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: **Natural Resources of Central Florida, Inc. dba American Cement Company**
2. Site Name: **Sumterville Cement Plant**
3. Facility Identification Number: **No facility ID: New air program facility**
4. Facility Location...
   Street Address or Other Locator: **County Road 470**
   City: **Sumterville** County: **Sumter** Zip Code: **33585**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☐ Yes ☒ No

Application Contact

1. Application Contact Name: **John B. Koogler, Ph.D., 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: jkoogler@kooglerassociates.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	1190042-001-AC
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

RECEIVED
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Department of ... BY SOUTHWEST DISTRICT ... ection

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1. Application Contact Name: **John B. Koogler, Ph.D., 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: jkoogler@kooglerassociates.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	9/30/05
2. Project Number(s):	1190042-001-AC
3. PSD Number (if applicable):	PSD-FL-361
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 1,000,000 tpy (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	Raw Mill/Kiln/Clinker Cooler		
No ID	Clinker Handling & Silos		
No ID	Finish Mill		
No ID	Cement Silos, Loadout, & Bagging		
No ID	Coal/Coke Mill		
No ID	Fugitive Emissions from Vehicle Travel		

Application Processing Fee

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

APPLICATION INFORMATION

Owner/Authorized Representative Statement

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

1.	Owner/Authorized Representative Name: **Cary Cohrs – General Manager**
2.	Owner/Authorized Representative Mailing Address... Organization/Firm: **Natural Resources of Central Florida, Inc. dba American Cement Company** Street Address: **P.O. Box 1209** City: **Anthony** State: **Florida** Zip Code: **32617**
3.	Owner/Authorized Representative Telephone Numbers... Telephone: **(352) 629-0666** ext. Fax: **(352) 629-2655**
4.	Owner/Authorized Representative Email Address:
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.* Cary O. Cohrs 9/30/05 Signature Date

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: **John B. Koogler, Ph.D., P.E.** Registration Number: **12925**
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: jkoogler@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 (seal) NO. 12925 STATE OF FLORIDA 9/20/05 Date

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

<u>**Facility Location and Type**</u>

1. Facility UTM Coordinates... Zone **17** East (km) **399.8** North (km) **3181.9**		2. Facility Latitude/Longitude Latitude (DD/MM/SS) **28/45/45** Longitude (DD/MM/SS) **82/01/35**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **32**	6. Facility SIC(s): **3241**
7. Facility Comment: **None**			

<u>**Facility Contact**</u>

1. Facility Contact Name: **Cary Cohrs – General Manager**
2. Facility Contact Mailing Address... Organization/Firm: **Natural Resources of Central Florida, Inc.** **dba American Cement Company** Street Address: **P.O. Box 1209** City: **Anthony** State: **Florida** Zip Code: **32617**
3. Facility Contact Telephone Numbers: Telephone: **(352) 629-0666** ext. Fax: **(352) 629-2655**
4. Facility Contact Email Address: ccohrs@direcway.com

<u>**Facility Primary Responsible Official**</u>

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 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 facility will be subject to:

- **NSPS Subpart F**
- **NSPS Subpart Y**
- **NSPS Subpart OOO**
- **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	**B**	**N**
DIOX	**B**	**N**
H114	**B**	**N**

FACILITY INFORMATION

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

FACILITY INFORMATION

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

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **None**
2. Control Device or Method Code(s): **None**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **280 TPH and 1,930,500 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: **280 tph rate 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: **PIT**	2. Emission Point Type Code: **4**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: ▫ **Primary crusher & belt conveyor transfer points up to raw material storage** ▫ **Conveyors and hoppers for additive and fuel handling** ▫ **Stockpiles**		
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... Zone: **17** East (km): **399.9** North (km): **3184.3**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **See Field 13** Longitude (DD/MM/SS) **See Field 13**	
15. Emission Point Comment: **Location for active pit**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Primary Crushing**		
2. Source Classification Code (SCC): **3-05-006-09**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **750**	5. Maximum Annual Rate: **1,482,000**	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: **None**		

Segment Description and Rate: Segment 2 of 3

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: **280**	5. Maximum Annual Rate: **1,930,500**	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: **280 tph rate is a 30-day average rate. Includes additives and onsite materials.**		

