardous air pollutant emission reduction requirements of 40 CFR Part 63, Subpart S, adopted and incorporated by reference at Rule 62-204.800, F.A.C. The proposed project is not being undertaken for the purpose of complying with the non-methane organic compound emission reduction requirements of 40 CFR Part 60, Subpart Cc or WWW, adopted and incorporated by reference at Rule 62-204.800, F.A.C. The proposed project is not the installation, operation, cessation, or removal of a temporary clean coal technology demonstration project that meets the requirements of 40 CFR 52.21(b)(2)(iii)(i), adopted and incorporated by reference at Rule 62-204.800, F.A.C. The proposed project is not the installation or operation of a permanent clean coal technology demonstration project that constitutes repowering. The proposed project is not the reactivation of a very clean-coal fired electric utility steam generating unit, as defined under 40 CFR 52.21(b)(38), adopted and incorporated by reference at Rule 62-204.800, F.A.C.

(b) Fugitive Emissions Exemption

As detailed below, the proposed project does not qualify for the exemption of Rule 62-212.400(2)(b), F.A.C.

The facility belongs to one of the facility categories listed in Table 212.400-1, Major Facility Categories (Portland Cement Plants), as shown in the following table.

TABLE 2 – MAJOR FACILITY CATEGORIES (LIST OF 28)

Fossil fuel fired steam electric plants of more than 250 million Btu/hr heat input
Coal cleaning plants (with thermal dryers)
Kraft pulp mills
PORTLAND CEMENT PLANTS
Primary zinc smelters
Iron and steel mill plants
Primary aluminum ore reduction plants
Primary copper smelters
Municipal incinerators capable of charging more than 250 tons of refuse per day
Hydrofluoric acid plants
Sulfuric acid plants
Nitric acid plants
Petroleum refineries
Lime plants
Phosphate rock processing plants
Coke oven batteries
Sulfur recovery plants
Carbon black plants (furnace process)
Primary lead smelters
Fuel conversion plants
Sintering plants
Secondary metal production plants
Chemical process plants
Fossil fuel boilers (or combinations thereof) totaling more than 250 MMBtu/hr heat input
Petroleum storage and transfer units with total storage capacity exceeding 300,000 barrels
Taconite ore processing plants
Glass fiber processing plants
Charcoal production plants

Reference: Table 62-212.400-1, F.A.C.

$$\_\_\_ \frac{lb}{hr} = \frac{1370\,T}{yr} \times \frac{1\,yr}{8766\,hrs} \times \frac{2000\,lbs}{1\,ton}$$

(c) Alternative Fuel or Raw Material Exemption

As detailed below, the proposed project does not qualify for the exemption of Rule 62-212.400(2)(c), F.A.C.

The proposed project does not include the use of an alternative fuel or raw material by reason of any order under Sections 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 or the Power Plant and Industrial Fuel Use Act of 1978, or by reason of a natural gas curtailment plan pursuant to the Federal Power Act. The proposed project does not include the use of an alternative fuel by reason of an order or rule under Section 125 of the Act. The proposed project is not at a steam generating unit using municipal solid waste as fuel. The proposed project does not include the use of an alternative fuel or raw material which the facility was capable of accommodating before January 6, 1975. The proposed project does not include the use of an alternative fuel or raw material which the facility is approved to use under any permit issued under 40 CFR 52.21 or Rule 17-2.500 (transferred) or 62-212.400, F.A.C.

(d) New and Modified Facilities

The project is not a proposed new minor facility. The proposed project is a major modification to a major facility. The proposed project is not exempted under Rule 62-212.400(2)(a), (b) or (c), F.A.C. ; and is subject to the PSD preconstruction review requirements of Rule 62-212.400, F.A.C.. The project will result in a significant net emissions increase (as set forth in Rule 62-212.400(2)(e)2., F.A.C.) of certain pollutants regulated under the Act, as shown in the table below.

TABLE 3 – REGULATED AIR POLLUTANTS SIGNIFICANT EMISSION RATES

Pollutant	Significant Emission Rate (Tons/Year)	Project Emission Rate (Tons/Year)	PSD ?
Carbon monoxide	100	2037	YES
Nitrogen oxides	40	1370	YES
Sulfur dioxide	40	141	YES
Ozone	40 VOC	84 VOC	YES

Particulate matter	25	358	YES
PM_{10}	15	290	YES
Sulfuric acid mist	7	<<1	NO
Fluorides	3	0.6	NO
Lead	0.6	0.1	NO
Mercury	0.1	0.095	NO

Reference: Table 62-212.400-2, F.A.C.

The facility to be modified is not located within 10 kilometers of a Class I area. Ambient impacts to Class I areas are addressed in the ambient impact analysis of this report.

(e) Emissions Increases

The proposed project results in net emissions increases for pollutants regulated under the Act. No contemporaneous creditable decreases in actual emissions are requested for this project. Creditable increases from the project itself and increases in quantifiable fugitive emissions are greater than zero.

The proposed project results in significant net emissions increases for certain pollutants regulated under the Act. The net emissions increases are greater than the applicable significant emission rate listed in Table 212.400-2, Regulated Air Pollutants – Significant Emission Rates, for the following pollutants:

- Carbon Monoxide
- Nitrogen Oxides
- Sulfur Dioxide
- Ozone (as VOC)
- Particulate Matter (total)
- Particulate Matter (<10 microns)

The date on which any increase in the actual emissions or in the quantifiable fugitive emissions of the facility occurs is the date on which the owner or operator of the facility begins, or projects to begin, operation of the emissions units resulting in the increase. No decreases in the actual emissions or in the quantifiable fugitive emissions of the facility are considered for this project.

(f) Pollutants Subject to PSD Preconstruction Review

The preconstruction review requirements of Rule 62-212.400, F.A.C. apply to all pollutants regulated under the Act for which the sum of the potential emissions and the quantifiable fugitive emissions of the facility would be equal to or greater than the significant emission rates listed in Table 212.400-2, Regulated Air Pollutants – Significant Emission Rates, as shown in the preceding section.

The facility is not located within 10 kilometers of a Class I area. The facility is not located in an area designated as nonattainment for any pollutant other than ozone under Rule 62-204.340, F.A.C. The facility is not located in an ozone nonattainment area.

(g) Relaxations of Restrictions on Pollutant Emitting Capacity

The proposed project is not subject to the preconstruction review requirements of this rule solely by virtue of a relaxation in any federally enforceable limitation on the capacity of the facility to emit a pollutant (such as a restriction on hours of operation).

3.3.3 Rule 62-212.400(3) – Limited Exemptions and Special Provisions

The provisions of Rule 62-212.400(3), F.A.C. establish exemptions and exclusions from certain of the General Provisions of Rule 62-212.400(4), F.A.C., and PSD Review Requirements of Rule 62-212.400(5), F.A.C.

(a) Relocatable Facilities

The proposed facility is not a relocatable facility.

(b) Voluntary Fuel Conversions (Reserved)

(c) Temporary Emissions

No temporary emissions exemptions are being claimed.

(d) Modifications Under Fifty Tons Per Year

The net emissions increases are greater than 50 tons per year for each pollutant.

(e) General Ambient Monitoring Exemption

The general ambient monitoring exemption is discussed in the ambient impact analysis section of this report.

(f) Temporary Exclusions From Increment Consumption

Concentrations of particulate matter attributable to the increase in emissions from construction or other temporary emission-related activities of new or modified facilities shall be excluded in determining compliance with any maximum allowable increase.

By an Order issued by the Secretary, the following ambient concentrations shall be excluded in determining compliance with any maximum allowable increase, provided the addition of such concentrations shall not cause or contribute to a violation of any ambient air quality standard. No exclusion of such concentrations shall apply more than five years after the effective date of the latest applicable plan or order as set forth in Rule 62-212.400(3)(f)2.a. or b., F.A.C.

- The facility has not converted from the use of petroleum products, natural gas, or both by reason of an order in effect under Sections 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 or the Power Plant and Industrial Fuel Use Act of 1978.
- The facility has not converted from using natural gas by reason of a natural gas curtailment plan in effect pursuant to the Federal Power Act.

The facility is not affected by SIP revisions approved by the Administrator.

By an Order issued by the Secretary, concentrations attributable to any federally enforceable interim allowable emissions resulting from the use of innovative control technology that are in excess of the final allowable emissions based on the application of BACT, shall be excluded in determining compliance with any maximum allowable increase, provided such Order shall:

a. Specify the time period over which the interim allowable emissions would occur (such time period shall not exceed four years, however such Order may be renewed for a period not to exceed an additional three years if the innovative control technology fails and the additional time period is needed to apply BACT through a demonstrated system of control).
b. Allow no emissions that would:
    (i) Have a significant impact on any Class I area or area where an applicable maximum allowable increase is known to be violated; or
    (ii) Cause or contribute to a violation of any ambient air quality standard.
c. Require limitations to be in effect by the end of the time period specified in Rule 62-212.400(3)(f)4.a., F.A.C., above, which would ensure that the emission levels from the emissions units using the innovative control technology would not exceed those that are equivalent to the application of BACT.

(g) Permanent Exclusions From Increment Consumption

The increase in ambient concentrations attributable to new emissions units outside the United States over the concentrations attributable to emissions units which are included in the baseline emissions shall be excluded in determining compliance with any maximum allowable increase.

3.3.4 Rule 62-212.400(4) – General Provisions

(a) Facilities Affecting Class I Areas

The Department shall comply with the additional notification requirements of Rule 62-210.350(2)(h), FAC, for a proposed new facility that would be located within 100 kilometers of, or whose emissions may affect, any Federal Class I area.

The Federal Land Manager of any lands contained in a Class I area which may be affected by emissions from a proposed facility may demonstrate to the Department that the emissions from the proposed facility would have an adverse impact on the air quality-related values (including visibility) of the Federal Class I area, notwithstanding that the change in air quality resulting from emissions from such facility would not cause or contribute to concentrations which would exceed any maximum allowable increase for a Class I area.

If this demonstration is received by the Department within thirty (30) days after the Department has mailed or transmitted to the Federal Land Manager a complete application pursuant to Rule 62-210.350(2)(b), FAC, it shall be considered in the Department's preliminary determination and proposed agency action on the permit application. If this demonstration is received within the public comment period on the Department's proposed agency action, it shall be considered in the Department's final determination and final agency action on the permit application.

If the Department finds that the Federal Land Manager's analysis does not demonstrate to the Department's satisfaction that an adverse impact on the air quality related values (including visibility) of a Class I area would occur, a written explanation of the reasons for such finding shall be included in the Department's preliminary or final determination as provided in Rule 62-212.400(4)(a)2.b., FAC. If the Department is satisfied that the Federal Land Manager has demonstrated an adverse impact on the air quality related values (including visibility) of a Class I area, the Department shall not issue the permit.

(b) Baseline Related Provisions

The establishment of a minor source baseline date for a pollutant establishes the baseline area for that pollutant based on the designations of individual prevention of significant deterioration (PSD) areas under Rule 62-204.360, F.A.C. The boundary of the baseline area may be changed only by redesignating the boundaries of the affected PSD areas in accordance with the redesignation provisions of Rule 62-204.320, F.A.C. The minor source baseline date for an area may be disestablished or changed as the result of such redesignation of PSD areas.

The establishment of a baseline area requires the determination of the baseline emissions that affect the baseline area. The baseline emissions are determined for each pollutant for which maximum allowable increases are established under Rule 62-204.260, F.A.C., and are used to compute the baseline concentration levels for each point within the baseline area. The baseline concentration is the ambient concentration value to which the applicable maximum allowable increase is added to determine the maximum allowable ambient concentration for each point within the area.

(c) Ambient Monitoring Quality Assurance Requirements

If ambient monitoring is required, the applicant for the proposed facility will meet the requirements of 40 CFR Part 58, Appendix B, during the operation of ambient air quality monitoring stations required pursuant to the provisions of Rule 62-212.400(5)(f) or (g), F.A.C.

3.3.5 Rule 62-212.400(5) – Preconstruction Review Requirements

(a) General

The proposed project subject to the preconstruction review requirements of this subsection shall be reviewed and permitted in accordance with the provisions of Rules 62-212.400(5)(b) through (h), F.A.C., below, unless specifically exempted from one or more of those requirements pursuant to Rule 62-212.400(3), F.A.C., Exemptions and Exclusions.

The applicant will not begin construction prior to obtaining a permit to construct in accordance with all applicable provisions of this rule and Rule 62-210.300, F.A.C.

(b) Technology Review

The proposed facility will comply with all applicable emission limitations.

(c) Best Available Control Technology

The proposed facility will apply Best Available Control Technology (BACT) for each pollutant subject to preconstruction review requirements as set forth in Rule 62-212.400(2)(f), F.A.C.

(d) Ambient Impact Analysis

The owner or operator of the proposed facility is demonstrating to the Department that the increase in federally enforceable allowable emissions from the proposed project, together with all other applicable increases and decreases in emissions resulting from the construction (including secondary emissions), will not cause or contribute to a violation of any ambient air quality standard or maximum allowable increase.

(e) Additional Impact Analyses

The owner or operator of the proposed facility is providing the Department with the required additional impact analyses. The analyses were carried out using EPA-approved methods. These requirements are addressed in the additional impact analyses section of this report.

(f) Preconstruction Air Quality Monitoring and Analysis

This requirement is addressed in the ambient impact analysis section of this report.

(g) Postconstruction Monitoring

The applicant is requesting that the Department waive the discretionary requirement for postconstruction air quality monitoring.

(h) Permit Application Information Required

The applicant is submitting this report and a completed application form to the Department. These documents provide the following information to the Department:

1. A description of the nature, location, design capacity and typical operating schedule of the facility, including specifications and drawings showing its design and plant layout;

2. A detailed schedule for construction (this will be provided prior to the initiation of construction);

3. A detailed description of the system of continuous emissions reduction proposed as BACT, emissions estimates and any other information as necessary to determine that BACT would be applied;

4. Information relating to the air quality impact of the facility, including meteorological and topographical data necessary to estimate such impact;

5. Information relating to the air quality impacts of, and the nature and extent of, all general commercial, residential, industrial and other growth which has occurred since August 7, 1977, in the area the facility would affect; and

6. A good-engineering-practice stack height, or other dispersion techniques, analysis to demonstrate compliance with Rule 62-210.550, FAC.

Project Description

The application and this report provide a description of the nature, location, design capacity and typical operating schedule of the facility, including general specifications and drawings showing proposed plant layout.

Construction Schedule

This section of the report provides a tentative schedule for construction of the facility. For the purposes of this report, the construction schedule assumes the construction permit will be issued prior to January 2007. The applicant requests that the air construction permit be issued for 5 years, to allow for any unanticipated delays.

January 2007:

- Contractor selection
- Engineering Plans and specifications

July 2007:

- Site work and foundations
- Contractor mobilization

January 2008:

- Major equipment delivery
- Equipment erection

July 2008:
- Final equipment erected
- Component tie-in
- Control/Instrument set up

December 2008:
- Equipment check
- Raw material/Fuel delivery
- Electrical shake out
- Commissioning

BACT Proposal

The BACT section of this report (Section 6.) provides a detailed description of the system of continuous emissions reduction proposed as BACT, and includes emissions estimates and any other information as necessary to determine that BACT would be applied to the facility.

Ambient Impact Analysis

The ambient impact analysis section of this report provides information relating to the air quality impact of the facility, including meteorological and topographical data necessary to estimate such impact.

Growth since 1977

This section of the report provides information relating to the air quality impacts of, and the nature and extent of, all general commercial, residential, industrial and other growth which has occurred since August 7, 1977, in the area the facility would affect.

For the purposes of this report, the area the facility will affect is defined as the area of significant impact. For conservatism, the area of significant impact is based on high-first-high concentrations. The largest area of significant impact is for PM_{10}, 24-hour average, and is the area within a 7-kilometer radius of the plant. This area is sparsely populated, and generally supports mining and agricultural land uses. The closest contiguous county (Citrus County) is less than 7 kilometers from the project's main stack. Sumter County is greater than 19 kilometers from the site. A review of growth parameters for Hernando County and Citrus County is provided below.

Hernando County has experienced substantial growth since 1977. The population was 44,469 in 1980 and was 158,409 in 2005. Total housing units increased from 22,541 in 1980 to 72,953 in 2005. Employment increased in the civilian labor force from 13,641 in 1980 to 26,588 in 2005. Manufacturing establishments increased from 19 in 1977 to 74 in 2003, while retail trade establishments increased from 312 in 1977 to 407 in 2002.

Citrus County has experienced similar substantial growth since 1977. The population was 54,703 in 1980 and was 134,370 in 2005. Total housing units increased from 29,195 in 1980 to 70,149 in 2005. Employment increased in the civilian labor force from 15,447 in 1980 to 25,194 in 2005. Manufacturing establishments increased from 29 in 1977 to 63 in 2003, while retail trade establishments increased from 420 in 1977 to 492 in 2002.

The air impacts from this growth are addressed with the background air quality concentrations, when comparing with the ambient air quality standards.

Good Engineering Practice Stack Height

Good engineering practice stack height is addressed in the ambient impact analysis section of this report.

3.3.6 Rule 62-212.400(6) – Best Available Control Technology

(a) BACT Determination

Following receipt of a complete application for a permit to construct an emissions unit or facility which requires a determination of Best Available Control Technology (BACT), the Department shall make a determination of Best Available Control Technology during the permitting process.

(b) Phased Construction Projects

For phased construction projects, the determination of BACT shall be reviewed and modified in accordance with 40 CFR 51.166(j)(4), adopted and incorporated by reference in Rule 62-204.800, F.A.C. The proposed facility is not presented as a phased construction project.

(c) Use of Innovative Control Technology

With the consent of the Governor(s) of other affected state(s), the Department shall approve, through the permitting process, the use of a system of innovative control technology if the proposed system would comply with the requirements of 40 CFR 51.166(s)(2)(i) through (v).

(d) Test Methods and Procedures

All emissions tests performed pursuant to the requirements of this rule will comply with the following requirements.

Pollutants for Which a Standard has Been Established Pursuant to 40 CFR Part 60, 40 CFR Part 61, or 40 CFR Part 63

The test methods shall be as specified in 40 CFR Part 60, Appendix A, 40 CFR Part 61, Appendix B, or 40 CFR Part 63, Appendix B, adopted and incorporated by reference in Rule 62-204.800(7), (8), (9), F.A.C.

Pollutants for Which No Standard has Been Established Pursuant to 40 CFR 60, 40 CFR 61, or 40 CFR 63

The test methods shall be as specified in the BACT determination.

4. Ambient Impact Analysis

The proposed project is subject to PSD review, and this section of the report provides a demonstration in accordance with the provisions of Rule 62-212.400(5)(d), F.A.C., that the increase in emissions from the proposed project, together with all other increases and decreases in emissions resulting from the construction (including secondary emissions), will not cause or contribute to a violation of any ambient air quality standard or maximum allowable increase (PSD increment). The project submittal includes all input and output files necessary for the Department to verify proper application of the air quality models used for ambient impact analysis.

The EPA and the State of Florida have adopted ambient air quality standards (AAQS). Primary AAQS protect the public health while secondary AAQS protect the public welfare from adverse effects of air pollution. Areas of the country have been designated as attainment or nonattainment for specific pollutants. Areas not meeting the AAQS for a given pollutant are designated as nonattainment areas for that pollutant. Any new source or expansion of existing sources in or near these nonattainment areas are subject to more stringent air permitting requirements. Projects proposed in attainment areas are subject to air permit requirements that would ensure continued attainment status.

In promulgating the 1977 CAA Amendments, Congress quantified concentration increases above an air quality baseline for sulfur dioxide and particulate matter that would constitute significant deterioration. The size of the allowable increment depends on the classification of the area in which the source would be located or have an impact. Class I areas include specific national parks, wilderness areas and memorial parks. Class II areas are all areas not designated as Class I areas and Class III areas are industrial areas in which greater deterioration than Class II areas would be allowed. There are no Class III areas in Florida.

In 1988, EPA promulgated PSD regulations for nitrogen oxides and PSD increments for nitrogen dioxide concentrations. FDEP adopted the nitrogen dioxide increments in July 1990.

A source impact analysis is required for the proposed project for each pollutant for which the increase in emissions exceeds the significant net emissions increase. Specific atmospheric dispersion models are required in performing the impact analysis. The analysis demonstrates the project's compliance with AAQS and allowable PSD increments. The modeling demonstrated compliance with all applicable standards, including Ambient Air Quality Standards (AAQS), PSD Class II increments, and PSD Class I increments.

4.1 Applicable Pollutants

The PSD air quality evaluation for the proposed major facility addresses the pollutants for which the proposed annual yearly emissions exceed any of the designated significant net emission increases. The proposed facility results in significant net emissions increases for certain pollutants regulated under the Act. The net emissions increases are greater than the applicable significant emission rate listed in Table 212.400-2, Regulated Air Pollutants – Significant Emission Rates, for the following pollutants:

- Carbon Monoxide
- Nitrogen Oxides
- Sulfur Dioxide
- Ozone (as VOC)
- Particulate Matter (total)
- Particulate Matter (<10 microns)

Both the applicable National Ambient Air Quality Standards (NAAQS) and the PSD increments are subject to air quality analyses in this PSD review. The following table lists the applicable ambient standards and increments, as relevant to this project.

TABLE 4 – PSD INCREMENTS AND NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)
Expressed in $\mu g/m^3$

Pollutant	Averaging Period	Primary NAAQS	Secondary NAAQS	PSD Class II Increment	State Ambient Standard	PSD Class I Increment
SO_2	3-Hour	None	1300	512	1300	25
	24-Hour	365	None	91	260	5
	Annual	80	None	20	60	2
PM_{10}	24-Hour	150	150	30	150	8
	Annual	50	50	17	50	4
NO_2	Annual	100	100	25	None	2.5
CO	1-Hour	40,000	40,000	None	40,000	None
	8-Hour	10,000	10,000	None	10,000	None
O_3	1-Hour	235	235	None	None	None
	8-Hour	157	157	None	None	None
	Daily	None	None	None	235	None

4.2 Source Information

The PSD Air Quality analysis includes source information. A map showing the location of the sources under review is provided. A scaled map of the facility clearly delineating the locations of all sources modeled, all buildings considered in the downwash analysis, and plant property boundaries is provided. Building sizes and shapes on the map are drawn to scale.

Rural dispersion coefficients were used in the modeling, as the surrounding area can be classified as rural. The modeling input files identify all baseline and increment sources used in the modeling, including all applicable stack parameters (UTM coordinate locations, emission rate, height, exit velocity, exit temperature and inside diameter) and volume source parameters (emission rate, center coordinates, height, horizontal and vertical dimensions).

4.2.1 Good Engineering Practice (GEP) Review

A GEP review was conducted for each proposed new source to determine if building downwash effects needed to be included in the modeling and to determine the appropriate stack heights to be used with the models. Listed below are the steps conducted in performing this review.

The dimensions (length, width, height) of all structures at the facility were acquired. Tiered structures, if any, were considered as separate buildings. A scaled plant diagram showing the location of each structure and stack is included in this submittal. EPA has developed a program called Building Profile Input Program (BPIP) that was used to generate direction-specific building dimensions.

In accordance with Chapter 62-210, FAC, the degree of emission limitation required for control of any pollutant is not to be affected by a stack height that exceeds GEP, or any other dispersion technique. The criteria for good engineering practice stack height in FAC Rule 62-210.550 states that the height of a stack should not exceed:

- 65 meters (m), or
- A height established by applying the formula:

$$H_g = H + 1.5\,L$$

where:

H_g	=	GEP stack height,
H	=	Height of the structure or nearby structure, and
L	=	Lesser dimension, height or projected width of nearby structure

The GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height. The actual stack height may be higher or lower. This stack height policy is designed to prevent achieving ambient air quality goals solely through the use of excessive stack heights and air dispersion.

The nearby structure for the proposed facility's main stack is the preheater tower. The main stack height will be 319 feet (97.2 meters).

Preheater tower height = 322 feet (98 meters)
Preheater tower width = 102 feet (31 meters)

Therefore, GEP stack height is described by

Hg = H + 1.5L, or Hg = 98 + 46.5 = 144.5 meters = 474 feet

The proposed stack height is less than the GEP stack height and was used for air quality modeling.

GEP stack height was also determined by the BPIP building downwash model. The following table shows that all stacks for the proposed facility are less than GEP stack height. The proposed stack heights were therefore used in air quality modeling.

TABLE 5 – GEP STACK HEIGHT RESULTS TABLE

(Output Units: meters)

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE

(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
PS61	3.70	0.00	157.50	157.50
PS62	3.70	0.00	165.86	165.86
PS65	27.40	0.00	175.41	175.41
PS63	27.40	0.00	176.74	176.74
PS64	27.40	0.00	176.74	176.74
PS64A	27.40	0.00	176.23	176.23
PS64AA	27.40	0.00	176.74	176.74
PS61A	15.20	0.00	172.52	172.52
PS62A	25.90	0.00	175.12	175.12
PS66	11.00	0.00	176.74	176.74
PS69	72.20	0.00	176.74	176.74
PS70	72.20	0.00	176.74	176.74
PS71	14.90	0.00	176.74	176.74
PS72	12.80	0.00	176.74	176.74
PS72A	11.00	0.00	176.74	176.74
PS73	112.20	0.00	176.74	176.74
PS74	50.60	0.00	172.27	172.27
PS67	97.20	0.00	176.74	176.74
PS68	23.20	0.00	176.74	176.74
PS75	3.70	0.00	159.10	159.10
PS76	46.30	0.00	167.39	167.39
PS77	7.00	0.00	161.67	161.67
PS78	45.40	0.00	157.50	157.50
PS79	46.90	0.00	157.50	157.50
PS80	18.90	0.00	157.50	157.50
PS78G	31.10	0.00	164.13	164.13
PS78S	27.70	0.00	160.80	160.80
PS78L	27.70	0.00	157.50	157.50
PS78GO	9.40	0.00	164.13	164.13
PS78SO	9.40	0.00	160.36	160.36
PS78LO	9.40	0.00	157.50	157.50
PS81	64.60	0.00	170.38	170.38
PS82A	64.60	0.00	173.59	173.59
PS83A	64.60	0.00	171.63	171.63
PS82	12.50	0.00	173.51	173.51
PS83	12.50	0.00	171.51	171.51
PS84	9.10	0.00	175.07	175.07
PS84A	28.00	0.00	176.74	176.74
PS87	50.90	0.00	176.74	176.74
PS88	28.00	0.00	176.74	176.74
PS89	28.00	0.00	176.74	176.74
PS85	33.20	0.00	176.74	176.74
PS86	33.20	0.00	176.74	176.74

4.3 Meteorological Data

Five years of representative meteorological data (metdata) was used for the modeling. For the ISC modeling, surface data from Tampa, Florida was used with upper air data from Tampa, Florida for the period 1986-1990. These data were provided by the Department for a previous project. These data are considered representative of site conditions.

Please note that a single datum element was changed in the 1989 metdata. The data had shown a rural mixing height of 0.1 meters for hour 7 on March 1, 1989. All other data points for this parameter were much larger, with an observed minimum during that general time frame of approximately 120 meters. The mixing height from the previous hour was used to persist the condition.

4.4 Modeling Methodology

4.4.1 Applicable Models

The air quality models used are those listed in the "Guideline on Air Quality Models", 40 CFR Part 51 Appendix W. All air quality analyses were performed using the current available versions of EPA guideline models. For ISC, version 02035 was used. For PLUVUE II, version 96170 was used.

4.4.2 Significant Impact Area Determination Modeling

a. Significant Impact Area

Determination of the Significant Impact Area (SIA) was based on modeling of the proposed major project only. New sources were modeled at their future maximum allowable emission rate. SIA determination modeling was performed with the ISCST3 model in default mode with five years of representative meteorological data. Building downwash was also included.

Receptor elevations were not considered in the modeling because the terrain in the modeling domain is mostly flat to gently rolling. The mixed Cartesian/polar grid used with this modeling shows the distance to where highest (high, first-high) short-term and long-term ambient concentrations fall below the appropriate significance levels. For this report, this distance is called the critical distance. The SIA is defined as a circular area centered on the proposed source with a radius equal to the critical distance. The SIA was established for every averaging period of every applicable pollutant for every year of meteorological data. The SIA, for each applicable pollutant, over which NAAQS and increment compliance modeling is performed, is the largest of these areas.

Modeling to determine significance was conducted using facility fenceline receptors with 100-meter spacing and discrete receptors on a polar grid with radial rings using 10 degree spacing. The network extended from 2 kilometers to 10 kilometers, with an initial interval of 100-meters, increasing to an interval of 1 kilometer.

Where predicted concentrations are below the significance levels for a given pollutant, no further modeling is required for that pollutant. The following table shows the significance levels in the Class II area.

TABLE 6 – SIGNIFICANT AMBIENT AIR QUALITY IMPACTS FOR CLASS II AREAS

Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
SO_2	1 $\mu g/m^3$	5 $\mu g/m^3$	--	25 $\mu g/m^3$	--
PM_{10}	1 $\mu g/m^3$	5 $\mu g/m^3$	--	--	--
NO_2	1 $\mu g/m^3$	--	--	--	--
CO	--	--	500 $\mu g/m^3$	--	2000 $\mu g/m^3$

The following table shows the SIA for each year and averaging period for each pollutant.

TABLE 7 – EVALUATION OF SIGNIFICANT IMPACTS FOR CLASS II AREAS

		1986	1987	1988	1989	1990
SO_2	Annual	Less than significant: Maximum impact = 0.06976 $\mu g/m^3$ [1989]				
	24-Hour	Less than significant: Maximum impact = 0.97588 $\mu g/m^3$ [1987]				
	3-Hour	Less than significant: Maximum impact = 5.67632 $\mu g/m^3$ [1989]				
PM_{10}	Annual	3 km	3 km	3 km	3 km	3 km
	24-Hour	7 km	5 km	5 km	5 km	5 km

NO_2	Annual	Less than significant: Maximum impact = 0.87273 μg/m^3 [1989]
CO	8-Hour	Less than significant: Maximum impact = 40.16214 μg/m^3 [1989]
	1-Hour	Less than significant: Maximum impact = 113.78019 μg/m^3 [1989]

Sulfur dioxide, nitrogen dioxide and carbon monoxide were determined to have less than significant impacts in the Class II area. This demonstrates compliance with ambient air quality standards and PSD increments for these pollutants. No further dispersion modeling was performed for these pollutants in the Class II area.

The ambient air concentrations of PM_{10} for all periods were below the Class II significance levels within a 7-kilometer radius of the facility. Refined dispersion modeling was conducted for PM_{10} to demonstrate compliance with the PSD increments and the AAQS.

4.4.3 Preconstruction Monitoring

The initial SIA determination modeling analysis also addresses preconstruction monitoring requirements for proposed sources whose predicted ambient impact exceeds any of the de minimus monitoring concentrations specified in Table 8. The required steps for addressing preconstruction monitoring are outlined below:

Only the major new sources were modeled and computed concentrations were compared against the de minimis monitoring levels. The sources included in this modeling were the same as those included in the SIA determination modeling. Where the de minimus levels are not exceeded, monitoring is not required. Representative ambient monitoring data are available, which may exempt the applicant from preconstruction monitoring for PM_{10}.

The proposed facility is exempt from the monitoring requirements of Rule 62-212.400(5)(f) and (g), F.A.C., for ozone because less than 100 TPY of VOC is proposed; and for lead, fluorides, mercury, and hydrogen sulfide because these pollutants are not subject to PSD review.

The proposed facility is exempt from the monitoring requirements of Rule 62-212.400(5)(f) and (g), F.A.C., for nitrogen dioxide, sulfur dioxide, and carbon monoxide because the net emissions increases of these pollutants from the facility will not have an impact on any area equal to or greater than that listed in the following table.

TABLE 8 – DE MINIMUS AMBIENT IMPACTS

Pollutant	Averaging Period	De minimus ($\mu g/m^3$)	Modeled Concentration [H1H] ($\mu g/m^3$)
Nitrogen dioxide	Annual	14	0.9 $\mu g/m^3$ [1991]
Sulfur dioxide	24-hour	13	5.7 $\mu g/m^3$ [1989]
PM_{10}	24-hour	10	25.5 $\mu g/m^3$ [1987]
Carbon monoxide	8-hour	575	40.2 $\mu g/m^3$ [1989]
Ozone	Not Applicable – Less Than 100 tons/year VOC		
Lead	Quarterly	0.1	Not Subject to PSD Review
Fluorides	24-hour	0.25	
Mercury	24-hour	0.25	
Hydrogen sulfide	1-hour	0.2	

Reference: Table 62-212.400-3, F.A.C.

The ambient concentrations resulting from the emissions of PM_{10} are greater than the de minimis levels. The Department has waived the requirement for ambient monitoring for PM_{10} at similar PSD facilities and CEMEX is requesting that the Department waive the requirement for analyses of ambient air quality as set forth in Rule 62-212.400(2)(f), F.A.C. This report provides an analysis of existing ambient air quality in the area of the proposed project for PM_{10}.

4.4.4 Background Concentrations

An estimate of background concentrations for PM_{10} is necessary for determining compliance with ambient air quality standards. Background concentrations of PM_{10} were estimated from the Department's Quick Look reports of existing air monitoring data considered representative of the project area. These background concentrations account for unpermitted sources, mobile sources, and other background concentrations. The background concentrations were added to the modeled concentrations to evaluate compliance with the AAQS. These concentrations are shown in the following table. The closest Department-approved monitor is in Pinellas County. There are private industry monitors in Hernando County, but Department staff stated that their QA procedures are different than the Department monitors.

TABLE 9 – PM_{10} MONITOR DATA FOR BACKGROUND CONCENTRATIONS

YEAR	MONITOR LOCATION	Concentration (µg/m³) 1st High	Arithmetic Mean
2001	Pinellas, 103-5002	54	20
2002	Pinellas, 103-5002	32	17
2003	Pinellas, 103-5002	34	17
2004	Pinellas, 103-5002	31	16
2005	Pinellas, 103-5002	30	~~16~~
		24-hour maximum = 54	Annual maximum = 20

Reference: FDEP QUICK LOOK Reports

4.4.5 20-D Inventory

An inventory was obtained from the Department's Bureau of Information Systems of all permitted air emission sources in the Central District and the Southwest District. The modeling inventory for compliance with PSD increments and AAQS was developed from the master inventory. The master inventory, the 20-D inventory, and supporting spreadsheets are included with this application.

One modeling inventory was developed – the 20-D inventory for use in the Class II area to demonstrate compliance with the AAQS and the PSD Class II area increments. The 20-D analysis includes two tasks: the total emissions of a given pollutant from a given facility were calculated in tons per year and the distance between the cement plant and the inventory facility was calculated in kilometers (D). The distance was multiplied by 20, and this value was compared to the facility's emissions in tons per year. Any facility where the 20-D value was greater than the emission value was assumed to have a negligible effect on the ambient air concentrations of the given pollutant at the proposed cement plant. It is conservative to use the 20-D inventory to demonstrate compliance with the PSD Class II increments.

The 20-D inventory is provided in the following table.

TABLE 10 – PM_{10} 20-D INVENTORY (FACILITIES)

FACILITY ID	OWNER/COMPANY NAME	SITE NAME	STATUS	ZONE	NORTH (km)	EAST (km)	All. TPY	Distance (km)	20xDistance	Model?
0170004	PROGRESS ENERGY FLORIDA, INC.	CRYSTAL RIVER POWER PLANT	A	17	3204.5	334	12606	41	827	**YES**
0530010	CEMEX	BROOKSVILLE PLANT	A	17	3169.19	357.47	636	1	20	**YES**
0530021	FLORIDA CRUSHED STONE CO., INC.	BROOKSVILLE CEMENT& POWER	A	17	3162.37	361.34	673	9	180	**YES**
1010017	PROGRESS ENERGY FL	ANCLOTE POWER PLANT	A	17	3120.68	327.41	5490	56	1120	**YES**

TABLE 11 – PM_{10} 20-D INVENTORY (EMISSIONS UNITS)

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator Unit 1 (Phase II Acid Rain Unit)	PMINV1	0	334300	3204500	0	59.06	152	417	40.5	4.6
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator Unit 2 (Phase II Acid Rain Unit)	PMINV2	0	334300	3204500	0	75.51	153	422	48.8	4.9
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator-5 (Phase I & II Acid Rain Unit)	PMINV3	0	334300	3204500	0	83.97	183	396	21.0	7.8
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator-4 (Phase I & II Acid Rain Unit)	PMINV4	0	334300	3204500	0	83.97	183	396	21.0	7.8
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fly Ash Transfer From FFSG Unit 1	PMINV5	0	334300	3204500	0	0.44	2	298	18.4	0.2
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fly Ash Storage Silo for FFSG Units 1 & 2	PMINV6	0	334300	3204500	0	0.07	28	298	7.3	0.5
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fly Ash Transfer From (source 4) FFSG Unit 2	PMINV7	0	334300	3204500	0	0.28	3	298	22.2	0.2
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fly Ash Transfer From (source 5) FFSG Unit 2	PMINV8	0	334300	3204500	0	0.28	3	298	28.3	0.2
FLORIDA POWER CORPORATION D/B/A PROGRESS	Cooling Towers for FFSG Units 1,2 and Nuclear unit 3	PMINV9	0	334300	3204500	0	13.32	16	298	14.6	10.5
FLORIDA POWER CORPORATION D/B/A PROGRESS	Bottom Ash Storage Silo for FFSG Units 1 & 2	PMINV10	0	334300	3204500	0	1.64	2	298	14.6	0.2
FLORIDA POWER CORPORATION D/B/A PROGRESS	Cooling Towers for FFSG Units 4 & 5	PMINV11	0	334300	3204500	0	44.10	135	311	14.6	65.2
CEMEX	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)	PMINV12	0	357470	3169190	0	0.13	23	303	7.0	0.9
CEMEX	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	PMINV13	0	357470	3169190	0	3.40	46	414	10.4	4.0
CEMEX	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	PMINV14	0	357470	3169190	0	1.71	15	444	8.8	3.0
CEMEX	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS	PMINV15	0	357470	3169190	0	4.54	21	366	14.4	0.8
CEMEX	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	PMINV16	0	357470	3169190	0	0.16	46	303	24.3	0.6
CEMEX	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. E-36,F-17)	PMINV17	0	357470	3169190	0	0.31	66	303	24.1	0.6

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
CEMEX	Portland Cement Storage Silos Nos. 1-5	PMINV18	0	357470	3169190	0	0.72	43	339	26.7	0.7
CEMEX	RAW MAT'L STORAGE SILOS & FEED SYST. W/BAGHOUSES (C-11,C-11A	PMINV19	0	357470	3169190	0	0.27	24	298	15.2	0.8
CEMEX	KILN NO. 2 BLENDING SILO W/BAGHOUSE (G-11)	PMINV20	0	357470	3169190	0	0.13	67	366	18.9	0.9
CEMEX	NO. 2 KILN FEED SYSTEM W/BAGHOUSE (H-13)	PMINV21	0	357470	3169190	0	0.12	27	328	19.5	0.4
CEMEX	CEMENT KILN NO. 2 BAGHOUSE(E-19); REVISED OIL CONCENTRATIONS	PMINV22	0	357470	3169190	0	3.40	32	394	9.8	4.3
CEMEX	NO. 2 CLINKER COOLER W/BAGHOUSE K-09	PMINV23	0	357470	3169190	0	1.71	15	478	21.6	2.3
CEMEX	CLINKER SILO NO. 3 W/BAGHOUSE (L-7)	PMINV24	0	357470	3169190	0	0.17	46	358	21.5	0.5
CEMEX	CLINKER/GYPSUM TRANSFER BELT W/BAGHOUSE (M-09)	PMINV25	0	357470	3169190	0	0.06	23	339	19.2	0.3
CEMEX	FINISH MILL NO. 3 CLINKER/GYPSUM DAY TANK W/BAGHOUSE (M-10)	PMINV26	0	357470	3169190	0	0.17	23	333	7.0	0.9
CEMEX	FINISH MILL NO. 3 W/BAGHOUSE (N-23)	PMINV27	0	357470	3169190	0	0.47	23	370	18.9	1.0
CEMEX	CEMENT SILOS 7 & 8 W/BAGHOUSE (P-05)	PMINV28	0	357470	3169190	0	0.12	64	336	15.2	0.7
CEMEX	MASONRY SILO W/BAGHOUSE (P-07)	PMINV29	0	357470	3169190	0	0.05	64	339	15.5	0.5
CEMEX	TRUCK LOADOUT SYSTEM W/BAGHOUSE (Q-17)	PMINV30	0	357470	3169190	0	0.05	21	339	15.5	0.5
CEMEX	RAW MATERIAL PRE-MIX BIN W/BAGHOUSE (M-2280)	PMINV31	0	357470	3169190	0	0.07	25	315	11.9	0.5
CEMEX	ADD MAT'L BIN + Outsized/Outside Clinker Hoppers (BH M-1171)	PMINV32	0	357470	3169190	0	0.33	10	294	24.1	0.6
CEMEX	CEMENT BAG LOADOUT SYSTEM W/BAGHOUSE (M-3514)	PMINV33	0	357470	3169190	0	0.05	8	294	6.1	0.6
CEMEX	CEMENT BAGGING LINE NO. 2	PMINV34	0	357470	3169190	0	0.13	15	344	20.5	0.5
FLORIDA CRUSHED STONE CO., INC.	BCP: Filter Dust Bin With Baghouse(D-75)	PMINV35	0	361340	3162370	0	0.09	38	298	11.0	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Fly Ash/Equilibrium Catalyst Bin With Baghouse (D-67)	PMINV36	0	361340	3162370	0	0.05	38	298	6.7	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Raw Meal Transfer With Baghouse (F-14)	PMINV37	0	361340	3162370	0	0.03	21	355	7.8	0.3

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
FLORIDA CRUSHED STONE CO., INC.	BCP: Two Blend Silos With Baghouse (G-12A & B)	PMINV38	0	361340	3162370	0	0.28	73	355	8.8	1.1
FLORIDA CRUSHED STONE CO., INC.	BCP: Kiln Feed Surge Bin With Baghouse (H-15)	PMINV39	0	361340	3162370	0	0.10	15	366	9.7	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Clinker Receiving/handling System (S-04)	PMINV40	0	361340	3162370	0	0.09	5	298	9.4	0.6
FLORIDA CRUSHED STONE CO., INC.	Clinker Cooler Discharge with Baghouse (K-07 & L-03)	PMINV41	0	361340	3162370	0	0.08	3	394	33.0	0.3
FLORIDA CRUSHED STONE CO., INC.	BCP: Clinker Storage Silos/baghouse (L-06 to L-05 & L-07)	PMINV42	0	361340	3162370	0	0.04	61	366	7.3	0.5
FLORIDA CRUSHED STONE CO., INC.	BCP: Gypsum & Limestone Bins With Baghouse (L-08)	PMINV43	0	361340	3162370	0	0.08	41	366	14.3	0.5
FLORIDA CRUSHED STONE CO., INC.	BCP: Silo Discharge With Baghouse(M-08)	PMINV44	0	361340	3162370	0	0.15	41	311	9.1	0.8
FLORIDA CRUSHED STONE CO., INC.	BCP: Finish Mill With Baghouse (N-13)	PMINV45	0	361340	3162370	0	0.64	21	372	10.1	1.5
FLORIDA CRUSHED STONE CO., INC.	BCP:A-side Cement Silos #1 & 2 Discharge Sys/Baghouse (Q-17)	PMINV46	0	361340	3162370	0	0.05	15	344	9.1	0.5
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Storage Silos #1 & 2 With Baghouse (Q-15)	PMINV47	0	361340	3162370	0	0.13	61	355	12.0	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Iron Ore Bin With Baghouse (D-63)	PMINV48	0	361340	3162370	0	0.06	16	355	10.4	0.5
FLORIDA CRUSHED STONE CO., INC.	BPP: Power Plant Boiler	PMINV49	0	361340	3162370	0	3.15	98	422	21.2	4.9
FLORIDA CRUSHED STONE CO., INC.	BCP: Finish Mill Feed Belt With Baghouse (M-05)	PMINV50	0	361340	3162370	0	0.15	9	303	14.3	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Kiln1, In-line Kiln/Raw Mill & Clinker Cooler 1	PMINV51	0	361340	3162370	0	6.21	91	378	14.3	4.9
FLORIDA CRUSHED STONE CO., INC.	BCP: B-side Cement Silos#1,2&3 Discharge Sys/Baghouse (Q-18)	PMINV52	0	361340	3162370	0	0.15	15	344	28.6	0.5
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Storage Silo #3 With Baghouse (Z-15)	PMINV53	0	361340	3162370	0	0.08	61	355	8.6	0.6
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Silo #4 & Truck Loadout Sys With Baghouse	PMINV54	0	361340	3162370	0	0.01	23	298	8.5	0.2
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Stor Silo & Railcar Loadout Sys/Baghouses (Z-18)	PMINV55	0	361340	3162370	0	0.13	24	298	17.1	0.5
FLORIDA CRUSHED STONE CO., INC.	Raw Mill System	PMINV56	0	361340	3162370	0	0.21	67	355	10.1	1.0
FLORIDA CRUSHED STONE CO., INC.	FINISH MILL SYSTEM	PMINV57	0	361340	3162370	0	1.62	37	344	10.1	2.6
FLORIDA CRUSHED STONE CO., INC.	CEMENT HANDLING SYSTEM	PMINV58	0	361340	3162370	0	0.18	62	355	10.6	0.6
FLORIDA CRUSHED STONE CO., INC.	COAL HANDLING SYSTEM	PMINV59	0	361340	3162370	0	0.24	12	339	10.2	1.2

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
FLORIDA CRUSHED STONE CO., INC.	BPP: Limestone Rock Bin With Baghouse (D-38)	PMINV60	0	361340	3162370	0	0.12	30	294	10.9	0.8
FLORIDA CRUSHED STONE CO., INC.	BPP: Contaminated Flyash & Filter Dust Bin (D-31)	PMINV61	0	361340	3162370	0	0.16	61	355	31.6	0.5
FLORIDA CRUSHED STONE CO., INC.	BPP: Limestone Screening System With Baghouse (D-39)	PMINV62	0	361340	3162370	0	0.09	9	339	4.8	0.6
FLORIDA CRUSHED STONE CO., INC.	BPP: Limestone Fines Storage Bin With Baghouse (D-13)	PMINV63	0	361340	3162370	0	0.09	46	311	10.0	1.1
FLORIDA CRUSHED STONE CO., INC.	BPP: Limedust Storage Bin With Baghouse (Z-31)	PMINV64	0	361340	3162370	0	0.13	30	322	6.5	0.8
FLORIDA CRUSHED STONE CO., INC.	BPP: Limestone Dryer Discharge Transfer Point (D-46)	PMINV65	0	361340	3162370	0	0.03	5	298	5.0	0.5
FLORIDA CRUSHED STONE CO., INC.	BPP:Coal Receiving, Handling & Transfer Activities-fugitives	PMINV66	0	361340	3162370	0	0.09	3	298	14.6	0.3
FLORIDA CRUSHED STONE CO., INC.	Kiln #2	PMINV67	0	361340	3162370	0	2.94	98	561	12.2	4.3
FLORIDA CRUSHED STONE CO., INC.	Filter Dust ID No. 2E-22	PMINV68	0	361340	3162370	0	0.03	59	366	9.0	0.5
FLORIDA CRUSHED STONE CO., INC.	Filter Dust ID No. 2E-22	PMINV69	0	361340	3162370	0	0.10	59	366	9.0	0.5
FLORIDA CRUSHED STONE CO., INC.	Raw Meal Transport 2F-04	PMINV70	0	361340	3162370	0	0.02	9	355	9.9	0.4
FLORIDA CRUSHED STONE CO., INC.	Kiln Feed Tranport ID 2H-05	PMINV71	0	361340	3162370	0	0.02	9	355	9.9	0.4
FLORIDA CRUSHED STONE CO., INC.	Clinker Transport	PMINV72	0	361340	3162370	0	0.02	10	389	7.6	0.5
FLORIDA CRUSHED STONE CO., INC.	Gypsum Bin 2L-14	PMINV73	0	361340	3162370	0	0.03	37	308	10.1	0.5
FLORIDA CRUSHED STONE CO., INC.	Clinker Storage ID 2L-05	PMINV74	0	361340	3162370	0	0.02	62	389	10.1	0.5
FLORIDA CRUSHED STONE CO., INC.	Finish Mill Collecting Bin	PMINV75	0	361340	3162370	0	0.07	5	355	14.7	0.7
FLORIDA CRUSHED STONE CO., INC.	Finish Mill	PMINV76	0	361340	3162370	0	0.20	40	373	14.1	1.2
FLORIDA CRUSHED STONE CO., INC.	Air Slide ID 2N-03	PMINV77	0	361340	3162370	0	0.04	14	366	12.0	0.5
FLORIDA CRUSHED STONE CO., INC.	Bucket Elevator ID 2N-04	PMINV78	0	361340	3162370	0	0.04	14	366	12.0	0.5
FLORIDA CRUSHED STONE CO., INC.	High Efficiency Seperator	PMINV79	0	361340	3162370	0	0.81	40	344	14.8	2.3
FLORIDA CRUSHED STONE CO., INC.	Cement Cooler 2N-26	PMINV80	0	361340	3162370	0	0.04	14	366	12.0	0.5
FLORIDA CRUSHED STONE CO., INC.	Cement Transport ID 2P-01	PMINV81	0	361340	3162370	0	0.02	62	355	9.4	0.5
FLORIDA CRUSHED STONE CO., INC.	Cement Transport ID 2P-01	PMINV82	0	361340	3162370	0	0.07	62	355	9.4	0.5

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
FLORIDA CRUSHED STONE CO., INC.	Cement Loadout Bin ID 2Q-28	PMINV83	0	361340	3162370	0	0.02	9	355	9.9	0.4
FLORIDA CRUSHED STONE CO., INC.	Cement Loadout Bin 2Q-31	PMINV84	0	361340	3162370	0	0.02	9	355	9.9	0.4
FLORIDA CRUSHED STONE CO., INC.	Coal Mill ID 2S-15	PMINV85	0	361340	3162370	0	0.14	12	339	9.4	1.2
FLORIDA CRUSHED STONE CO., INC.	Fuel Bin 2S-20	PMINV86	0	361340	3162370	0	0.01	12	339	10.7	0.3
FLORIDA POWER CORPDBAPROGRESS ENERGY FL	STEAM TURBINE GENERATOR ANCLOTE UNIT NO. 1	PMINV87	0	327410	3120680	0	79.89	152	433	18.9	7.3
FLORIDA POWER CORPDBAPROGRESS ENERGY FL	STEAM TURBINE GENERATOR ANCLOTE UNIT NO. 2	PMINV88	0	327410	3120680	0	78.05	152	433	18.9	7.3

4.4.6 Class II Increment Compliance Modeling

Through the coarse grid runs, the regulatory high value receptors were identified. Refined modeling for PM_{10} was then conducted with 25-meter receptor spacing in a fine-grid for PSD increments in the Class II Area. A receptor fine-grid was centered in the area of the high value receptors. The greatest regulatory concentration values from the modeling runs were used to demonstrate compliance with PSD increments. The purpose of Class II Increment compliance modeling is to demonstrate that the new sources will not cause or contribute to a violation of a PSD Increment. Modeling to address the Class II Increments included the sources under review as well as all sources in the 20-D inventory.

Receptor elevations were not considered in Class II Increment compliance modeling because the terrain within the SIA is mostly flat to gently rolling. All increment compliance modeling was performed with ISCST3 in default mode.

Class II Increment compliance modeling addresses all areas within the Significant Impact Area (SIA). All maximum predicted concentrations were resolved to the nearest 25 meters. This includes maximum predicted annual concentrations as well as short term concentrations for the 24-hour PM_{10} NAAQS. Compliance with the 24-hour PM_{10} PSD Increment is achieved when the greatest high-second-high concentration is less than the increment. The ambient air impacts were evaluated with respect to the allowable PSD Class II increments.

TABLE 12 – CLASS II AREA INCREMENT ANALYSIS [PM_{10}]

	1986	1987	1988	1989	1990
Annual H1H < 17 $\mu g/m^3$	4.9 $\mu g/m^3$	3.9 $\mu g/m^3$	4.0 $\mu g/m^3$	5.4 $\mu g/m^3$	4.0 $\mu g/m^3$
24-Hour H2H < 30 $\mu g/m^3$	23.0 $\mu g/m^3$	26.4 $\mu g/m^3$	20.0 $\mu g/m^3$	22.9 $\mu g/m^3$	25.4 $\mu g/m^3$

The proposed facility is shown to not exceed any applicable Class II area PSD increments, by showing that such increments were not exceeded when the facility's emissions were modeled with the PSD inventory (20-D inventory). The inventory is conservative because all current allowable emissions are assumed to be increment consuming. This approach is considered to be more conservative, more accurate and less cumbersome than determining baseline emissions. No evaluation of increment expansion was conducted.

4.4.7 NAAQS Compliance Modeling

NAAQS compliance modeling was performed for PM_{10} to demonstrate that the new sources will not cause or contribute to a violation of a NAAQS.

The ambient air concentrations from the proposed cement plant and the 20-D inventories, plus the background concentrations, were evaluated with respect to the applicable AAQS. This refined air quality modeling demonstrated that the AAQS were not violated for PM_{10}.

NAAQS compliance modeling addressed all areas within the Significant Impact Area (SIA). All maximum predicted concentrations were resolved to the nearest 25 meters. This included maximum predicted annual concentrations as well as short-term concentrations for the 24-hour PM_{10} NAAQS. Compliance with the 24-hour PM_{10} NAAQS is achieved when the greatest high-sixth-high concentration over five years is less than the standard.

NAAQS compliance modeling involved the sources under review as well as sources from within and near the SIA in the inventory provided by the Department. Modeling to address the NAAQS included the sources under review as well as all sources in the 20-D inventory and background concentrations. The background concentrations were added to the modeled concentrations to evaluate compliance with the AAQS. The ambient air concentrations from the proposed cement plant, including the 20-D inventory, plus the background concentrations, were evaluated with respect to the applicable AAQS. This was accomplished by adding the background concentrations from the Quick Look reports to the concentrations from the fine grid PSD modeling. For simplicity and conservatism, the 24-hour H2H impacts for each year were used instead of the 5-year H6H.

TABLE 13 – NAAQS ANALYSIS [PM_{10}]

	1986	1987	1988	1989	1990
Annual H1H < 50 μg/m^3 Background = 20	24.9 μg/m^3	23.9 μg/m^3	24.0 μg/m^3	25.4 μg/m^3	24.0 μg/m^3
24-Hour <150 μg/m^3 Background = 54	77.0 μg/m^3	80.4 μg/m^3	74.0 μg/m^3	76.9 μg/m^3	78.0 μg/m^3

80.4
-54
26.4

4.4.8 Federal Class I Areas

Ambient and visibility impacts were determined for the only nearby Class I area; the Chassahowitzka National Wilderness Area.

20km W

a. Class I Area Modeling Protocol

Ambient impact modeling to assess impacts at the Class I area utilized the ISC modeling system as described above for the Class II area modeling. There were three components of the Class I analysis: a Class I increment analysis, a visibility analysis, and a nitrogen deposition analysis.

Class I area receptors were downloaded from the National Park Service (NPS) Air Resources Division (ARD), which has developed a database of modeling receptors for all of the Class I areas in the conterminous (lower 48) United States. Receptors for Chassahowitzka were used in the modeling analysis.

b. Class I Increment

The Class I Increment analysis included an initial screening analysis to determine whether the new sources will have a significant impact on air quality in the Class I area. The determination was made by comparing the estimated impacts from the sources under review to the Class I "Significance Levels" proposed by EPA, as shown in the following table.

TABLE 14 – CLASS I AREA SIGNIFICANCE

Pollutant	Averaging Period	Significance Level ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)	Significant?
PM_{10}	Annual	0.2	0.13 (1986)	No
	24-hour	0.3	1.65 (1986)	Yes
Sulfur dioxide	Annual	0.1	0.02 (1986)	No
	24-hour	0.2	0.14 (1988)	No
	3-hour	1.0	0.69 (1990)	No
Nitrogen dioxide	Annual	0.1	0.20 (1986)	Yes

Reference: 61FR38292, July 23, 1996

As SO2 for all averaging periods, and PM10 for the annual averaging period, are less than significant, no further review for compliance with Class I PSD increments is required for these pollutants for these averaging times. As impacts are below the Class I significance levels, then the increment portion of the Class I analysis is complete.

PM10 was modeled with the 20-D inventory described above for the Class II Area to assess 24-hour impacts and a 20-D inventory was developed for NOx and is provided below.

TABLE 15 – NOX 20-D INVENTORY

Facility	Emissions Unit	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator Unit 1 (Phase II Acid Rain Unit)	NXINV1	0	334300	3204500	0	283.50	152	417	40.5	4.6
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator Unit 2 (Phase II Acid Rain Unit)	NXINV2	1	334300	3204500	1	362.49	153	422	48.8	4.9
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator-5 (Phase I & II Acid Rain Unit)	NXINV3	2	334300	3204500	2	587.86	183	396	21.0	7.8
FLORIDA POWER CORPORATION D/B/A PROGRESS	Fossil Fuel Steam Generator-4 (Phase I & II Acid Rain Unit)	NXINV4	3	334300	3204500	3	587.86	183	396	21.0	7.8
CEMEX	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	NXINV5	4	357470	3169190	4	34.65	46	414	10.4	4.0
CEMEX	CEMENT KILN NO. 2 BAGHOUSE(E-19); REVISED OIL CONCENTRATIONS	NXINV6	5	357470	3169190	5	32.51	32	394	9.8	4.3
FLORIDA CRUSHED STONE CO., INC.	BPP: Power Plant Boiler	NXINV7	6	361340	3162370	6	24.34	98	422	21.2	4.9
FLORIDA CRUSHED STONE CO., INC.	BCP: Cement Kiln1, In-line Kiln/Raw Mill & Clinker Cooler 1	NXINV8	7	361340	3162370	7	45.22	91	378	14.3	4.9
FLORIDA CRUSHED STONE CO., INC.	Kiln #2	NXINV9	8	361340	3162370	8	28.67	98	561	12.2	4.3
PASCO COUNTY	Municipal waste Combustor Unit #1	NXINV10	9	348620	3139020	9	11.34	84	394	25.0	1.4
PASCO COUNTY	Municipal Waste Combustor Unit #2	NXINV11	10	348620	3139020	10	11.34	84	394	25.0	1.4
PASCO COUNTY	Municipal Waste Combustor Unit #3	NXINV12	11	348620	3139020	11	11.33	84	394	25.0	1.4
PASCO COUNTY	Leachate Treatment Facility	NXINV13	12	348620	3139020	12	0.04	9	450	5.8	0.3
SHADY HILLS POWER COMPANY, L.L.C.	A 170 MW Gas Simple Cycle Combustion Turbine	NXINV14	13	348720	3138370	13	7.25	18	874	35.4	6.7
SHADY HILLS POWER COMPANY, L.L.C.	A 170 MW Gas Simple Cycle Combustion Turbine	NXINV15	14	348720	3138370	14	7.25	18	874	35.4	6.7
SHADY HILLS POWER COMPANY, L.L.C.	A 170 MW Gas Simple Cycle Combustion Turbine	NXINV16	15	348720	3138370	15	7.25	18	874	35.4	6.7

PM10 (24-hr) and NOx (annual) impacts were modeled using ISC, with the proposed new sources in combination with the inventories. These impacts were compared to the Class I Area Increment. The estimated impacts, for the specified pollutants and averaging periods, were below the applicable PSD Class I Area increments.

TABLE 16 – CLASS I AREA INCREMENT ANALYSIS

	1986	1987	1988	1989	1990
NOx Annual < 2.5 μg/m³	1.3 μg/m³	1.4 μg/m³	1.4 μg/m³	1.6 μg/m³	1.4 μg/m³
PM_{10} 24-Hour < 8 μg/m³	4.8 μg/m³	4.6 μg/m³	4.8 μg/m³	4.7 μg/m³	4.8 μg/m³

NOx for the annual averaging period, and PM10 for the 24-hour averaging period, were modeled with appropriate inventories. The estimated impacts are less than the PSD increments and no further review for compliance with Class I PSD increments is required. The increment portion of the Class I analysis is complete.

c. Visibility Analysis

This section describes the method used for analyzing the impacts on visibility from the new sources. The visibility impairment from sources within 50 kilometers of a view is usually calculated using contrast and color difference. This project used the more refined PLUVUE II analysis, where $|C| = 0.02$ and $\Delta E = 1$ are the levels of concern (USEPA, 1992b). These levels are usually applied for near field analyses where single sources are locating within 50 kilometers of a view. When a refined near field analysis is performed, values of $|C| < 0.02$ or $\Delta E < 1$ would not likely result in an objection by the FLM.

FLAG is using estimates of natural conditions as reference levels for Class I visibility analyses. EPA has recommended a methodology to assess impacts due to coherent plumes. A guideline, for when these steady state conditions apply, is the distance from the source to the view of concern. This technique is usually applied for sources locating less than 50 km from a Class I area. Applicants must model their potential plume impacts using the screening model, VISCREEN (USEPA, 1992a), or, if the next level of analysis is called for, PLUVUE II (USEPA 1992b and 1996c). Both of these models use steady-state, gaussian-based plume dispersion techniques to calculate one-hour concentrations within an elevated plume. These two models calculate the change in the color difference index and contrast between the plume and the viewing background. The values are based on the concentrations of fine primary particulates (including sulfates), nitrogen dioxide (NO2), and the geometry of the observer, target, plume, and the position of the sun. PLUVUE II also allows consideration of the effects of secondarily formed sulfates. Plume contrast results from an increase or decrease in light transmitted from the viewing background through the plume to the observer. The specifics of the emission scenarios and plume/observer geometries for modeling were selected consistent with available guidance. At the present time there is no recommended procedure for conducting analyses of multiple sources with these modeling tools, so the main stack was treated individually. It does not appear reasonable to combine the other emission points into a single source, as the dispersion parameters vary greatly.

FLAG recommends that the visual range corresponding to natural conditions be used to generate the hourly estimates of ΔE and plume contrast. For the refined analyses, the reconstructed natural condition is derived from the relative humidity used in the modeling, the corresponding relative humidity adjustment factor (Table 2.A-1), and estimated natural aerosol concentrations (Table 2.B-1).

The PLUVUE II plume visibility model requires numerous data inputs before use. The data preparation algorithm for the model requests the information by entry codes. Entry codes 1-38 are described in detail below, with values used in the coherent plume analyses for this project.

ENTRY CODE 1: *PLANT NAME*

Plant Name (up to 24 characters): CEMEX K3

ENTRY CODE 2: *WIND SPEED AND STABILITY*

Wind speed: 3.9 MPH

- 1.5433 m/s from worst-case dispersion conditions with a cumulative frequency greater than 1%

- Power law extrapolation for Tampa anemometer at less than 10 meters (6.7 meters) as follows: U10m = U6.7m (10/6.7)0.3 = 1.7403 m/s x 3600 seconds/hour x 3.281 feet/meters x 1.0 mile/5280 feet = 3.8931 mph

Stability index: 6

For Pasquill-Gifford stability classes, use:

1 for class A, 2 = B, 3 = C, 4 = D, 5 = E, 6 = F, and 7 = G

- Stability class F (6) from worst-case dispersion conditions with a cumulative frequency greater than 1%

Ambient temperature lapse rate: 13.825 degrees F per 1000 feet.

- Suggested values are 5.6 for E stability and 13.825 for F stability.
- Model does not accept input for this parameter, defaults to suggested value.

ENTRY CODE 3: WIND SPEED MEASUREMENT HEIGHT FLAG

SWITCH: 1

- Wind speed at 10 m height was entered.

ENTRY CODE 4: INITIAL PLUME DIMENSIONS

- 0 for point sources.

ENTRY CODE 5: MIXING HEIGHT

Depth of atmosphere that is well mixed: 0 meters.

- Set to zero, vertical mixing is not limited.

ENTRY CODE 6: RELATIVE HUMIDITY

- Spring - March 21: 71%
- Summer - June 21: 77%
- Fall - September 21: 74%
- Winter - December 21: 73%

See Entry Code 34 for a discussion of days selected for modeling.

ENTRY CODE 7: DIFFUSION PARAMETER FLAG

Flag indicating diffusion parameters: 0

- Pasquill-Gifford-Turner values

ENTRY CODE 8: CALCULATION FLAGS

Switches to determine if the following calculations are done.

- = Skip calculation
- = Do calculation
- Horizontal Views: 1
- Non-horizontal Views: 0
- Background Objects: 0
- Plume Centerline: 0

No terrain features (background objects) are present at Chassahowitzka. Therefore, only sky background views are evaluated. No integral vistas or terrain features were identified at Chassahowitzka, and the worst case angle to the plume centerline is used in all runs. Only horizontal and views with a clear sky background are evaluated.

The number of downwind distances for calculations: At least two distances must be used, and the current dimensions allow up to 16 distances.

- 3 wind directions were modeled (90°, 113°, 118°) to encompass the range of wind directions from the source to the closest boundary at Chassahowitzka.
- 90° Closest distance = 16.2 km
- 113° Closest distance = 14.8 km
- 118° Closest distance = 19.9 km

Starting and ending indices for light scattering angles used in the plume based calculation. The angles corresponding to indices 1 through 7 are 0, 22, 45, 90, 135, 158 and 180 degrees. The first angle used has an index one greater than the starting index, so a starting index of 3 and an ending index of 4, will cause calculations only at 90 degrees. As only observer-based calculations will be done, the observer-based values are used.

- Starting index: 1

- Ending index: 7

Index for number of altitudes for visual impact calculations: 2

- Centerline and ground level

Enter the serial numbers of the downwind distances for which optical size modeling is to be done. Up to three downwind distances can be selected by entering their serial numbers (between 1 and number: If optical size modeling is to be done at less than three distances, enter zeros as needed to complete the three entries.

- No optical size modeling will be done: 0 0 0

ENTRY CODE 9: PRINTOUT FLAGS

SWITCH: 0

- No printout of table of initial plume rise data.

Enter the number of points to be generated in the vertical scans by the optical size modeling. The maximum number of points is 256. It is recommended that the vertical resolution be set at 256 unless computer resources are limited.

- 0 0, as no optical size modeling

Enter the resolution desired for the printing of the spatial images.

- Resolution is: 0 as no optical size modeling

Enter a flag to control the printing and plotting of spatial images of the individual channels.

- 0 - Both types of printouts and plots are generated

Enter the FORTRAN unit number to be used for the HVS output. This should be set to the same unit being used for the main PLUVUE output.

- Output is directed to unit no: 0

ENTRY CODE 10: DOWNWIND DISTANCES

Enter the values for the downwind distances for which calculations are to be performed. This specifies the distance downwind from the source along the plume trajectory of each point where visibility impairment calculations will be made. The units for this array are kilometers. For accurate prediction of the oxidation of NOx to NO2, it is important to use downwind distances that are close together and near the source. The first downwind distance must be 1 km; 2.5 km, 5 km, and 10 km are recommended for the succeeding three distances.

- Distance No. 1: 1 km
- Distance No. 2: 2.5 km
- Distance No. 3: 5 km
- Distance No. 4: 10 km
- 90° Closest distance = 16.2 km
- 113° Closest distance = 14.8 km
- 118° Closest distance = 19.9 km

ENTRY CODE 11: EMISSION RATES

Emission rates from Application for Air Permit.

- SO2 emissions rate from main stack: 0.38 tons per day.
- NOx Emission rate from main stack: 3.75 tons per day.
- Primary particle emission rate from main stack: 0.29 tons per day.

ENTRY CODE 12: STACK PARAMETERS

Flow rate and temperature from Application for Air Permit.

- Actual gas flow rate: 407,000 cu ft/min.
- Flue gas exit temperature: 392 degrees F.
- Flue gas oxygen concentration: 8 mole percent.
- Flue gas exit velocity: 13.4 meters/sec.

ENTRY CODE 13: STACK HEIGHT

Stack information from Application for Air Permit.

- Number of stacks: 1

- Stack height: 319 feet.

ENTRY CODE 14: AMBIENT AIR TEMPERATURE

Ambient air temperature at stack height (must not equal stack temperature):

- Spring - March 21: 66 degrees F.
- Summer - June 21: 82 degrees F.
- Fall - September 21: 82 degrees F.
- Winter - December 21: 66 degrees F.

ENTRY CODE 15: AMBIENT POLLUTANT CONCENTRATIONS

Concentrations from Air Monitoring Report 1997 (Florida Department of Environmental Protection).

- Ambient NOx concentration: 0.06 ppm.
- Ambient NO2 concentration: 0.06 ppm.
- Ambient ozone concentration: 0.08 ppm.
- Ambient SO2 concentration: 0.03 ppm.

ENTRY CODE 16: MASS MEAN RADII FOR AEROSOL SIZE DISTRIBUTIONS

- Background accumulation mode aerosol: 0.15 micrometers
- Background coarse mode aerosol: 3.0 micrometers
- Plume secondary aerosol: 0.10 micrometers
- Plume primary aerosol: 1.0 micrometers

ENTRY CODE 17: STANDARD DEVIATION OF SIZE DISTRIBUTIONS

Geometric standard deviation of the aerosol size distribution. (The standard deviation for a monodisperse aerosol = 1.0).

- Background accumulation mode aerosol: 2.0
- Background coarse mode aerosol: 2.2
- Plume secondary aerosol: 2.0
- Plume primary aerosol: 2.0

ENTRY CODE 18: DENSITY OF AEROSOL MATERIAL

- Background accumulation mode aerosol: 1.5 grams per cubic centimeter
- Background coarse mode aerosol: 2.5 grams per cubic centimeter
- Plume secondary aerosol: 1.5 grams per cubic centimeter
- Plume primary aerosol: 2.5 grams per cubic centimeter

ENTRY CODE 19: CARBONACEOUS AEROSOL INFORMATION

- Geometric mean radius: 0.05 micrometers
- Standard deviation: 2.0
- Particle density of the carbonaceous aerosol: 2.0 grams per cubic centimeter
- Fraction (on a scale from zero to one) of the plume primary aerosol that is carbonaceous: 0.0
- Concentration of carbonaceous aerosol in the background atmosphere : 0.02 ug/m3

ENTRY CODE 20: INDICES OF REFRACTION FOR BACKGROUND AEROSOL

Indices of refraction for the background aerosol in the format m - ik: Accumulation mode:

Real part of index: 1.5

Imaginary part: 0.0

Coarse mode: Real part of index: 1.5

Imaginary part: 0.0

ENTRY CODE 21: INDICES OF REFRACTION EMITTED AEROSOLS

Indices of refraction for the emitted primary aerosol and the carbonaceous aerosol in the format m - ik:

- Emitted primary aerosol: Real part of index: 1.5
  Imaginary part: 0.0
- Carbonaceous aerosol: Real part of index: 2.0
  Imaginary part: 1.0

ENTRY CODE 22: BACKGROUND COARSE MODE AEROSOL CONCENTRATION

Background coarse mode aerosol concentration: 3.0 ug/m3

ENTRY CODE 23: BACKGROUND SULFATE/NITRATE FLAG

Switch: 1 = Input background sulfate and nitrate concentrations.

ENTRY CODE 24: AMBIENT BACKGROUND VISUAL RANGE

Not used, calculated from background concentrations, per FLAG

ENTRY CODE 25: BACKGROUND SULFATE/NITRATE CONCENTRATION

- Background sulfate mass concentration = 0.2 ug/m3
- Background nitrate mass concentration : 0.1 ug/m3

ENTRY CODE 26: DEPOSITION VELOCITIES

- SO2 aerosol: 1.0 cm/sec
- NOx aerosol: 1.0 cm/sec
- Coarse-mode aerosol: 0.1 cm/sec
- Accumulation-mode aerosol: 0.1 cm/sec

ENTRY CODE 27: SULFUR DIOXIDE TO SULFATE CONVERSION FLAG

Switch to determine the sulfur dioxide to sulfate conversion rate added to the rate, calculated from hydroxyl radical chemistry.

- Recommended value: 0 = Added rate the same at all distances from the source

ENTRY CODE 28: RATE OF SULFUR DIOXIDE TO SULFATE CONVERSION

Rate of SO2 to sulfate conversion to be added to the value predicted from the HO chemistry in the model.

- Recommended value is 0.0% per hour.

ENTRY CODE 29: RATE OF SULFUR DIOXIDE TO SULFATE CONVERSION

- Not used - only used if Entry Code 27 is set equal to 1

ENTRY CODE 30: *CALCULATION FLAG*

Switches to control calculations performed. If only observer-based calculations are done, there will be no output of plume-based calculation results for plotting. Only observer-based calculations are desired to demonstrate compliance with regulatory guidelines.

- Observer-based calculations only: 2. 2.

ENTRY CODE 31: *INDICES FOR PLOTTING PLUME-BASED CALCULATIONS*

Not used as only observer-based calculations were selected above - only used if plume-based calculations have been selected in Entry Code 30.

ENTRY CODE 32: *OBSERVER COORDINATES*

All scenarios have the observers at the worst-case offset angle of 11.25° from the plume, as recommended for the worst-case wind direction sector. Observers were offset north and south of the 3 wind directions.

	UTM coordinates		Elevation
Observer	X (km)	Y (km)	(ft msl)
• 90° North	339.99	3172.41	0
• 90° South	339.90	3165.98	0
• 113° North	338.49	3181.42	0
• 113° South	340.22	3172.70	0
• 118° North	338.52	3183.54	0
• 118° South	341.20	3173.70	0

ENTRY CODE 33: *STACK COORDINATES*

UTM ~~coordinates of the main stack in km,~~ and elevation of the base of the stack in feet msl.

X	Y	Elevation
• 356.1	3169.3	0

ENTRY CODE 34: *TIME ZONE*

Because of the large number of variables important to a visual impact calculation, several model calculations are needed to assess the magnitude of visual impact. It is preferable to select a few representative values for each of these variables to represent the range of visual impact over a given period of time, such as a season or year.

The largest impact magnitudes are likely to occur for wind directions that would carry the plume closest to the observer, light wind speeds, and stable conditions. Sun angles are specified by the date and time of the simulation. Since worst-case meteorological conditions generally occur in the morning, simulation times were selected as close after sunrise as the model allowed, and spanning a 2-hour period at half-hour increments.

- UTM zone: 17
- Month: 3 (March)
6 (June)
9 (September)
12 (December)
- Day of month: 21
- Time (24-hour clock) : March 21: 0647 - 0830
June 21: 0547 - 0730
September 21: 0630 - 0830
December 21: 0734 - 0930
- Time zone code: 5, Eastern Standard Time
- Year: 2006 (arbitrary year)

ENTRY CODE 35: TERRAIN ELEVATION

Elevation of terrain at each downwind point (feet msl) to be used in the calculation of view elevation angle. If zero is entered for the first distance, the elevation at the base of the stack is used for all downwind distances.

- Value for the first distance: 0 ft msl.

ENTRY CODE 36: BACKGROUND OBJECT DISTANCES

Only used when Entry Code 8 calculates background objects. Background object distances from observer through plume to background terrain for line-of-sight azimuths of 15, 30, 45, ... , 360 degrees from true north. If the distance at 15 degrees is set equal to zero, the model will set the object distance equal to the plume-observer distance along the line-of-sight to each downwind point.

- Distances to the background objects in km are at 15°: 0

ENTRY CODE 37: WIND DIRECTION

Direction from which the wind is blowing.

- Wind direction #1: 90°
- Wind direction #2: 113°
- Wind direction #3: 118°

ENTRY CODE 38: USER INPUT DISPERSION PARAMETERS

Not applicable as the index at entry code 7 indicates that Pasquill-Gifford-Turner dispersion parameters are to be used.

TABLE 17 – CLASS I AREA VISIBILITY IMPAIRMENT

	Spring			Summer			Fall			Winter		
	C	ΔE	Time	C	ΔE	Time	C	ΔE	Time	C	ΔE	Time
90°N	0.0072	0.5156	0647	0.0088	0.5719	0547/0600	0.0077	0.5465	0630	0.0057	0.5486	0734
90°S	0.0073	0.5209	0647	0.0057	0.5335	0547	0.0076	0.5514	0630	**0.0090**	**0.5869**	0734
113°N	0.0074	0.5229	0647	0.0122	0.5920	0547	0.0084	0.5552	0630	**0.0142**	**0.7271**	0900
113°S	0.0046	0.5043	0830/0647	0.0107	0.534	0600/0547	0.0052	0.5399	0830/0630	0.0078	0.5252	0930/0734
118°N	0.0067	0.3879	0647	0.0083	0.4301	0547/0600	0.0072	0.4164	0630	0.0052	0.4234	0734
118°S	0.0128	0.6335	0647/0830	0.0119	0.6351	0547	0.0135	0.6635	0630/0830	**0.0135**	**0.6886**	0734

The plume centerline returned higher values than the ground level elevation in every case. Two times are provided if the maximum contrast and maximum ΔE occurred in different runs. The overall maximum contrast (absolute value) was 0.0142; as this is less than 0.02, compliance with the guidelines is demonstrated. The overall maximum ΔE was 0.7271; as this is less than 1.0, compliance with the guidelines is demonstrated. With this refined near field analysis values of |C| < 0.02 or ΔE < 1 are not likely result in an objection by the FLM.

d. Nitrogen Deposition Analysis

The National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) have developed criteria for evaluating the contribution of additional nitrogen (N) to deposition within Class I areas, titled *Guidance on Nitrogen and Sulfur Deposition Analysis Thresholds.*[7] The NPS and FWS have developed this DAT equation in response to requests by permitting authorities and permit applicants to continue to develop consistent, predictable permit review processes, and to expedite the permit review process. The FLMs have applied the 4 percent value used in Class I increment significant impact levels to these new deposition analysis thresholds. By incorporating this value into the DAT equations, new sources whose modeled deposition amounts are below the DATs are not likely to significantly contribute to cumulative impacts from N or sulfur deposition.

A DAT is the additional amount of N deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant. The DAT for Chassahowitzka National Wildlife refuge was compared with the amount of additional deposition resulting from the proposed new cement kiln, as modeled using ISC. The DAT for nitrogen in Eastern Class I parks and refuges is: 0.01 kg/ha/yr N.

The EPA Document EPA-454/R-93-015: *Interagency Workgroup On Air Quality Modeling (IWAQM) Phase 1 Report: Interim Recommendation For Modeling Long Range Transport And Impacts On Regional Visibility*, from April 1993, provides Inset 2 - Description of method to estimate deposition from SO2 and NOx concentrations. That method is shown below.

Calculation of Deposition For Level I analysis

1. Run appropriate model for Level I analysis.
2. Assume no conversion of NOx to other species.
3. Multiply the concentrations of NOx (μg/m3) by the ratio of the molecular weights of the secondary species (HNO3) to the primary species (NO2). The molecular weights of NO2 and HNO3 are 46 and 63. Thus multiplying the concentration of NOx (μg/m3) by 1.37 will yield the concentration of HNO3 (μg/m3).

Maximum NOx annual average impact = 0.20 μg/m3 x 1.37 = 0.274 μg/m3 HNO3

[7] http://www2.nature.nps.gov/air/Permits/flag/docs/N_SDATGuidance.pdf

4. [Sulfur – N/A]

5. The averaging times for deposition generally require a long term value (annual). Since the Level I models will produce average values, they must be converted to total rates. Multiply the concentration of HNO3 by the number of seconds in the averaging time of interest to obtain a total rate. (3.1536 × E+07 seconds/year).

0.274 µg/m3 HNO3 x 31,536,000 seconds/year = 8640864 µg x sec/m3 x yr

6. Multiply the result of step 5 by the deposition velocity for the appropriate pollutant. (0.05 m/s for HNO3). This will result in a deposition value in units of µg/m2.

8640864 µg x sec/m3 x yr x 0.05 m/sec = 432043.2 µg/m2

7. To convert to kg/hectare, multiply the result of step 6 by 0.00001.

43,204.32 µg/m2 x 0.00001 kg x m2/µg x Ha = 4.32 kg/ha/yr

As N, 0.96 kg/ha/yr

This value exceeds the DAT, but represents a small percentage (16%) of the existing deposition of HNO3 at Chassahowitzka (2005 wet deposition of NO3 = 13.26 kg/ha/yr, multiplied by 2 to account for dry deposition). Further, another cement kiln was recently permitted nearby with N deposition impacts in excess of the DAT. As described in that application, the NOx emissions from these projects are limited by the most stringent BACT emission rates in the country.

Sulfur deposition?

5. Additional Impact Analyses

Federal Secondary Ambient Air Quality Standards were established to protect the public welfare including the protection of animal and plant life, property, visibility and atmospheric clarity, and the enjoyment of life and property.

The U. S. Environmental Protection Agency was directed by Congress to develop primary and secondary ambient air quality standards. The primary standards were to protect human health and the secondary standards were to:

"... protect the public welfare from any known or anticipated adverse effects of a pollutant."

The public welfare was to include soils, vegetation and visibility.

As a basis for promulgating the air quality standards, EPA undertook studies related to the effects of all major air pollutants and published criteria documents summarizing the results of the studies. The studies included in the criteria documents were related to both acute and chronic effects of air pollutants. Based on the results of these studies, the criteria documents recommended air pollutant concentration limits for various periods of time that would protect against both chronic and acute effects of air pollutants with a reasonable margin of safety.

The facility will not cause or contribute to any exceedance of established ambient air quality standards. The emissions from the facility will result in ambient impacts that are less than significant and are considered to be de minimis, for all regulated pollutants except for PM_{10}.

5.1 Impairment to Visibility, Soils & Vegetation

The impacts to ambient air resulting from emissions of PM_{10} are well below the applicable Federal Secondary Ambient Air Quality Standards. Compliance with PSD Class II increments establishes an effective ambient air quality standard that is much more stringent than the ambient air quality standards. It is concluded that there will be no adverse effect to the soils or vegetation of the area. Impacts to visibility at Class I areas were estimated using the PLUVUE II modeling system.

In accordance with the *Draft New Source Review Workshop Manual*, the depth of the analysis depends on existing air quality, the quantity of emissions, and the sensitivity of local soils and vegetation in the source's impact area. The analysis fully documents all sources of information, and underlying assumptions utilized as a part of the analysis. This guidance confirms that the geographical scope of the additional impact analyses is the significant impact area, 7 km in this case.

The PSD pollutants for this project are as follows:

- Carbon monoxide (CO)
- Nitrogen oxides (NOx)
- Sulfur dioxide (SO_2)
- Ozone/Volatile organic compounds (O_3/VOC)
- Particulate matter (PM)
- Particulate matter (PM_{10})

Impacts to soils, vegetation, and wildlife from the PSD pollutants could result from ambient concentrations or from deposition. Screening concentrations[8] for exposure to ambient air concentrations of CO, NOx, SO2, and ozone were compared to site-specific modeling results for CO, NOx, and SO2; and to monitored data for ozone. Screening values[9] for deposition for sulfur and nitrogen were compared to site-specific modeling results.

No information was identified for evaluating impacts of particulate matter on soils, vegetation, or wildlife. For the purposes of this application, it is assumed that the ambient air quality standards and Class II area increments provide adequate protection from impacts to soils, vegetation, and wildlife resulting from source emissions of particulate matter.

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[8] A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals, EPA 450/2-81-078, December 1980.

[9] A Screening Procedure to Evaluate Air Pollution Effects on Class I Wilderness Areas, United States Department of Agriculture, General Technical Report RM168, 1989.

5.1.1 Soils

The soils in the impact area are described by the *Soil Survey of Hernando County*. The general soils map in the soil survey shows three major soil complexes within the area of significant impact:

- 1. Candler-Tavares-Paola
- 2. Arredondo-Sparr-Kendrick
- 5. Nobleton-Blichton-Flemington

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

1. Candler-Tavares-Paola
Nearly level to sloping, excessively drained and moderately well drained soils that are sandy throughout. This area is made up of broad rolling sandhill areas interspersed with small ponds, wet swampy areas, and a few sinks.

2. Arredondo-Sparr-Kendrick
Nearly level to sloping, well drained and somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches. This association is made up of upland areas interspersed with a few small sinkholes and small lakes and ponds.

5. Nobleton-Blichton-Flemington
Nearly level to strongly sloping, somewhat poorly drained and poorly drained, fine sandy loams to sands less than 40 inches thick. This association is made up of uplands, interspersed with sinkholes.

Impacts to soils as a result of sulfur deposition were estimated using *A Screening Procedure to Evaluate Air Pollution Effects on Class I Wilderness Areas*. It should be recognized that the loadings suggested by this screening technique are likely to overestimate potential impacts. The screening concept uses numerical values of sulfur and nitrogen deposition and ozone concentrations in nine different wildernesses considered representative of the diversity of wilderness ecosystems.

A conceptual framework was developed to help evaluate the potential impact of proposed new air pollution sources. This framework includes the idea of acceptable (Green Line), unacceptable, (Red Line), and intermediate (Yellow Zone) levels of pollution. Specifically, the Green Line denotes a total loading (current deposition plus predicted additional deposition from the new source) of sulfur and nitrogen and the total dose of ozone that predicts, with a very high degree of certainty, that no AQRV will be adversely affected. Ozone was considered only to affect terrestrial ecosystems.

Two criteria or effects were considered to set the Green and Red Line levels of deposition for sulfur:

(1) removal of base cations from soil, a "capacity" effect, and
(2) the "intensity" effects resulting from changes in soil solution composition.

Nitrogen is the only major plant nutrient that does not accumulate to any significant extent in soils. Any increase in N deposition will most probably result in some increase in vegetation growth, and may actually improve the health of the ecosystem.

A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals was also reviewed. That report states that no direct impacts on soils are defined, such impacts being screened through the potential impacts on soils. Impacts on fauna are also addressed indirectly with effects being related to the ingestion of plants.