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

Segment Description and Rate: Segment 3 of 3

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: **280**	5. Maximum Annual Rate: **1,930,500**	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: **280 tph rate is a 30-day average rate. 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	**None**	**None**	**EL [VE]**
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: **See Field 5** Lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **0** to **1** tons/year	
6. Emission Factor: **See spreadsheet** Reference: **AP-42**	7. Emissions Method Code: **3**
8. Calculation of Emissions: **0.2 lb/hr = 0.9 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 __ 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):	

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 1 of 3

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 9**	
5. Visible Emissions Comment: **40CFR60.672(b), Transfer points on belt conveyors** **Prior to raw material storage, subject to NSPS OOO.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 3

1. Visible Emissions Subtype: **VE15**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **15%** Exceptional Conditions: **15%** Maximum Period of Excess Opacity Allowed: **0** min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment: **40CFR60.672(c), Primary crusher** **Prior to raw material storage, subject to NSPS OOO.**	

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: **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** ☐ 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

EMISSIONS UNIT INFORMATION
Section [1] of [8]: Raw Materials Handling and Storage

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

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 36 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 Raw Mill/Kiln/Cooler emissions unit.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

Baghouses	ID
Raw meal transfer F01	**F03**
Raw meal transfer F02/F04	**F10**
Raw meal to homogenizing silo	**G07**
Homogenizing Silo Bin Vent	**G10**
Dust bin	**E38**
Raw meal from homogenizing silo	**H08**

2. Control Device or Method Code(s): **016, 017, 018**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **280 tons per hour wet raw material to mill**		
2. Maximum Production Rate: **Not Applicable**		
3. Maximum Heat Input Rate: **36 million Btu/hr for air heater**		
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: **280 tph is a 24-hour 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: **See Field 3**

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

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

Raw meal transfer F01	**F03**
Raw meal transfer F02/F04	**F10**
Raw meal to homogenizing silo	**G07**
Homogenizing Silo Bin Vent	**G10**
Dust bin	**E38**
Raw meal from homogenizing silo	**H08**

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 8: Raw Mill/Kiln/Cooler.

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**

ID	UTM EAST	UTM NORTH	HEIGHT, FT	DIAM, FT	TEMP, F	ACFM	H2O	DSCFM
F03	399.77	3181.92	50	1.00	200	1000	2	784
F10	399.79	3181.90	40	1.00	200	1000	2	784
G07	399.78	3181.89	200	3.90	180	22000	2	17796
G10	399.79	3181.90	70	1.80	180	5000	2	4045
E38	399.80	3181.91	80	1.80	350	6000	2	3834
H08	399.80	3181.90	40	1.00	180	1000	2	809
								28053

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: **280**	5. Maximum Annual Rate: **1,930,500**	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: **280 tph is a 24-hour average rate**		

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: **280**	5. Maximum Annual Rate: **1,930,500**	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: **280 tph is a 24-hour average rate**		

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: **0.257**	5. Maximum Annual Rate: **2252**	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** **36 MMBtu/hr @ 140 MMBtu/10^3 gal = 0.257 (10^3 gal)/hr = 257 gallons/hour** **@8760 hr/year = 2252 (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: **0.034**	5. Maximum Annual Rate: **300**	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** **36 MMBtu/hr @ 1050 MMBtu/MMCF = 0.034 MMCF/hr** **@8760 hr/year = 300 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	**016,017,018**	**None**	**EL**
PM10	**016,017,018**	**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: **2.40** lb/hour **10.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 28053 dscfm x 60 min/hr 4 7000 gr/lb = 2.40 lb/hr** **@ 8760 hr/year = 10.5 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: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **2.40** lb/hour **10.5** 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: **1.68** lb/hour **7.4** 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 28053 dscfm x 60 min/hr 4 7000 gr/lb = 1.68 lb/hr @ 8760 hr/year = 7.4 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: **1.68** lb/hour **7.4** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

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

(Optional for unregulated emissions units.)