The Joyce Kilmer, NC/Slick Rock, TN wilderness areas were selected as most representative for conditions in the eastern United States. The Green Line for total nitrogen deposition is 7-10 kg/ha/year, and for sulfur deposition is 5-7 kg/ha/year.

The IWAQM method described for estimating nitrogen deposition at the Class I area was used to determine the maximum deposition rates of total nitrogen and total sulfur in the impact area. The maximum modeled nitrogen deposition rate at any receptor was 18.85 kg/ha/year; and the maximum modeled sulfur deposition rate at any receptor was 0.11 kg/ha/year. As the deposition rate for sulfur is well below the Green Line screening value, no further analysis was conducted. The nitrogen value is higher than the screening value.

The monitored ozone in Winter Park, second-highest 1-hour average value, averaged over the most recent 5 years (2000-2004) is 96 ppb. This value falls between the Green Line screening value of 75 ppb and the Red Line screening value of 110 ppb. The source's effects on regional ozone concentrations are unknown, but are not expected to be significant. It is assumed that source emission effects on ozone concentrations will not cause adverse effects on soils, vegetation, or wildlife.

5.1.2 Vegetation

Vegetation having significant commercial or recreational value was identified by the *Soil Survey*.

1. Candler-Tavares-Paola

The natural vegetation is bluejack, post, and turkey oaks and scattered longleaf and slash pines. Most of this association is still in native vegetation.

2. Arredondo-Sparr-Kendrick

The natural vegetation is slash, longleaf, and loblolly pines; live, laurel, and water oaks; magnolia; hickory; and dogwood. Most of this association is in improved pasture.

5. Nobleton-Blichton-Flemington

The natural vegetation is slash, longleaf, and loblolly pines; live, laurel, and water oaks; magnolia; sweetgum; hickory; dogwood; ironwood, and scattered red cedar. Most of this association is in improved pasture.

A more detailed review of commercially significant vegetation was conducted for the major soil types described within the general soil types:

- 6: Arredondo
- 11: Blichton
- 14: Candler
- 20: Flemington
- 29: Kendrick
- 36: Nobleton
- 39: Paola
- 47: Sparr
- 49: Tavares

Various tables in the Soil Survey were reviewed for these soil types.

TABLE 18: SOIL YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map Unit	Oranges (box)	Grapefruit (box)	Corn (bushel)	Soybeans (bushels)	Watermelon (tons)	Bahiagrass (animal unit/month)	Grass/Clover (animal unit/month)
6: Arredondo	450	650	---	25	10	8	---
11: Blichton	400	600	50	35	9	10	12
14: Candler	425	625	35	---	10	7	---
20: Flemington	---	---	---	35	8	10	12
29: Kendrick	525	725	60	35	---	10	---
36: Nobleton	475	675	60	30	11	10	---
39: Paola	250	300	---	---	---	4.5	---
47: Sparr	415	615	50	25	10	9	---
49: Tavares	425	600	---	---	8	8	---

TABLE 19: WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map Unit	Trees to Plant
6: Arredondo	Slash pine
11: Blichton	Slash pine
14: Candler	Sand pine, slash pine
20: Flemington	Slash pine
29: Kendrick	Slash pine, loblolly pine
36: Nobleton	Slash pine, loblolly pine
39: Paola	Sand pine
47: Sparr	Slash pine
49: Tavares	Slash pine

TABLE 20: RECREATIONAL DEVELOPMENT

[Terms describe level of restrictions to use based on soil limitations and features. Absence of an entry indicates that the soil was not rated]

Map Unit	Camp areas	Picnic areas	Playgrounds	Paths and trails
6: Arredondo	Moderate	Moderate	Severe	Moderate
11: Blichton	Severe	Severe	Severe	Severe
14: Candler	Severe	Severe	Severe	Severe
20: Flemington	Severe	Severe	Severe	Severe
29: Kendrick	Moderate	Moderate	Severe	Moderate
36: Nobleton	Moderate	Moderate	Severe	Moderate
39: Paola	Severe	Severe	Severe	Severe
47: Sparr	Moderate	Moderate	Severe	Moderate
49: Tavares	Moderate	Moderate	Severe	Moderate

A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals was reviewed. The document provided ambient concentrations for various pollutants in relation to vegetation sensitivity. The concentration for the most sensitive vegetation for each pollutant is compared to the modeled concentration (monitored concentration for ozone) in the following table. Where reasonable to do so, concentrations for atypical averaging periods were estimated through the use of the ISC model. The comparisons used the highest-first-high from any year modeled (1986-1990).

TABLE 21: VEGETATION SENSITIVITY

Pollutant	Averaging Time	Screening Concentration	Modeled Concentration
SO_2	1 hour	917 $\mu g/m^3$	6.11 $\mu g/m^3$
	3 hours	786 $\mu g/m^3$	5.68 $\mu g/m^3$
	1 year	18 $\mu g/m^3$	0.07 $\mu g/m^3$
Ozone Monitored 2004	1 hour	0.20 ppm	0.091 ppm
	8 hour	0.06 ppm	0.078 ppm

NO_2	4 hours	3760 μg/m³	53.26 μg/m³
	8 hours	3760 μg/m³	27.01 μg/m³
	1 month	564 μg/m³	2.29 μg/m³
	1 year	94 μg/m³	0.87 μg/m³
CO	24 hours	1 week = 1,800,000 μg/m³	18.16 μg/m³
	1 month		3.41 μg/m³

All modeled source-alone concentrations are much less than the screening concentrations. The monitored 8-hour ozone concentration is greater than the screening concentration for sensitive vegetation, but is less than the screening concentration for intermediate vegetation.

Based on the above analysis, adverse impacts to vegetation as a result of source emissions are not expected.

5.1.3 Wildlife

The wildlife in Hernando County is described by the Florida Natural Areas Inventory. An online search showed numerous Total Elements (biological occurrences) in Hernando County. The list included the following:

- Amphibians
- Reptiles
- Birds
- Fish
- Mammals
- Plants

Although the lists included certain plants, commercially significant vegetation was identified by the soil survey and is discussed above. The soil survey also includes a table describing potential as habitat for open land wildlife, woodland wildlife, and wetland wildlife.

TABLE 22: WILDLIFE HABITAT

Map Unit	Potential for habitat for:		
	Openland wildlife	Woodland wildlife	Wetland wildlife
6: Arredondo	Fair	Fair	Very poor
11: Blichton	Fair	Good	Fair
14: Candler	Fair	Fair	Very poor
20: Flemington	Fair	Good	Fair
29: Kendrick	Fair	Good	Very poor
36: Nobleton	Fair	Fair	Very poor
39: Paola	Poor	Poor	Very poor
47: Sparr	Fair	Fair	Very poor
49: Tavares	Fair	Fair	Very poor

No information was identified for evaluating direct impacts to wildlife from emissions of PSD pollutants. Some information was reviewed that described indirect effects to wildlife resulting from impacts to vegetation, including habitat alteration and ingestion of vegetation.

For the purposes of this application, it is assumed that the ambient air quality standards and Class II area increments provide adequate protection from impacts to wildlife resulting from source emissions of PSD pollutants.

5.2 Air Quality Impact as a Result of Growth Associated with the Facility

No quantifiable air quality impacts are projected for the area as a result of general commercial, residential, industrial and other growth associated with the facility.

The proposed facility will result in approximately 20 new jobs at the cement plant. Hernando County's unemployment rate was 4.4% in August 2006. No increase in residential or commercial construction is expected in the area surrounding the plant as a result of this facility. Therefore, no additional growth impacts are expected as a result of the proposed project.

The area the facility will affect is the area of significant impact described in the air quality analysis section of this report. This area is within a radius of 7 kilometers from the proposed facility. The applicant owns a substantial amount of this area. General commercial, residential, and other growth within the radius is expected to continue at approximately the current rate.

6. Best Available Control Technology Analysis

6.1 Introduction

Any major stationary source or major modification to a stationary source subject to PSD must conduct an analysis to ensure the application of Best Available Control Technology (BACT). BACT determinations are done on a case-by-case basis and the energy, environmental, and economic impacts of each control technology are evaluated. The BACT requirements are defined as:

> *"an emissions limitation (including visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutants. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."*

A common method for determining BACT is the "top-down" method. The "top-down" method provides that all available control technologies be ranked in descending order of control effectiveness. The most stringent control technology is considered BACT until the applicant can eliminate that technology based on technical infeasibility, control effectiveness, energy impacts, environmental impacts, and economic impacts. The most effective control technique that is not rejected is considered to be BACT.

The BACT requirement applies to each individual new or modified affected emissions unit and pollutant emitting activity at which a new emissions increase would occur. The BACT determination must address separately, air pollution controls for each emissions unit and for each regulated pollutant with a significant emission rate increase. Therefore, in the case of the proposed CEMEX cement plant, a BACT analysis must be performed for PM/PM_{10}, SO_2, NO_X, VOC, and CO. A "top-down" BACT analysis is described below for each emission unit for the applicable pollutants.

The proposed plant's preliminary design is presented in the application and report. The proposed control technologies are described in the following sections as a specific control technology or "equivalent". The plant design is still in the preliminary stages. Therefore, the final plant design, including the control equipment design, may differ somewhat from the proposed design. However, the final control equipment configurations will be equivalent in performance and reliability.

In a memorandum from December 22, 1978, titled: "BACT Information for Coal-fired Power Plants 8.7", EPA supports the concept of submitting preliminary designs followed by a later submission (prior to commencement of construction) of a more detailed control equipment analysis:

> *"While the new PSD regulations require a reasonable degree of assurance that the source can and will install BACT, they also permit the Agency to establish a system for initial BACT review followed by a more detailed control equipment analysis. While such a system does not relieve the source from its responsibility to demonstrate to the Agency that it is applying*

BACT, it does act to streamline the review process and minimize the delays incurred by power plants which cannot supply ultimate equipment designs and blueprints at the time that a permit to construct is secured. This system will also provide the utility with sufficient flexibility to take advantage of expected improvements in control technology...In general information should include the preliminary engineering and plant design criteria which will constitute the basis for soliciting and reviewing vendor proposals for control equipment...This approach must be conditioned on the company's later submission of final detailed engineering design specifications prior to commencement of construction of the control equipment. While the final engineering design and vendor specifications will vary from preliminary information, the utility must show it to be equivalent in performance and reliability established as BACT in the initial determination. These variations may include basis changes in equipment design such as a shift from an ESP to a baghouse, a change in lime/limestone scrubber to a regenerable scrubbing system or a change in the design approach to insuring reliability...Such a submission...would not constitute a reopening of the permit process."

6.2 Particulate Matter (PM/PM_{10})

The various physical and chemical processes at a cement plant generate particulate matter (PM/ PM_{10}). Control of particulate matter emissions is achieved by the collection of particles from point sources, and by the prevention of generation of particles from fugitive sources. Common control devices for point sources include fabric filters (baghouses), and electrostatic precipitators (ESP). ESPs and baghouses are both used as control devices for kilns and coolers at cement plants while baghouses are typically used to control particulate emissions from material handling operations.

A baghouse or an ESP, when properly designed, will provide similar PM/PM10 control efficiency. Particulate matter emissions from kiln/raw mill systems and clinker coolers at modern preheater/precalciner plants in Florida are controlled by both electrostatic precipitators and baghouses. At the Rinker Miami Cement Plant, the kiln/raw mill and cooler all discharge through a baghouse for particulate matter control. At the Suwannee American Cement Plant, particulate matter emissions from the kiln/raw mill are controlled by a baghouse while emissions from the clinker cooler are controlled with an electrostatic precipitator, and at the FRI Thompson S. Baker Cement Plant (Kiln No. 1), particulate matter emissions from both the kiln/raw mill and from the clinker cooler are controlled by separate electrostatic precipitators. For CEMEX Kiln No. 3, it is proposed to control PM/PM10 emissions from the kiln and cooler with separate baghouses.

To assess the relative efficiencies of baghouses and electrostatic precipitators, particulate matter emission data reported to the Department through 2004 by the three aforementioned operating cement plants were reviewed. The three plants combined, reported ten sets of particulate matter emission data from kiln/raw mill systems controlled by electrostatic precipitators, seven sets of data from clinker coolers controlled by electrostatic precipitators, and eight sets of data from kiln/raw mills or kiln/raw mills/coolers controlled by baghouses. Each data set consisted of three 1-2 hour test runs.

The particulate matter concentrations in the ten gas streams discharged from electrostatic precipitators controlling particulate matter emissions from kiln/raw mills averaged 0.0047 grains per dry standard cubic foot while the particulate matter concentrations from the eight sets of kiln/raw mill or kiln/raw mill/cooler data with emissions controlled by baghouses averaged 0.0038 grains per dry standard cubic foot. Using procedures 40 CFR 60, Appendix C, there was no significant difference in these particulate matter discharged concentrations.

If all of the particulate matter emissions data from kiln/raw mills and coolers controlled by electrostatic precipitators were combined (17 data sets), the average particulate matter discharge concentration was 0.0038 grains per dry standard cubic foot; identical to the particulate matter concentration from kiln/raw mill/cooler systems controlled by baghouses.

Based on these data, it is evident that baghouses and electrostatic precipitators control particulate matter from kiln/raw mill and cooler systems equally well under normal operating conditions.

Regarding the use of Teflon-coated bags in baghouses, the data presented herein demonstrates that baghouses with bags of conventional fabric and electrostatic precipitators can both reduce particulate matter concentrations in discharged gas streams to ~0.004 grains per dry standard cubic foot. Correspondence with the BHA division of General Electric[10] revealed that a typical guarantee for membrane-coated bags is no better than 0.01 grains per dry standard cubic foot. Thus there is no compelling reason to install membrane-coated bags in a baghouse; or to select a baghouse over an electrostatic precipitator or vice versa.

Inertial separators (cyclones), another category of PM/PM10 control devices, can have efficiencies of over 90 percent within narrow particle size ranges, but the overall efficiencies are generally less than 85 percent. As all particulate matter collected by dust collectors in cement plants is returned to the system as an intermediate product or product, inertial separators are used extensively as process devices for material recovery.

6.2.1 Proposed BACT

The cement kiln, raw mill and the auxiliary raw mill heater will exhaust through a baghouse and the clinker cooler will exhaust through a separate baghouse. Baghouses will also be used to control particulate matter emissions from all material handling activities.

The kiln/raw mill baghouse is proposed to operate at a PM/PM10 emission rate of 0.153 pounds per ton of clinker (all assumed to be PM10) and the cooler baghouse is proposed to operate at a PM/PM10 emission rate of 0.10/0.08 pounds per ton of clinker.

The baghouses for material handling activities will operate with proposed PM/PM10 discharge concentrations of 0.01 grains of PM per dry standard cubic foot and 0.007 grains of PM_{10} per dry standard cubic foot.

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[10] *Personal Correspondence,* BHA Division of General Electric, December 2004

6.2.2 Particulate Matter Sources

It is proposed that there will be 43 point sources of PM/PM_{10} emissions associated with Kiln No. 3. The major emission point will be the baghouse and stack exhausting the kiln/raw mill. The clinker cooler, the finish mill and the coal mill will also have baghouses of significant size. The remaining 39 emission points are associated with material handling equipment will have PM/PM10 emissions controlled by smaller baghouses.

6.2.3 Description of Control Technologies

A summary of PM/PM_{10} control devices, including control efficiencies, is detailed in Table 23. These devices include the following:

Precleaners (including cyclones);

Scrubbers;

Electrostatic precipitators; and

Fabric filters (baghouses).

The various types of control techniques, some of which are obviously not practical for cement plant application, are described below.

Precleaners

This type of technology reduces the inlet loading of PM to downstream collection devices by removing larger particles. Precleaners include cyclones, mechanically-aided separators, momentum separators, and settling chambers. Cyclones are widely used in the cement industry for material recovery and to reduce the dust loading to baghouses and ESPs.

Cyclones remove PM by centrifugal and inertial forces, induced by forcing particle-laden gas to change direction. Cyclones are primarily used to control PM and PM greater than 10 micrometers in aerodynamic diameter.

Mechanically-aided separators remove PM by centrifugal and inertial forces, induced by mechanically accelerating particulate-laden gas. They are used primarily to control PM and PM greater than 8 to 10 micrometers in aerodynamic diameter.

Momentum separators remove PM by gravitational settling and inertial collection. The particles are separated from the moving gas stream by providing a sharp change in the direction of gas flow so that momentum carries the particle across the gas stream lines and into a hopper. They are used primarily to control larger sized PM.

Settling chambers remove PM by reducing the gas velocity to enable to dust to settle out by the action of gravity. They are used primarily to control larger sized PM.

Scrubbers

Scrubbers remove PM/PM10 and acid gas from a gas stream. The pollutants are removed primarily through the impaction, diffusion, interception, and/or absorption of the pollutant onto droplets of liquid. The liquid containing the pollutant is then collected for disposal. The types of PM/PM10 scrubbers are listed and described below, but it should be noted that these devices are not used in the cement industry as all material recovered in a cement plant is returned (dry) to the process.

- Spray tower;
- Cyclonic spray tower;
- Dynamic scrubber (mechanically-aided);
- Tray tower;
- Venturi scrubber;
- Orifice scrubber;
- Condensation scrubber; and
- Mist eliminators (fiber-bed).

In a spray tower, particulate-laden air passed into a chamber it comes in contact with a liquid spray from spray nozzles. The gas stream enters at the bottom of the tower and flows upward. Spray nozzles are mounted on either the walls of the tower or at the tower center and spray downward on the gas flow. The water droplets capture particles suspended in the gas flow through impaction, interception, and diffusion. Droplets that are large enough to settle by gravity accumulate at the bottom of the chamber. Droplets that remain in the gas stream are collected by a mist eliminator downstream of the nozzles.

Spray tower scrubbers are not typically used for fine PM applications because high liquid to gas ratios are required. Waste is generated from wet scrubbers in the form of a slurry, from which the solid waste must be treated or disposed.

Cyclonic spray scrubbers are similar to spray scrubbers, except that the gas stream flows through the chamber in a cyclonic motion. The droplets impact on the tower walls and fall to the bottom of the tower. Droplets that remain in the gas stream are removed with a mist eliminator.

Dynamic scrubbers, or mechanically-aided scrubbers, are also similar to spray scrubbers, but have a powered rotor that shears the scrubbing liquid into finely dispersed droplets. A mist eliminator or cyclonic separator removes the liquid and captured PM. These scrubbers typically have higher maintenance and power costs because of the rotor.

Tray tower scrubbers consist of a vertical tower with several perforated trays mounted horizontally inside the tower. The gas flows through the tower from the bottom and flows upward through holes in the trays, while the scrubbing liquid flows from the top and across each tray in the tower. This type of scrubber has a higher gas-liquid contact than spray towers because the gas mixes with the liquid flowing over the tray. The gas velocity stops the liquid from flowing down through the holes in the tray. Tray towers do not effectively remove submicron particles.

Venturi scrubbers have a "converging-diverging" flow channel. The cross-sectional area of the channel decreases then increases along the length of channel, which increases the gas stream velocity and turbulence which improves the gas-liquid contact. The liquid droplets are then separated from the gas stream in an entrainment section. Venturi scrubbers are typically used where high collection efficiency for fine PM is desired.

Venturi scrubbers are more expensive than spray tower, cyclonic, or tray tower scrubbers, but have higher collection efficiencies for fine PM. A venturi scrubber's control efficiency is increased by increasing the pressure drop. This leads to higher operating costs.

Orifice, or impaction, scrubbers direct the gas stream flow over the surface of a pool of scrubbing liquid. As the gas impinges on the water surface, it entrains droplets of the liquid. The gas then flows upward and enters an orifice with a narrower opening than the duct. The orifice induces turbulence in the flow which atomizes the entrained droplets. The atomized droplets capture the PM in the gas stream. A series of baffles then removes the droplets, which fall into the liquid below. The disadvantage is the difficulty of removing the waste sludge. Capital and operation and maintenance costs are significantly higher than spray towers.

Condensation scrubbers remove PM by use of condensation to increase pollutant particle size followed by inertial impaction. Although condensation scrubbers have high collection efficiency, the scrubber can only remove relatively small amounts of dust because of the amount of saturation and condensation that are capable of being maintained in the gas stream. They are intended to be used downstream of another scrubber. Condensation scrubbers are a new technology and have not been proven on a cement plant operation. Therefore, this control technique is not considered further.

Mist eliminators, or fiber-bed scrubbers, operate as moisture-laden gas passes through beds or mats of packing fibers, such as spun glass, fiberglass, or steel. For PM collection, fiber mats must be made of coarse fibers and have a high void fraction to decrease the tendency to plug.

Electrostatic Precipitators

Electrostatic precipitators (ESP) are control devices that use electrical changes to move the particles out of the gas stream and onto collector plates. The particles are electrically charged by passing through a corona. The electrical field is generated from electrodes that are maintained at high voltage in the center of the flow. Once particles are collected on the plates, they must be removed without reentrainment into the gas stream.

There are several types of ESPs including plate-wire (the most common), flat plate, tubular, wet, and the two-stage. For gas streams that have a high loading of large particles, cyclones are used upstream of the ESP to reduce the load on the ESP. ESPs are capable of very high collection efficiencies, even for very small particles. Since the particles are dry when collected it is easy to recycle the collected material in a cement plant. Operating costs are relatively low and ESPs can handle a wide range of operating temperatures and gas flow rates.

Fabric Filters

In a fabric filter or baghouse, gas is passed through a felted or woven fabric, causing PM in the flue gas to be collected on the fabric by sieving and other mechanisms. Fabric filters may be in the form of sheets, cartridges, or bags, with a number of individual fabric filter units housed together in a group. Bags are the most common type of fabric replacements of bags without having to shut down the entire system.

Fabric filters can be made of many different types of materials. The type of fabric is based on the operating conditions. Cleaning intensity and frequency are important variables in determining removal efficiency. The dust cake provides a significant portion of the fine particulate removal efficiency. Therefore, cleaning that is too frequent or too intense will reduce the fine particulate removal efficiency. Also the cleaning cannot be too infrequent or too ineffective because this will increase the pressure drop.

Baghouses are typically categorized by their cleaning method. The different types of cleaning methods of baghouses include shaker cleaning, reverse-air, and pulse-jet.

6.2.4 Technically Feasible Options

A summary of the proven and technically feasible control techniques ranked by the order of control efficiency is listed in Table 24. There are two control techniques that have the top ranking (greater than 99 percent control efficiency); ESPs and baghouses.

6.2.5 Previous BACT Determinations

Kiln/Raw Mill/Cooler

A review of previous BACT determinations for kilns and raw mills is presented in Table 25. This information was compiled from data on EPA's RACT/BACT/LAER Clearinghouse and represents $PM/PM_{10}/PM_{2.5}$ BACT determinations for the last 10 years. This review indicates that the most common control techniques have been ESPs and baghouses. A few scrubbers have also been used for this type of process.

The BACT emission limits have ranged from 0.02 lb/ton feed to 4.48 lb/ton (dry basis) for PM and 0.09 lb/ton to 3.80 lb/ton (dry basis) for PM_{10}. The most recent BACT determinations have been 0.52-0.57 lb/ton of feed (hourly) or 0.46 lb/ton (annual) for PM and 0.48-0.52 lb/ton of feed (hourly) or 0.39 lb/ton (annual) for PM_{10}.

A review of previous BACT determinations for clinker coolers is presented in Table 26. This information was compiled from data on EPA's RACT/BACT/LAER Clearinghouse and represents $PM/PM_{10}/PM_{2.5}$ BACT determinations for the last 10 years. This review indicates that the only add-on control techniques have been ESPs and baghouses. The BACT emission limits have ranged from 0.01- 0.16 lb/ton of feed (dry basis) for PM and 0.02-0.13 lb/ton (dry basis) for PM_{10}.

The proposed CEMEX Kiln No. 3 will have separate baghouses and stacks for the kiln/raw mill and clinker cooler. The proposed BACT PM limits for the kiln/raw mill is 0.153 pounds of PM/PM10 per ton of clinker (all PM assumed to be PM10). This is equivalent to about 0.09 pounds of PM/PM10 per ton of kiln feed. The proposed PM/PM10 limit for the clinker cooler is 0.10/0.08 pounds per ton of clinker; or about 0.06/0.05 pounds per ton of kiln feed. These emission limits are at the lower end of the range of previously determined BACT limits.

Material Handling Sources

A review of recent BACT determinations was performed for PM/PM_{10} material handling sources at Portland cement plants from the Clearinghouse. A summary of this review is presented in

Table 27. From this review it is evident that the only type of add-on control technology that has been applied to this type of operation is the baghouse. Other types of particulate control include water sprays, covered conveyors, and enclosed buildings to minimize the generation of fugitive PM/PM_{10} emissions. PM/PM_{10} emission limits have ranged from 0.005 to 0.10 gr/dscf. The proposed PM and PM_{10} emission limits of 0.01 gr/dscf and 0.007 gr/dscf, respectively, are reasonable based on the previous BACT determinations.

Finish Mills

A review of recent BACT determinations was performed for PM/PM_{10} finish mills at Portland cement plants from the Clearinghouse. A summary of this review is included in Table 28. From this review it is evident that the only type of add-on control technology that has been applied to this type of operation is the baghouse. PM emission limits have ranged from 0.017 to 0.10 gr/dscf. PM_{10} emission limits have ranged from 0.01 to 0.015 gr/dscf. The proposed PM and PM_{10} emission limits of 0.01 gr/dscf and 0.007 gr/dscf, respectively are as low, or lower than any of the previous BACT determinations.

6.2.6 BACT Selection

Cement Kiln and Clinker Cooler

The proposed BACT emissions limits for the kiln/raw mill are 0.153 lb/ton clinker for PM and for PM_{10}. For the clinker cooler, the proposed BACT emission limits are 0.10 lb/ton clinker for PM and 0.08 lb/ton clinker for PM 10. Emissions of PM/PM_{10} are to be controlled using baghouses (fabric filter). Final baghouse specifications will be provided to FDEP when available. Based on operating experience at other modern cement plants in Florida however, assurance has been provided that the proposed BACT limits for PM/PM_{10} are achievable.

The baghouse is a top-ranked technique based on control efficiency, technical feasibility, and proven technology. The baghouse will achieve more than 99 percent control of PM/PM10 emissions from the kiln/raw mill and the cooler. The proposed emission limits are reasonable based on the most recent BACT determinations listed on the Clearinghouse and permitted in

Florida. The proposed control technology of a baghouse is reasonable based on the control technologies listed on the Clearinghouse for this type of process.

Finish Mills, Coal Mills and Material Handling Equipment

The only add-on control technology that is listed on the Clearinghouse for finish mills, coal mills and material handling sources at cement plants are baghouses. Baghouses can achieve very high control efficiency (greater than 99%). Any additional add-on control techniques would be very costly based on the control that the baghouses alone can achieve. Therefore, as baghouses are the only proven control technology for this type of source and since they can achieve very high control efficiencies, baghouses are justified as BACT for this source group. The proposed PM and PM_{10} emission limits of 0.01 gr/dscf and 0.007 gr/dscf are reasonable as BACT based on previous BACT determinations for similar sources. Again, the final selection of baghouses will be provided when available.

6.3 Sulfur Dioxide

SO_2 can be generated from organic or pyritic sulfur compounds in the raw material fed to the preheater and from sulfur in the fuel. In Florida there is very little organic or pyritic sulfur in the raw materials and the alkaline nature of the cement provides for the nearly complete adsorption of SO_2 generated by sulfur in the fuels. Thus, SO_2 emissions from Florida cement plants are inherently low.

6.3.1 Proposed BACT

The proposed SO_2 emission limit for the kiln and raw mill is 0.20 pounds per ton of clinker, 24-hour average. The proposed control technique is inherent absorption of SO_2 by the limestone and alkalis in the raw material, raw material management to avoid materials with organic or pyritic sulfur and good operating practices.

6.3.2 SO_2 Sources and the Combustion Process

The kiln/raw mill system is the only source of SO_2 in a cement plant. The SO_2 is potentially from organic or pyritic sulfur in the raw meal that is oxidized in the preheater, from fuels fired to the kiln system or from fuel fired to the auxiliary heater in the raw mill. All SO_2 is discharged through the kiln/raw mill stack.

Sulfur in Raw Materials

Cement plant operators in Florida are fortunate in that there is little to no organic or pyritic sulfur in the limestone and overburden mined onsite and management practices can be used to assure that the materials procured offsite likewise have little or no sulfur. As a result, SO_2 generated by the oxidation of sulfur compounds in the preheater is minimal.

Combustion Process

The main potential source of SO_2 is that generated by the combustion of sulfur containing fuels in the kiln burner and the calciner burner. Sulfur cycles in the calciner and kiln with the cycle dependent upon the sulfur/alkali balance, the oxidizing/reducing conditions in the kiln and calciner and the $CaO/CaSO_4$ equilibrium. Most of the sulfur eventually reacts with alkali minerals (primarily sodium and potassium) to form alkali sulfates that are incorporated in the cement clinker. If the sulfur/alkali balance is too much out of balance, alkali additives can be incorporated in the mix or the sulfur content of the fuel can be reduced.

Conventional wisdom is that if the sulfur-alkali balance exceeds unity, sulfur emissions (as sulfur dioxide) will increase and/or there will be sulfur deposits in the riser duct and/or preheater. It has been the experience of CEMEX, however and the experience of European cement producers, that a sulfur-alkali ratio of up to two can be maintained without increasing SO_2 emissions or experiencing sulfur deposits.

Operating with a high sulfur-alkali ratio can be accomplished by assuring that there is complete burnout of the fuel under oxidizing conditions early in the kiln. This allows the fuel sulfur to form sulfate complexes in the clinker and exit the kiln with the clinker. To assure the early burnout requires grinding the fuel to a fineness of 95 percent passing a 200 mesh sieve and requires sufficient oxygen to assure the burnout under oxidizing conditions. CEMEX has had experience operating under these conditions (with 100 percent petcoke) at their Fairborn, Ohio

Plant, their Balcones, Texas Plant and their Knoxville Plant and is of the opinion that similar operations can be achieved at the Brooksville Cement Plant.

Without the early burning of high sulfur fuel under oxidizing conditions, the sulfur will form salts that will evaporate in the sintering zone and return to the riser duct and calciner where they will condense and return to the sintering zone; thus creating a sulfur cycle in the kiln/calciner. In the temperature range 750-1200°C (which includes the calcination temperature of limestone), the salts have sticky properties. Thus, if excessive sulfur is present under these conditions, plugging problems will occur at the kiln feed shelf, the riser duct and/or the calciner, causing plant operating problems well before the sulfur can break through and cause SO_2 emission problems. Thus, the release of SO_2 generated by fuel combustion is extremely unlikely as plant operating problems, potentially resulting in a plant shutdown, will occur before SO_2 breakthrough. But, as discussed previously, the sulfur cycle can be managed by controlling combustion conditions.

A factor to note is that high-sulfur fuels can be burned with confidence under oxidizing conditions in the proposed CEMEX Kiln No. 3 without concern for NOx emissions as SNCR is proposed for NOx control.

As a result of the self-limiting mechanism for potential sulfur emissions and combustion management practices just described, SO_2 emissions as a result of fuel sulfur are essentially nonexistent. Therefore, there is no need to establish a sulfur limit on any of the fuels.

Regarding the firing of coal and petcoke as is proposed by CEMEX, CEMEX has found that coal and petcoke mixes in the range of 90/10 and 80/20 can be satisfactorily burned and that 100 percent petcoke can be satisfactorily burned. CEMEX has found that when coal/petcoke mixes approach 50/50, two flames develop in the kiln. One flame is the result of coal combustion and the second is the flame resulting from petcoke combustion. The coal flame develops near the front of the kiln while the petcoke flame develops further down the kiln. This double flame results in poor clinkering conditions as well as operating problems.

Regarding the combustion of petcoke and Tire Derived Fuel (TDF), CEMEX has had success with this combination. CEMEX has burned a petcoke/TDF mix at their Balcones Plant with good success.

In general, the ratio of the heat input between the kiln and calciner is about 40 percent of the heat fired at the kiln burner and about 60 percent of the heat fired at the calciner burner. When tire derived fuel is used, the calciner heat input will be reduced and tires will make up the difference; up to 15 percent of the total heat input.

The heat input ratio and fuel mixtures can vary. Typically, the kiln burner will burn coal or petcoke and the calciner burner will fire these fuels or other fuels (e.g., high-carbon flyash) in various combinations. Other fuels may include natural gas, fuel oil, tire-derived fuel at up to 15 percent of the total heat value, and used oil.

The heat input to the pyroprocessing system is determined by the raw material feed rate to the kiln and the burnability of the raw materials. An increase in feed rate or burnability will require increases in total heat input rate. The feed rate is limited by the plant mechanical design and raw material properties. The raw material burnability is dependent on the chemistry of the onsite raw materials and the raw meal fineness from the raw mill. The KHD kiln proposed by CEMEX is very energy efficient, with a heat requirement of only 2.6 mmBTU per ton of clinker.

Fuel ratios will be affected by changes in fuel parameters, including heat value and volatility; fuel availability and delivered price. Changes in heat input ratios or in fuels are not expected to have significant effects on emissions from the kiln system; and in particular sulfur as described in preceding paragraphs. Pollutant emissions are assumed to be essentially independent of fuels and heat input ratios. At all times emissions are expected to be within the limits proposed in the application.

During startup, fuel consumption will be greater than during steady state operations because heat is not recovered from the clinker cooler for combustion air. Emissions may likewise be affected as the kiln system is heated and raw materials are introduced through the preheater. Data from operating cement plants have demonstrated that mass emission limitations (pounds per hour) are not typically exceeded during startup, however emission rates based on tons of clinker can be exceeded because of the low clinker production rate at startup.

While on the subject of fuel combustion and sulfur, any additional amounts of vanadium and/or nickel in petcoke are not expected to have measurable effects on sulfuric acid mist emissions from the CEMEX Brooksville Cement Plant. It is recognized that soot deposition resulting from the firing of petcoke in steam generators has resulted in boiler tube corrosion as a result of higher levels of vanadium and/or nickel in soot and the catalytic effect of these metals on sulfur dioxide in the gas stream. This same effect is not expected in a cement plant, however, because of the high overall dust concentration in the kiln system and the nature of this dust.

To evaluate the overall magnitude of potential increases in vanadium and nickel in the kiln system as a result of firing various fractions of petcoke, several references were reviewed. Geometric mean values of vanadium and nickel in kiln feed, coal and coke were determined from these references and are presented in the following table:

Material	Vanadium (ppm)	Nickel (ppm)
Kiln Feed	38	21
Coal	65	33
Petcoke	270	80

For purposes of this discussion, a kiln feed rate of 260 tons per hour and a fuel firing rate of 16 tons per hour were taken as typical for Kiln No. 3. Based on these system operating conditions and the vanadium and nickel concentrations in the feed and fuels, data in the following table summarize the total vanadium and nickel input to the kiln system for various petcoke firing and coal firing.

Fuel	Material	Vanadium (lb/hr)	Nickel (lb/hr)
100% Coal	Feed	19.8	10.9
	Coal	2.0	1.1
	Total	**21.8**	**12.0**
100% Petcoke	Feed	19.8	10.9
	Petcoke	8.6	2.6
	Total	**28.4**	**13.5**

These data demonstrate that when firing 100 percent coal, there is approximately 21.8 pounds per hour of vanadium input to the kiln system and approximately 12.0 pounds per hour of nickel. With 100 percent petcoke firing, the vanadium input to the kiln system will increase by approximately 6.6 pounds per hour and the nickel input will increase by approximately 1.5 pounds per hour. These increases in vanadium and nickel will be associated with a kiln feed rate of 260 tons per hour and a corresponding kiln dust recirculation rate of approximately 26 tons per hour. In this total material feed/recirculating dust environment, the increase in vanadium and nickel is not expected to have any measurable effect on the formation of sulfuric acid mist.

6.3.3 Description of Control Technologies

The following discussion of SO_2 control technologies is provided for permitting purposes. However, these control technologies are unnecessary in the Florida cement industry and are not cost effective on Florida cement plants.

A summary of the available SO_2 control technologies are listed in Table 29, including the respective control efficiencies. These techniques include the following:

- Absorption;
- Adsorption; and
- Low sulfur fuels.

Absorption

Absorption is a mass transfer operation in which one or more soluble components of a gas mixture are dissolved in a liquid with a low volatility. The pollutant diffuses out of the gas into the liquid when the liquid has less than the equilibrium concentration of the gaseous component. The driving force for absorption is this difference between actual and equilibrium concentrations. Control devices that use absorption principles include packed towers, plate or tray columns, venturi scrubbers, and spray chambers.

Packed towers are columns that are filled with packing material that provide a large surface area. The large surface area allows for contact between the liquid and the gas. Packed towers can achieve higher removal efficiencies, handle higher liquid rates, and have relatively lower water consumption requirements than other types of gas absorbers. However, packed towers may also have high pressure drops, high instances of clogging and fouling, and high maintenance costs because of the packing material.

Plate, or tray, tower scrubbers are vertical cylinders where the gas and liquid come in contact in steps on trays or plates. The liquid enters at the top of the column and flows across each plate and through a downspout to the plates below. The gas stream flows upward through holes in the plates, bubbles into the liquid, and passes to the plate above. Plate towers are easier to clean and can handle large temperature fluctuations better than packed towers. However, at high gas flow rates, plate towers exhibit larger pressure drops and have higher liquid holdups.

Venturi scrubbers have a "converging-diverging" flow channel. The cross-sectional area of the channel decreases then increases along the length of channel, which increases the waste stream velocity and turbulence which improves the gas-liquid contact. The liquid droplets are then separated from the gas stream in an entrainment section. A venturi scrubber control efficiency is increased by increasing the pressure drop, which leads to higher operating costs.

Spray towers use a spray distribution system to deliver liquid droplets through a countercurrent gas stream under the influence of gravity. The droplets contact the pollutants in the gas stream.

The required contacting power is derived from an appropriate combination of liquid pressure and flow rate. Spray towers are easy to operate and maintain and have low energy requirements. However, they have the least effective mass transfer capability of the absorbers and have high water recirculation rate requirements.

Adsorption

In an adsorption control system, a dry alkaline material is injected into the gas stream. SO_2 is adsorbed to the surface of the alkaline particles. A reaction occurs that forms compounds that cannot be reentrained into the gas stream. Hydrated lime (calcium hydroxide) is a common type of alkali and can be introduced at the top of the preheater for SO2 control if necessary.

Low Sulfur Fuels and/or Raw Materials

This technique is discussed in Section 6.3.2.

6.3.4 Technically Feasible Options

All of the control techniques included in Table 29 are considered technically feasible for SO_2 control from the cement kiln. A summary of the control techniques ranked by the order of control efficiency is listed in Table 30. The top two control techniques, based on control efficiency, are packed tower scrubbers and spray dry scrubbing; however, neither are necessary or cost effective in Florida cement plants. The proposed control technique for SO_2 from the kiln/raw mill is the inherent adsorption by alkaline raw materials and effective operating practices.

6.3.5 Previous BACT Determinations

A review of previous BACT determinations from the last ten years was performed for SO_2 emissions from cement kilns at Portland cement plants and is presented in Table 31. From this review, it is evident that the control techniques for SO_2 have typically been wet scrubbers (only 4 facilities), dry scrubbing equivalent (inherent scrubbing of SO_2 from limestone in raw material), low sulfur fuels, and process changes or controls. The SO_2 emission limits have ranged from 0.143 lb/ton to 28.8 lb/ton (daily and annual averages).

6.3.6 BACT Selection

The proposed BACT emission limit for sulfur dioxide for the CEMEX Kiln No. 3 plant is 0.20 pounds of SO_2 per ton of clinker. This emission limit is proposed as a 24-hour rolling average. The control technology that will be used to achieve this emission rate is process control, which includes the management of raw materials to assure acceptably low sulfur contents in all raw materials and good combustion practices.

6.4 Nitrogen Oxides

Nitrogen oxides (NOx) emissions from a modern dry process Portland cement plant kiln are the result of fuel combustion in the main kiln burner and the calciner burner. NOx emissions can be reduced by minimizing fuel combustion (or conversely, by increasing the thermal efficiency of the kiln system), by controlling the combustion processes and/or by add-on technology such as Selective Catalytic Reduction (SCR) or Selective Non-catalytic Reduction (SNCR). All of these approaches will be discussed in this Section.

The most fuel efficient Portland cement plants are the dry-process plants with a calciner and preheater. Approximately 40 percent of the fuel utilized in these plants is fired in the kiln to create a clinkering condition while the remainder is fired in the calciner to preheat the raw meal as it passes through the preheater and to calcine the limestone in the raw meal.

There are three mechanisms involved in the formation of NOx; "prompt" NOx, fuel NOx, and thermal NOx. "Prompt" NOx is NOx formed instantaneously at the flame surface during luminous oxidation. This NOx is independent of flame temperature and excess air. The formation of this NOx and the resulting concentration in the gases exhausted from the kiln can be considered as the baseline NOx emissions resulting from the two combustion processes. In cement plants, prompt NOx is not significant.

The fuel NOx is the NOx formed by the oxidation of nitrogen in the fuel. Approximately 60 percent of the fuel nitrogen is converted to NOx; depending upon available oxygen in the flame and the temperature profile of the flame.

The thermal NOx is the most significant source of NOx in cement kilns. This NOx is formed through a reaction between atmospheric nitrogen and oxygen. The rate of formation is a function of both available oxygen in the flame and the temperature of the flame.

The combustion characteristics of various fuels affect the formation of both fuel NOx and thermal NOx. Additionally, the firing location (the main kiln burner or the calciner burner) affects NOx formation as a result of differing heat release requirements. And finally, the burner design plays a very important role in NOx formation.

Natural gas when fired in the main kiln burner has been shown to generate approximately twice the amount of NOx per ton of clinker as coal or oil. This is not intuitive as the adiabatic flame temperatures of coal and oil is higher than for natural gas and both coal and oil have more fuel nitrogen than natural gas. Additionally, coal and oil are generally fired with a higher volume of combustion air which increases the availability of oxygen, and hence the potential for NOx formation. There are other factors associated with coal and oil burning, however, that more than offset the factors that would indicate higher NOx formation with these fuels. These factors include the flame shape, the luminescence of the flame, and higher levels of carbon monoxide (CO), and various radicals that tend to counter the formation of NOx.

The use of petroleum coke in either the kiln burner or calciner appears to increase NOx emissions even though the nitrogen content of petroleum coke can be lower than that of coal and it burns with a lower flame temperature.

The location at which fuel is introduced and the combustion requirements also affect the potential for NOx formation. At the main kiln burner, the purpose of combustion is to create a high temperature (1450-1550°C) burning zone for clinker production. The associated gas temperature is in the range of 1700°C. This combustion must be carried out with sufficient oxygen to produce an intense, high temperature flame under oxidizing conditions. Both of these conditions contribute to the formation of thermal NOx. The burner design, as it affects flame shape, and the fuel to air ratio, can mitigate NOx formation, however. In most modern dry process cement plants, low-NOx burners are used. These burners have multiple channels through which the fuel, primary combustion air and secondary combustion air are introduced. The introduction of secondary air, in addition to completing the combustion of the fuel, is used to shape the flame.

In the calciner of a preheater-precalciner designed plant, the purpose of combustion is to provide the heat necessary to calcine the kiln feed prior to entering the kiln and to provide heat for the preheater tower. The calciner fuel can be fired either in a separate combustion chamber or in an in-line calciner where it is burned in contact with the raw meal. In either case, the temperature required is in the range 900-950°C (the calcination temperature of calcium carbonate). This is much lower than the temperature at the kiln burner. Furthermore, the combustion in the calciner can occur with either stoichiometric or sub-stoichiometric amounts of combustion air. In the case of sub-stoichiometric combustion, reducing conditions are created that can reduce the NOx generated in the kiln. With sub-stoichiometric combustion, additional combustion air is supplied downstream of the calciner to assure the complete burned-out of fuel and to oxidize hydrocarbons and carbon monoxide.

6.4.1 Proposed BACT

The proposed BACT for NO_x from the cement kiln is 1.95 lb/ton clinker, 30-day rolling average which will be met using Selective Non-Catalytic Reduction (SNCR), low-NOx burners and kiln design. The kiln burner will be a multi-channel, low-NOx burner and the calciner burner will be supplied by KHD. This BACT limit and the associated technology has been applied to five cement plants recently permitted in Florida and the limit is the lowest established BACT limit for NOx in the U.S. There have been no operations at any plant that has demonstrated a lower limit is achievable long-term.

6.4.2 NOx Sources

The kiln/raw mill system is the only source of NOx in a cement plant. The NOx results from fuel combustion in the kiln and calciner burners and from fuel combustion in the auxiliary heater in the raw mill. All NOx is discharged through the kiln/raw mill stack.

6.4.3 Description of Control Technologies

A summary of available NOx control technologies and their associated control efficiencies is listed in Table 32. Control technologies for NO_x can be divided into two categories: design features, and post-combustion controls. The available types of NO_x controls are:

Design Features:

- Plant design;
- Combustion control;
- Low-NO_x burners with indirect firing; and
- Fuel selection and feed mix.

Post-combustion controls:

- Selective non-catalytic reduction (SNCR); and
- Selective catalytic reduction (SCR).

DESIGN FEATURES

Plant Design

NO_x formation in the pyroprocessing system at a Portland cement plant is a function of the energy release. Plant designs that minimize the energy release during clinker production typically reduce the formation of NO_x emissions. Modern plant designs such as the preheater/precalciner design have lower heat input requirements for clinker production, and therefore generate lower amounts of NO_x emissions.

As points of comparison, a long wet-process cement kiln requires approximately 6.0 mmBTU per ton of clinker and a long dry-process kiln requires in the order of 4.5 mmBTU per ton of clinker. The more modern design dry process plants with a preheater have a heat requirement in the range of 3.5-3.8 mmBTU per ton of clinker and dry process plants with both a precalciner and preheater have heat input requirements in the range of 2.6-3.0 mmBTU per ton of clinker.

The KHD kiln system as proposed by CEMEX, typically operates in the range of 2.6 mmBTU per ton of clinker.

Combustion Control

The control of combustion and the staging of fuel, feed and combustion air play important roles in the formation of NOx. In the modern dry process plants with preheaters and precalciners (the only type of plant addressed herein) the firing of fuel is split so that approximately 40-50 percent of the fuel is fired at the kiln burner and 50-60 percent is fired at the precalciner. The fuel fired at the precalciner can be further staged so that approximately 35-45 percent of the total fuel is fired into the precalciner and up to 15 percent of the total fuel is fired at the kiln inlet; either through a separate burner or in the form of Tire Derived Fuel (TDF).

The fuel fired in the kiln is for purposes of producing cement clinker. This requires a short, intense flame capable of producing a material temperature in the range of 1450-1550°C. The corresponding gas temperature is typically greater than 1700°C. Additionally, excess oxygen is required for clinkering. It is typical to strive for oxygen levels of one to two percent at the kiln inlet (the point where raw material is fed into the kiln and the combusted gases exit the kiln) to guarantee oxidizing conditions in the burning zone.

With continuous oxygen (O_2) and carbon monoxide (CO) monitoring at the kiln inlet and throughout the calciner and preheater, the excess air can be controlled to maintain a level that promotes optimum clinkering conditions while minimizing the excess O_2 available for NOx formation. Another practical benefit of reducing excess oxygen levels is a reduction in the amount of excess air drawn through the kiln. By minimizing excess air, the fuel required to heat the air is minimized and the power consumption of the kiln I.D. fan is minimized.

Other factors related to fuel firing in the kiln are the method in which the fuel is delivered to the burner and the burner design. Modern Portland cement plants are indirectly fired; i.e., the air that sweeps the mill in which solid fuels are ground is vented to the atmosphere through a particulate matter control device and the ground fuel is stored in a fuel storage bin. From the fuel storage bin, the ground fuel is conveyed to the burner with a controlled amount of primary combustion air.

In a direct-fired kiln, the primary combustion air typically accounts for 17-20 percent of the total combustion air. This introduces a relatively large fraction of oxygen at the point of initial fuel combustion, leading to the formation of higher levels of NOx. With indirect-fired kilns, the primary combustion air is typically in the range of 5-7 percent of the total combustion air. This not only reduces the amount of oxygen available for NOx formation, but also allows a greater proportion of hot air recovered from the clinker cooler to be used as secondary combustion air. This both reduces the formation of NOx and increases the thermal efficiency of the pyroprocessing system.

The other general location of firing fuel in a preheater-precalciner cement plant is in the area of the calciner. This fuel preheats the raw meal as it passes through the preheater and calcines the limestone prior to the raw meal entering the kiln. These two processes require a large amount of heat, however the temperature required for calcination is in the range 900°C. This is much lower than the temperature required in the kiln for clinkering and as a result, NOx formation is minimized.

The concept of staged combustion can also be employed in preheater-precalciner kilns. The staging can involve the staging of fuel combustion, the staging of combustion air and the staging (splitting) of kiln feed. The basic staged combustion system operating under oxidizing conditions throughout will result in NOx emissions of about 3.5-4.0 pounds per ton of clinker. Compared to this, a dry process plant with a preheater only (all fuel fired at the kiln burner) will have NOx emissions in the range of 5.0-6.0 pounds per ton of clinker. The reduction in NOx emissions achieved with the preheater-precalciner kilns is a result of burning approximately 50-60 percent of the fuel at lower temperatures in the calciner.

Staged combustion can also occur under fuel-rich conditions. If a kiln inlet burner is employed or if TDF is fired as a supplemental fuel at the kiln inlet, this combustion can occur with sub-stoichiometric combustion air. This creates a reducing atmosphere in a temperature range that is typically 900-1000°C and results in a good portion of the NOx generated in the kiln being converted to elemental nitrogen; thus reducing the NOx emissions. This concept is similar to that referred to as "reburning".

Staged combustion can also be operated under reducing conditions without a kiln inlet burner and without feeding TDF at the kiln inlet. In this mode of operation, the fuel fired at the calciner (particularly that fired in a separate combustion chamber) can be burned with sub-stoichiometric combustion air. The gases from this combustion, when combined with the gases discharged from the kiln again create a reducing condition which converts the NOx generated in the kiln to elemental nitrogen. Tertiary air is introduced in the manner previously described to complete the burnout of the fuel and the oxidation of CO. This is referred to as air staging; as opposed to fuel staging.

Tests conducted at a plant in north Florida in 2004 demonstrated that a kiln inlet burner had no significant effect on NOx emissions. The NOx reduction achieved with air staging was just as effective as that achieved with fuel and air staging.

NOx emissions from a preheater-precalciner plant with the staged combustion system operating under reducing conditions will yield NOx emissions in the range of 2.3-2.6 pounds per ton of clinker. This compares with NOx emissions in the range of 3.5-4.0 pounds per ton of clinker with a staged combustion system operating under oxidizing conditions.

Low-NO_x Burners with Indirect Firing

The burner design also plays a major role in the creation of an optimum burning zone and in the formation of NOx. The low-NOx burners installed on most modern cement plants have multiple channels through which fuel and combustion air are introduced. The fuel is fired with an optimum amount of primary combustion air to produce a fuel-rich combustion zone. With initial combustion occurring in a fuel-rich atmosphere, NOx formation is minimized. The secondary combustion air (heated air recovered from the clinker cooler) is fired around the flame. This firing method reduces the flame turbulence, it establishes a fuel-rich zone for initial combustion, and delays the mixing of fuel with secondary combustion air. The shaped, less intense flame from a low-NOx burner results from the staging of combustion and lowers the overall flame temperature. This reduces NOx formation and shapes the flame to optimize clinkering conditions in the burner zone. It should be noted that low-NOx burners can be used only with indirect fired kilns.

The main kiln burner for CEMEX Kiln No. 3 will be a low NOx burner. The burner will be indirectly fired. The calciner burner will be provided by the plant designer and will be indirectly fired.

It has been well established that indirect firing systems are the most efficient firing systems for rotary kilns. Some of the advantages of indirect firing are:

- The moisture from coal drying is no longer injected into the flame,
- Since the primary air flow is substantially less than with either direct firing or semi-direct firing, the peak flame temperature is reduced and the potential for thermal NOx generation is reduced,
- As the primary combustion air is reduced and the excess coal mill sweep air is replaced by hot clinker cooler air as secondary combustion air, the fuel consumption (mmBTU per ton of clinker) can be reduced by approximately 2-5 percent,
- As the indirect firing system includes a pulverized coal storage bin, the coal mill can be taken down for maintenance without shutting the kiln down,
- NOx emissions can be reduced as much as 30-35 percent over emissions from a typical direct fired, mono-channel burner,
- The indirect firing system coupled with a multi-channel burner can be adjusted to accommodate fuels of varying characteristics; i.e., coal and petroleum coke,
- The flame shaping with the multi-channel burner improves combustion efficiency and eliminates flame impingement on refractory.

In the following sections indirect firing systems are described, and the multi-channel burner (as a pulverized solid fuel burner) is described.

In modern cement plants, indirect firing systems are most commonly used. With these systems, the coal or petcoke is ground in a mill, it passes through a classifier and is delivered to a mill baghouse. The baghouse separates the pulverized fuel from the air that sweeps the mill. The sweep air is discharged from the baghouse to the atmosphere while the fuel is delivered to a pulverized fuel silo. From the silo, the pulverized fuel is delivered to a multi-channel burner with a controlled amount of air. As a result of the small amount of air introduced into the root of the flame, combustion will occur in an oxygen deficient environment; thereby reducing thermal NOx formation. The remainder of the combustion air is introduced through the swirl air and axial air channels under conditions dictated by fuel characteristics.

This process for fuel grinding, coupled with a multi-channel burner, results in the volume of primary combustion air being reduced to 6-10 percent of the stochiometric air. The remainder of the combustion air is secondary air is derived from hot clinker cooler gases thus improving the overall thermal efficiency of the combustion system. Various sources have reported fuel savings of 2-5 percent with indirect firing systems when compared with direct firing systems.

Multi-channel burners were introduced approximately 30 years ago for firing pulverized coal to steam boilers. The multi-channel burners were a departure from the traditional mono-channel burner where fuel and primary air were delivered through a single channel with secondary combustion air supplied elsewhere around the burner. With the mono-channeled burners, 20-40 percent of the combustion air was delivered as primary air with the fuel. Because of the volume and momentum of the primary combustion air, fuel ignition typically took place some distance from the burner, resulting in flame instability and allowing even more combustion air to be entrained into the flame. This burner configuration resulted in relatively high thermal NOx formation and offered no opportunity for flame shaping.

With the multi-channel burner, the basic principles are to introduce the fuel with a small amount of primary combustion air at a low injection velocity. The remainder of the primary air is then added through two other concentric channels. One channel delivers swirl or radial air and the other channel delivers axial air. Combined, the total primary air delivered to the multi-channel burner is 6-10 percent of the stochiometric combustion air. This design allows for the initial combustion of coal to occur in an oxygen deficient environment close to the burner. The swirl air provides internal mixing of the flame, and the axial air allows for flame shaping.

The typical multi-channel burner is a three channel burner with the channels being concentric openings within the burner tube. The inner channel is the pulverized coal channel, the middle channel is where swirl or radial air is introduced, and the outer channel is for axial air. Typically, the outer wall of the burner tube (the outer wall of the axial air channel) extends beyond the burner face to prevent a rapid expansion of the axial air. This enables better flame shaping. With this design, the multi-channel burner allows for flame shaping, it minimizes the oxygen concentration at the flame root in order to lower thermal NOx emissions, and it allows for variability in fuel characteristics without sacrificing performance and efficiency.

The aims of the multi-channel burner are achieved through the following design features:

- In the center of a coal/coke firing burner tube is a plug. This forms the inner wall of the fuel channel and functions to introduce recirculating core eddies at the root of the flame. These recirculating eddies promote the early ignition of the fuel in an oxygen deficient atmosphere. The early ignition was found to be important because as the flame propagates away from the burner face, more air is entrained and the potential for thermal NOx generation is greater.
- Pulverized coal/coke is introduced through the inner channel with a minimal amount of air at a low injection velocity. The combination of volume and momentum can be varied to conform to fuel characteristics, but the overall purpose of the low flow/low momentum is to assure early ignition of the fuel and to minimize entrained oxygen thus minimizing the potential for thermal NOx formation.
- The middle channel of a three channel burner is for the introduction of swirl or radial air. The swirl motion created is by swirl vanes built into this channel. The purpose of this air component is to expand the pulverized fuel flow and stabilize the flame by generating an internal recirculation zone. This, in conjunction with the axial air component, makes it possible to control the flame shape. The swirl air volume and momentum can be varied depending on fuel characteristics.

- The outer air channel is the axial air channel. This channel is constructed with axial vanes; the purpose of which is to maintain the concentricity of the axial air flow. This promotes the recirculation of combustion gases (from within the flame) thus minimizing the free oxygen level. As with the swirl air, the volume and momentum of axial air can be controlled based on fuel characteristics.
- The outer wall of the burner tube, the outer wall of the axial air channel, extends beyond the face of the burner, preventing the premature mixing of the flame with hot secondary air introduced from the clinker cooler.

This overall design allows flame shaping with minimal primary air flow and maximum swirl air and axial air momentum. The design results in a primary air flow that is 6-10 percent of the stochiometric combustion air requirement. These characteristics result in the initial combustion occurring in an oxygen deficient atmosphere that reduces both the peak flame temperature and the potential for the formation of thermal NOx. The design also allows for flame shaping which eliminates flame impingement on the kiln refractory and results in a more even and better controlled heat distribution. And, as stated previously, the firing characteristics of a multi-channel burner can be altered to match the characteristics of the pulverized fuel being fired.

In addition to improving combustion characteristics, the multi-channel burner is quite effective in reducing thermal NOx emissions. Studies by Pillard and others have indicated that NOx emissions can potentially be reduced 30-35 percent over emissions from a mono-channel burner. This is achieved through the reduction in primary air and by controlling combustion as previously described. It should be noted that the reduction of primary air below 6-10 percent of stochiometric combustion air is not practical as further reduction will result in kiln instability and overheating of the burner tip.

Improvements in the thermal efficiency of the multi-channel burner over a mono-channel burner result from the improved and controlled combustion process and from the fact that all secondary air is hot air from the clinker cooler. The moisture laden, relatively cool coal mill sweep air that is introduced with direct and semi-direct firing systems is no longer introduced to the kiln. Various reports have cited improvements in fuel use ranging from 2-5 percent.

Fuel Selection and Feed Mix Composition

Reducing the temperature required to clinker the raw feed and/or changes in fuels have an effect on NOx emissions. Varying the feed mix or fuel, however, may not be practical because of the fact most cement plants have a captive quarry and hence, are limited in the general chemistry of the mix. Additionally, the availability of suitable fuels limits the practicality of pursuing alternative fuels.

With feed mix composition, it is known that raw materials with a higher alkali content clinker at higher temperatures and thus have the potential for generating higher NOx emissions. The alkali content of raw materials typically found in Florida are quite low and further measures to reduce the alkali content of raw feed is not practical.

The addition of slag to the raw feed (a process known as the CemStar® process) will reduce the heat required for clinkering. This is because the slag is very similar to clinker and has a low melting temperature because many of the reactions required to convert slag to clinker have already taken place in the processes producing the slag. Because less heat is required to calcine the slag, there is a reduced heat requirement for overall clinkering and a potential for the reduction of thermal NOx emissions.

Burning fuels with the highest possible heating value and lowest possible fuel nitrogen content also has the potential for reducing NOx emissions. As the availability of fuels (and solid fuels in particular) is driven by economics and regional availability, fuel switching is of limited practical value. Theoretically, replacing of coal with petroleum coke (which has a higher heating value than coal) would appear to have the potential for reducing NOx emissions. Reportedly, some operators have found that the combustion of petroleum coke actually increases NOx emissions.

Design Consideration Summary

The KHD Humboldt Wedag (KHD) kiln considered by CEMEX incorporates all of the features just discussed. The KHD pyroprocessing system includes a kiln fired with the proprietary KHD PYRO-JET multi-channel kiln burner followed by a PYRO-CLON calciner and a PYROTOP calciner extension. The overall system offers high on-line availability, energy efficiency (approximately 2.6 mmBTU per ton of clinker), minimized NOx and CO emissions, and flexibility in raw materials and fuel selection. The kiln size is minimized due to the fact that the calcinations of the raw mill effectively carried out in the calciner. The PYRO-JET kiln burner operates with approximately seven percent primary air and with optimized flame shaping and combustion as previously described for multi-channel burners in this report. The KHD kilns typically operate with a kiln inlet oxygen concentration in the range of 1.5-2.5 percent.

The gas stream exiting the kiln enters the PYRO-CLON calciner; an in-line calciner designed for both the calcination of raw meal and the reduction of NOx formed in the kiln. The NOx reduction is achieved in a reducing zone created by firing calciner fuel under fuel-rich conditions. This is followed by the introduction of tertiary combustion air to provide for fuel burnout and the combustion of CO. To achieve the efficient utilization of both coal and petcoke in the calciner, the KHD calciner is extended vertically to increase the residence time to 5-7 seconds. At the top of the extended calciner, KHD uses a PYROTOP. This is a device to create turbulent mixing prior to the gas stream entering the bottom stage cyclone of the preheater, thus assuring the maximum burnout of both fuel and carbon monoxide.

POST-COMBUSTION CONTROLS

The two add-on NOx control technologies that have been proven effective by full scale application on cement plants are SNCR and SCR.

Both technologies are based on the injection of an ammonia based compound into a hot gas stream and the subsequent reduction of NOx to elemental nitrogen by the ammonia. SNCR is effective in a temperature range of 850-1150°C and operates without a catalyst. SCR on the other hand, operates in a temperature range of 300-500°C and employs a catalyst to facilitate the reaction between ammonia and NOx.

Both technologies have been described in detail in several publications and reports. Therefore, only an overview of each technology will be provided herein along with an assessment of each.

SNCR

Selective non-catalytic reduction (SNCR) is based on the chemical reduction of the NO_x molecule into molecular nitrogen (N_2) and water vapor (H_2O). It is considered to be a selective process because the reaction of the reduction of NO_x is favored over other chemical reactions during this process for a specific range of temperatures and in the presence of oxygen.

The ammonia reaction is as follows:

$$2NO + 2NH_3 + \frac{1}{2} O_2 \rightarrow 2N_2 + 3H_2O \text{ (90-95 percent)}$$
$$6NO_2 + 8NH_3 \rightarrow 7N_2 + 12H_2O \text{ (5-10 percent)}$$

The main urea reaction is as follows:

$$2NO + CO(NH_2)_2 + \frac{1}{2} O_2 \rightarrow 2N_2 + CO_2 + 2H_2O$$

The basic reactions that occur following ammonia injection begin with the decomposition of ammonia in the presence of OH* radicals to create a NH_2* radical and water vapor. The NH_2* radicals then react with NOx to produce elemental nitrogen and water vapor.
These reactions take place without the aid of a catalyst and are highly temperature dependent. The other requirement for SNCR is excess oxygen; the source of the OH* radicals.

With the injection of aqua ammonia (an ammonia/water solution), the optimum reaction temperature is approximately 950°C (1750°F). For urea injection, the optimum temperature is about 1000°C (1830°F). It has been found that ammonia water is the most effective reagent. In Europe, ammonia water containing approximately 25 percent ammonia is typically used. In the U.S. water with ammonia concentrations in excess of 20 percent is considered a "hazardous material" for transportation purposes. Therefore, the ammonia content of ammonia water in the U.S. is typically reduced to slightly below 20 percent.

For temperatures significantly below these optimum temperatures, some of the ammonia remains unreacted and ends up in the raw materials or as ammonia in the stack gas. At temperatures significantly above the optimum temperatures, the ammonia will react with oxygen, increasing the concentrations of NO and NO_2 (referred to collectively herein as NOx).

In modern preheater-precalciner cement plants operating with staged combustion, the optimum location for the introduction of ammonia is following the calciner; between the point where the final combustion air is added and the bottom stage cyclone of the preheater. Between these points, oxygen is available and the 900-1000°C temperature window occurs under normal steady-state plant operating conditions. During periods of plant startup and malfunction, the temperature window might be erratic and the effectiveness of SNCR will suffer.

Another factor to take into consideration with SNCR in a staged combustion plant system operating under reducing conditions is that the introduction of combustion air is required to complete the burnout of fuel and to oxidize CO in the gas stream. The oxidation of CO to CO_2 involves the same OH* radicals that react with ammonia to produce the NH_2* radicals. Thus, for SNCR to be effective without significantly increasing CO emissions (because of the competition between CO and ammonia for the OH radicals), there must be sufficient gas residence time between the introduction of tertiary air and the introduction of ammonia for CO oxidation to occur. With the KHD extended calciner coupled with the PYROTOP, offering 5-7 seconds residence time, the burn-out of both hard-to-burn fuels (e.g. petcoke) and CO is optimized.

It has been reported that carbon monoxide emissions increase with SNCR with some plant designs. At a molar ratio of ammonia to NOx of 0.4, the CO emissions have been reported to increase between 0 and 0.5 pounds per ton of clinker. At a molar ratio of 0.8, the CO emissions can increase 0.3-1.0 pounds per ton of clinker and at a molar ratio of 1.0, the CO emission increase can be in the range of 0.5-1.5 pounds per ton of clinker. These data are based on a Polysius designed calciner. There are no comparable data available for KHD calciners, but the increases in CO are expected to be less because of the extended residence time in the KHD calciner.

Another factor to consider with SNCR is the potential for ammonia slip and the consequence of this secondary emission. It has been found that with a molar ratio (ammonia to NOx) of 0.8 or less, ammonia slip is minimized (typically less than 5ppm in the stack gas). Above a molar ratio of 0.8, ammonia slip begins to increase.

The undesirable consequence of ammonia slip is the potential for a visible plume. The formation of this plume is temperature/humidity dependent and results from reactions between ammonia, chlorides and/or SO_2 in the stack gas; usually after the stack gas leaves the stack.

SNCR has been demonstrated at several installations to be effective for reducing NOx emissions from Portland cement plants. At an ammonia to NOx molar ratio of 0.4, a NOx reduction of approximately 30 percent can be achieved and at a molar ratio of 0.8 (the upper limit before ammonia slip begins increasing) the NOx reduction efficiency will be in the range of 60 percent. These data are based on tests conducted at two North Florida cement plants in late 2004. The results of both of these tests have been reported to the Department.[11,12]

One of these referenced cement plants installed SNCR to operate on a continuous basis following the SNCR tests and the second plant has applied for a permit to install SNCR. Data from the referenced plant with the operating SNCR system was recently reported and the data are consistent with the control efficiencies reported herein.[13]

It should be noted that the efficiency of SNCR as applied at different facilities, can be quite varied. The efficiency of SNCR in the two tests referenced above was in the range of 80 percent while efficiencies reported in the paper by Horton *et al*[4] ranged from as low as 20 percent to 90+ percent depending on conditions at the point of ammonia injection.

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[11] *Selective Non-Catalytic Reduction Test Report,* Florida Rock Industries, Thompson S. Baker Cement Plant, Newberry, Florida, report prepared by Koogler and Associates, December 2004.

[12] *Evaluation of SNCR Tests,* Suwannee American Cement, Branford, Florida, report prepared by Koogler & Associates, November 2004.

[13] *Use of SNCR to Control Emission of NOx from Cement Plants,* paper presented at the 2006 IEEE Meeting, J. Horton, A. Linero, and F. Miller

To illustrate the importance of injecting ammonia under optimum conditions, CEMEX reduced ammonia consumption by as much as 50 percent for SNCR systems operating on preheater kilns at the CEMEX Brooksville cement plant. This improvement was the result of fluid dynamic modeling of the gas stream between the kiln feed shelf and the lower stages of the preheater. The modeling assisted in selecting an injection point with a more ideal temperature and better mixing.

To summarize, SNCR has been proven to be effective in reducing NOx emissions from Portland cement plants both in the US and Europe. The system is cost effective, it has no significant adverse effects on the operation of the plant, and NOx reductions in the range of 30-60 percent can be achieved at an ammonia to NOx molar ratio of 0.4:0.8. Contrary to placing a burden on the operation of the plant, SNCR offers the possibility of operating staged combustion under less severe reducing conditions, thus reducing the potential for plugging in the riser duct. This has the potential for increasing plant operating time and production.

Regarding the cost of an SNCR system, it is estimated that the total installed cost of an SNCR system is in the range $0.20-0.25 per ton of clinker (per year) or approximately $350,000 for the proposed CEMEX Kiln No. 3. The annual operating cost of an SNCR system, including capital recovery, will be in the range $0.40-0.65 per ton of clinker depending on the ammonia cost (which was a function of natural gas prices) and the degree of NOx control targeted. To put this into perspective, the current clinker production cost for CEMEX at the Brooksville Cement Plant is approximately $50 per ton.

The other way of expressing the cost of an SNCR system is in terms of dollars per ton of NOx removed. For the 3850 ton per day (clinker) kiln proposed by CEMEX and a NOx reduction from 3.5 pounds per ton of clinker to 1.95 pounds per ton of clinker, the cost of SNCR is in the range $470-$500 per ton of NOx removed.

While being effective for controlling NOx emissions and while being cost effective, it must be recognized that an SNCR system will not always be fully effective. Because the system is a mechanical system, there will be periods of downtime. In addition to this, system will not be fully effective during plant start-ups and during periods of plant upset because of the temperature dependency of the reactions associated with SNCR. During periods when SNCR is not fully effective, NOx emissions from a staged combustion plant can be controlled by using Best Operating Practices including more aggressive reducing conditions in the calciner.

SCR

Selective catalytic reduction (SCR) chemically reduces the NO_x molecule into N_2 and H_2O in the presence of a catalyst. A nitrogen-based reagent such as ammonia or urea is injected upstream of a catalyst bed. The gas mixes with the reagent and then enters a reactor that contains the catalyst. As the hot gas stream and reagent diffuse through the catalyst, the reagent reacts selectively with the NO_x molecules within a specific temperature range and in the presence of oxygen.

SCR operates on the same basic principle as SNCR, but in a lower temperature range. The optimum temperature range for SCR is 300-500°C. This temperature window is normally found near the kiln I.D. fan; downstream of the preheater.

One of the main obstacles encountered in applying SCR to Portland cement plants is the high dust loading. The particulate matter loading downstream of the preheater is typically in a range of 35-45 grains per dry standard cubic foot. Experience has shown that SCR catalysts designed for high dust loading can effectively operate in this dust loading range with an operating life in excess of three years, however cleaning is a major issue.

Catalyst operation requires continuous cleaning (analogous to soot blowing in coal and oil fired boilers) and a by-pass that will automatically open if the gas stream temperature approaching the catalyst falls outside (either above or below) the temperature operating range of the catalyst.

Because of the location of the SCR system, increases in carbon monoxide emissions are not expected. Additionally, the reaction between ammonia and NOx can be better controlled and the potential for ammonia slip is minimized.

SCR has been used extensively worldwide to control NOx emissions from fossil fuel fired boilers. At the present time there are approximately 200 SCR installations in the U.S. operating on boilers and achieving 80-90 percent reductions in NOx emissions. The application of SCR systems to Portland cement plants, on the other hand, has been much more limited. There were pilot scale applications of SCR on plants in Sweden, Austria, and Germany. The study in Germany, at the Solnhofen Portland Cement Works GmbH & Co. KG (Solnhofen), resulted in the installation of a full-scale system that went on-line in 2001. More recently (June 2006) a SCR system went on-line at Cementeria di Monselice near Padova, Italy. Insufficient operating data are available from the Italian plant at this time. Therefore, the information and comments provided herein will be based on the Solnhofen plant.

The Solnhofen plant is an 1800 metric ton per day (clinker) preheater plant. The feed to the plant is low in sulfur and alkali. The fuel typically used at the plant is a mix of No. 6 fuel oil (60 percent) and auto-shredder fluff (40 percent).

With low-NOx burners and the typical fuel mix used at the plant, uncontrolled NOx emissions were in the range 800-1200 milligrams per cubic meter (~3.7-5.5 pounds of NOx per ton of clinker).

The plant has demonstrated that NOx emissions as low as 100 milligrams per cubic meter (~0.5 pounds per ton of clinker) can be achieved for short periods. The permit issued for the plant in 2000 set as a "goal", 200 milligrams per cubic meter (~0.9 pounds per ton of clinker). More recently, the 2002 operating permit for the plant sets the NOx emission limit at 500 milligrams per cubic meter (~2.3 pounds of NOx per ton of clinker). This is the standard adopted by Germany for new cement plants.

With an uncontrolled NOx emission rate in the range of 800-1200 milligrams per cubic meter and an emission limit of 500 milligrams per cubic meter, the required efficiency of the SCR system is in the range of 50 percent. It has been reported that in calendar year 2003, the NOx emission limit of 500 milligrams per cubic meter was achieved 95.6 percent of the time. The annual operating report for calendar year 2005 states that the limit of 500 milligram per cubic meter was met only 72 percent of the time.

The biggest obstacle to the SCR application to Portland cement plants is the dust loading in the gas stream between the preheater and the raw mill; the only location in the plant (without gas reheating) where the gas is in the temperature range of 300-500°C. The dust loading in this gas stream is typically 35-45 grains per dry standard cubic foot. To find a catalyst that will operate in these conditions, Lurgi, the catalyst supplier for the Solnhofen plant, tried approximately 20 different catalyst types before coming up with a catalyst that was effective. The catalyst most recently used was primarily titanium dioxide with approximately two percent vanadium pentoxide on a honeycombed ceramic base. The pitch of the honeycombed openings was in the range of 10-13 millimeters in order to facilitate cleaning.

At Solnhofen, catalyst was installed in three of the six beds with a total catalyst loading of approximately 35 cubic meters. This catalyst loading was found adequate to meet the NOx emission limit of 500 milligrams per cubic meter. It is expected that a lower NOx emission rate could be met on a continuing basis with a greater catalyst loading.

The catalyst cleaning evolved over a 2-3 year period at Solnhofen. The auto-cleaning system consists of continuous high pressure air jets sweeping the catalyst beds and the use of acoustical horns and reverse air flow. Even with this cleaning regime, the SCR system must be shutdown every 7-14 days for a manual cleaning[14]; resulting in a 7-14 percent loss in on-line availability of the SCR system.

At the present time, it has been reported that the SCR system at Solnhofen is off-line as a plate-type catalyst is evaluated and differences are negotiated with the plate-catalyst supplier. During the time SCR is off line, NOx is controlled by SNCR.

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[14] Terry, Mark (Polysius), email to Robert Schreiber, January 20, 2006.

Regarding the effectiveness of ammonia utilization in the SCR system at Solnhofen, it has been reported that an ammonia use of 60 liters an hour (of 25 percent aqua-ammonia) is required to achieve the permitted emission limit of 500 milligrams per cubic meter. At a permitted operating rate of 1800 tons per day (clinker) and an uncontrolled NOx emission rate on the order of 1000 milligrams per cubic meter, the 60 liter per hour ammonia solution injection rate would be equivalent to a mole ratio (ammonia to NOx) of approximately 0.5. Based on data reported by Polysius for the Solnhofen plant[15], an ammonia to NOx molar ratio of 0.5 corresponds to an NOx control efficiency of approximately 45 percent. As a point of comparison, the SNCR test data from Florida cement plants previously referenced showed a NOx reduction efficiency of approximately 40 percent at an ammonia to NOx molar ratio of 0.5. Based on this limited comparison, it appears that the ammonia utilization in SCR systems is similar to the ammonia utilization in SNCR systems.

Based on this observation, the report from Solnhofen that ammonia injection rates of up to 600 liters per hour are required with SNCR[16] (when SCR is off-line) sounds unreasonable. This reported ammonia usage rate corresponds to a molar ratio of ammonia to NOx of approximately 5.0; a highly suspect ratio. If it's true that the ammonia injection rate is this high, it is quite apparent that the ammonia slip must be astronomical.

Regarding the installation of an SCR system at a cement plant in the U.S., it is widely expected that pilot plant testing would be necessary to evaluate the most effective catalyst type, configuration, and loading for the physical and chemical characteristics of the dust and the gas stream at the candidate plant. The pilot study would evaluate the suitability of gas temperatures, gas bypass systems or gas blending systems to account for times when the gas temperature is outside an acceptable range, the NOx loading to the SCR system and the NOx reduction required, catalyst loading requirements, and catalyst cleaning systems. Such a study would probably require 1-3 years to be thoroughly effective.

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[15] Idem.

[16] Linero, A.A., *Trip Report on SCR Experience at Solnhofen Portland Zementwerke*, Cementeria di Monselice, and ASM Brescia Waste-to-Energy Plant, July 31, 2006.

Regarding the cost of SCR systems, Linero[17] recently reported cost information developed by the German Federal Environmental Office. These costs were based on installing an SCR system on a 1500 metric ton per day (clinker) plant with a stack gas flow rate of 2300 cubic meters per ton of clinker and with an uncontrolled NOx emission rate of approximately 1000 milligrams per cubic meter (~4.6 pounds per ton of clinker). Costs were reported for SCR systems achieving target NOx emission rates of 500 milligrams per cubic meter and 200 milligrams per cubic meter (2.3 and 0.9 pounds per ton of clinker). The reported total installed costs (excluding catalyst) were 2.2 million and 2.7 million euros, respectively.

These costs were scaled to a 3850 ton per day (clinker) plant as proposed by CEMEX with an uncontrolled NOx emission rate of 3.5 pounds per ton of clinker and a permitted NOx emission rate of 1.95 pounds per ton of clinker. The scaling was based on gas flow rates with the scaling factor calculated as the ratio of gas flow rates raised to the 0.6 power. The estimated total installed cost of an SCR system for the CEMEX facility, based on European data, would be approximately $5,250,000 excluding catalyst. The estimated cost of catalyst is about $972,000, again based on European costs.

Annual costs were estimated using EPA cost estimating procedures including capital recovery and assuming catalyst replacement every four years. The estimated annual cost for an SCR system on the proposed CEMEX Kiln No. 3 is a little over $2 million a year or $1.55 per ton of clinker. This compares with a clinker production cost at the Brooksville cement plant of about $50 per ton of clinker. The cost of the SCR system based on NOx removal is a little over $2000 per ton of NOx removed.

6.4.4 Technically Feasible Options

The NO_x control technologies are listed in Tables 32 and 33.

[17] Idem.

6.4.5 Previous BACT Determination

A review was made of the most recently issued permits for Portland cement plants and a summary of previous NOx BACT determinations from the last ten years is listed is Table 34. The NOx emission levels established as BACT were reviewed as were the control technologies employed to achieve the permitted emission limits. Additionally, European regulatory and operating experience with NOx was reviewed.

Several of the most recent air construction permits issued for Portland cement plants in the U.S. have required post-combustion technology for NOx control and in all cases, the permitted technology was SNCR. Selective catalytic reduction (SCR) was debated for the proposed St. Lawrence Cement Plant in Greenport, New York; however, plans for this plant have been dropped due to impasse between the applicant and distracters. SNCR is also employed on approximately 19 plants in Europe, including two precalciner plants in Sweden and about 17 preheater plants; primarily in Germany. Additionally, a SCR system has been successfully operated at one plant in Germany for approximately five years and a second SCR system was brought on-line in June 2006 in Italy.

As an overall observation on the review of the BACT/LAER Clearing House references, it was noted that in the 1980's some exceeding stringent NOx limits were established as BACT for Portland cement plants. The fact that none of these limits are currently in effect is a result of permitted plants not being built or a demonstration that the limits were not achievable and have subsequently been adjusted upward to more realistic limits. As the original limits are no longer effective, they should not be considered in a review of BACT. Following are summaries of NOx emission limits and control technologies included in recently issued air construction permits in the U.S. and those contained in permits that have been referenced in previous BACT determinations made by the Florida Department of Environmental Protection.

Suwannee American Cement – Plant No. 2

Branford, Florida

February 2006

Suwannee American Cement has permitted a second plant for their Branford, Florida facility. The air construction permit for this plant was issued in February 2006. The plant is designed for a clinker production rate of 120 tons per hour and 965,425 tons per year of clinker. The plant is very similar to the Florida Rock Industries Plant No. 2 and the Rinker/Florida Crushed Stone Plant. SNCR is required and the NOx emission limit is 1.95 pounds per ton of clinker, 30-day rolling average.

Sumter Cement, LLC

Sumter County, Florida

February 2006

The Sumter Cement Plant is a greenfield, dry process cement plant with a clinker production rate of approximately 210 tons per hour and 1,715,500 tons per year. The plant is designed with low-NOx burners and indirect firing, stage combustion in the calciner and SNCR. The permitted NOx emission limit for the plant is 1.95 pounds per ton of clinker, 30-day rolling average.

American Cement Company

Sumter County, Florida

February 2006

The American Cement Company Plant is a greenfield plant with a clinker production rate of 125 tons per hour and 1,150,000 tons per year. The plant will incorporate low-NOx burners with indirect firing, stage combustion and SNCR to control NOx emissions. The plant is permitted for a NOx emission limit of 1.95 pounds per ton of clinker, 30-day rolling average.

Florida Rock Industries – Line No. 2

Thompson S. Baker Plant

Alachua County, Florida

July 2005

This permit is for a dry process Portland cement plant of the preheater/precalciner design. The plant is permitted for a clinker production rate of 125 tons per hour (1,095,000 tons of clinker per year). The plant can be fired with natural gas, coal, fuel oil, petroleum coke, high carbon flyash and whole tire derived fuel.

The plant is of the Polysius design, incorporating multi-stage combustion with a separate combustion chamber in the calciner. The kiln burner is a low NOx burner and the calciner burner is of the Polysius design. TDF (providing up to 30 percent of the total pyroprocessing heat input) can be introduced at the base of the riser duct and onto the feed shelf of the kiln. With this design and fuel firing options, NOx emissions in the range of 2.3-2.5 pounds per ton of clinker can be expected.

BACT for the plant also requires SNCR with ammonia typically being introduced as 19 percent aqua ammonia. With SNCR, the NOx emissions are limited to 1.95 pounds per ton of clinker, 30 day rolling average. During the first 180 days of operation, the NOx emissions are limited to 2.45 pounds per ton of clinker.

Rinker Materials Corporation – Plant No. 2

Florida Crushed Stone Plant

Brooksville, Florida

July 2005

The Rinker/Florida Crushed Stone Plant has the same characteristics as the Florida Rock Industries No. 2 Plant, however, it is not a Polysius plant. The NOx emission limit is the same as that for the Florida Rock Industries Plant No. 2.

Drake Cement

Drake, Arizona

The plant is a greenfield preheater/precalciner plant rated at 660,000 tons per year of clinker (83.3 tph). The BACT emission limit for NOx is proposed as 1.95 pounds per ton of clinker; achieved by using SNCR. Drake however, requested a NOx emission limit of 1.2 pounds per ton of clinker in order to meet Class I PSD Area air quality impact limits. The request emission limit will be achieved with SNCR.

Holcim (U.S.) Inc. - Lee Island Project

St. Genevieve County, Missouri

June 8, 2004

This permit includes a BACT limit for NOx and an Innovative Control Technology (ICT) limit. The BACT limit requires staged combustion and low-NOx burners as the technology. NOx emissions are limited to 3.0 pounds of NOx per ton of clinker (30-day rolling average) for the first two years of operation and to 2.8 pounds of NOx per ton of clinker (30-day rolling average) thereafter.

The ICT requirement, in addition to staged combustion and low-NOx burners, requires the installation of SNCR no later than 24 months after commencing operations. The State of Missouri has the option of granting a term of up to five years for testing and evaluating SNCR. The NOx emission limit with SNCR is 2.4 pounds of NOx per ton of clinker (12-month rolling average).

Holcim also has a "summer season" NOx limit based on ozone non-attainment in St. Louis. This limit establishes a NOx emission rate for the summer period equivalent to 1.8 pounds per ton of clinker; taking into consideration various emission credits. The effective annual NOx emission rate combining ICT and the "summer season" limit is approximately 2.15 pounds of NOx per ton of clinker (12-month rolling average).

Lehigh Cement Company

Mason City, Iowa

October 9, 2003

This permit was issued for a modification of an existing dry process cement plant; increasing clinker production to 120 tons per hour. The BACT technology determined for this project included proper kiln design, combustion control, low-NOx burners, and SNCR. The NOx emission limit established as BACT was 2.85 pounds per ton of clinker (30-day rolling average). This limit is not to apply during periods of startup-shutdown or malfunction. There is also a NOx limit of 1,496 tons, 12-month rolling average, including startups, shutdowns, and malfunctions.

Suwannee American Cement – Plant No. 1

Suwannee County, Florida

June 1, 2000

The permitted BACT for this plant was 3.8 pounds per ton of clinker during the first year of operation and 2.9 pounds per ton of clinker thereafter (24-hour rolling average). These limits also included periods of startup, shutdown and malfunction – except for a one-hour period during any 24-hour period.

The BACT technology for the plant was a low-NOx burner and staged combustion with a separate combustion chamber. The plant was proposed with a kiln inlet burner to achieve staging of fuel. Suwannee American Cement (SAC) has operated the plant without the inlet burner but has staged combustion air to achieve the same end result as fuel staging. A trial conducted in 2004 with the kiln inlet burner operating demonstrated that no significant NOx reduction was achieved when operating with the inlet burner.

In late 2004, the company conducted a test to evaluate the effectiveness of SNCR for reducing NOx emissions. As a result of the tests, SAC elected to install SNCR on the existing No. 1 Plant. The installation of SNCR was coupled with a production rate increase (from 105 tph to 120 tph of clinker) and a reduction in the permitted NOx emission rate. The revised NOx emission limits for the plant are 2.9 pounds per ton of clinker, 24-hour average (the originally permitted limit) and 2.4 pounds per ton of clinker, 30-day rolling average.

Florida Rock Industries – Plant No. 1
Thompson S. Baker Plant
Alachua County, Florida
September 1995

This plant was the first new plant built in the U.S. in about 12 years. The NOx limit established for this plant was 2.8 pounds of NOx per ton of clinker (30-day rolling average); to be effective 24 months after commencing operation. The technology employed by Florida Rock was combustion control and staged combustion (without a separate combustion chamber). The calciner fuel is fired in the riser duct using Polysius technology.

The NOx limit for the plant was subsequently reduced to 2.45 pounds per ton of clinker (30-day rolling average) at the request of Florida Rock. This revision was made in December 2002 in conjunction with a production rate increase. Florida Rock is permitted to use Whole Tire Derived Fuel (WTDF). The company uses WTDF but limits the firing rate to 10-15 percent of the total heat input to the pyroprocessing system. The WTDF is fed on to the kiln feed shelf; functioning as a kiln inlet burner.

Other Plants:

NOx emission limits and proposed NOx control technologies for several other plants were reviewed. Most of these other plants have been permitted rather recently. However, some plants that were permitted quite some time ago were permitted with exceedingly low NOx emission limits and have been referenced in previously BACT reviews. The present status of these plants is included in the review.

Holcim Texas Limited Partnership

Midlothian, Texas

1998

In 1998, Holcim received an air construction permit for a second 3500 ton per day (clinker) plant at their Midlothian, Texas facility. In order to avoid a PSD Review, Holcim accepted an NOx emission limit of 1.2 pounds per ton of clinker on the existing kiln and the new kiln. It was proposed that these NOx emission limits would be met by scrubbing for NOx control.

It became apparent that the NOx emission limit for the plants could not be met. Holcim applied to the Texas Commission for Environmental Quality (TCEQ) for a permit amendment relaxing the NOx emission limits. The TCEQ recently revised the NOx emission limit on both kilns to 2.8 pounds per ton of clinker with a 30-day average emission limit of 1300 pounds per hour (equivalent to an NOx emission rate of 3.75 pounds per ton of clinker). The TCEQ rejected SNCR as BACT stating that "the high sulfur content of the Midlothian area limestone may cause ammonia sulfate salt buildup and plugging of the preheater tower and opacity problems under some operating conditions." As an August 2005 addendum to the BACT Determination, TCEQ reported that Holcim investigated the application of SNCR and preliminarily showed NOx reductions in the range of 35-45 percent. The agency has given Holcim until December 1, 2005 to formally submit a report on the SNCR testing.

RMC Lone Star

Davenport, California

April 1988

This plant has a design preheater feed rate of 200 tons per hour and a nominal clinker production rate of 120 tons per hour. The plant has operated since 1988, and perhaps earlier, with two NOx emission limits. One limit is a 2-hour average emission rate of 350 pounds of NOx per hour and the other is a 24-hour average emission rate of 250 pounds of NOx per hour. There is no NOx emission limit for this plant expressed in terms of pounds of NOx per ton of clinker.

Martin Marietta currently operated by Ashgrove Cement

Leamington, Utah

This plant was originally permitted as a wet process plant with a NOx emission limit of 101.5 pounds per hour. This is equivalent to a NOx emission rate of 1.34 pounds per ton of clinker, however, this was not a permit limit. The plant could not achieve this limit and at some point in time the limit was increased. A February 1993 permit in the name of Ashgrove Cement reflected a NOx limit of 336 pounds per hour (equivalent to, but not a permit condition, of 4.4 pounds per ton of clinker). Ashgrove modernized the plant to a dry process plant in 1996, but could not achieve the 1996 permitted NOx limit (limit not known). The plant is currently operating with a NOx limit of 2,165 tons, 12-month rolling average. This is equivalent to a NOx emission rate of 4.5 pounds per ton of clinker; however, the 4.5 pounds per ton is not a permit limit.

Dixie Cement

Richard City, Tennessee

Permit Date Unknown

This plant was permitted with a NOx emission limit of 110 pounds per hour (this was equivalent to approximately 1.1 pounds per ton of feed, but not a permit limit). This plant was never built.

Texas Cement, currently operated by Texas-Lehigh Cement

Buda, Texas

This plant operated with a 1980 NOx limit of 240 pounds per hour. This was equivalent to approximately 2.09 pounds of NOx per ton of feed (approximately 3.5 pounds of NOx per ton of clinker). Neither of these "pound per ton" limits were permit conditions. In 1993, the permitted NOx emission limit was increased to 600 pounds per hour, which is equivalent to, but not a permit limit, of about 3.7 pounds of NOx per ton of clinker.

Great Star Cement

Nevada

Permit Date Unknown

The BACT for this plant required a urea-based SNCR system. The NOx limit for the plant with SNCR was 3.1 pounds per ton of clinker (averaging time not specified). This plant was never built and the permit has expired.

Calaveras Cement

Tehachapi, California

This plant operates with a NOx emission limit of 281 pounds per hour, 24-hour average. This is equivalent to a NOx emission limit of 2.91 pounds per ton of clinker; however, the latter is not a permit condition.

Calaveras Cement

Redding, California

The plant currently operates with a NOx emission limit of 5,940 pounds per day with relief granted for periods of startup and plant upset. This 24-hour NOx limit is equivalent to 2.75 pounds per ton of clinker (not a permit condition).

Texas Industries

Midlothian, Texas

Information Date: 2/2004

NOx Limit	- 2.79 lb/ton clinker, 30-day rolling average, and 681.25 lb/hr
Compliance	- CEMS
Control	- Low NOx burners, MCS

CEMEX

Victorville, California

Information Date: 2002

NOx Limit - 2.8 lb/ton clinker, 30-day rolling average, and 583.3 lb/hr

Compliance - CEMS

Control - Low NOx burners, MCS

European Experience

The European community, for many years, has been concerned about the effects of acid gas emissions (SO_2 and NOx). As a result, NOx emission limits have been established for new and existing Portland cement plants on the continent. For new plants, the NOx emission limit is 500 milligrams per normal cubic meter (~2.3 pounds of NOx per ton of clinker), and for existing plants, the limit is 800 milligrams per normal cubic meter (~3.7 pounds per ton of clinker).

Government agencies and cement industry organizations have collaborated on research into NOx control technology as a result of the continental concern. This collaboration has resulted in jointly funded studies to evaluate staged firing technology (multi-stage combustion or MSC) and the applications of selective non-catalytic reduction (SNCR) and selective catalytic reduction (SCR). As a result of these efforts, MSC has been validated and the efficacy of both SNCR and SCR has been demonstrated.

There are presently approximately 19 Portland cement plants in Europe employing SNCR for NOx control. The majority of these plants (about 17) is of the preheater design or the traveling grate design and most are in Germany. Two plants in Sweden of the preheater-precalciner design employ SNCR.

Through a joint funded project, a SCR pilot study was carried out during the period 1998-1999 at the Solnhofen Portland Zementwerke AG plant in Solnhofen, Germany. The pilot study was successful and a full scale SCR system was installed on the plant and began operating in 2001. To date, the system has operated approximately five years and has demonstrated favorable results.

In reviewing the application of SNCR and SCR on European cement plants, the environmental and operational factors associated with the European cement industry must be taken into consideration. Because of the industrialization of Europe and problems associated with acid gas emissions, pressure was placed on the industry to reduce the emissions of all acid gases. This is particularly true of the two preheater-precalciner plants employing SNCR in Slite, Sweden. The other factors leading to the targeting of the cement industry for NOx emission reduction is the fact that most of the European cement plants are of the older preheater design or traveling grate design. Only the two plants in Sweden are of the preheater-precalciner design. Reported uncontrolled NOx emissions from many of these plants were in the range of 9-10 pounds of NOx per ton of clinker. The emissions from the plants at Slite, Sweden were estimated to be in the range of 4.5-5.0 pounds of NOx per ton of clinker. Additionally, many of the European cement plants use various industrial wastes as alternative fuels. The European average use of waste fuel is 12 percent with some countries utilizing up to 50 percent waste fuels in cement plants.

Because of the high level of uncontrolled NOx emissions from the European plants and the use of waste fuels, SNCR became the technology of choice for NOx control. Most European plants operate SNCR systems at a level that will achieve 10-50 percent NOx reduction with a molar ratio of ammonia to NOx in the range 0.5–0.9. These conditions have been found to achieve the regulatory limits of 500/800 milligrams of NOx per normal cubic meter. NOx reductions in the range of 80-85 percent have been reported; but only with uncontrolled emissions in excess of 2000 milligrams per normal cubic meter (9-10 pounds per ton of clinker). The plants at Slite, Sweden report a NOx reduction in the range of 80 percent, however, these plants operated with an ammonia to NOx molar ratio of 1.0-1.1. Ammonia slip (unreacted ammonia exiting the stack) at the Slite plants is not a problem as an SO_2 scrubber follows the SNCR system; effectively eliminating ammonia from the stack gas.

On March 4, 2004, FDEP personnel and personnel from a Florida cement plant spoke with Dr. Richard Erpelding of Polysius. Dr. Erpelding stated that SNCR was used in European plants primarily when waste fuels were fired and further stated that SNCR would not effectively reduce NOx emissions during plant startups or a plant malfunction. Another factor to take into consideration is that the regulatory emission limits that European plants are striving to achieve

(500/800 milligrams per normal cubic meter or 2.3-4.0 pounds per ton of clinker) are limits that can be achieved by well operated modern preheater-precalciner plants in Florida. On a long-term average, a staged combustion plant operating under reducing conditions at the precalciner can achieve a NOx emission rate in the order of 2.3-2.5 pounds per ton of clinker.

The plant at Solnhofen, Germany employing SCR is the full-scale operation of a demonstration project to assess the applicability of SCR to Portland cement plants. As previously stated, SCR has proven to be effective and the plant has operated for approximately five years. The major concern with applying SCR to cement plants is the high dust loading to which the catalyst would be exposed. To achieve a gas temperature range of 300-500°C (the range in which SCR is most effective) the optimum location of a SCR system is following the preheater. At this location, the proper gas temperature range is achieved; however, the dust loading is in the range of 35-45 grains per dry standard cubic foot. SCR could be employed after the particulate matter control system; however, the gas would have to be reheated, imposing an unacceptable energy penalty.

The SCR installation at Solnhofen has demonstrated the long-term effectiveness of SCR catalyst in a high dust loading environment; approximately 40,000 hours of catalyst life. While lower NOx emission levels have been demonstrated to be achievable short-term, the Solnhofen plant operates at the regulatory NOx emission limit of 500 milligrams per normal cubic meter (2.3-2.5 pounds per ton of clinker).

6.4.6 BACT Selection

The No. 3 kiln proposed by CEMEX will be a modern preheater-precalciner plant with staged combustion. The fuel staging will involve firing approximately 40-50 percent of the total pyroprocessing heat requirement at the kiln burner and approximately 50-60 percent of the total heat requirement in the area of the precalciner. The use of Tire Derived Fuel (TDF) will be an option. When used, TDF will be introduced at the kiln inlet and will account for up to 15 percent of the pyroprocessing heat requirement. When TDF is not used (because of availability or other reasons) reducing conditions at the kiln inlet and around the precalciner will be created by combustion air staging.

Whether fuel staging, combustion air staging, or feed staging (splitting), experience with similar plants has demonstrated that NOx emissions in the range of 2.5 pounds per ton of clinker (30-day average) can routinely be achieved. Achieving these levels requires the following:

- A preheater-precalciner design plant capable of firing petcoke,
- Low-NOx burners,
- Process monitors for oxygen, carbon monoxide, temperature and pressure, and
- Raw materials typically processed at Florida cement plants (i.e., limestone and other on-site derived materials with little or no pyritic sulfur, nitrogen compounds, or organics). It is also a prerequisite that the materials from off-site suppliers have these same characteristics.

Beyond plant design and operation, CEMEX is proposing SNCR to further reduce NOx emissions. The SNCR will operate in conjunction with the staged combustion. SNCR and staged combustion will be operated to achieve a NOx emission rate of 1.95 pounds of NOx per ton of clinker. This is the lowest BACT established NOx emission rate permitted for any Portland cement plant in the U.S.

SNCR is proposed by CEMEX rather than SCR for several reasons:

- SNCR is immediately available for application on Portland cement plants;
- For installing a SCR system, a pilot study would be necessary, requiring 1-3 years;
- SNCR has been demonstrated on cement plants in the U.S. and more specifically on the two existing CEMEX Brooksville cement plants;
- The on-line availability of SNCR systems is much greater than the on-line availability of SCR systems;
- The SNCR system does not introduce for operation and maintenance a system that is foreign to cement plant operators;
- Comparable NOx control efficiencies can be achieved with both SCR and SNCR in the range required for Portland cement plants; and

- The capital and operating costs of the SNCR system is considerably less than the comparable cost of an SCR system.

Based on these factors, CEMEX is proposing SNCR along with the aforementioned plant design features to achieve the proposed BACT emission limit of 1.95 pounds of NOx per ton of clinker.

6.5 Carbon Monoxide

In modern Portland cement plants of the preheater/precalciner design, carbon monoxide emissions can result from two independent sources. The first is carbon monoxide resulting from the combustion processes in the kiln and calciner and the second is from the oxidation of carbonaceous material in the raw feed introduced to the preheater. Another potential source which is not considered significant is the reduction of carbon dioxide generated during the calcination of raw meal in the preheater tower.

The carbon monoxide that is generated by the combustion processes is the most complex. Further compounding the control of the combustion related CO is the effect of SNCR used for nitrogen oxide control. The generation of CO that is feed related is purely a function of the organic or elemental carbon content of the raw feed and the volatility of this carbon.

6.5.1 Proposed BACT

The CO emission limit proposed as BACT is 2.9 pounds per ton of clinker, 30-day rolling average. This will be achieved by good combustion practices, plant design, and raw materials management.

6.5.2 Carbon Monoxide Sources

Combustion Sources

In modern preheater/precalciner cement plants, approximately 40-50 percent of the fuel fired in the kiln burner and the remaining 50-60 percent is fired in the calciner. The carbon monoxide generated in the kiln results from the kiln operating conditions dictated by the production of quality clinker.

As the gases exit the kiln and enter the calciner, CO levels become a function of plant design and the degree to which staged combustion is used to control nitrogen oxides. If staged combustion is used aggressively for nitrogen oxide control, reducing conditions are created in the lower stages of the calciner which will increase CO levels. Regardless of the CO level in the lower stages of the calciner, the CO can be oxidized by the introduction of secondary or tertiary combustion air prior to the bottom cyclone of the preheater. The mechanism of this oxidization is a function of plant design which is discussed in the following paragraphs. The degree of carbon monoxide reduction prior to the bottom stage cyclone becomes a function of the residence time and turbulence in the calciner following the introduction of secondary or tertiary air.

The KHD designed kiln proposed by CEMEX utilizes an in-line calciner (ILC) in the riser duct leaving the kiln. The calciner design is dictated by the requirements for using 100 percent petroleum coke as a fuel. The burner in this calciner is a low-NOx burner which can be operated with sub-stochiometric combustion air to create a reducing zone that will destroy some of the NOx formed in the kiln. The severity of the reducing conditions can be controlled to minimize plugging in this section of the pyroprocessing system. It should be noted that the lower the degree of NOx reduction in the calciner, the greater will be the demand placed on the SNCR system for NOx control.

Raw meal from the second stage cyclone (the second cyclone from the bottom of the preheater) is introduced into the riser duct near the calciner burner. If a hard-to-burn fuel (such as petcoke) is fired in the calciner, KHD can create a hotspot in the calciner by tangentially introducing the raw meal. This technique creates a zone free of raw meal where the petcoke can burn at a temperature approximately 1050°C.

The KHD design also incorporates a burner in the tertiary air duct. This is referred to as the fresh air calciner. In this calciner fuel is fired with combustion air from the clinker cooler and meal split from the second stage cyclone is introduced to control combustion temperature.

The KHD calciners are designed with a residence time in the order of seven seconds to allow the burnout of hard-to-burn fuels as well as carbon monoxide. At the top of the calciner, KHD employs a proprietary PYROTOP that thoroughly mixes the gas stream from the calciner with tertiary air to provide additional assurance of fuel and carbon monoxide burnout.

The KHD design is similar in concept to the ILC in the F.L. Smidth design. To provide an indication of the effectiveness of this design, the Titan America Plant in Dade County (designed by FLS) reportedly operates with a CO emission rate as low as 1.0 pounds per ton of clinker[18]. It should be noted that for the period of record for which this claim was made, the Titan plant operated at approximately 82 percent capacity, the plant was fired with coal (not petcoke), and bauxite (not flyash) was used as the primary alumina source. It is not known what CO emission rate might have been observed if the plant operated at capacity, was fired with petcoke and used flyash as an alumina source.

Regardless of the calciner design, another factor that must be taken into consideration when evaluating potential CO emissions is the use of SNCR for nitrogen oxide control. The oxidation of CO to CO_2 in the calciner involves the same OH* radicals that react with ammonia to produce the NH_2* radicals. Thus, there will be a competition between ammonia and CO for the radicals.

Polysius conducted work in Germany and found that CO emissions can increase with SNCR as a result of the aforementioned competition for radicals. At a molar ratio of ammonia to NOx of 0.4, the CO emissions could increase between 0 and 0.5 pounds per ton of clinker, at a molar ratio of 0.8, CO emissions could increase 0.3-1.0 pounds per ton of clinker and at a molar ratio of 1.0, CO emissions could increase 0.5-1.5 pounds per ton of clinker.[19]

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[18] Titan America, LLC. *Data Provided to the Florida Department of Environmental Protection*. Date unknown.

[19] Erpelding, R.M., *Latest Developments in NOx Reduction Technology in the Cement Industry*. Cement Plant Environmental Handbook, 2003.

Based on the above findings including the use of SNCR for nitrogen oxides control, a reasonable equivalent CO emission rate entering the lower stages of a KHD preheater should be in the range of 1.5-2.5 pounds per ton of clinker.

Raw Materials

In Florida cement plants, the materials mined on site are fortuitously very low in carbonaceous material. The most significant source of carbon compounds in raw materials in cement production is the unburned carbon in the power plant ash that is commonly used as a source of aluminum and iron. In Florida, this ash is most typically a byproduct of coal fired electric power generating stations.

The carbon content of the ashes (typically referred to as Loss on Ignition, or LOI) ranges from 5-40 percent, and even higher. Some cement companies in Florida are using, or propose to use, high LOI flyash and to inject the ash into the calciner along with fuel to take advantage of the heating value of the flyash while using the aluminum and iron content to provide the proper feed chemistry. The injection of the ash into the calciner will reduce CO problems that would exist if the high LOI flyash was fed into the top of the preheater.

CEMEX does not intend to use the high LOI flyash nor does it intend to inject flyash into the calciner, although it does propose to introduce ash into the raw mill (approximately 4-6 percent of the raw meal). CEMEX will not introduce flyash into the calciner for quality control reasons as ash is a byproduct and the characteristics are variable. CEMEX will grind the flyash with the other raw materials in the raw mill and verify the chemical properties of the raw meal in the blend silo before introducing the raw meal into the processing system.

Another factor that influences potential CO emissions from feed materials is the volatility of the carbon in the feed. It was reported[20] that carbon volatilizing in the range of 450-550°C (temperatures in the upper part of the preheater) will produce more CO than carbon that

[20] Shenk, R.E., F.L. Smidth, Inc., *Presentation to the Florida Department of Environmental Protection.* December 17, 2004.

volatilizes in the range of 600-800°C (temperatures in the lower part of the preheater). The reason is that carbon volatilizing in the lower section of the preheater stands a better chance of being oxidized to CO_2 than carbon volatilizing in the upper portions of the tower where the temperatures are much lower.

Total CO Emissions

In addition to the design and material characteristics affecting CO emissions, there are operating conditions that continually occur in a well operated cement plant that create a great deal of variability in CO emissions. These include issues such as material flushes, build up, blockages, false air, poor material burnability, and changes in fuel and feed characteristics. These factors require constant adjustments in plant operations to maintain a smooth running plant and a uniform clinker quality.

These adjustments are accomplished through a series of control loops that automatically adjust fuel and feed rates, fan speeds, and other factors. The process operates best if the adjustments are made in small increments to avoid excessively overshooting or undershooting the set point of the burning zone temperature and kiln exit gas composition. These small incremental adjustments result in a built in time lag. Drastic control measures can be taken, including the shutdown of the plant to cope with some of the normally encountered excursions in a cement plant; however, energy costs, wear and tear on the plant, and poor clinker quality can be the result.

Based on approximately six months of operating data provided to the Department by Rinker[21], the CO concentrations in the downcomer duct of their Miami Cement Plant ranged from less than 400 ppm to over 1200 ppm (one hour averages) under normal operating conditions. These data are referenced as an example of the variability in CO emissions from a modern Portland cement plant under normal operating conditions.

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21 FDEP. *Technical Evaluation and Preliminary Determination* – CSR Rinker Materials Corporation. Miami-Dade County, Florida. December 14, 2004.

Considering that combustion related CO without SNCR is approximately 2.0 pounds per ton of clinker; that SNCR at a molar ratio of 0.8 could increase CO emissions about 0.5 pounds per ton of clinker; and that the carbon in ash used in the raw meal can increase CO emissions 0.4-0.6 pounds per ton of clinker (with the LOI of the ash in the range 10 percent), a CO emission rate in the range of 2.9-3.1 pounds per ton of clinker can be expected. This emission rate does not take into consideration the short term fluctuations brought on by operating fluctuations and variations in feed and fuel as previously discussed. Considering these factors and the variability in emissions due to plant operating issues, a CO emission rate for the proposed CEMEX Kiln No. 3 of 2.9 pounds per ton of clinker, 30-day rolling average is proposed.

6.5.3 Control of Carbon Monoxide

The control mechanisms discussed thus far are related to plant design and operating features and material selection. Further reduction in CO emissions can only be accomplished in add-on controls. Such controls would involve some type of thermal oxidation.

To date, two thermal oxidizers have been installed on cement plants in the U.S. TXI Operations, LP (TXI) installed a Regenerative Thermal Oxidizer (RTO), a wet scrubber, and a baghouse on a kiln permitted at their Midlothian facility in November 1998. TXI elected to install this air pollution control system in order to "net-out" of a PSD review for the project.[22]

After operating the plant for about a year, TXI approached the Texas Commission on Environmental Quality (TCEQ) and requested that they be allowed to discontinue the operation of the RTO. The request was based on an alleged inferior design of the RTO, high operating cost due to the sharp increase in the price of natural gas used to fire the RTO and an excessively high pressure drop across the RTO. In evaluating the request, TCEQ determined that the RTO was technically feasible but economically unreasonable.[23]

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[22] Texas Commission on Environmental Quality. *Construction Permit Amendment – Review Analysis and Technical Review, Permit No. 1360A/PSE-TX-632MI.* September 9, 2005.

[23] Idem.

It should be noted that the RTO was installed to control both VOC and carbon monoxide. During the consideration of the TXI request to discontinue the use of the RTO, cost analyses were performed by TCEQ and by TXI. The cost of control for carbon monoxide at the TXI plant was estimated to be approximately $1400 per ton of CO removed. This cost was higher than what was considered BACT for CO by the TCEQ.[24] Using cost figures developed by TCEQ and scaling to the CEMEX plant, the estimated control cost is $6000+ per ton of CO removed. This is for 75 percent CO control; the control proposed for TXI under their amended permit.

Even though TCEQ agreed with TXI that the RTO was not BACT, TXI agreed in a settlement with third-party interveners to continue to operate the RTO, but at a reduced operating temperature. Such operation would meaningfully reduce natural gas usage, electrical consumption, and kiln limitations created by exceeding system pressure drop safety operating margins. With the RTO, the CO limit for the No. 5 Kiln at the TXI Midlothian facility is 1.56 pounds per ton of clinker.

The only other known RTO operating in the U.S. is at the Holcim Plant in Dundee, Michigan. This RTO was installed for the control of VOC's resulting from high levels of kerogen in the limestone. Without the RTO, the VOC emissions from the two wet process kilns would be about 7200 tons per year. The driving force for installing the RTO at the Holcim Plant was part of a consent agreement to abate odors resulting from the high VOC emissions.

It has been reported[25] that the Holcim RTO has had problems with material build up, probably related to its packed bed design, and has required a large-scale rebuilding to improve performance.

6.5.4 Previous BACT Determinations

A summary of previous CO BACT determinations from the last ten years is listed is Table 35. As shown, the only means of controlling CO emissions has been good combustion practices and

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[24] Idem.

[25] Idem.

kiln design. Two RTOs have been installed on cement kilns in the past, but neither was required by BACT.

6.5.5 BACT Selection

The operation of an RTO at CEMEX would increase the energy and environmental impacts as fossil fuel (natural gas) would be required to provide the thermal energy for the system operation. The use of this fuel would increase emissions of NOx and result in minor increases in other pollutants. Additionally, electrical energy would be necessary to operate the system and this would have secondary environmental impacts.

Based on the operating experience with RTOs at plants in Texas and Michigan and the cost of controlling CO with an RTO (at $6000+ per ton of CO), the application of an RTO or other thermal oxidizers to control CO is rejected as BACT. Good combustion practices, plant design and material selection will be used to limit carbon monoxide emissions to 2.9 pounds per ton of clinker, 30-day rolling average. This is proposed as BACT for the CEMEX Kiln No. 3 project.

6.6 Volatile Organic Compounds

The discussion in this section is related to hydrocarbon emissions from preheater/precalciner cement plants using raw materials typically encountered in Florida and firing conventional fuels including coal, petcoke, natural gas, fuel oils (including used oil) and tire derived fuel. No waste fuels (other than tires and used oil) are considered. This discussion is limited as the raw materials mined onsite in Florida are essentially free of organic materials that can contribute significantly to hydrocarbon emissions and the raw materials procured off-site can be managed to minimize the content of organic materials that can contribute to hydrocarbon emissions.

6.6.1 Proposed BACT

The proposed BACT limit for VOCs is 0.12 pounds per ton of clinker, which is among the lowest BACT limits imposed in the U.S. This limit will be achieved by plant design, good combustion practices, and material management to avoid raw materials with VOC precursors.

6.6.2 Source of VOC Emissions

Regarding the nature of the hydrocarbon emissions from plants in Florida, it has been found that approximately 20 percent of the total hydrocarbons are methane (a non-VOC hydrocarbon) and the remainders are classified as VOCs. For compliance with the MACT Standard (40 CFR 63, Subpart LLL), a 30-day block-average total hydrocarbon (THC) limit of 50 ppm (v/v) is imposed. The BACT limit for hydrocarbon emissions imposed by the State of Florida is typically stated in terms of VOC emissions averaged over a 30-day block average.

Hydrocarbon emissions from Florida cement plants generally result from organic materials in the raw meal fed to the preheater. The plant design and burner selection for both the kiln and calciner assure efficient combustion and essentially a complete burnout of organic fuel constituents prior to the bottom stage cyclone of the preheater.

The selection of raw materials can be managed such that VOC emissions from the proposed CEMEX kiln will be limited to 0.12 pounds of VOC per ton of clinker; the proposed BACT emission limit for the plant. For a nominal 1,400,000 tons of clinker, this emission rate is equivalent to approximately 19 pounds of VOC per hour or 84 tons of VOC per year. This limit or similar limit has been imposed on several modern preheater/precalciner plants in Florida and operating experience at these plants has provided assurance that the limit can be achieved.

To further reduce this VOC emission rate would require the addition of add-on control equipment such as a thermal oxidizer. To date, add-on control has not been required as BACT for any cement plant in the United States. Two regenerative thermal oxidizers (RTOs) have been installed in the U.S.; one to allow the applicant to "net-out" of a PSD Review and the second was installed to reduce hydrocarbon emissions that resulted in an objectionable odor. These RTOs were installed at the TXI Midlothian Texas Plant (to avoid a PSD Review) and at the Holcim Dundee, Michigan Plant (for odor control). As previously reported in Section 6.5, both facilities have reported problems with the operation of the RTOs. TXI has approached the Texas Commission on Environmental Quality (TCEQ) and requested a permit amendment allowing the shutdown of the RTO. The TCEQ ruled that the RTO was technically feasible but economically unreasonable and therefore, would have permitted TXI to operate without the RTO. As part of an agreement with third-party interveners however, TXI agreed to continue operating the RTO, but at a lower operating temperature. The lower operating temperature resulted in an approximate 85 percent control efficiency for VOC and reduced operating costs and the operating problems encountered by TXI.

Using cost data developed by TCEQ and TXI during the processing of the application for the amended permit and scaling these data to the CEMEX Plant, a control cost of approximately $140,000 per ton of VOC removed has been estimated.[26] This is for 85 percent VOC control; the control proposed for TXI under their amended permit.

6.6.3 Recent BACT Determinations

A summary of recently established BACT determinations is presented in Table 36. The BACT limit proposed by CEMEX is among the lowest BACT limits imposed on cement plants in the U.S.

6.6.4 BACT Selection

The BACT limit proposed for the CEMEX Kiln No. 3 for VOC emissions is 0.12 pounds per ton of clinker, 30-day block average. This averaging time is consistent with that required by the MACT Standard. Furthermore, the proposed limit of 0.12 tons of VOC per ton of clinker will be equivalent to an expected stack gas concentration that will be in the range of 12-16 ppm; well below the MACT THC limit of 50 ppm. This limit will be achieved by plant design, burner selection, plant operating practices and raw material management. No add-on control is proposed because the available technology is not cost effective.

6.7 Mercury

Although mercury is not a PSD pollutant, and hence not subject to BACT as the proposed emission rate is less than 200 pounds per year, potential mercury emissions are addressed herein because of concerns expressed by the Department.

Mercury emissions will be limited to 190 pounds per year or to 0.00014 pounds per ton of clinker. This mercury emission rate was established by considering the total potential mercury content of all of the raw materials and all fuels introduced to the plant and assuming all of the mercury input to the plant is released to the atmosphere through the kiln/raw mill/cooler stack. This is an overly conservative assumption because studies have shown that some mercury exits the kiln in the clinker and is incorporated into the cement product.

To assure the mercury entering the plant, and hence the mercury assumed to be discharged to the atmosphere, does not exceed 190 pounds per year, CEMEX proposes to incorporate a monitoring protocol established by the Department and incorporated in several recently issued cement plant permits in Florida. A typical monitoring protocol follows:

> *Material Balance Analysis of Mercury: The owner or operator shall demonstrate compliance with the mercury throughput limitation by material balance and making and maintaining records of monthly and rolling 12-month mercury throughput. The owner or operator shall, for each month of sampling required by this condition, perform daily sampling of the raw mill feed, coal, petroleum coke, and tires, and shall composite the daily samples each month, and shall analyze the monthly composite sample to determine mercury content of these materials for the month. The owner or operator shall determine the mass of mercury introduced into the pyroprocessing system (in units of pounds per month) from the total of the product of the mercury content from the monthly composite analysis and the mass of each material or fuel used during the month. The consecutive 12-month record shall be determined from the individual monthly records for the current month and the preceding eleven months and shall be expressed in units of pounds of mercury per consecutive 12-month period. Such records shall be completed no later than 25 days following the month of the records. To*

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[26] Idem.

determine the mercury content of the feed material and fuels to be used in the monthly calculation, sampling and analysis shall be performed in accordance with the following schedule:

1. *During the first quarter of plant operation, sample each month and analyze each month's composite sample.*
2. *After the first quarter, sample for one month of each quarter and analyze that month's composite sample.*

This material and fuel monitoring protocol is proposed in lieu of a continuous emission monitor for mercury as it provides an equivalent, and more conservative measure of mercury emissions and because of the fact that continuous emission monitors for mercury have not yet been proven for cement plant applications. Another factor supporting the reliability of the material balance approach is the consistency of the mercury concentration in the raw materials and fuels that will be used.

Information has been discussed with the Department that demonstrates that there is a mercury cycle within the kiln/raw mill system. The mercury enters the raw mill with the raw materials and the kiln and calciner with the fuels. At all three of these locations, the mercury concentrations in the materials input to the plant are quite low. The mercury input to the plant appears to be primarily from the raw materials, however, because of the mass of these materials.

In the kiln, and possibly in the calciner, some mercury from the fuels and raw materials is volatilized and it exits the preheater with the kiln dust. With the raw mill operating, the cycled mercury mixes with the raw materials in the raw mill and becomes part of the raw meal.

The majority of the raw meal eventually enters the preheater again and the mercury cycle continues. The fraction of the dust from the raw mill that does not recycle directly to the kiln enters the particulate matter control device and a fraction of the mercury contained therein is released to the atmosphere. The remainder of this fraction recycles to the kiln.

When the raw mill is not operating, the majority of the cycled mercury is returned directly to the blend silo and cycles again through the kiln. The remaining fraction enters the particulate matter control device and a fraction of that is released to the atmosphere, with the remainder cycling to the kiln.

The resulting cycle is such that the mercury that enters with the raw materials and fuels is assumed to be released to the atmosphere. Again, it is conservatively assumed that none of the mercury exits the kiln and the clinker.

CEMEX has discussed the mercury cycle and offered additional information on this matter. The material is considered to be outside the scope of this application and will be provided under separate cover.

Table 23. Summary of Available PM Control Technologies and the Associated Control Efficiency and Technical Feasiblity

Control Technique	Control Efficiency (%)	Ranking Based on Efficiency	Proven and Technically Feasible? (Y/N)	Proposed Technology for the Cement Kiln and Clinker Cooler? (Y/N)	Proposed Technology for the Other PM Sources[a]? (Y/N)
Precleaners					
Cyclones	70 - 90	6	Y	N	N
Mechanically-aided Separators	< 30	11	Y	N	N
Momentum Separators	5 - 99	10	Y	N	N
Settling Chambers	10 - 99	9	Y	N	N
Wet Scrubbers					
Spray Tower Scrubber	70 - 99	5	Y	N	N
Cyclonic Spray Tower	60 - 95	7	Y	N	N
Dynamic/Mechanically-aided Scrubbers	80 - 99	4	Y	N	N
Impingement Plate/Tray Tower Scrubbers	50 - 99	8	Y	N	N
Venturi Scrubbers	70 - 99	5	Y	N	N
Orifice Scrubber	80 - 99	4	Y	N	N
Condensation Scrubber	> 99	3	N	N	N
Mist Eliminators (Fiber-Bed)	70 - 99	5	Y	N	N
Electrostatic Precipitators (ESP)	99 - 99.9	3	Y	Y	N
Fabric Filters	99 - 99.9	3	Y	Y	Y
Paper/Nonwoven Filters					
HEPA or ULPA Filter	> 99.9	2	N	N	N
Cartridge Collector Filter	> 99.99	1	N	N	N

[a] Includes the Finish Mills and Material Handling equipment.

Table 24. Ranking of Technically Feasible PM Control Technologies Based on Control Efficiency

Control Technique	Control Efficiency (%)	Ranking Based on Efficiency	Proposed Technology for the Cement Kiln and Clinker Cooler? (Y/N)	Proposed Technology for the Other PM Sources[a]? (Y/N)
Fabric Filters	99 - 99.9	1	Y	Y
Electrostatic Precipitators (ESP)	99 - 99.9	1	Y	N
Dynamic/Mechanically-aided Scrubbers	80 - 99	2	N	N
Orifice Scrubber	80 - 99	2	N	N
Mist Eliminators (Fiber-Bed)	70 - 99	3	N	N
Spray Tower Scrubber	70 - 99	3	N	N
Venturi Scrubbers	70 - 99	3	N	N
Cyclones	70 - 90	4	N	N
Cyclonic Spray Tower	60 - 95	5	N	N
Impingement Plate/Tray Tower Scrubbers	50 - 99	6	N	N
Settling Chambers	10 - 99	7	N	N
Momentum Separators	5 - 99	8	N	N
Mechanically-aided Separators	< 30	9	N	N

[a] Includes the Finish Mills and Material Handling equipment.

Table 25. Summary of Previous PM/PM_{10}/$PM_{2.5}$ BACT Determinations from Preheaters, Precalciners, Calciners, and Kilns at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Fuel Used	Throughput	Emission Limit (as presented in Clearinghouse)	Emission Limit (converted [a])	Control Equipment Description	% Effic.
Particulate Matter (PM)											
Unknown (1)	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-350/0010087-013-A(	July 2005	PREHEATER/PRECALCINER KILN	COAL	125.0 TPH CLINK	28.8 LB/HR	0.23 lb/ton clinker	Baghouse	
Unknown (2)	RINKER FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-A(	7/7/2005	PREHEATER/PRECALCINER KILN	COAL	125.0 TPH CLINK	28.8 LB/HR	0.23 lb/ton clinker	Baghouse	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	KILN/CALCINER/PREHEATER	COAL	150 TPH CLINK	0.516 LB/ TON CLINK	0.516 lb/ton clinker	ESP.	
VA-0272	ROANOKE CEMENT	VA	20232	6/13/2003	LIME KILN	COAL	1,300,000 TPY CLINK	83.9 LB/H; 297.5 TPY	0.565 lb/ton (hourly); 0.46 lb/ton (annual)	ESP and GCP	
IA-0052	LAFARGE CORPORATION	IA	PROJ. # 00-057	7/1/2002	PREHEATER/PRECALCINER KILN	COAL	3,488 TON PER DAY	0.3 LB/T	0.516 LB/TON Clinker	BAGHOUSE	99.9
WA-0307	PORTLAND CEMENT CLINKERING PLANT	WA	PSD-90-03	10/5/2001	KILN EXHAUST STACK			10.6 LB/H; 46 tpy		BAGHOUSE	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			32.24 LB/H; 135.41 tpy		ESP	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			36.33 LB/H; 152.59 tpy		ESP	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	PREHEATER/PRECALCINER, KILN		950,000 TPY CLINK	0.01 gr/dscf, 0.105 lb/ton	0.105 lb/ton clinker	High-Temp Baghouse	
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	Nat. Gas	178 T/H	0.13 LB/T	0.13 LB/T	BAGHOUSE	
MI-0287	HOLNAM, INC.	MI	60-71L	3/20/2000	CEMENT KILNS, WET PROCESS (2)	COAL	100 T/H FEED	130 LB/H, 1.3 lb/ton	1.3 lb/ton	Fabric Filter, Slurry Scrubber	90
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	KILN/PREHEATER/BYPASS & CLINKER COOLER EXHAUST			132.1 T/YR		BAGHOUSE	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	KILN OPERATION	COAL	360 T/H	0.016 gr/dscf, 0.3 lb/ton	0.3 lb/ton	ESP	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	CALCINER/ KILN		584,000 T/YR	27.3 LB/H	0.33 lb/ton	BAGHOUSE.	99.9
N-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS,	COAL	75 TPH Clinker	40.5 LB/H	0.3 LB/T	ESP	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY/WET KILN & ALKALI BYPASS BAGHOUSE STACK (KS-1)		378,650 TPY DRY KILN	193.53 LB/H; 847.85 tpy	4.48 lb/ton (dry)	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730,000 TPY Clinker	25.44 LB/H	0.31 lb/ton clinker	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BAGHOUSE STACK (9A)			5.39 LB/H; 23.63 tpy		BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE (KS-1B)		378,650 TPY Clinker	162.7 LB/H; 712.8 tpy	3.76 lb/ton	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BAGHOUSE STACK (9A)			3.06 LB/H; 13.41 tpy		BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730,000 T/YR CLINKER	14.44 LB/H; 63.24 tpy	0.17 lb/ton clinker	BAGHOUSE IS	
MI-0354	HOLNAM, INC	MI	60-71K	6/23/1998	CEMENT KILNS, WET PROCESS, (2)	COAL	100 T/H	1.3 LB/T	1.3 lb/ton	Baghouse	
IL-0057	ILLINOIS CEMENT COMPANY	IL	97030016	6/12/1998	KILN, CEMENT, PREHEATER-PRECALCINER		3,000 TPD Cement	0.208 LB/T	0.208 lb/ton clinker	FABRIC FILTER	99
TN-0086	SIGNAL MOUNTAIN CEMENT COMPANY,	TN	47-065-3070	5/29/1998	DRY FEED KILN	PETROLEU	160 T/H	18.3 LB/H	0.3 LB/T	BAGHOUSE	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	KILN			436 LB/D	0.3 lb/ton 6-hr	BAGHOUSE	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	KILN FEED FOR PREHEATER			0.019 GR/DSCF, 3-hr; 90 lb/day		BAGHOUSE	
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN	COAL	14 T/H	0.2 LB/T clinker	0.23 LB/T clinker	ESP.	
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996	KILN	COAL	170 T/H	23.45 LB/H	0.14 LB/T	BAGHOUSE.	
FL-0110	FL CRUSHED STONE	FL	PSD-FL-227	11/17/1995	KILN	COAL	83 T/H	0.02 LB/T feed	0.02 LB/T feed	FABRIC FILTER	
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	KILN, COAL	COAL	45.3 T/H COAL	13.59 LB/H	0.3 LB/TON	ESP	99.9
Particulate Matter (PM_{10})											
	FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-A(	Draft--7/7/05	PREHEATER/PRECALCINER KILN	COAL	125.0 TPH CLINKER	25.0 LB/HR	0.20 lb/ton clinker	Baghouse	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	KILN/CALCINER/PREHEATER	COAL	150 TPH CLINK	0.516 LB/ TON CLINK	0.516 LB/T	ESP.	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROTARY KILN #6	COAL	2,250 T/D	0.01 GR/DSCF		FABRIC FILTER	
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	ROTARY KILN	COAL	183 T/H	99 %		FABRIC FILTER	
IA-0052	LAFARGE CORPORATION	IA	PROJECT NUMBER 00-057	7/1/2002	PREHEATER/PRECALCINER KILN	COAL	3,488 T/D	0.516 lb/ton clinker	0.516 LB/T	Baghouse	99.9
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			40 LB/H; 168 TPY		ESP	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	KILN, CLINKER		950,000 T/YR Clinker	0.01 gr/dscf, 0.097 lb/ton	0.097 lb/ton clinker	High-Temp Fabric Filter	99.9
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	PREHEATER/PRECALCINER, KILN		950,000 T/YR Clinker	45.9 T/YR	0.097 LB/T, 12-month rolling	High-Temp Filter Baghouse	
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	CEMENT MANUFACTURING, PREHEATER/PRECALCINER	COAL	2,214,000 T/YR	96 T/YR	0.087 LB/T	Enclos., Wet Supp., Paved Rds	60
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	CEMENT MANUFACTURING, PREHEATER/PRECALCINER	COAL	2,214,000 T/YR	620 T/YR	0.56 LB/T	Baghouses	99
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	Nat. Gas	178 T/H	0.11 LB/T	0.11 LB/T	BAGHOUSE	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	KILN/PREHEATER/BYPASS & CLINKER COOLER EXHAUST			132.1 T/YR		BAGHOUSE	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	KILN OPERATION	COAL	360 T/H	0.014 GR/DSCF	0.3 lb/ton	ESP	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	ALKALI BYPASS DUST BINS			0.01 GR/DSCF; 0.64 lb/hr		BAGHOUSE	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAIN KILN/SCRUBBER STACK	COAL	3,100 T/D	123 TPY	0.22 lb/ton clinker	Scrubber and Baghouse	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	CALCINER/ KILN		584,000 T/YR	21.3 LB/H; 74.8 TPY	0.32 lb/ton (hourly); 0.26 lb/ton (annual)	Baghouse	
N-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS,	COAL	75 T/H	37.3 LB/H	0.28 LB/T	ESP	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY/WET KILN & ALKALI BYPASS BAGHOUSE STACK (KS-1)		378,650 TPY DRY KILN	164.2 LB/H; 719.34 TPY	3.80 lb/ton (dry)	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730,000 T/YR CLINKER	21.37 LB/H	0.26 lb/ton	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BAGHOUSE STACK (9A)			4.53 LB/H; 19.85 TPY		BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE (KS-1B)		378,650 T/YR CLINKER	138.3 LB/H; 605.9 TPY	3.20 lb/ton	BAGHOUSE IS	
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MILL, PREHEATER/PRECALCINER KINL(EP		1,584,071 TONS	19.22 LB/HR, 24-HR	0.11 lb/ton (24-hr)	BAGHOUSE	
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN		165 T/H	0.18 LB/T	0.18 LB/T	FABRIC FILTERS.	
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN		165 T/H, 1-hour max	0.18 LB/T	0.18 LB/T	FABRIC FILTERS.	
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN		165 T/H, 1-hour max	0.09 LB/T	0.09 LB/T	FABRIC FILTERS.	
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN, PORTLAND	COAL	14 T/H	0.23 LB/T, clinker	0.20 LB/T, clinker	ESP.	
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996	KILN	COAL	170 T/H	21.11 LB/H	0.12 LB/T	BAGHOUSE.	
UT-0062	HOLNAM, DEVIL'S SLIDE PLANT	UT	DAQE-522-96	5/13/1996	KILN	COAL		14 LB/H		BAGHOUSE.	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	CEMENT KILN		1.6 MILLION TONS	23.7 lb/hr; 0.015 gr/dscf; 88 TPY		BAGHOUSE.	99
Unknown (3)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	IN-LINE KILN AND RAW MILL	COAL			0.28 LB/TON CLINKER (3-hr stack test)	BAGHOUSE.	
Unknown (3)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	KILN/CALCINER/PREHEATER	COAL				BAGHOUSE.	
Particulate Matter ($PM_{2.5}$)											
WA-0307	PORTLAND CEMENT CLINKERING PLANT	WA	PSD-90-03	10/5/2001	KILN EXHAUST STACK			0.005 GR/DSCF, 24-HR		BAGHOUSE	

[a] Based on 8,760 hours per year.

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Environmental Protection, Florida Division of Air Resource Management, March 29, 2005.
(2) Source: Department of Environmental Protection, Florida Division of Air Resource Management, July 7, 2005.
(3) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.

Table 26. Summary of Previous PM/PM_{10} BACT Determinations from Clinker Coolers at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Throughput	Emission Limit (as presented in Clearinghouse)	Emission Limit (converted [a])	Control Equipment	% Effic.
Particulate Matter (PM)									
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996		10.69 LB/H; 0.01 gr/dscf		Baghouse	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	150 TPH Clinker	0.015 GR/DSCF	0.1 LB/T	Baghouse	
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	182.60 T/H			Baghouse	
IA-0052	LAFARGE CORPORATION	IA	Proj. No. 00-057	7/1/2002	145.30 TONS OF	0.015 GR/DSCF	0.1 LB/TON	Baghouse	99.9
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	178 T/H	0.07 LB/T DRY PM	0.07 LB/T DRY PM FEED	ESP	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999		60.2 T/YR		Baghouse	
IN-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	75 T/H	13.5 LB/H	0.082 LB/T	Baghouse	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998		0.1 GR/DSCF, 3-hr	0.1 LB/T, 6-hr	Baghouse	
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	14 T/H	0.1 LB/T, dry	0.16 LB/T clinker	ESP	
FL-0110	FL CRUSHED STONE	FL	PSD-FL-227	11/17/1995	83 T/H	0.01 LB/T, clinker	0.01 LB/T clinker	FABRIC FILTER	
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995		0.01 GR/ACF; 0.09 lb/hr		Baghouse	99.9
Particulate Matter (PM_{10})									
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	150 TPH Clinker	0.015 GR/DSCF	0.092 LB/T	Baghouse	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	2,250 T/D	0.01 GR/DSCF	0.091 lb/ton	FABRIC FILTER	
IA-0052	LAFARGE CORPORATION	IA	Proj. # 00-057	7/1/2002	1,028,599 TPY	0.015 GR/DSCF		Baghouse	99.9
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	178 T/H	0.06 LB/T DRY PH	0.06 LB/T DRY PH FEED	ESP	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999		60.2 T/YR		Baghouse	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	183 T/H CLINKER	0.015 GR/DSCF	0.02 lb/ton	BAGHOUSE	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	584,000 T/YR CLINKER	37.7 T/YR	0.13 LB/T	Baghouse	99.9
IN-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	75 T/H	12.4 LB/H	0.075 LB/T	BAGHOUSE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998		12.25 LB/H; 53.66 TPY		Baghouse	
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	1,028,599 TONS	11.74 LB/HR, 24 HR	0.10 lb/ton	BAGHOUSE	99.9
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	14 T/H	0.13 LB/T, clinker	0.13 LB/T, clinker	ESP	
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996		9.63 LB/H; 0.009 gr/scf		Baghouse	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS CORP.	NV	A139	10/24/1995		21 LB/HR & .015 GR/DSCF		Baghouse	99
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004			0.07 LB/TON CLINKER (3-HR STACK TEST)	Baghouse	

[a] Based on 8,760 hours per year.

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.

Table 27. Summary of Previous PM/PM$_{10}$/PM$_{2.5}$ BACT Determinations from Various Material Handling and Storage Sources at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Throughput	Control Equipment Description	Emission L. Units	
Particulate Matter (PM)									
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	BUCKET ELEVATOR FEED - CEMENT SILO	275 T/H	Baghouse	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SHIPPING DISCHARGE SPOUTS	385 T/H (per spout)	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	AIRSLIDES & SILOS - CEMENT	275 T/H	Baghouse	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	PAN & BUCKET ELEVATORS - CLINKER	165 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	PAN CONVEYOR & SILO - CLINKER SILO	165 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SILO WITHDRAWAL	330 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	CONVEYOR AND ELEVATORS	220 T/H	Baghouse	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SEPARATOR VENT - CLINKER PREGRIND	220 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	MATERIAL TRANSFER TO SCRUBBER	100 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	MATERIAL TRANSFER FROM SCRUBBER	25 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SECONDARY FUEL HANDLING	110 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SECONDARY MATERIAL HANDLING	110 T/H	BAGHOUSE.	0.01 GR/DSCF	
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	CRUSHING AND TRANSFER, LIMESTONE,	227.8 T/H	Baghouse, Moisture > 1.5 %, Underground Process		
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	QUARRYING - SHALE	41.5 T/H			
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	RAW MATERIAL CRUSHER, SHALE AND CLAY	53.1 T/H	BAGHOUSE		
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	ROLLER MILL CRUSHING	284.9 T/H	BAGHOUSE		
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	CEMENT HANDLING - BULK RAILCAR LOADING	191.8 T/H	Baghouse		
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	HAZARDOUS WASTE DERIVED FUEL	4.6 T/H	BAGHOUSE		
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	QUARRYING, Q-1		NONE	14.61 LB/H; 13.49 TPY	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CRUSHING OPERATION, B-06	1250 T/H	BAGHOUSE	0.6 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	TRANSPORT TO RAW MATERIAL/STORAGE BINS, RMS			5.58 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	ADDITIVES ELEVATOR, D-28		BAGHOUSE	0.94 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	BLENDING SILO, F-11		BAGHOUSE	1.03 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	RETURN ELEVATOR, F-12		BAGHOUSE	0.26 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	AEROPOL FEED, H-06		BAGHOUSE	0.17 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	ELEVATOR, H-07		BAGHOUSE	0.21 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER ELEVATOR, L-12		BAGHOUSE	0.45 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	HOT CLINKER, L-13		BAGHOUSE	0.43 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	DOME 1, L-14		BAGHOUSE	0.45 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	DOME 1 BOTTOM, L-15		BAGHOUSE	0.32 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	TRUCK LOADOUT SILO, L-16		BAGHOUSE	1.03 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER DOME 2 BOTTOM, L-18		BAGHOUSE	0.21 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER DOME 2, L-19		BAGHOUSE	0.12 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	ADDITIVE BELT, M-02		BAGHOUSE	0.25 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	ADDITIVE BELT, M-04		BAGHOUSE	0.15 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	REVERSIBLE BELT/GVP BIN, M-06		BAGHOUSE	0.25 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER/LIMESTONE BINS, M-09		BAGHOUSE	0.3 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	SPECIAL CLINKER BIN, M-10		BAGHOUSE	0.21 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER FEEDER BELT, M-28		BAGHOUSE	0.33 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	CLINKER FEEDER BELT, M-29, -32, -33		BAGHOUSE	0.25 LB/H, each	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 1 ELEVATOR, N-09		BAGHOUSE	0.15 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 1 SEPARATOR , N-13		BAGHOUSE	2.52 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FLY ASH BINS, N-20		BAGHOUSE	0.17 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 1 AIRSLIDES, N-22		BAGHOUSE	0.72 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 2 ELEVATOR, N-59		BAGHOUSE	0.15 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 2 SEPARATOR, N-63		BAGHOUSE	2.52 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 2 AIRSLIDES, N-69		BAGHOUSE	0.72 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 1 BELT, N-94A, -94B		BAGHOUSE	0.15 LB/H, each	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	FM NO. 2 BELT, N-95		BAGHOUSE	0.25 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	SILOS 1, 2, 3, 4-7, 8-11, 12-15		BAGHOUSE	0.15 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	SILO LOADOUT 1, 2, 3, 4-7, 8-11, 12-15		BAGHOUSE	0.15 LB/H, each	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	ROTARY BAGGING ELEVATOR, R-70		BAGHOUSE	1.26 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	MANNED BAGGER ELEVATOR, R-90		BAGHOUSE	1.26 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	MATERIAL HANDLING, F-1		NONE	5.02 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL/COKE STOCKPILES, S-01		NONE	0.6 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL AND COKE ROAD HOPPER, S-98		NONE	1.8 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL AND COKE UNLOADING, S-44		BAGHOUSE	0.64 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL MILL, S-30		BAGHOUSE	2.14 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL BIN, S-56		BAGHOUSE	0.6 LB/H	
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	COAL MILL		BAGHOUSE	0.01 GR/DSCF	
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	BAGHOUSE, MATERIAL HANDLING & STORAGE SILO		BAGHOUSE	0.01 GR/DSCF	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	UNLOADING, TRANSFER, CONVEYING RAW MATERIALS & ADDITIVES TO TRANSFER TOWER		BAGHOUSE	0.17 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIALS EXTRACTION		MINIMIZE DISTANCE AREA, REVEGETATION, CHEMICAL STABILIZERS	2.63 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	OVERBURDEN AND WASTE ROCK REMOVAL		CONTROL PLAN	32.37 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIAL REMOVAL AND HAULAGE		CONTROL PLAN	62.47 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	CEMENT KILN DUST HAULING		WETTING MATERIAL PRIOR TO PLACEMENT	2.23 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	DISTURBED AREAS IN QUARRY AND PLANT		MINIMIZATION OF AREAS EXPOSED TO EROSION.	167.21 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL TRANSFER, HAUL TRUCKS TO PRI CRUSH FEED CRUSHER FEED HOPPER, (2)		ENCLOSURE UNDER NEG PRESSURE, DUST CURTAINS, WATER SPRAY, BAGHOUSE	0.01 T/YR, transfer 1	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	ROCK CRUSHER		BAGHOUSE	0.05 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, CRUSHER #1 TO SECOND #1		BAGHOUSE	0.01 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	SECONDARY CRUSHER #1		BAGHOUSE	0.03 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	PRIMARY CRUSHER #2		BAGHOUSE	0.91 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, SECONDARY CRUSHER #1		BAGHOUSE	0.1 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, PRELIM CRUSH #2 TO PRE-BLEND		BAGHOUSE	0.28 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	STACKER BELT, RECLAIMER, PRE-BLENDING CONVEYORS		BAGHOUSE	0.25 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIALS CONVEYING, RAW MILL FEED BINS		BAGHOUSE	0.22 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	UNLOADING & CONVEYING, COAL TO STOCKPILE		NEG PRESSURE AND BAGHOUSE	1.94 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	COAL STOCKPILE		SURFACE MOISTURE	0.45 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RECLAIMING, CONVEYING, & TRANS COAL TO COAL SCREEN		Baghouse	0.19 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	SCREENING AND CRUSHING OVERSIZE COAL		BAGHOUSE.	0.19 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANS & CONVEYING - CRUSHED COAL TO TRANSFER TOWER		BAGHOUSE. PERMIT MODIFICATION TRIGGERED BACT REVIEW OF	0.02 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, COAL, TRANSFER TOWER TO SILO		BAGHOUSE. PERMIT MODIFICATION TRIGGERED BACT REVIEW OF	0.02 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, RAW MATERIAL		BAGHOUSE	0.23 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	COAL MILL VENT BAGHOUSE		BAGHOUSE, PM	14.4 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MILL SYSTEM		BAGHOUSE	6.17 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, MILLED RAW MEAL TO BLENDING SILO		BAGHOUSE	3.86 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, BLENDING SILO TO KILN FEED BIN		BAGHOUSE	1.54 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	CEMENT CLINKER STORAGE & HANDLING		BAGHOUSE	0.07 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, CLINKER TO CEMENT FINISH MILL BINS		BAGHOUSE	0.09 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, CEMENT TO CEMENT SILOS		BAGHOUSE	2.55 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL HANDLING, CEMENT PACKHOUSE		BAGHOUSE	0.13 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL HANDLING, CEMENT BULK LOADOUTS		BAGHOUSE	2.58 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	PAVED ROADS, CEMENT PRODUCT HAULOUT		CONTROL	1.6 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	DRILLING AND BLASTING			1.35 T/YR	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SHIFTABLE QUARRY BELT DROP POINT		PARTIAL ENCLOSURE AND SPRAYING	0.29 LB/H	SEE NOTE
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT DROP POINT (FUTURE)		COVERED AND SPRAYED	0.29 LB/H	SEE NOTE
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY CONVEYOR BELT TO LIMESTONE STORAGE DROP		COVERED AND SPRAYED	0.29 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MOBILE CRUSHER			0.65 LB/H	SEE
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL HOPPER		BAGHOUSE	0.18 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL FEED BIN		BAGHOUSE	0.25 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL CONVEYOR TRANSFER		BAGHOUSE	0.39 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BLENDING SILO DEDUSTING		BAGHOUSE	0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FEED BIN		BAGHOUSE	0.2 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	PREHEATER FEED			0.2 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BLENDING SILO		BAGHOUSE	0.06 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR NO. 1		BAGHOUSE	0.51 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR NO. 2		BAGHOUSE AND COVERED CONVEYOR	2.15 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR AND BIN		BAGHOUSE	0.67 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BYPASS DUST BIN			0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MILL DUST BIN			0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SCRUBBER AREA		BAGHOUSE	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW COAL/COKE BIN			0.08 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT STORAGE, CRUSHED COAL/COKE BIN		BAGHOUSE AND SPRAY PILE	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING SYSTEM INTO FINISH MILL		BAGHOUSE	0.92 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER LOADOUT	1131500 T/YR	BAGHOUSE	0.18 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO.1		BAGHOUSE	0.1 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO. 2		BAGHOUSE	0.34 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO. 3		BAGHOUSE	0.11 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT LOADOUT NO. 1 AND NO. 2		BAGHOUSE	0.33 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO FEED BIN #S, 1, 2, 3, 4		BAGHOUSE	0.14 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FRONT END LOADER DROP POINT TO CRUSHER		PARTIAL ENCLOSURE WITH WATER SPRAYER	0.57 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CRUSHER DROP POINT TO CONVEYOR		PARTIAL ENCLOSURE WITH WATER SPRAYER	0.57 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	LIMESTONE STORAGE BUILDING VENT		FULLY ENCLOSED BUILDING FOR LIME STG	0.1 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND/MILL SCALE DROP POINT TO HOPPER		FULLY ENCLOSED BUILDING FOR LIME STG	0.19 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, ADDITIVE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.53 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER TRUCK LOADING			0.53 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE DROP PT TO HOPPER		PARTIAL ENCLOSURE AND WATER	0.19 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.47 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.47 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP TO HOPPER		PARTIAL ENCLOSURE AND WATER	0.47 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING COAL/COKE DROP FEEDER TO		ENCLOSURE AND WATER	0.19 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING COAL/COKE DROP BELT TO		COVERED CONVEYOR	0.19 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE RECEIVING DROP TO		PARTIAL ENCLOSURE AND WATER	0.07 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY CONVEYOR BELT TO LIMESTONE		COVERED	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT (SHIFTABLE)		COVERED CONVEYOR	0.13 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT (FUTURE)		COVERED CONVEYOR	0.19 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	LIMESTONE CONVEYOR BELT TO FEED			0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND/MILL SCALE CONVEYOR BELT TO FEED			0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MIX CONVEYOR BELT TO GRINDING		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER PAN CONVEYOR		COVERED	0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR		COVERED	0.03 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, ADDITIVES TO		COVERED CONVEYOR	0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE UNLOADING CONVEYOR			0.01 LB/H	

TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE STACKER TO		PARTIAL ENCLOSURES, WATER SPRAYS	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO COAL		COVERED CONVEYOR	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO MILL FEED		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL STORAGE, COAL/COKE PILES		SPRAY THE C/C	0.55 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	ADDITIVE PILE			0.16 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MILL SCALE PILE		WATER	0.03 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND PILE			0.03 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER PILE			0.42 LB/H	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	PORTABLE CRUSHER			0.044 T/YR	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	STACKER / RECALCINER		BAGHOUSE	0.051 T/YR	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	QUARRY HAUL ROADS, WASTE DUST		HAUL ROADS - ROAD WATERING, GRAVEL, CHEMICAL DUST SUPPRESSANTS KILN DUST DISPOSAL - WATERING COMPACTION REVEGETATION	157.1 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS SHUTTLE BELT DROP TO PILE (F-R-7)		COVERED	0.02 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS FEEDER DROP TO BELT (F-R-8)		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS BELT DROP TO CROSS PLANT BELT (F-R-9)		COVERED CONVEYORS	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CROSS PLANT BELT DROP TO SHUTTLE BELT		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SHUTTLE BELT DROP TO DRY FEED BINS		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED BINS DROP TO ROLLER MILL BELT		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	PAVED ROADS (F-TR-1)		PAVED ROADS	10.37 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL TRUCK UNLOADING DROP (F-TR-2)			0.02 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO BIN (F-B-1)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL BIN DROP TO CONVEYOR (F-B-2)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL CONVEYOR DROP TO BINS (PT. F-B-3)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED TASK DROP TO DRAG CHAIN (F-B-4)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRAG CHAIN DROP TO BELT (PT. F-B-5)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-B-6)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-B-7)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO MILL CHUTE (F-B-8)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CLINKER DROP TO SHUTTLE BELT (F-C-1)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.3 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SHUTTLE BELT DROP TO CLINKER BARN (F-C-2)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.3 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO CONVEYOR (F-B-2)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	UNPAVED ROADS (PT. F-L-1)		QUARRY ROADS SHALL BE SPRINKLED	25.34 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO HOPPER (F-L-2)		THE TOP AND SIDES OF ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL STORAGE DROP TO PILE (F-P-1)		THE TOP AND	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WIND PILE EROSION (W-P-2)		COAL AND COKE STOCKPILES SHALL	0.1 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	KILN DUST DROP TO PILES (F-P-7)		NONE	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CKD DRY KILN PUG MILL TO TRUCK (F-P-12)		INCOMING AND	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	QUARRY LOADER DROP TO TRUCK (F-Q-4)		INCOMING AND	0.11 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	PRIMARY CRUSHER (F-Q-6)		A WATER SPRAY SHALL BE APPLIED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-R-2)			0.02 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT DROP TO TABERNACLE TRANSFER (F-R-3)		THE TOP	0.11 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED BELT DROP TO RMS SHUTTLE BELT (F-R 6)		THE TOP AND	0.02 LB/H	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	QUARRY OR CRUSHING		BAGHOUSE	0.1 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	RAW MATERIAL TRANSFER AND STORAGE		BAGHOUSE	0.1 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	AIR SLIDE TO BLEND SILOS		BAGHOUSE	0.1 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	CEMENT SILOS		BAGHOUSE	0.1 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	CEMENT SILOS		BAGHOUSE	0.019 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	RAILCAR		BAGHOUSE	0.1 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	CONVEYOR -		BAGHOUSE	0.019 GR/DSCF	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	PULVERIZED		BAGHOUSE	0.1 GR/DSCF	
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	CONVEYOR,	45.3 T/H COAL	BAGHOUSE	0.01 GR/ACF	
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	DUST RETURN		BAGHOUSE	0.01 GR/ACF	
Particulate Matter (PM10)									
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	BUCKET ELEVATOR FEED - CEMENT SILO	275 T/H	BAGHOUSE. THERE IS ALSO A NAAQS LIMIT OF 0.34 LB/HR.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SHIPPING DISCHARGE SPOUTS	385 T/H (per spout)	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	AIRSLIDES & SILOS - CEMENT	275 T/H	BAGHOUSE. THERE IS ALSO A	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	PAN & BUCKET ELEVATORS - CLINKER	165 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	PAN CONVEYOR & SILO - CLINKER SILO	165 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SILO WITHDRAWAL	330 T/H	BAGHOUSE.	0.009 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	CONVEYOR AND ELEVATORS	220 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SEPARATOR VENT - CLINKER PREGRIND	220 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	MATERIAL TRANSFER TO SCRUBBER	100 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	MATERIAL TRANSFER FROM SCRUBBER	25 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SECONDARY FUEL HANDLING	110 T/H	BAGHOUSE.	0.01 GR/DSCF	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	SECONDARY MATERIAL HANDLING	110 T/H	BAGHOUSE.	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	SCREEN	1000 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAW MATERIAL TRANSFER FROM STORAGE TO KILN	180 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROCK SILO TO LOESCHE MILL	180 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	STORAGE SILO, KILN FEED TO KILN #6	160 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	CLINKER SHED TO FINISH MILLS	500 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAW SHED TO LOESCHE MILL	40 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAW MATERIAL TRANSFER FROM BELT CONVEYOR 107	800 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAW MATERIAL TRANSFER RAW SHED (2) TO LOESCHE MILL	40 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	GYPSUM RAW SHED	350 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	PENTHOUSE STORAGE #2 (NORTH #1)	2250 T/D	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	PENTHOUSE STORAGE #2 (NORTH #2)	2250 T/D	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	PENTHOUSE STORAGE #2 (NORTH #3)	2250 T/D	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROCK SILO DISCHARGE	1000 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	MATERIAL TRANSFER, ALKALI	2250 T/D	FABRIC FILTER	0.01 GR/DSCF	calculated
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK STORAGE SILOS #1	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK STORAGE SILOS #2	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK STORAGE SILOS #3	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK STORAGE SILOS #4	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK STORAGE SILOS #5	200 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAIL STORAGE SILOS #1	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAIL STORAGE SILOS #2	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	RAIL STORAGE SILOS #3	125 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK RAIL LOADOUTS #1	500 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK RAIL LOADOUTS #2	500 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	EAST BULK TRUCK LOADOUT	500 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	BULK TRUCK LOADOUT, WEST	500 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	CEMENT BAGGING #1	114 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	CEMENT BAGGING #2	114 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	CEMENT BAGGING #3	114 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL MILL	20 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL STACKER TOP	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL SURGE BIN TOP (2)	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL TUNNEL TO COAL STACKER	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL TRANSFER	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL BIN #6	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL DRYER - FK PUMP	20 T/H	FABRIC FILTER	0.01 GR/DSCF	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	COAL HOPPER TO CONVEYOR	400 T/H	FABRIC FILTER	0.01 GR/DSCF	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	QUARRYING, Q-1	0 000 T/YR	NONE	8.64 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	TRANSPORT TO RAW MATERIAL/STORAGE BINS, RMS		CLEAN AND MAINTAIN OUTGOING VEHICLES TO MINIMIZE FUGIVITES	1.33 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	MATERIAL HANDLING, F-1		NONE	2.37 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL/COKE STOCKPILES, S-01		NONE	0.28 LB/H	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	COAL AND COKE ROAD HOPPER, S-98		NONE	0.9 LB/H	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	RAW MATERIAL TRANSFER, ROAD DUST	950000 T/YR CLINKER	CE = 85-90%. TREATMENT OF UNPAVED HAUL SURFACES WITH CHEMICAL STABILIZERS AND REGULAR WATERING. REGULAR INSPECTION AND CLEANING OF PAVED HAUL SURFACES. USE OF SURFACTANTS IN SPRAY WATERS. NO LIMIT SET FOR FUGITIVE EMISSION	85 %	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	MATERIAL MILLING	1000000 T/YR	LOW TEMPERATURE MEMBRANE TYPE FILTER BAGHOUSE	0.005 GR/DSCF	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	MATERIAL HANDLING	950000 T/YR	LOW TEMPERATURE MEMBRANE TYPE FILTER BAGHOUSE; CE > 99.9%	0.005 GR/DSCF	
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	COAL MILL		BAGHOUSE	0.01 GR/DSCF	
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	MATERIAL HANDLING & STORAGE SILO		BAGHOUSE	0.0085 GR/DSCF	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	UNLOADING, TRANSFER, CONVEYING RAW MATERIALS & ADDITIVES TO TRANSFER TOWER		BAGHOUSE	0.16 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIALS EXTRACTION		MINIMIZE DISTANCE AREA, REVEGETATION, CHEMICAL STABILIZERS	1.32 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	OVERBURDEN AND WASTE ROCK REMOVAL		CONTROL PLAN	16.73 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIAL REMOVAL AND HAULAGE		CONTROL PLAN	37.27 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	CEMENT KILN DUST HAULING		WETTING MATERIAL PRIOR TO PLACEMENT	1.34 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	DISTURBED AREAS IN QUARRY AND PLANT		MINIMIZATION OF AREAS EXPOSED TO EROSION.	83.61 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL TRANSFER, HAUL TRUCKS TO PRI CRUSH FEED CRUSHER FEED HOPPER. (2)		ENCLOSURE UNDER NEG PRESSURE, DUST CURTAINS, WATER SPRAY, BAGHOUSE	0.01 T/YR, transfer 1	

CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	ROCK CRUSHER		BAGHOUSE	0.05 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, CRUSHER #1 TO SECOND #1		BAGHOUSE	0.01 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	SECONDARY CRUSHER #1		BAGHOUSE	0.03 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	PRIMARY CRUSHER #2		BAGHOUSE	0.91 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, SECONDARY CRUSHER #1		BAGHOUSE	0.1 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, PRELIM CRUSH #2 TO PRE-BLEND		BAGHOUSE	0.27 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	STACKER BELT, RECLAIMER, PRE-BLENDING CONVEYORS		BAGHOUSE	0.25 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MATERIALS CONVEYING, RAW MILL FEED BINS		BAGHOUSE	0.21 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	UNLOADING & CONVEYING, COAL TO STOCKPILE		NEG PRESSURE AND BAGHOUSE	1.85 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	COAL STOCKPILE		SURFACE MOISTURE	0.33 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RECLAIMING, CONVEYING, & TRANS COAL TO COAL SCREEN		BAGHOUSE, PERMIT MODIFICATION TRIGGERED BACT REVIEW OF		
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	SCREENING AND CRUSHING OVERSIZE COAL		BAGHOUSE, PERMIT MODIFICATION TRIGGERED BACT REVIEW OF	0.19 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANS & CONVEYING - CRUSHED COAL TO TRANSFER TOWER		BAGHOUSE, PERMIT MODIFICATION TRIGGERED BACT REVIEW OF	0.02 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, COAL, TRANSFER TOWER TO SILO		BAGHOUSE, PERMIT MODIFICATION TRIGGERED BACT REVIEW OF	0.02 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER & CONVEYING, RAW MATERIAL		BAGHOUSE	0.22 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	COAL MILL VENT BAGHOUSE		BAGHOUSE, PM	14.44 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	RAW MILL SYSTEM		BAGHOUSE	6.17 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, MILLED RAW MEAL TO BLENDING SILO		BAGHOUSE	3.86 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, BLENDING SILO TO KILN FEED BIN		BAGHOUSE	1.54 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	CEMENT CLINKER STORAGE & HANDLING		BAGHOUSE	0.07 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, CLINKER TO CEMENT FINISH MILL BINS		BAGHOUSE	0.08 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	TRANSFER, CEMENT TO CEMENT SILOS		BAGHOUSE	2.54 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL HANDLING, CEMENT PACKHOUSE		BAGHOUSE	0.13 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	MATERIAL HANDLING, CEMENT BULK LOADOUTS		BAGHOUSE	2.46 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	PAVED ROADS, CEMENT PRODUCT HAULOUT		CONTROL	1.2 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	DRILLING AND BLASTING			0.7 T/YR	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	COAL MILL	40 T/YR	FABRIC FILTER	0.01 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	CLINKER COOLER TRANSFER EQUIPMENT	183 T/H	FABRIC FILTER	0.015 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	CLINKER STORAGE SILOS		BAGHOUSE	0.015 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	CEMENT STORAGE SILOS	235 T/H	FABRIC FILTER	0.015 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	SECONDARY CRUSHER	400 T/H LIMESTON	BAGHOUSE, PM10	0.015 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	BALL MILL TRANSFER EQUIPMENT	360 T/H raw mat'l	BAGHOUSE, PM10 = TOTAL FILTERABLE	0.01 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	FLY ASH SILOS	135300 tpy fly ash	BAGHOUSE, PM10 = TOTAL FILTERABLE	0.015 GR/DSCF	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SHIFTABLE QUARRY BELT DROP POINT		PARTIAL ENCLOSURE AND SPRAYING	0.29 LB/H	SEE NOTE
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT DROP POINT (FUTURE)		COVERED AND SPRAYED	0.29 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY CONVEYOR BELT TO LIMESTONE STORAGE DROP		COVERED AND SPRAYED	0.29 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MOBILE CRUSHER			0.65 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL HOPPER		BAGHOUSE	0.18 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL STORAGE BINS		BAGHOUSE	0.68 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL FEED BIN		BAGHOUSE	0.25 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MATERIAL CONVEYOR TRANSFER		BAGHOUSE	0.39 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BLENDING SILO DEDUSTING		BAGHOUSE	0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FEED BIN		BAGHOUSE	0.2 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BLENDING SILO		BAGHOUSE	0.06 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR NO. 1		BAGHOUSE	0.51 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR NO. 2		BAGHOUSE AND COVERED CONVEYOR	2.15 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR AND BIN		BAGHOUSE	0.67 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	BYPASS DUST BIN			0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MILL DUST			0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SCRUBBER AREA		BAGHOUSE	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW COAL/COKE BIN		BAGHOUSE & SPRAY COAL/COKE	0.08 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT STORAGE, CRUSHED COAL/COKE BIN		BAGHOUSE AND SPRAY PILE	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING SYSTEM INTO FINISH MILL		BAGHOUSE	0.92 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER LOADOUT	1131500 T/YR	BAGHOUSE	0.18 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO.1		BAGHOUSE	0.1 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO. 2		BAGHOUSE	0.34 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO NO. 3		BAGHOUSE	0.11 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT LOADOUT NO. 1 AND NO. 2		BAGHOUSE	0.33 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CEMENT SILO FEED BIN #S. 1, 2, 3, 4		BAGHOUSE	0.14 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FRONT END LOADER DROP POINT TO CRUSHER		PARTIAL ENCLOSURE WITH WATER SPRAYER	0.27 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CRUSHER DROP POINT TO CONVEYOR		PARTIAL ENCLOSURE WITH WATER SPRAYER	0.27 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	LIMESTONE STORAGE BUILDING VENT		FULLY ENCLOSED BUILDING FOR LIME STG	0.05 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND/MILL SCALE DROP POINT TO		FULLY ENCLOSED BUILDING FOR LIME STG	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, ADDITIVE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.25 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER TRUCK LOADING			0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE DROP PT TO HOPPER		PARTIAL ENCLOSURE AND WATER	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP POINT TO		PARTIAL ENCLOSURE AND WATER	0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE DROP TO HOPPER		PARTIAL ENCLOSURE AND WATER	0.22 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING COAL/COKE DROP FEEDER TO			0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING COAL/COKE DROP BELT TO		COVERED CONVEYOR	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE RECEIVING DROP TO		PARTIAL ENCLOSURE AND WATER	0.04 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY CONVEYOR BELT TO LIMESTONE		COVERED CONVEYOR	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT (SHIFTABLE)		COVERED CONVEYOR	0.07 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	QUARRY BELT (FUTURE)		COVERED CONVEYOR	0.09 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	LIMESTONE CONVEYOR BELT TO FEED		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND/MILL SCALE CONVEYOR BELT TO FEED		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	RAW MIX CONVEYOR BELT TO GRINDING		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER PAN CONVEYOR		COVERED	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER CONVEYOR		COVERED	0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, ADDITIVES TO		COVERED CONVEYOR	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING, COAL/COKE UNLOADING CONVEYOR		COVERED CONVEYOR BELT, WATER	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL HANDLING, COAL/COKE STACKER TO		ENCLOSURE, WATER SPRAY	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO COAL		COVERED CONVEYOR	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAT HANDLING COAL/COKE CONVEYOR TO MILL FEED		COVERED CONVEYOR BELT	0.01 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MATERIAL STORAGE, COAL/COKE PILES		SPRAY THE C/C	0.28 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	ADDITIVE PILE			0.08 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MILL SCALE PILE		WATER	0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	SAND PILE			0.02 LB/H	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	CLINKER PILE			0.21 LB/H	
MI-0257	LAFARGE MIDWEST, INC., ALPENA PLANT	MI	356-88E	1/5/1999	MATERIAL STORAGE CLINKER	400000 T	BAGHOUSES, PERMIT LIMIT IS CONTROL AND GR/DSCF LIMIT	0.02 GR/DSCF	
MI-0257	LAFARGE MIDWEST, INC., ALPENA PLANT	MI	356-88E	1/5/1999	CLINKER TRANSFER	2500000 T/Y	CONVEYORS AND TRANSFER POINTS ALL COVERED AND CONTROLLED BY BAGHOUSES, PERMIT LIMIT IS CONTROLS	0.02 GR/DSCF	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	PORTABLE CRUSHER			0.037 T/YR	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	STACKER / RECALCINER		BAGHOUSE	0.043 T/YR	
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	QUARRY HAUL ROADS, WASTE DUST		HAUL ROADS - ROAD WATERING, GRAVEL, CHEMICAL DUST SUPPRESSANTS KILN DUST DISPOSAL - WATERING OMPACTION REVEGETATION	70.5 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS SHUTTLE BELT DROP TO PILE (F-R-7)		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS FEEDER DROP TO BELT (F-R-8)		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	RMS BELT DROP TO CROSS PLANT BELT (F-R-9)		COVERED CONVEYORS	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CROSS PLANT BELT DROP TO SHUTTLE BELT		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SHUTTLE BELT DROP TO DRY FEED BINS		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED BINS DROP TO ROLLER MILL BELT		COVERED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	PAVED ROADS (F-TR-1)		PAVED ROADS	0.86 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL TRUCK UNLOADING DROP (F-TR-2)			0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL FEED BINS BAGHOUSE STACK (PT. 4)		BAGHOUSE IS	0.09 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BLEND SILO ROOF BAGHOUSE STACK (PT. 7)		BAGHOUSE IS	0.69 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY PROC. BLEND TANKS BOTTOM BAGHOUSE STACK (PT			0.11 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BIN BAGHOUSE STACK (PT. 9B)		BAGHOUSE IS	0.21 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	COAL/COKE BINS BAGHOUSE STACK (PT. 10)		BAGHOUSE	0.09 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	UNDERGROUND CLINKER TUNNEL BAGHOUSE STACK (PT. 14)		BAGHOUSE IS	0.28 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CEMENT SILO NO. 1 BAGHOUSE STACK (PT. 25)		BAGHOUSE IS	0.69 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CEMENT SILO NO. 2 BAGHOUSE STACK (PT. 26)		BAGHOUSE	0.34 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	MILL BAGHOUSES STACK (PT. 31)		BAGHOUSE IS	0.26 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FUEL BIN BAGHOUSE STACK (PT. 32)		BAGHOUSE IS	0.59 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL FINES BIN BAGHOUSE STACK (PT. 33)		BAGHOUSE IS	0.06 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FRINGE MATERIAL BAGHOUSE STACK (PT. 38)		BAGHOUSE IS	0.15 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	TURN HEAD MATERIAL DIVERTER BAGHOUSE (PT. 39)		BAGHOUSE IS	0.26 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED TANK BAGHOUSE STACK (PT. 40)		BAGHOUSE IS	0.15 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SEPARATOR BAGHOUSE STACK (PT. 41A)		BAGHOUSE IS	2.98 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	MILL BAGHOUSE STACK (41B)		BAGHOUSE IS	1.2 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO BIN (F-B-1)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL BIN DROP TO CONVEYOR (F-B-2)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	

TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL CONVEYOR DROP TO BINS (PT. F-B-3)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED TANK DROP TO DRAG CHAIN (F-B-4)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRAG CHAIN DROP TO BELT (PT. F-B-5)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-B-6)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-B-7)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO MILL CHUTE (F-B-8)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CLINKER DROP TO SHUTTLE BELT (F-C-1)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.14 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SHUTTLE BELT DROP TO CLINKER BARN (F-C-2)		THE TOP AND SIDES OF ALL CONVEYOR BELTS SHALL BE COVERED.	0.14 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO CONVEYOR (F-H-2)		THE TOP AND SIDES OF ALL CONVEYORS SHALL BE COVERED. ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	UNPAVED ROADS (PT. F-L-1)		QUARRY ROADS SHALL BE	11.4 T/YR	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL DROP TO HOPPER (F-L-2)		THE TOP AND SIDES OF	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	SOLID FUEL STORAGE DROP TO PILE (F-P-1)		THE TOP AND	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WIND PILE EROSION (W-P-2)		COAL AND COKE STOCKPILES SHALL	0.05 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	KILN DUST DROP TO PILES (F-P-7)		NONE	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	CKD DRY KILN PUG MILL TO TRUCK (F-P-12)		INCOMING AND	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	QUARRY LOADER DROP TO TRUCK (F-Q-4)		INCOMING AND	0.05 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	PRIMARY CRUSHER (F-Q-6)		A WATER SPRAY SHALL BE APPLIED	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT TRANSFER DROP (F-R-2)		THE TOP AND SIDES OF ALL	0.01 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	BELT DROP TO TABERNACLE TRANSFER (F-R-3)		THE TOP	0.05 LB/H	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	FEED BELT DROP TO RMS SHUTTLE BELT (F-R 6)		THE TOP AND	0.01 LB/H	
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	CONVEYOR TRANSFER POINTS(EP		WATER SPRAY AND		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	SCALPER SCREEN(EP	1460029 TONS	WATER SPRAY AND		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	STORAGE		PARTIAL ENCLOSURE OR		1460029
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	STORAGE PILE(EP	182470.8 TONS	PARTIAL ENCLOSURES OR WIND		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	STORAGE PILE(EP	6570000 TONS	PARTIAL ENCLOSURES OR WIND		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	STORAGE PILE(EP	182470.8 TONS	PARTIAL ENCLOSURES OR WIND		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	CONVEYORS, SURGE BIN(EP 72,	100039.2 TONS	BAGHOUSE DESIGNED TO		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	SOLID FUEL STORAGE BINS AND	100039.2 TONS	BAGHOUSE DESIGNED		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	SOLID FUEL DAY BIN #1(EP	100039.2 TONS	BAGHOUSE DESIGNED TO REDUCE		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	SOLID FUEL DAY BIN #2(EP	70080 TONS	BAGHOUSE DESIGNED TO REDUCE		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	BINS, CONVEYOR, ROLLER MILL	182470.8 TONS	BAGHOUSE		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MATERIAL SILOS(EP	182470.8 TONS	BAGHOUSE DESIGNED TO REDUCE		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	TRANSFER POINT(EP	1337039 TONS	BAGHOUSE DESIGNED TO		99
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	TRANSFER POINT(EP	102930 TONS	BAGHOUSE DESIGNED TO REDUCE		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	TRANSFER POINTS(EP	0 TONS	BAGHOUSE DESIGNED TO REDUCE PM10		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MIX SURGE BIN(EP	1584071 TONS	BAGHOUSE DESIGNED TO		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MIX SILO(EP	1584071 TONS	BAGHOUSE DESIGNED TO		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MIX UNLOADING SYSTEM(EP	1584071 TONS	BAGHOUSE DESIGNED TO		
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	CLINKER SILO #1(EP	640180.8 TONS	BAGHOUSE DESIGNED TO REDUCE		
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996	COAL DELIVERY SYSTEM		BAGHOUSE	1.08 LB/H	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	MATL HANDLING		BAGHOUSE WITH A	18.7 LB/HR & .010 GR/DSCF	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	QUARRYING		WET SUPPRESSION	399.6 LB/HR	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	LIMESTONE CRUSHING		BAGHOUSE WITH A	0.05 LB/HR & .010 GR/DSCF	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	SAND AND GRAVEL SCREENING		WET	274.9 LB/HR	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	RAW MATERIALS BLENDING"		BAGHOUSE	2.334 LB/HR & .010 GR/DSCF	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	COLLECTING AT FINISH		BAGHOUSE WITH A STACK	3.32 LB/HR & 0.010 GR/DSCF	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	CEMENT STORAGE SILO		BAGHOUSE WITH A	1.269 LB/HR & .010 GR/DSCF	
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS	NV	A139	10/24/1995	SAND/GRAVEL LOADERS &		WET	399.4 LB/HR	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	PRIMARY AND SECONDARY CRUSHERS	1000 T/H	FABRIC FILTER	0.01 GR/DSCF	
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	FUGITIVE EMISSIONS		SURFACTANT SPRAY		
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	FUGITIVE EMISSIONS-ROAD PAVED AND UNPAVED ROADS AND STORAGE PILES		WATER SPRAY	NONE	
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	FUGITIVE EMISSIONS-MATERIAL TRANSFER		CLOSE ENCLOSURE DOORS	NONE	
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	QUARRY OPERATIONS		BAGHOUSE	NONE	
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	RAW MATERIAL HANDLING		BAGHOUSE	0.01 GR/DSCF	
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	COAL PREPARATION		BAGHOUSE	0.28 LB/TON CLINKER 3-HR STACK TEST	

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.

(1) Source: Department of Natural Resources, Missouri Air Conservation Commission, June 8, 2004.

Table 28 Summary of Previous PM/PM_{10} BACT Determinations from Finish Mills at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Throughput	Control Equipmen	Emission Limit 1	Emission Limit 2	% Effic.
Particulate Matter (PM)										
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	FINISH MILL, CLINKER GRINDING, ELEVATOR	114.2 T/H	BAGHOUSE			
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	FINISH MILL SYSTEM		BAGHOUSE	70.78 T/YR		
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FINISH MILL SYSTEM VENT		BAGHOUSE	9.83 LB/H; 43.1 TPY		
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	FINISH GRINDING MILL FEED BELT		BAGHOUSE	0.1 gr/dscf, 3-hr		
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	FINISH MILL #2		BAGHOUSE	0.017 gr/dscf, 3-hr	69 LB/D	
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	FINISH MILL C" EXISTING GRINDING MILL USED IN		BAGHOUSE	0.01 GR/ACF	1.89 LB/H	99.9
Particulate Matter (PM_{10})										
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 3	35 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 4	40 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 5	45 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 6	45 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 7 (MILL SWEEP)	85 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 7 (MILL SEPARATOR)	85 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL NO. 7 (TRANSFER)	500 T/H	FABRIC FILTER	0.01 GR/DSCF		
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	FINISH MILL #7 (TRANSFER #2)	500 T/H	FABRIC FILTER	0.01 GR/DSCF		
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 1 SEPARATOR , N-13		BAGHOUSE	1.26 LB/H	5.29 T/YR	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 1 AIRSLIDES, N-22		BAGHOUSE	0.36 LB/H	1.51 T/YR	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 2 SEPARATOR, N-63		BAGHOUSE	1.26 LB/H	5.29 T/YR	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 2 AIRSLIDES, N-69		BAGHOUSE	0.36 LB/H	1.51 T/YR	
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	FINISH MILL SYSTEM		BAGHOUSE	70.78 T/YR		
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	FINISH MILL, NO. 3	95 T/H	FABRIC FILTER	0.01 GR/DSCF	1.97 LB/H	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	FINISH MILL TRANSFER EQUIPMENT	235 TPH	BAGHOUSE	0.015 gr/dscf	0.01 GR/DSCF	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	FINISH MILL TRANSFER NO. 3		FABRIC FILTER	0.015 GR/DSCF	0.01 GR/DSCF	
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	FINISH MILL SYSTEM VENT		BAGHOUSE	9.83 LB/H	43.1 T/YR	
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	FINISH MILL, HOPPER, CEMENT AIR SEPARATION	1401600 TONS	BAGHOUSE	3.46 LB/HR		
Unknown (1)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	FINISH MILL AND PRODUCT LOADOUT		BAGHOUSE			

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.

Table 30. Ranking of Available SO_2 Control Technologies by Control Efficiency

Control Technology	Control Efficiency (%)	Ranking Based on Efficiency	Proposed Technology for the Cement Kiln? (Y/N)
Packed Towers	95 - 99	1	N
Dry Scrubbing	> 90	2	Y
Plate (or Tray) Scrubbers	80 - 99	3	N
Spray Chambers	80 - 99	3	N
Venturi Scrubbers	70 - 99	4	N
Low-Sulfur Fuels	< 90	5	N

+ 913
- 108

14
9
13+3
3

2107

0004 27 51.54
22
28 34 37.56

0005

28 34 35.44
82 24 49.59

28 38 41
82 28 20

28 35.433
82 24.866

Table 29. Summary of Available SO_2 Control Technologies and the Associated Control Efficiency and Technical Feasibility

Control Technology	Control Efficiency (%)	Proven and Technically Feasible? (Y/N)	Ranking Based on Efficiency	Proposed Technology for the Cement Kiln? (Y/N)
Absorption				
Packed Towers	95 - 99	Y	1	N
Plate (or Tray) Scrubbers	80 - 99	Y	3	N
Venturi Scrubbers	70 - 99	Y	4	N
Spray Chambers	80 - 99	Y	3	N
Adsorption				
Dry Scrubbing	> 90	Y	2	Y
Low-Sulfur Fuels	< 90	Y	5	N

28

5

24.2

82

42

3.41

27

58

16

Table 31. Summary of Previous SO_2 BACT Determinations from Cement Kilns, Preheaters, and Calciners at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Fuel Used	Throughput	Emission Limit (as presented in Clearinghouse)	Emission Limit (converted [a])	Control Equipment Description	% Effic.
Unknown (1)	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-350/0010087-013-AC	July 2005	PREHEATER/PRECALCINER KILN	COAL	125 TPH CLINKER	28.8 LB/HR	0.23 lb/ton clinker	Inherently limited by process.	
Unknown (2)	RINKER FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-AC	7/7/2005	PREHEATER/PRECALCINER KILN	COAL	125 TPH CLINKER	28.8 LB/HR	0.23 lb/ton clinker	Inherently limited by process.	
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	KILN/CALCINER/PREHEATER	COAL	150 TPH CLINK	1.01 LB/ TON CLINK	1.01 LB/ TON CLINK	WET SCRUBBER.	
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROTARY KILN #6	COAL	2,250 T/D	632 LB/H	6.74 lb/ton	Inherent scrubbing effect of processing limestone	
AL-0200	CEMEX, INC.	AL	105-0002-Z004	9/13/2002	CEMENT KILN	COAL	230 T/H	160 LB/H	0.821 LB/T		90
IA-0052	LAFARGE CORPORATION	IA	PN 00-057	7/1/2002	PREHEATER/PRECALCINER KILN	COAL	3,488 T/D	500 LB/D; 4,850 TPY	0.143 lb/ton (daily)	Dry Scrubber Equivalent. Lime is generated from limestone in feed and comes into contact with SO2 and some SO2 captured in waste kiln dust.	75
WA-0307	PORTLAND CEMENT CLINKERING PLANT	WA	PSD-90-03	10/5/2001	KILN EXHAUST STACK			180 ppm @ 10% O2, 1-hr		During kiln preheating period, shutdown and during maintenance of baghouse, only nat. gas will be burned and sulfur rings shall be removed if the ring was the cause of the shutdown.	
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			20 LB/H; 84 TPY		NONE INDICATED.	
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	PREHEATER/PRECALCINER, KILN		950,000 T/YR Clinker	1.99 LB/T, 12-month rolling	1.99 LB/T	Raw materials quarry will be managed for optimum sulfur contents. SO2 will be absorbed in a 5-stage precalciner/preheater Kiln.	85
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	PREHEATER/PRECALCINER	COAL	2,214,000 T/YR	1041 T/YR	0.94 lb/ton	Options include the installation of a 5-stage preheater/precalciner pyroprocessing plant and use of raw material with sulfur < 0.03%.	95
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	Nat. Gas	178 T/H	0.27 LB/T CLINKER	0.27 LB/T CLINKER	Low sulfur materials and process control	
MI-0287	HOLNAM, INC.	MI	60-71L	3/20/2000	CEMENT KILNS, WET PROCESS (2)	COAL	100 T/H Feed	21.7 LB/T	21.7 LB/T	SULFUR IN FUEL LIMIT HAS BEEN DROPPED IN SCRUBBER	85
KS-0022	MONARCH CEMENT COMPANY	KS	10069	1/27/2000	2 PRECALCINERS (EACH)	Nat. Gas	107.6 TPH	421 LB/H; 622.3 TPY	3.91 lb/ton (hourly); 1.32 lb/ton (annual)	BAGHOUSE	99
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	KILN/PREHEATER/BYPASS & CLINKER COOLER			623.23 T/YR		WET LIME SCRUBBER	
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	KILN OPERATION	COAL	360 T/H	3317 T/YR	2.10 lb/ton		
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAIN KILN/SCRUBBER STACK	COAL	3,100 T/D	2840 LB/H; 1,577 TPY	21.99 lb/ton (hourly); 2.79 lb/ton (annual)	SCRUBBER AND BAGHOUSE	
N-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS,	COAL	75 T/H	543 LB/H	4.03 LB/T feed	SULFUR CONTENT OF COAL SHALL NOT EXCEED 3 PERCENT	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY/WET KILN & ALKALI BYPASS		378,650 TPY Dry Kiln/730,000 tpy	2400 LB/H; 10,512 tpy	55.52 lb/ton (dry); 28.8 lb/ton	DRY SCRUBBER.	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730,000 T/YR Clinker	840 LB/H; 3,679.2 TPY	10.08 lb/ton	DRY SCRUBBER ACHIEVEING AT LEAST 30% REDUCTION.	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BAGHOUSE STACK (9A)			360 LB/H; 1,576.8 TPY		NONE	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE (KS-1B)		378,650 T/YR Clinker	1200 LB/H; 5,256 TPY	27.76 lb/ton	NONE	
MI-0354	HOLNAM, INC	MI	60-71K	6/23/1998	CEMENT KILNS, WET PROCESS, (2)	COAL	100 T/H	11940 T/YR	21.7 LB/T clinker	SULFUR IN FUEL LIMITED TO 2.5% MAX, 2.17%	combined
IL-0057	ILLINOIS CEMENT COMPANY	IL	97030016	6/12/1998	KILN, CEMENT, PREHEATER-PRECALCINER		3,000 TPD Cement	0.8 LB/T	0.8 LB/T	INHERENT ABSORPTION OF SO2 IN PRODUCT	
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	KILN			10 PPMV; 150 lb/day		LOW SULFUR FUEL	3-H AV
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN, PORTLAND	COAL	14 T/H	0.16 LB/T	0.16 LB/T	FUEL S LIMITS AND PROCESS DESIGN	CLINKE R
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996	KILN	COAL	170 T/H	1 LB/MMBTU		LOW SULFER FUEL	
UT-0062	HOLNAM, DEVIL'S SLIDE PLANT	UT	DAQE-522-96	5/13/1996	KILN	COAL		110 LB/H		LOW SULFUR	
FL-0110	FL CRUSHED STONE	FL	PSD-FL-227	11/17/1995	KILN	COAL	83 T/H	0.27 LB/T	0.27 LB/T	PROCESS REMOVES ACID	CLINKE R
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCTS CORP.	NV	A139	10/24/1995	CEMENT KILN/CLINKER COOLER			208 TPY	0.416 LB/TON CLINKER	FUEL SPEC: LIMIT FUEL TO COAL WITH 1% SULFUR (COAL SULFUR ANALYSIS)	90
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	KILN, COAL	COAL	45.3 T/H COAL	406 LB/H (3 Hr)		LOW SULFUR COAL AND ABSORPTION OF SO2 BY THE	
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	ROTARY KILN	COAL	183 T/H	12 LB/T Clinker, 3-hr rolling; 10 lb/ton 24-hr	12 LB/T Clinker, 3-hr rolling; 10 lb/ton 24-hr	WET SCRUBBER	
TN-0086	SIGNAL MOUNTAIN CEMENT COMPANY,	TN	47-065-3070	5/29/1998	DRY FEED KILN	Pet. Coke	160 T/H	500 PPM; 89.3 lb/hr		GOOD COMBUSTION	
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MILL, PREHEATER/PRECALCINER KILN		1,584,071 TONS	477.3 LB/HR, 3 HR AVG	2.64 lb/ton (3-hr)	INHERENT DRY SCRUBBING	
Unknown (3)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	KILN/CALCINER/PREHEATER	COAL		694 LB/HR	1.26 LB/TON CLINKER (30-day rolling ave.)	INHERENT DRY SCRUBBING AND LIME SRAY WHEN RAW MILL NOT OPERATING, SELECTIVE QUARRYING OF MATERIALS	

[a] Based on 8,760 hours per year.

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Environmental Protection, Florida Division of Air Resource Management, March 29, 2005.
(2) Source: Department of Environmental Protection, Florida Division of Air Resource Management, July 7, 2005.
(3) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.

Table 32. Summary of Available NO_x Control Technologies and the Associated Control Efficiency and Technical Feasibility

Control Technique	Control Efficiency (%)	Proven and Technically Feasible? (Y/N)	Ranking Based on Efficiency	Proposed Technology for the Cement Kiln? (Y/N)
Pre-Combustion				
Plant Design	< 50	Y	7	Y
Fuel Switching	Minimal	Y	9	N
Overfire Air (OFA)	20 - 30	Y	8	N
Flue Gas Recirculation (FGR)	50 - 80	N	3	N
Low NO_x Burners (LNB)/Staged Combustion	35 - 55	Y	5	Y
Reburn	50 - 60	N	4	N
Post-Combustion				
Selective Non-Catalytic Reduction (SNCR)	30 - 50	Y	6	Y
SCR	70 - 90	N	2	N
LNB with SCR	50 - 80	N	3	N
LNB with OFA and SCR	85 - 95	N	1	N

Table 33. Ranking of Available NO_x Control Technologies by Control Efficiency

Control Technique	Control Efficiency (%)	Ranking Based on Efficiency	Proposed Technology for the Cement Kiln? (Y/N)
Low NO_x Burners (LNB), Staged Combustion	35 - 55	1	Y
Selective Non-Catalytic Reduction (SNCR)	30 - 50	2	Y
Plant Design	< 50	3	Y
Overfire Air (OFA)	20 - 30	4	N
Fuel Switching	Minimal	5	N

Table 34. Summary of Previous NO_x BACT Determinations from Cement Kilns and Preheaters/Precalciners/Calciners at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Fuel Used	Throughput	Emission Limit (as presented on Clearinghouse)	Emission Limit (as calculated)[a]	% Effic.	Control Equipment Description
Unknown (1)	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-350/0010087-013-A(	July 2005	PREHEATER/PRECALCINER KILN	COAL	125.00 TPH CLINKER	243.8 LB/HR	1.95 lb/ton clinker		Multi-staged Combustion and/or SNCR
Unknown (2)	RINKER FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-A(	7/7/2005	PREHEATER/PRECALCINER KILN	COAL	125.00 TPH CLINKER	243.8 LB/HR	1.95 lb/ton clinker		Multi-staged Combustion and/or SNCR
MS-0071	HOLCIM (US), INC.	MS	1630-00025	8/20/2004		COAL	650,000 TPY Clinker	10 LB/T	10 LB/T	5	GOOD COMBUSTION PRACTICE
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	KILN/CALCINER/PREHEATER	COAL	150 TPH CLINK	2.85 LB/ TON CLINK	2.85 LB/T		SNCR, Low-NOx Burners, Comb. Control, and Proper Kiln Design
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROTARY KILN #6	COAL	2,250 T/D	2267 T/YR	5.52 lb/ton		PREHEATER/PRECALCINATOR SYSTEM
AL-0203	HOLCIM (US), INC.	AL	503-8026-X021	2/4/2003	Kiln System (Calcining Kiln, Preheater, w/Precalciner)	COAL	390 T/H	2998 T/YR	1.76 lb/ton		
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	ROTARY KILN	COAL	183 T/H	8 lb/t clinker, 30-day rolling	8 lb/t clinker, 30-day rolling		SNCR, LOW NOX BURNERS TOP AIR DUCT
IA-0052	LAFARGE CORPORATION	IA	PROJECT No. 00-057	7/1/2002	PREHEATER/PRECALCINER KILN	COAL	3,488 T/D	2546 T/YR	4 LB/TON CLINKER		GOOD COMBUSTION PRACTICES
WA-0307	PORTLAND CEMENT CLINKERING PLANT	WA	PSD-90-03	10/5/2001	KILN EXHAUST STACK			650 ppm @ 10% O2, 24-hr			NONE INDICATED.
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			660 LB/H			NONE INDICATED.
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	PREHEATER/PRECALCINER, KILN		950,000 T/YR Clinker	2.32 LB/T	2.32 LB/T		MULTI-STAGE COMBUSTION AND RECIRCULATION.
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	PREHEATER/PRECALCINER	COAL	2,214,000 T/YR	4871 T/YR	4.40 lb/ton		5-Stage Preheater/Precalciner Pyroprocessing Plant
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	Nat. Gas	178 T/H	2.9 LB/T CLINKER	2.9 LB/T CLINKER		Multi-Stage Combustion w/Sep. Line Calciner Comb. Chamber
MI-0287	HOLNAM, INC.	MI	60-71L	3/20/2000	CEMENT KILNS, WET PROCESS (2)	COAL	100 T/H FEED	6 LB/T	6 LB/T	30	30% REMOVAL IN SLURRY-SCRUBBER, RTOS.
KS-0022	MONARCH CEMENT COMPANY	KS	10069	1/27/2000	2 PRECALCINERS (EACH)	Nat. Gas	107.6 TPH	200 T/MO	5.09 lb/ton	99	NATURAL GAS
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	Kiln/Preheater/Bypass & Clinker Cooler Exhaust			2922.71 T/YR			LOW NOX COMBUSTION SYSTEM
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	KILN OPERATION	COAL	360 T/H	4428 T/YR	2.81 lb/ton		LOW NOX CALCINER, GOOD COMBUSTION PRACTICES
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAIN KILN/SCRUBBER STACK	COAL	3,100 T/D	1085 LB/H	8.4 lb/ton (short-term); 2.8 lb/ton (annual)		LOW-NOX CALCINER AND LOW-NOX IN-LINE CALCINER
CO-0048	HOLNAM, LAPORTE CO.	CO	11LR338-1	9/22/1998	CALCINER/ KILN		584,000 T/YR	900 LB/H	13.5 lb/ton (short-term); 8.6 lb/ton (annual)		Design of Burner/Kiln to Control Alkali from Limestone
N-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS,	COAL	75 T/H	471 LB/H	6.28 lb/ton		LOW NOX BURNERS AND GOOD COMBUSTION
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	Dry/Wet Kiln & Alkali Bypass Baghouse Stack		378,650 TPY DRY KILN/730,000 tpy	950 LB/H	21.98 lb/ton dry; 11.4 lb/ton wet		
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730,000 T/YR Clinker	450 LB/H	5.40 lb/ton wet		NONE
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE (KS-1B)		378,650 T/YR Clinker	450 LB/H	10.41 lb/ton dry		NONE
MI-0354	HOLNAM, INC	MI	60-71K	6/23/1998	CEMENT KILNS, WET PROCESS, (2)	COAL	100 T/H	3377 T/YR	6 LB/T clinker		
IL-0057	ILLINOIS CEMENT COMPANY	IL	97030016	6/12/1998	KILN, CEMENT, PREHEATER-PRECALCINER		3,000 TON/D CEMENT	4.5 LB/T CLINKER	4.5 LB/T CLINKER		CONVERSION TO PRECALCINER KILN
TN-0086	SIGNAL MOUNTAIN CEMENT COMPANY,	TN	47-065-3070	5/29/1998	DRY FEED KILN	Pet. Coke	160 T/H	1500 PPM	2.52 lb/ton		GOOD COMBUSTION
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MILL, PREHEATER/PRECALCINER KILN		1,584,071 TONS	1894.8 TON/YR	2.39 lb/ton		GOOD COMBUSTION practices
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN	Mixed	165 T/H, 1-Hr Max	1.8 LB/T	1.8 LB/T		GCP and Burner Design w/ Primary Comb. Air Control
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN		165 T/H, 1-Hr Max	1.72 LB/T	1.72 LB/T		GCP and Burner Design w/ Primary Comb. Air Control
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN, PORTLAND	COAL	14 T/H	2.45 LB/T	2.45 LB/T		Process Control and Secondary Combustion of Fuel
UT-0059	ASH GROVE CEMENT COMPANY	UT	DAQE-958-96	10/24/1996	KILN	COAL	170 T/H	400 LB/H	2.35 lb/ton		LOW NOX BURNER.
UT-0062	HOLNAM, DEVIL'S SLIDE PLANT	UT	DAQE-522-96	5/13/1996	KILN	COAL		251 LB/H			LOW NOX BURNER
FL-0110	FL CRUSHED STONE	FL	PSD-FL-227	11/17/1995	KILN	COAL	83 T/H	2.8 LB/T	2.8 LB/T		COMBUSTION PRACTICES
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PROD. CORP	NV	A139	10/24/1995	CEMENT KILN/CLINKER COOLER			3.1 LB/TON CLINKER	3.1 LB/TON CLINKER	50	SNCR UREA INJECTION SYSTEM AT PREHEATER
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	KILN, COAL	COAL	45 T/H COAL	208.8 LB/H (30-DAY)		20	COMBUSTION UNIT DESIGN (WELL DESIGNED
Unknown (3)	HOLCIM, LEE ISLAND	MO	062004-005	6/8/2004	KILN/CALCINER/PREHEATER	COAL		1543 LB/HR (30-day rolling ave.)	2.8 LB/TON CLINKER		GOOD COMBUSTION PRACTICES AND MULTI-STAGED COMBUSTION
Unknown (4)	HOLNAM, HOLLY HILL	SC		5/29/2003	KILN SYSTEM	COAL	2,462,318 ton clink /yr	4.33 LB/TON CLINKER	4.48 LB/TON CLINKER (30-DAY ROLLING AVE.); higher limit during	30	LNB, MSC
MS-0071	HOLCIM (US), INC., ARTESIA	MO	1630-00025	8/20/2004	PORTLAND CEMENT MANUFACTURING	COAL	6,500,000 TON CLINKER/YR	10 lb/ton	10 LB/TON	5	GOOD COMBUSTION PRACTICE
Unknown (5),(6)	DRAKE CEMENT	AZ	DRAFT				660,000 TON CLINKER/YR; MAX: 83.33 TPH CLINKER	95 lb/hr (24-hr ave);	1.95 lb/ton (30-day rolling ave.)		SNCR

[a] Based on 8,760 hours per year.

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Environmental Protection, Florida Division of Air Resource Management, March 29, 2005.
(2) Source: Department of Environmental Protection, Florida Division of Air Resource Management, July 7, 2005.
(3) Source: Department of Natural Resoucres. Missouri Air Conservation Commission. June 8. 2004.
(4) Source: Department of Health and Environmental Control, Bureau of Air Quality, South Carolina, May, 29, 2004.
(5) Source: Vaidyanatha, Balaji, Arizona Department of Environmental Quality. Email Correspondence, September 23, 2005.
(6) Draft limits.

Table 35. Summary of Recent BACT-Determinations for CO Emissions from Cement Kilns, Calciners, and Preheaters at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Fuel Used	Throughput	Emission Limit (as presented in Clearinghouse)	Emission Limit (converted [a])	% Effic.	Control Equipment Description
PA-0236	Essroc Cement, Nazareth Plant I	PA	48-309-118	2/11/2003	KILN SYSTEM			5187 LB/HR (1 HR AVE.)	1363 LB/HR (12-mo. Ave)		
Unknown (1)	Holcim (US), Inc, Trident Plant	MT	draft		KILN SYSTEM	COAL	425,000 ton clink /yr		1.46 LB/TON CLINKER		GOOD COMBUSTION PRACTICES
Unknown (2)	Buzzi Unicem, USA, Selma Plant-River Cement Co.	MO	DRAFT	12/1/2004	KILN SYSTEM	COAL	2,220,000 ton clink /yr	691 LB/HR-30 day roll	2.73 LB/TON CLINKER		GOOD COMBUSTION PRACTICES
Unknown (3)	Holnam, Holly Hill	SC	TV-1860-0005	4/15/2003	KILN SYSTEM	COAL	2462318 ton clink /yr		8 LB/TON CLINKER -30 day roll		GOOD COMBUSTION PRACTICES
Unknown (4)	Giant Cement, Portland Cement plant	SC	0900-0002-DO	5/29/2003	KILN SYSTEM	COAL		1049 LB/HR	6.8 LB/TON CLINKER -30 day roll		GOOD COMBUSTION PRACTICES
Unknown (5)	Holcim (US), Inc., Lee Island Project	MO	062004-005	6/8/2004	KILN/CALCINER/PREHEATER	COAL		6 LB/TON CLINKER -30 day roll	3307 LB/HR - 30 day roll		GOOD COMBUSTION PRACTICES AND MULTI-STAGED COMBUSTION
Unknown (6)	DRAKE CEMENT	AZ	DRAFT				TON CLINKER/YR; MAX: 660,000 83.33 TPH CLINKER		3.6 lb/ton (3 hr ave.)		Good Combustion Practices
Unknown (7)	RINKER FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-AC	7/7/2005	PREHEATER/PRECALCINER KILN	COAL	125.00 TPH CLINKER	450 LB/HR	3.60 lb/ton clinker		Combustion Control
Unknown (8)	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-350/0010087-013-AC	July 2005	PREHEATER/PRECALCINER KILN	COAL	125.00 TPH CLINKER	450 LB/HR	3.60 lb/ton clinker		Combustion Control
WV-0022	CAPITOL CEMENT DIVISION--MARTINSBURG PLANT	WV	R14-0026	6/2/2005	PREHEATER/PRECALCINER KILN	COAL	5,900 TPD	39 LB/HR	4.0 lb/ton clinker		GOOD COMBUSTION PRACTICES
IA-0070	LEHIGH CEMENT COMPANY - MASON CITY PLANT	IA	17-01-005	12/11/2003	KILN/CALCINER/PREHEATER	COAL	150 TPH Clinker	3.7 LB/T	3.7 LB/T		PROPER KILN DESIGN AND OPERATION
SD-0003	GCC DACOTAH - DACOTAH QUARRYS LIMESTONE	SD	28.1101-PSD	4/10/2003	ROTARY KILN #6	COAL	2,250 T/D	3,250 LB/H; 2,002 TPY	34.67 lb/ton (hourly); 4.88 lb/ton (annual)		GOOD COMBUSTION PRACTICES
MO-0059	CONTINENTAL CEMENT COMPANY, LLC	MO	2002-02-038	9/24/2002	ROTARY KILN	COAL	183 T/H	12 lb/ton clinker (1-hr); 10 l/bton (8-hr)	12 lb/ton clinker (1-hr); 10 lb/ton (8-hr)		PYROCLON
AL-0200	CEMEX, INC.	AL	105-0002-Z004	9/13/2002	CEMENT KILN	COAL	230 T/H	725 LB/H	3.72 LB/T		
IA-0052	LAFARGE CORPORATION	IA	PROJECT NUMBER 00-057	7/1/2002	PREHEATER/PRECALCINER KILN	COAL	3,488 T/D	4.5 lb/ton clinker	4.5 lb/ton clinker		GOOD COMBUSTION PRACTICES
WA-0307	PORTLAND CEMENT CLINKERING PLANT	WA	PSD-90-03	10/5/2001	KILN EXHAUST STACK			1045 PPM @ 10%O2; 538 lb/hr (8-hr)			NONE INDICATED.
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			460 LB/H; 1,932 TPY			GCPs AND GOOD COMBUSTION UNIT DESIGN
CO-0043	RIO GRANDE PORTLAND CEMENT CORP.	CO	98PB0893	9/25/2000	PREHEATER/PRECALCINER, KILN		950,000 T/YR CEMENT CLINKER	2.11 LB/T	2.11 lb/ton (12-month rolling avg.)	90	MULTI-STAGE COMBUSTION AND GCP
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	PREHEATER/PRECALCINER	COAL	2,214,000 T/YR	3328 T/YR	3.01 lb/ton (12-month rolling avg.)		Process Modification and Operational Monitoring
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	NAT. GAS	178 T/H	3.6 LB/T CLINKER	3.6 LB/T CLINKER		COMBUSTION CONTROL
MI-0287	HOLNAM, INC.	MI	60-71L	3/20/2000	CEMENT KILNS, WET PROCESS (2)	COAL	100 T/H FEED				FABRIC FILTER, SLURRY SCRUBBER, RTO.
KS-0022	MONARCH CEMENT COMPANY	KS	10069	1/27/2000	2 PRECALCINERS (EACH)	NAT. GAS	120 MMBTU/H	5,000 LB/H; 2,093.3 TPY		99	NATURAL GAS
KS-0020	ASH GROVE CEMENT	KS	1330001	8/26/1999	PREHEATER/PRECALCINER KILN	COAL	331 T/H	5,000 LB/H; 1,409 TPY	15.11 lb/ton (hourly); 0.97 lb/ton (annual)		Computerized process monitoring, GCP
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	Kiln/Preheater/Bypass & Clinker Cooler Exhaust			3988.7 T/YR			GOOD COMBUSTION
IN-0081	LONE STAR INDUSTRIES, INC.	IN	133-10159	4/16/1999	KILN OPERATION	COAL	360 T/H	2930 T/YR	3.65 LB/T clinker		GOOD COMBUSTION PRACTICES
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAIN KILN/SCRUBBER STACK	COAL	3.100 T/D	2209 LB/H; 3,225 TPY	17.10 lb/ton (hourly); 5.70 lb/ton (annual)		GOOD COMBUSTION PRACTICES
IN-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS,	TDF	75 T/H	22.8 LB/H	0.30 lb/ton clinker (wet process)		
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE		378,650 T/YR CLINKER	80 LB/H; 350 TPY	1.85 lb/ton		NONE
MI-0354	HOLNAM. INC	MI	60-71K	6/23/1998	CEMENT KILNS, WET PROCESS, (2)	COAL	100 T/H	3515 T/YR	6.4 LB/T clinker		
TN-0086	SIGNAL MOUNTAIN CEMENT COMPANY,	TN	47-065-3070	5/29/1998	DRY FEED KILN	PET. COKE	160 T/H	248 LB/H: 1,085 TPY	1.55 lb/ton clinker		GOOD COMBUSTION PRACTICES
OR-0036	DURKEE FACILITY	OR	01-0029	2/26/1998	KILN			490 LB/H; 8-hr			NONE
MO-0048	LAFARGE CORPORATION	MO	0897-019	8/20/1997	RAW MILL, PREHEATER/PRECALCINER KILN		1,584,071 TONS	842 TON/YR	1.06 lb/ton		GOOD COMBUSTION practices
FL-0173	SOUTHDOWN, INC.	FL	PSD-FL-233	6/27/1997	KILN		165 T/H (1-hr)	1.2 LB/T	1.2 lb/ton kiln feed		COMBUSTION CONTROLS
OR-0022	ASH GROVE CEMENT COMPANY	OR	01-0029	3/10/1997	PYROPROCESSING KILN	NAT. GAS	113 TON CLINKER/H	490 LB/H	4.34 lb/ton		GCP as monitored by CO and O2 CEMS
PR-0003	PUERTO RICAN CEMENT COMPANY, INC.	PR	PR-0101	2/25/1997		COAL	4,100 TPD Clinker	296.6 LB/H, 8-H	1.74 lb/ton clinker		COMBUSTION CONTROLS.
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN, PORTLAND	COAL	14 T/H	2.5 LB/T	2.5 LB/T clinker		COMBUSTION CONTROLS
UT-0062	HOLNAM, DEVIL'S SLIDE PLANT	UT	DAQE-522-96	5/13/1996	KILN	COAL		438 LB/H			COMBUSTION CONTROLS
FL-0110	FL CRUSHED STONE	FL	PSD-FL-227	11/17/1995	KILN	COAL	83 T/H	2 LB/T	2 LB/T clinker, 1-hr		GOOD COMBUSTION PRACTICES
NV-0032	GREAT STAR CEMENT CORP./UNITED ROCK PRODUCT	NV	A139	10/24/1995	CEMENT KILN/CLINKER COOLER			5.67 LB/TON CLINKER	5.67 LB/TON CLINKER		GOOD COMBUSTION PRACTICE. AIR/FUEL
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	KILN, COAL	COAL	45.3 T/H COAL	3.2 LB/H			PROPER COMBUSTION/BURNER

[a] Based on 8,760 hours per year.

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Montana Department of Environmental Quality, September 21, 2005.
(2) Source: Missouri Air Pollution Control Prgram: September 2005.
(3) Source: Department of Health and Environmental Control, Bureau of Air Quality, South Carolina, May, 29, 2004.
(4) Source: Department of Health and Environmental Control, Bureau of Air Quality, South Carolina, March, 24, 2003.
(5) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.
(6) Source: Vaidyanatha, Balaji, Arizona Department of Environmental Quality. Email Correspondence, September 23, 2005.
(7) Source: Department of Environmental Protection, Florida Division of Air Resource Management, July 7, 2005.
(8) Source: Department of Environmental Protection, Florida Division of Air Resource Management, March 29, 2005.

Table 36. Summary of Previous VOC BACT Determinations from Cement Kilns, Preheaters, and Calciners at Portland Cement Plants

RBLC ID	Facility Name	State	Permit No.	Date Issued	Process Type	Fuel Used	Throughput	Emission Limit 1	Emission Limit 2	Control Equipment Description
Unknown (1)	RINKER FLORIDA CRUSHED STONE COMPANY	FL	PSD-FL-351/0530021-009-AC	7/7/2005	PREHEATER/PRECALCINER KILN	COAL	125 TPH CLINKER	15 LB/HR	0.12 lb/ton clinker	Combustion control
Unknown (2)	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-350/0010087-013-AC	July 2005	PREHEATER/PRECALCINER KILN	COAL	125 TPH CLINKER	15 LB/HR	0.12 lb/ton clinker	Combustion control
WV-0022	CAPITOL CEMENT DIVISION--MARTINSBURG PLANT	WV	R14-0026	6/2/2005	PREHEATER/PRECALCINER KILN	COAL	5,900 TPD	3,960 LB/HR	0.14 LB/TON CLINKER (12-month rolling)	GOOD COMBUSTION PRACTICES
AL-0200	CEMEX, INC.	AL	105-0002-Z004	9/13/2002	CEMENT KILN	COAL	230 T/H	136 LB/H	0.698 LB/T	
FL-0231	RINKER/MIAMI CEMENT PLANT	FL	PSD-FL-324	3/1/2002	IN-LINE KILN/RAW MILL/CLINKER COOLER SYSTEM	COAL	137 T/H CLINKER	0.12 LB/TON CLINKER	0.12 LB/TON CLINKER	PROPER COMBUSTION CONTROL AND RAW MATERIAL SELECTION.
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 MI	6/29/2001	GRINDING/ PREHEATING/ KILN, K-19			15 LB/H; 63 TPY		NONE INDICATED.
MD-0027	LEHIGH PORTLAND CEMENT COMPANY	MD	06-6-0356R	6/8/2000	MATERIAL STORAGE AND TRANSFER			165 T/YR		ANY ADD ENVIRONMENTALLY INFEASIBLE
FL-0139	SUWANNEE AMERICAN CEMENT COMPANY, INC.	FL	1210465-001-AC	6/1/2000	IN LINE KILN & RAW MILL	NATURAL GAS	178 T/H			COMBUSTION CONTROL
MI-0287	HOLNAM, INC.	MI	60-71L	3/20/2000	CEMENT KILNS, WET PROCESS (2)	COAL	100 T/H FEED			RTOS, THREE IN PARALLEL PER KILN. STANDBY ACTIVATED CARBON FOR BACKUP.
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	COAL MILL VENT BAGHOUSE			16.2 T/YR		GOOD COMBUSTION
CO-0047	HOLNAM, FLORENCE	CO	98-FR-0895	7/29/1999	KILN/PREHEATER/BYPASS & CLINKER COOLER EXHAUST			180.5 T/YR		GOOD COMBUSTION
TX-0279	NORTH TEXAS CEMENT COMPANY	TX	PSD-TX-893	3/4/1999	MAIN KILN/SCRUBBER STACK	COAL	3100 T/D	686 LB/H; 1,008 TPY	5.31 lb/ton (hourly); 1.78 lb/ton (annual)	GOOD COMBUSTION PRACTICES
N-0112	LONE STAR INDUSTRIES, INC.	IN	133-5886-00002-3241	9/18/1998	CEMENT KILN, WET PROCESS.	TDF	75 T/H	9.13 LB/H	0.12 lb/ton	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY/WET KILN & ALKALI BYPASS BAGHOUSE STACK (KS-1)		378,650 TPY DRY KILN/7:	277.55 LB/H; 395.58 TPY	6.42 lb/ton (dry, hourly); 2.1 lb/ton (dry, annual)	
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	DRY KILN EXHAUST BAGHOUSE (KS-1A)		730000 T/YR CLINKER	97.55 LB/H; 320.44 TPY	1.17 lb/ton (hourly); 0.88 lb/ton (annual)	NONE
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	ALKALI BYPASS BAGHOUSE STACK (9A)			2.87 LB/H; 9.44 TPY		NONE
TX-0282	CAPITOL CEMENT DIVISION	TX	PSD-TX-120M3	9/16/1998	WET KILN EXHAUST BAGHOUSE (KS-1B)		378650 T/YR CLINKER	15 LB/H; 65.7 TPY	0.35 lb/ton	NONE
MI-0354	HOLNAM, INC	MI	60-71K	6/23/1998	CEMENT KILNS, WET PROCESS, (2)	COAL	100 T/H	7217 T/YR	13 LB/T clinker	COOLING AIR CONDENSER REMOVES PAH AND ORGANICS BEFORE BAGHOUSE. ACTIVATED CARBON IS INJECTED FOR ADSORPTION OFPOLLUTANTS.
TN-0086	SIGNAL MOUNTAIN CEMENT COMPANY	TN	47-065-3070	5/29/1998	DRY FEED KILN	PET. COKE	160 T/H CLINKER	10.7 LB/H	0.07 lb/ton clinker	GOOD COMBUSTION
FL-0173	SOUTHDOWN, INC. (CEMEX)	FL	PSD-FL-233	6/27/1997	KILN		165 T/H (1-hr)	0.09 LB/T	0.09 LB/T kiln feed	GOOD COMBUSTION PRACTICES
PR-0003	PUERTO RICAN CEMENT COMPANY, INC.	PR	PR-0101	2/25/1997		COAL	4100 TPD OF CLINKER	20.5 LB/H, 24-H	0.12 LB/T	COMBUSTION CONTROLS
FL-0224	FLORIDA ROCK INDUSTRIES, INC.	FL	PSD-FL-228	12/23/1996	KILN, PORTLAND	COAL	14 T/H	0.11 LB/T clinker	0.11 LB/T clinker	COMBUSTION controls
WY-0044	MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	WY	CT-1137	3/6/1995	KILN, COAL	COAL	45.3 T/H COAL	7.3 LB/H		PROPER COMBUSTION/BURNER
Unknown (3)	Holcim (US), Inc., Lee Island Project	MO	062004-005	6/8/2004	KILN/CALCINER/PREHEATER	COAL	? ?	**182 LB/HR (30-Day Block)**	**0.33 LB/TON CLINKER**	GOOD COMBUSTION PRACTICES AND SELECTIVE QUARRYING
Unknown (4)	Giant Cement, Portland Cement plant	SC	0900-0002-DO	5/29/2003	KILN SYSTEM	COAL		**85 LB/HR (30-Day Roll)**	**0.55 LB/TON CLINKER**	GOOD COMBUSTION PRACTICES
Unknown (5)	Holnam, Holly Hill	SC		5/29/2003	KILN SYSTEM	COAL	2462318 ton clink /yr		**0.27 LB/TON CLINKER (3-hr stack test)**	GOOD COMBUSTION PRACTICES
Unknown (6)	Holcim, cement kiln	CO	98-FR-0895	12/1/2004	KILN SYSTEM	COAL	2,220,000 ton clink /yr	**843 TPY (12-mo. Rolling)**	**0.9 LB/TON CLINKER (30-day roll)**	GOOD COMBUSTION and SELECTIVE QUARRY PRACTICES

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.
(1) Source: Department of Environmental Protection, Florida Division of Air Resource Management, July 7, 2005.
(2) Source: Department of Environmental Protection, Florida Division of Air Resource Management, March 29, 2005.
(3) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.
(4) Source: Department of Health and Environmental Control, Bureau of Air Quality, South Carolina, March, 24, 2003.
(5) Source: Department of Health and Environmental Control, Bureau of Air Quality, South Carolina, May, 29, 2004.
(6) Source: Colorado Air Pollution Control Division, December 2004.

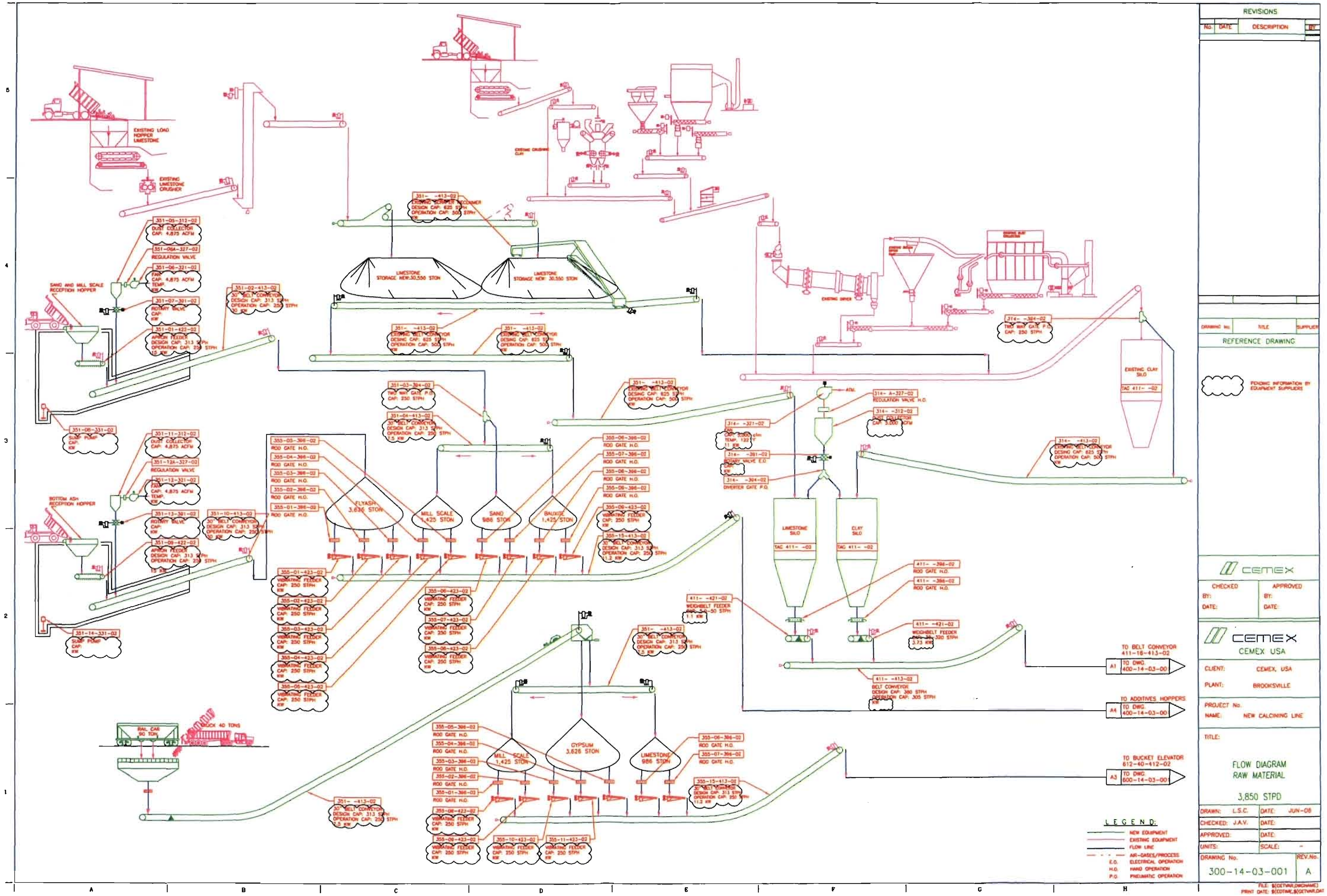
7. Conclusion

The proposed emission limits for particulate matter (PM/PM10), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC) and mercury from the proposed CEMEX Line No.3 are based on the application of control technology that has been recently been accepted and permitted as BACT for Portland cement plants by FDEP and there is no operating record from operating Portland cement plants that demonstrate that more stringent emission limits are justified.

The pollutant emission rates based on the proposed BACT emission limits, as described in this report will not cause or contribute to a violation of any air quality standard, PSD increment, or any other provision of Chapter 62-212, FAC.

The proposed plant design information provided in the application and this report provide the Department with reasonable assurance that the construction and operation of the proposed plant will not discharge, emit, or cause pollution in contravention of Department standards or rules.

ATTACHMENT 1



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P.O. PNEUMATIC OPERATION
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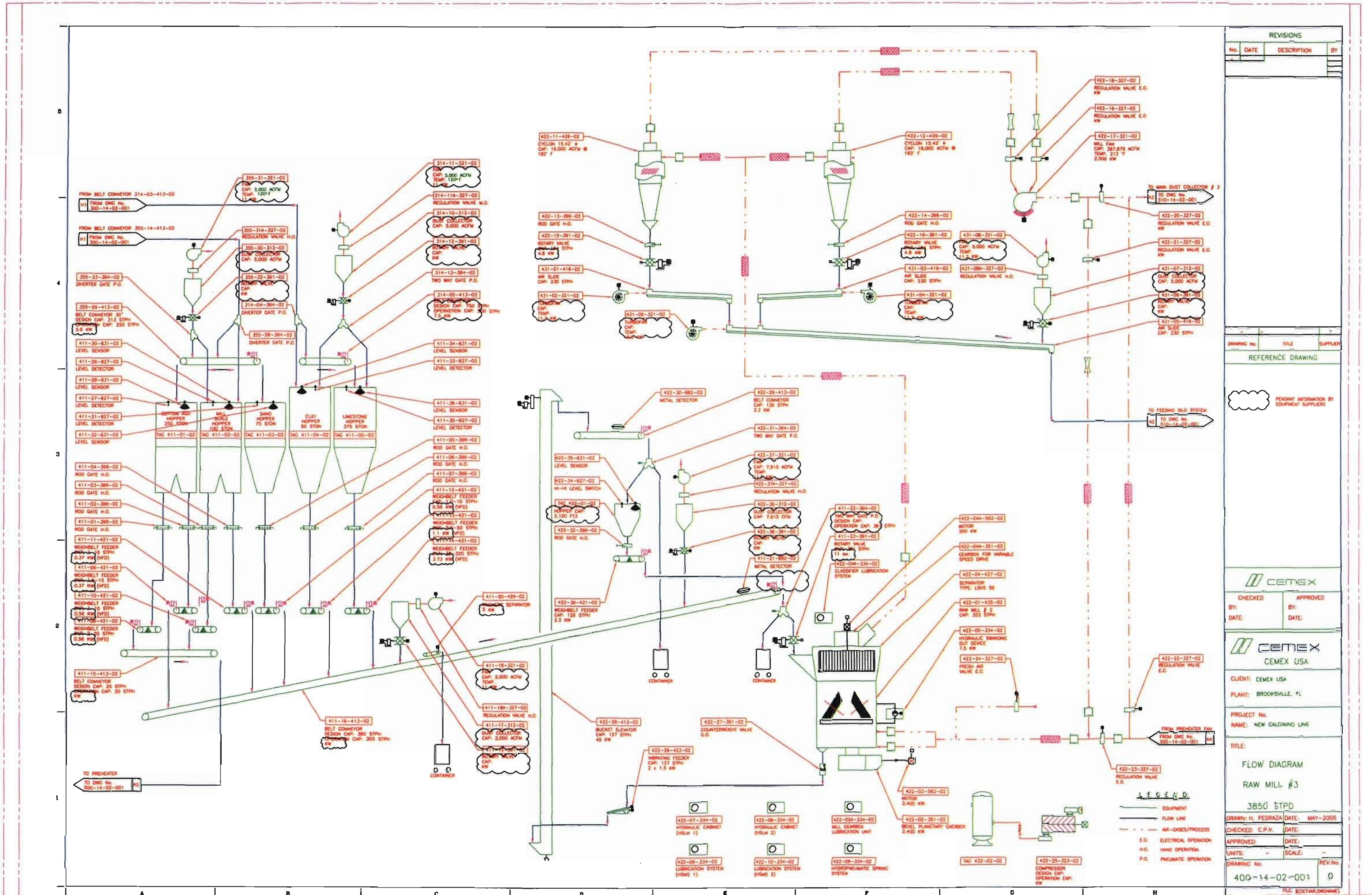
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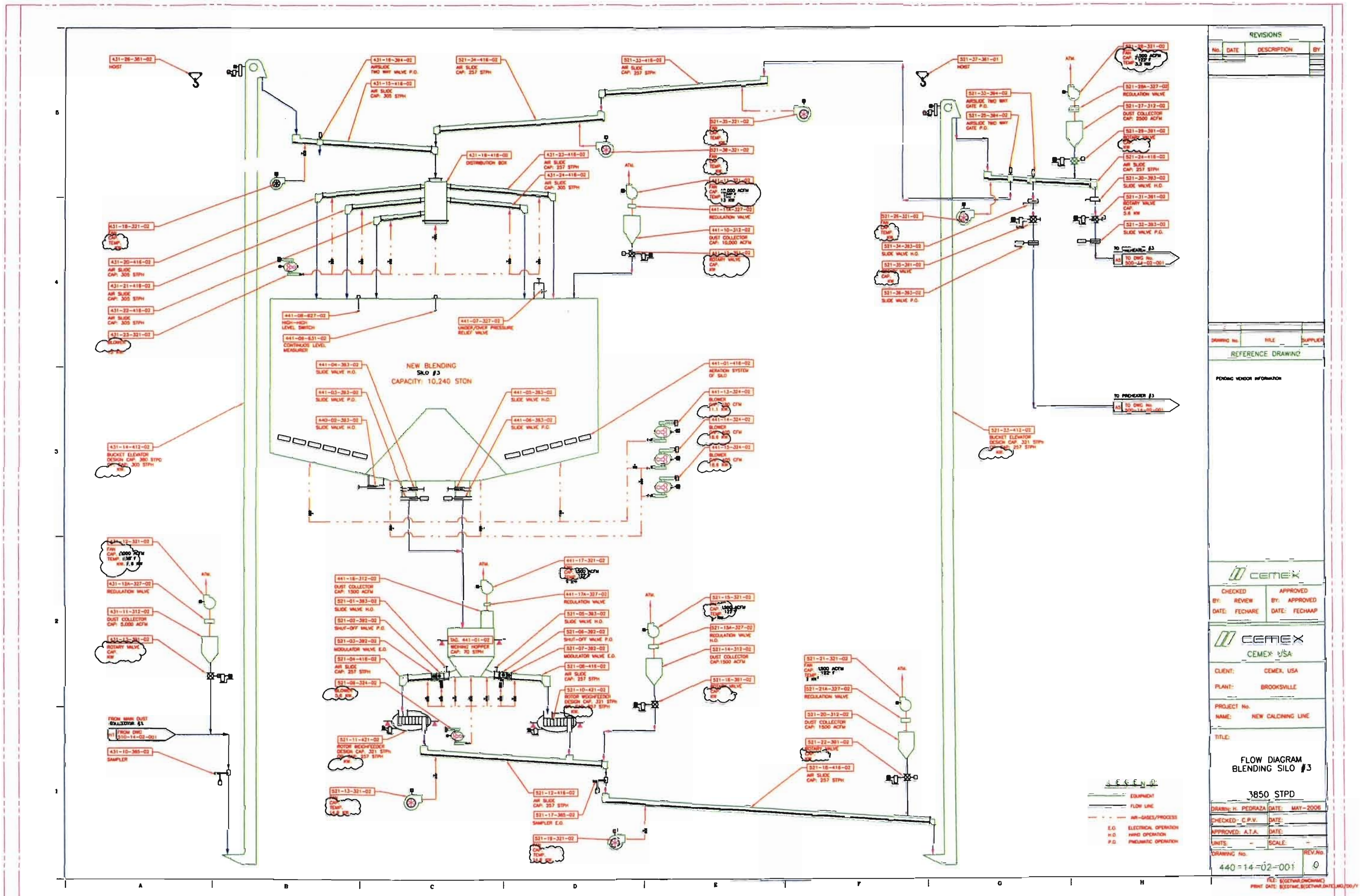

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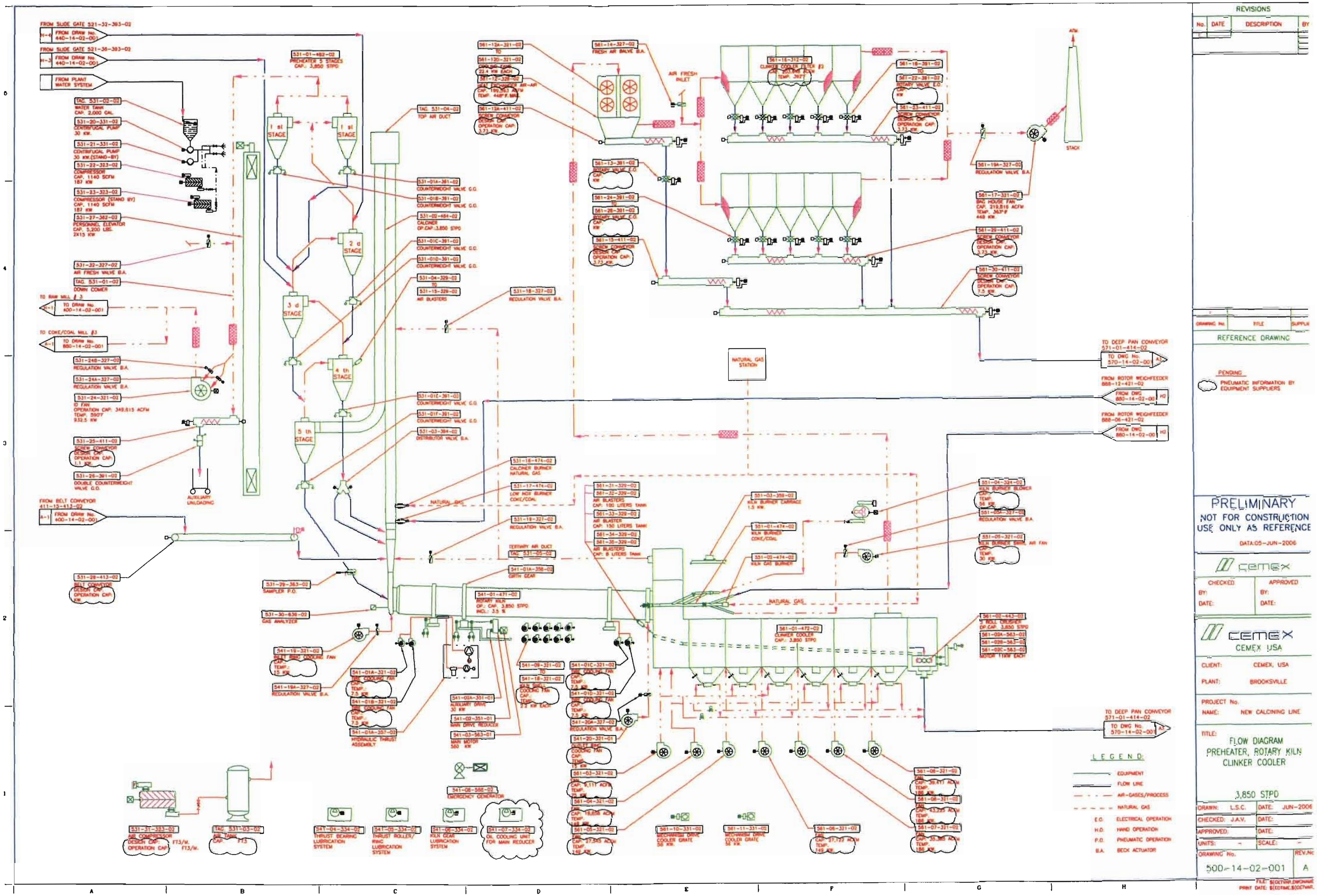

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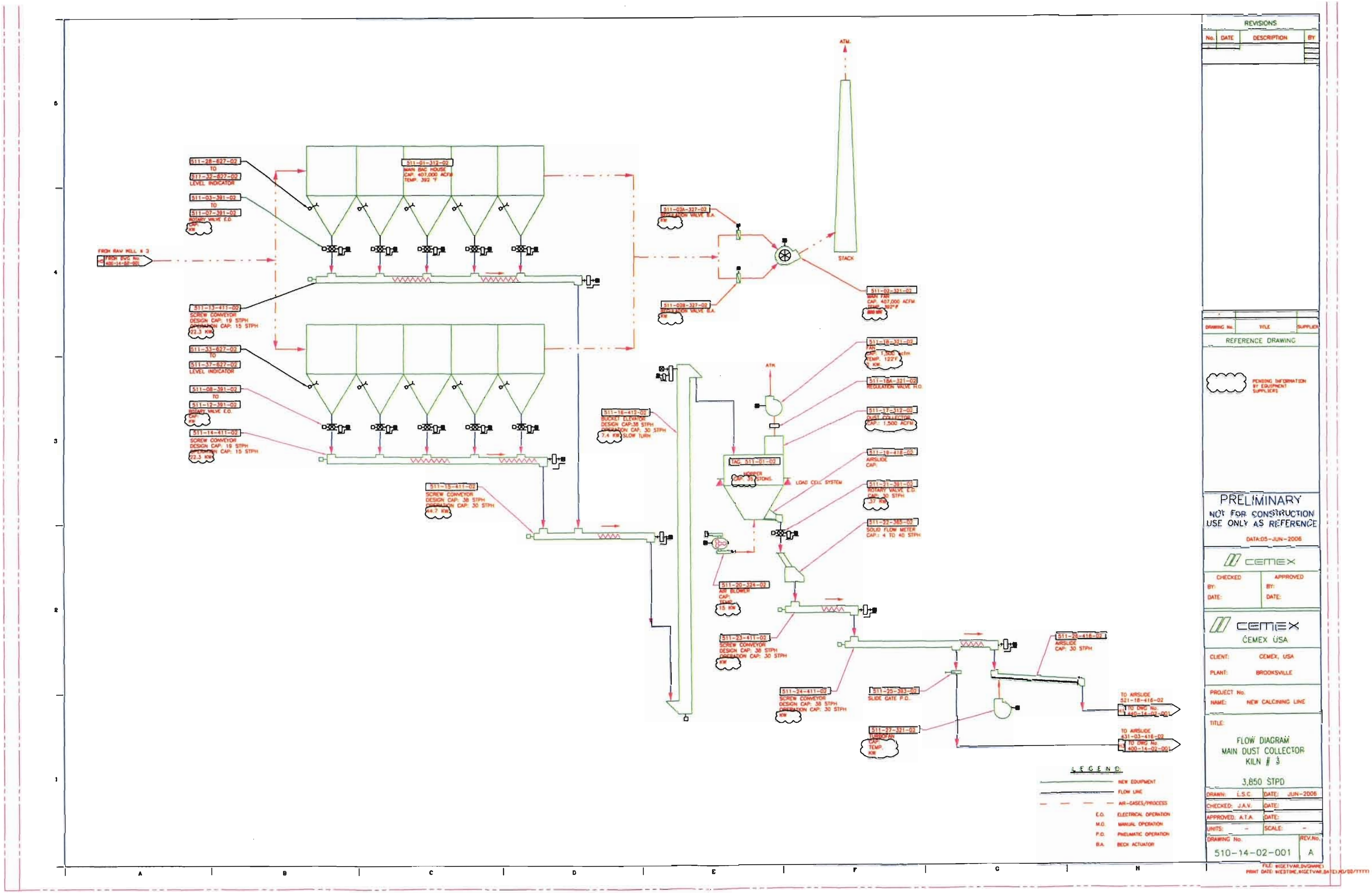
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511-08-391-02 TO 511-12-391-02 ROTARY VALVE E.O. CAP: KW
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STACK
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511-16-412-02 BUCKET ELEVATOR DESIGN CAP:38 STPH OPERATION CAP. 30 STPH 7.4 KW SLOW TURN
ATM
511-18-321-02 FAN CAP: 1,500 acfm TEMP. 122°F 2 KW.
511-18A-321-02 REGULATION VALVE H.O.
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LOAD CELL SYSTEM
511-19-418-02 AIRSLIDE CAP.
511-21-391-02 ROTARY VALVE E.O. CAP: 30 STPH .37 KW
511-22-385-02 SOLID FLOW METER CAP.: 4 TO 40 STPH
511-20-324-02 AIR BLOWER CAP: TEMP. 15 KW
511-23-411-02 SCREW CONVEYOR DESIGN CAP: 38 STPH OPERATION CAP: 30 STPH KW
511-24-411-02 SCREW CONVEYOR DESIGN CAP: 38 STPH OPERATION CAP: 30 STPH KW
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TO AIRSLIDE 431-03-416-02 TO DWG No. 400-14-02-001
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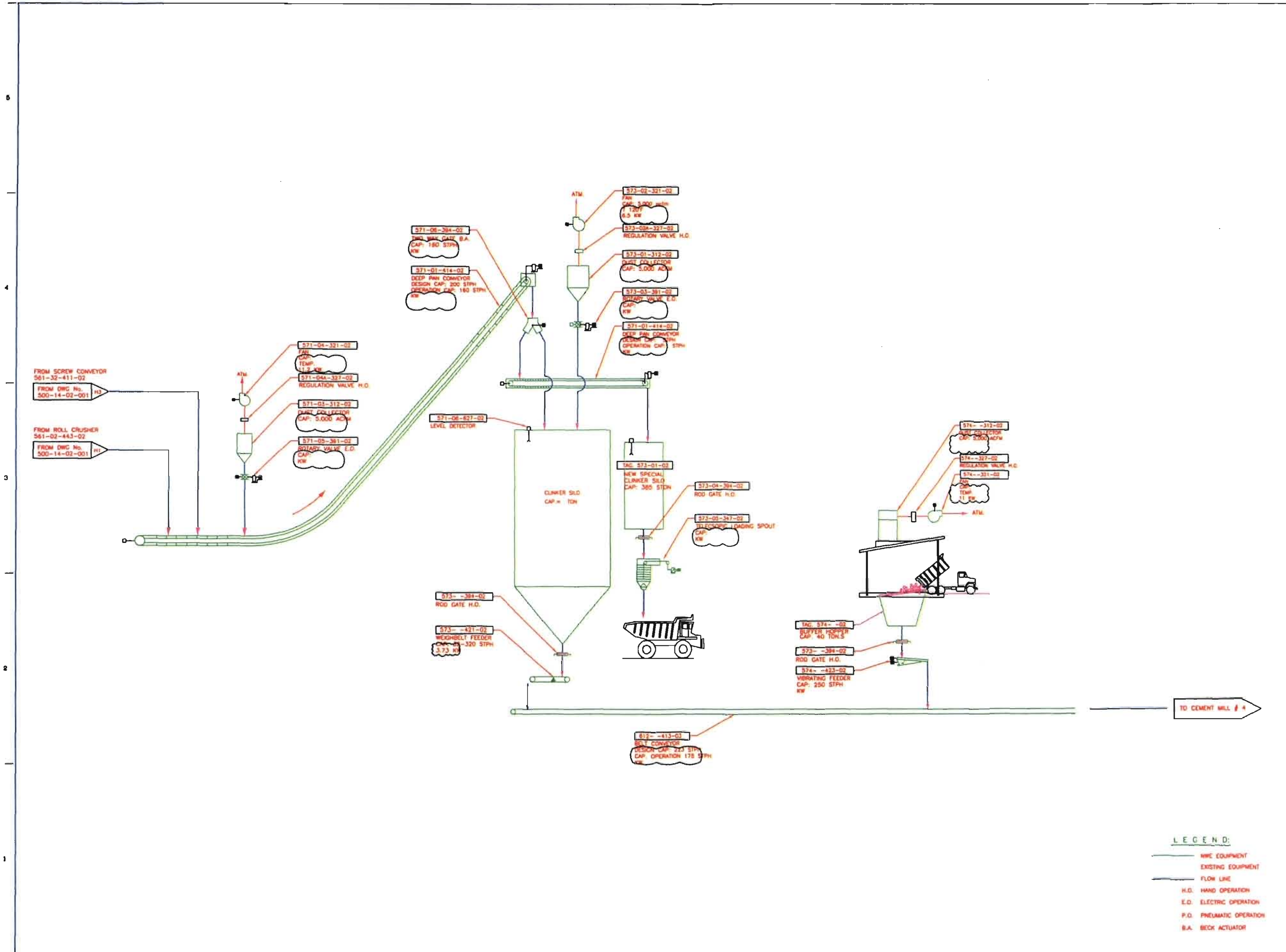

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CEMEX USA

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PROJECT No.
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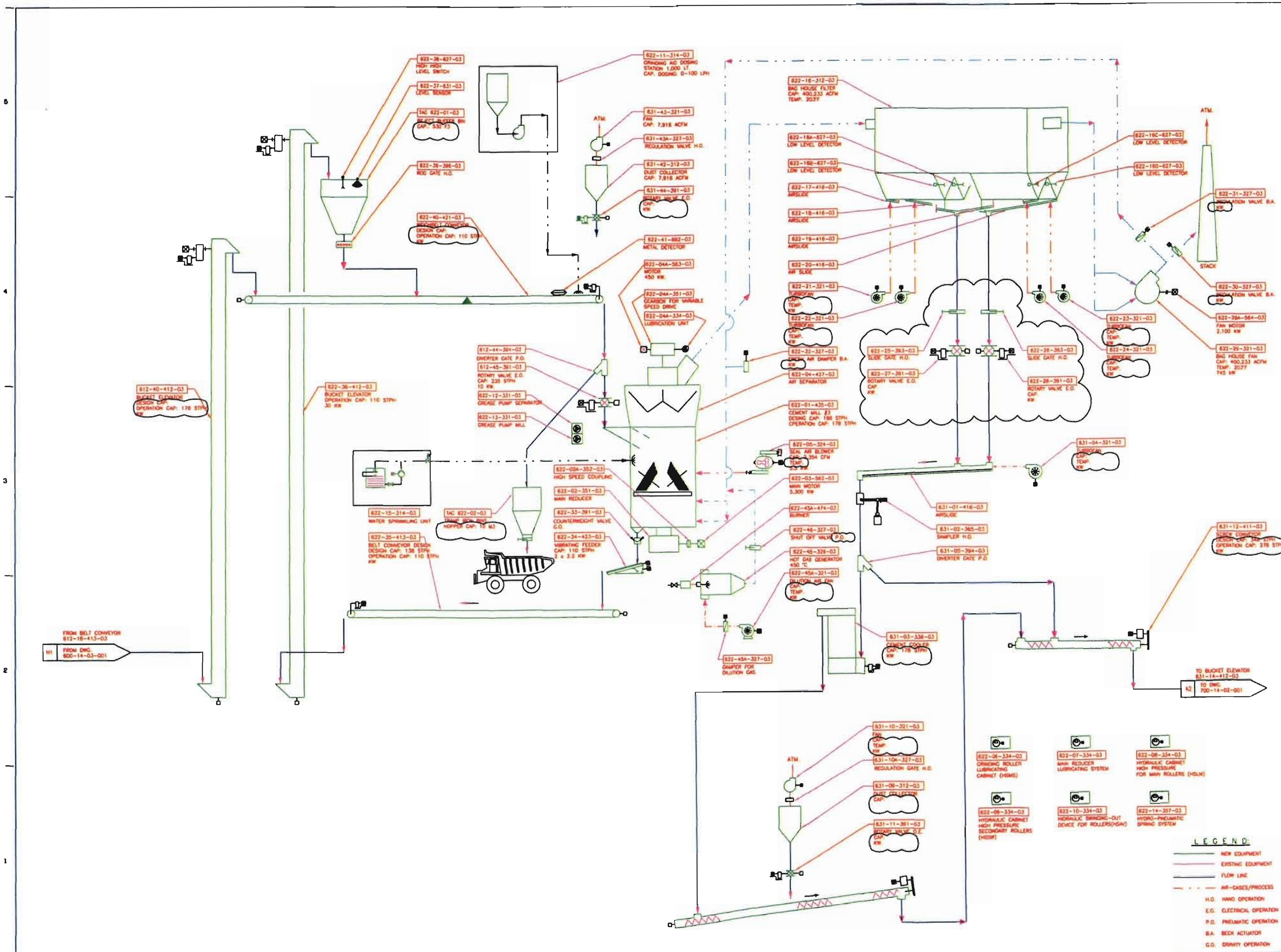

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GRINDING MILL # 3

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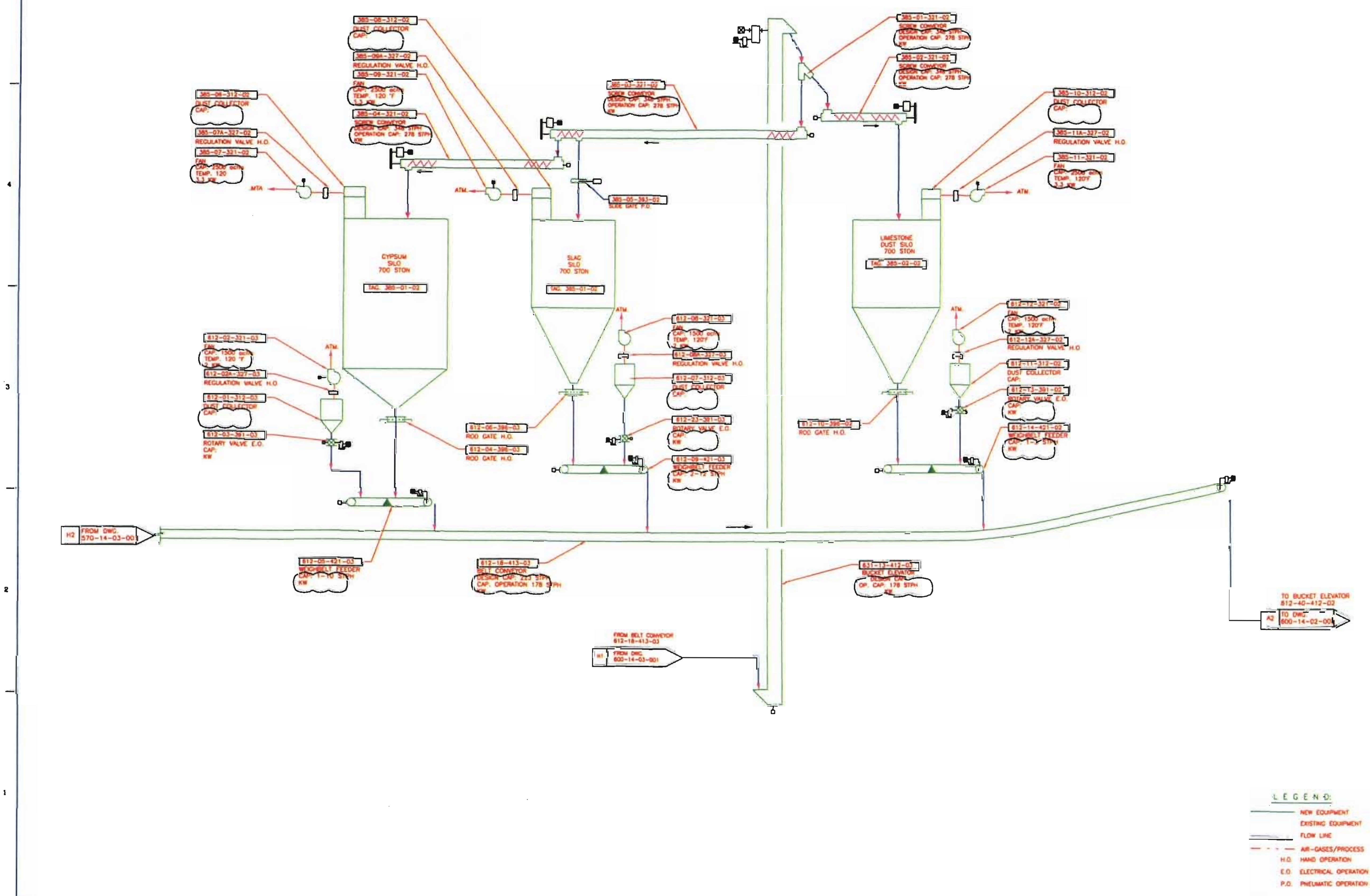

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USE ONLY AS REFERENCE
DATA:05-JUN-2006

CEMEX

CHECKED	APPROVED
BY:	BY:
DATE:	DATE:

CEMEX
CEMEX USA

CLIENT: CEMEX, USA
PLANT: BROOKSVILLE

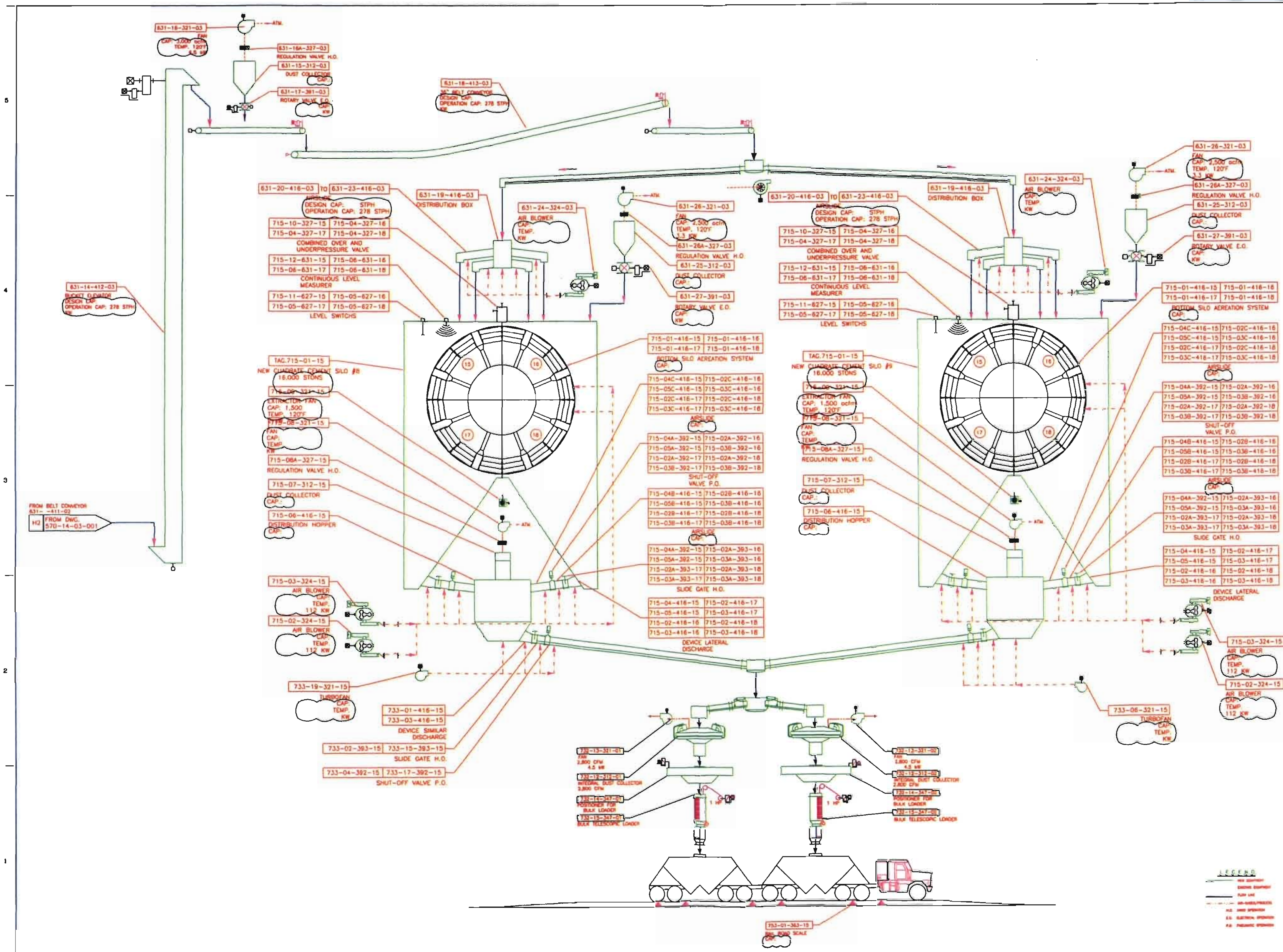
PROJECT No.
NAME: NEW CALCINING LINE

TITLE:
FLOW DIAGRAM
SLAG & LIME DUST
FEEDING AND TRANSPORT
CEMENT MILL #4

3,850 STPD

DRAWN: H. PEDRAZA	DATE: 31-05-2006
CHECKED: C.P.V.	DATE:
APPROVED:	DATE:
UNITS: -	SCALE: -
DRAWING No. 600-14-03-001	REV.No. A

FILE: $(GETVAR,DWGNAME)
PRINT DATE: $(EDTIME,$(GETVAR,DATE),MO/DD/YYYY)



REVISIONS			
No.	DATE	DESCRIPTION	BY

DRAWING No.	TITLE	SUPPLIER

REFERENCE DRAWING

PRELIMINARY
NOT FOR CONSTRUCTION
USE ONLY AS REFERENCE
DATA:06-JUN-2006

CEMEX

CHECKED	APPROVED
BY:	BY:
DATE:	DATE:

CEMEX
CEMEX USA

CLIENT: CEMEX, USA
PLANT: BROOKSVILLE

PROJECT No.
NAME: NEW CALCINING LINE

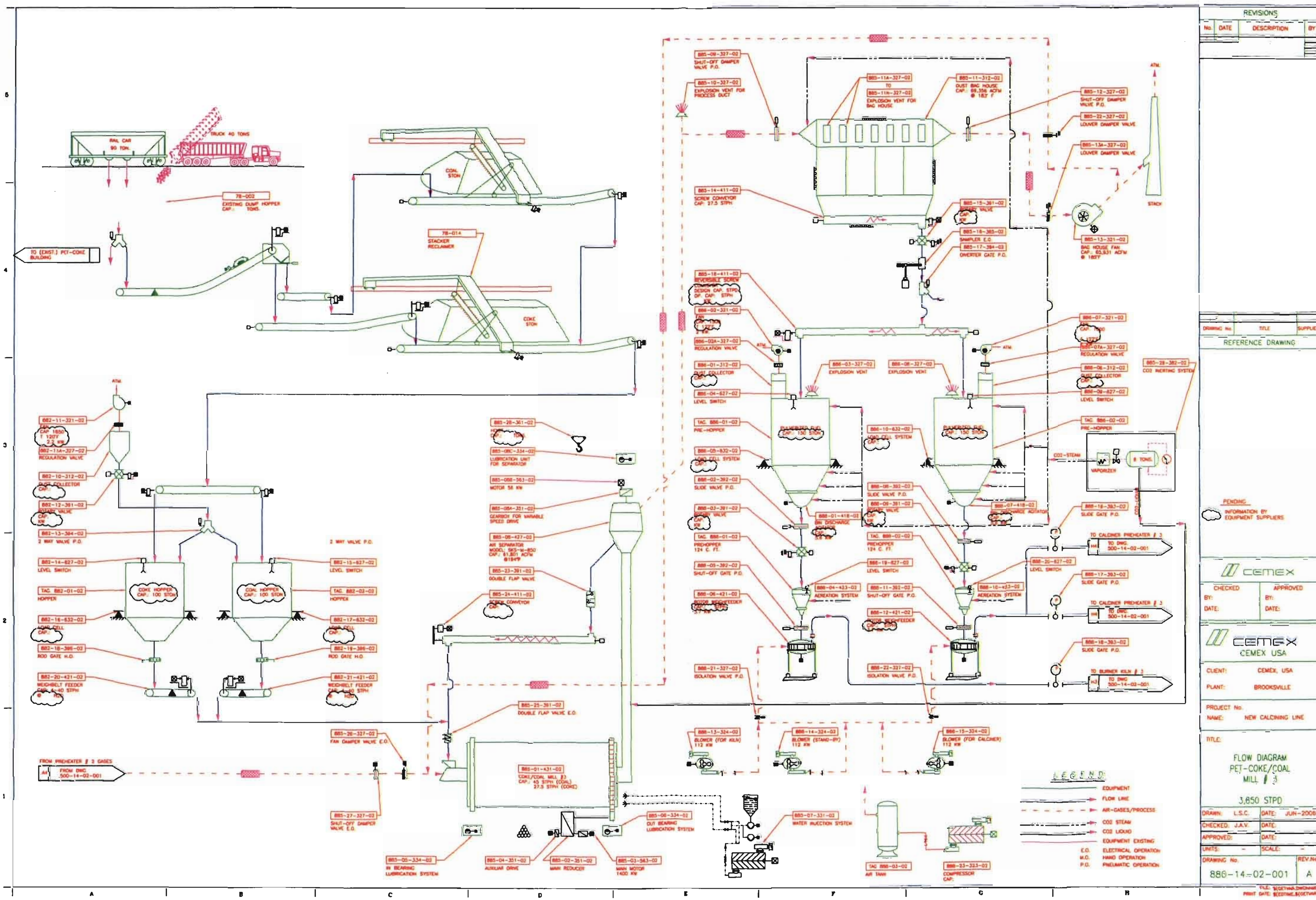
TITLE:

FLOW DIAGRAM CEMENT STORAGE AND LOADING TO RAILROAD

3,850 STPD

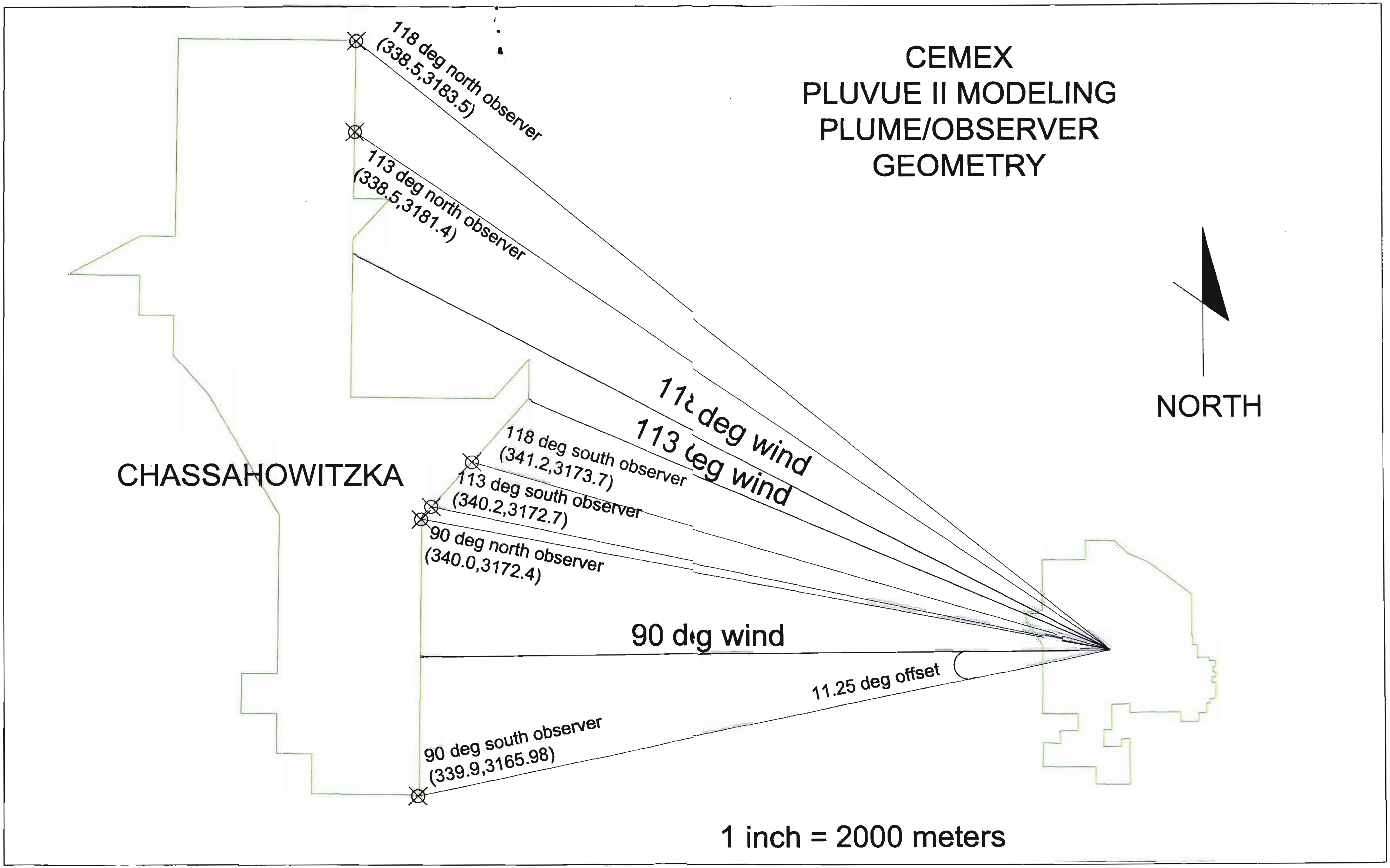
DRAWN: L.S.C.	DATE: JUN-2006
CHECKED: J.A.V.	DATE:
APPROVED:	DATE:
UNITS: -	SCALE: -
DRAWING No. 700-14-03-001	REV.No. A

FILE: $(GETVAR,DWGNAME)
PRINT DATE: $(EDTIME,$(GETVAR,DATE),MO/DD/YY


REVISIONS
No. DATE DESCRIPTION BY
REFERENCE DRAWING
PENDING
INFORMATION BY EQUIPMENT SUPPLIERS
CEMEX
CHECKED BY: DATE:
APPROVED BY: DATE:
CEMEX USA
CLIENT: CEMEX, USA
PLANT: BROOKSVILLE
PROJECT No.
NAME: NEW CALCINING LINE
TITLE:
FLOW DIAGRAM PET-COKE/COAL MILL # 3
3,850 STPD
DRAWN: L.S.C. DATE: JUN-2006
CHECKED: J.A.V. DATE:
APPROVED: DATE:
UNITS: - SCALE: -
DRAWING No. 880-14-02-001
REV.No. A
LEGEND
EQUIPMENT
FLOW LINE
AIR-GASES/PROCESS
CO2 STEAM
CO2 LIQUID
EQUIPMENT EXISTING
E.O. ELECTRICAL OPERATION
H.O. HAND OPERATION
P.O. PNEUMATIC OPERATION
RAIL CAR 90 TON.
TRUCK 40 TONS
COAL STGN
COKE STGN
STACK
ATM.

ATTACHMENT 2

ATTACHMENT 3



CEMEX
PLUVUE II MODELING
PLUME/OBSERVER
GEOMETRY
NORTH
CHASSAHOWITZKA
118 deg north observer
(338.5,3183.5)
113 deg north observer
(338.5,3181.4)
118 deg south observer
(341.2,3173.7)
113 deg south observer
(340.2,3172.7)
90 deg north observer
(340.0,3172.4)
90 deg south observer
(339.9,3165.98)
113 deg wind
90 deg wind
11.25 deg offset
1 inch = 2000 meters