<u>**Potential/Estimated Fugitive Emissions**</u>

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 Raw Mill/Kiln/Cooler** 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 Raw Mill/Kiln/Cooler 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 Raw Mill/Kiln/Cooler.**	

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 Raw Mill/Kiln/Cooler** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from the air heater will be effectively limited by BACT emissions for the Raw Mill/Kiln/Cooler.**	

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 Raw Mill/Kiln/Cooler.**	

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 Raw Mill/Kiln/Cooler** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from the air heater will be effectively limited by BACT emissions for the Raw Mill/Kiln/Cooler.**	

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 Raw Mill/Kiln/Cooler.**	

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 Raw Mill/Kiln/Cooler** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emissions from the air heater will be effectively limited by BACT emissions for the Raw Mill/Kiln/Cooler.**	

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**	
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 Raw Mill/Kiln/Cooler 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: ________ ☒ 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: **Raw Mill/Kiln/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: **Raw Mill/Kiln/Cooler from the preheater to clinker cooler discharge.**				

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: **125 tons per hour clinker, 24-hour average**
2. Maximum Production Rate: **Not Applicable**
3. Maximum Heat Input Rate: **400 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: **125 tph is a 24-hour 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: **E21**	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: **350** feet	7. Exit Diameter: **10.2** feet
8. Exit Temperature: **308°F**	9. Actual Volumetric Flow Rate: **472,558** acfm	10. Water Vapor: **2%**

11. Maximum Dry Standard Flow Rate: **318,523** dscfm	12. Nonstack Emission Point Height: **N/A** Feet
13. Emission Point UTM Coordinates... Zone: **17** East (km): **399.81** North (km): **3181.92**	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 7

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: **125**	5. Maximum Annual Rate: **1,095,000**	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: **125 tph is a 24-hour average rate**		

Segment Description and Rate: Segment 2 of 7

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: **15.4**	5. Maximum Annual Rate: **134,904**	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** **400 MMBtu/hr @ 26 MMBtu/ton = 15.4 tons/hr** **@8760 hr/year = 134,904 tons/year**		

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

Segment Description and Rate: Segment 3 of 7

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: **0.381**	5. Maximum Annual Rate: **3337.1**	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 400 MMBtu/hr @ 1050 MMBtu/MMCF = 0.381 MMCF/hr @8760 hr/year = 3337.1 MMCF/year**		

Segment Description and Rate: Segment 4 of 7

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: **2.857**	5. Maximum Annual Rate: **25,028**	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 400 MMBtu/hr @ 140 MMBtu/10^3 gal = 2.857 (10^3 gal)/hr = 2857 gallons/hour @8760 hr/year = 25028 (10^3 gal)/year**		

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

Segment Description and Rate: Segment 5 of 7

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: **15.04**	5. Maximum Annual Rate: **131,729**	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** **400 MMBtu/hr @ 26.6 MMBtu/ton = 15.04 tons/hr** **@8760 hr/year = 131,729 tons/year** **NOTE: Maximum expected petcoke firing rate is 40% of this maximum amount**		

Segment Description and Rate: Segment 6 of 7

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use : Tires** **Supplemental Fuel at up to 15% of heat value (60 MMBtu/hour)**		
2. Source Classification Code (SCC): **3-90-012-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **2.5**	5. Maximum Annual Rate: **21,900**	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** **60 MMBtu/hr @ 24 MMBtu/ton = 2.5 tons/hr** **@8760 hr/year = 21900 tons/year**		

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

Segment Description and Rate: Segment 7 of 7

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: **3.077**	5. Maximum Annual Rate: **26,954**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **1.0**	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** **400 MMBtu/hr @ 130 MMBtu/10^3 gal = 3.077 (10^3 gal)/hr = 3077 gallons/hour** **@8760 hr/year = 26954 (10^3 gal)/year**		

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: **22.5** lb/hour **98.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.18 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.18 lb/ton of clinker x 125 ton/hr clinker = 22.5 lb/hr @ 8760 hr/year = 98.6 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 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.18 lb/ton of clinker**	4. Equivalent Allowable Emissions: **22.5** lb/hour **98.6** 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: **~69** lb/hour **~302** 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: **19.13** lb/hour **83.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.153 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.153 lb/ton of clinker x 125 ton/hr clinker = 19.13 lb/hr** **@ 8760 hr/year = 83.8 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: **19.13** lb/hour **83.8** 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: **28.75** lb/hour **125.9** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.23 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.23 lb/ton of clinker x 125 ton/hr clinker = 28.75 lb/hr** **@ 8760 hr/year = 125.9 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: **0.23 lb/ton of clinker**	4. Equivalent Allowable Emissions: **28.75** lb/hour **125.9** 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: **243.75** lb/hour **1067.6** 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 125 ton/hr clinker = 243.75 lb/hr
@ 8760 hr/year = 1067.6 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: **243.75** lb/hour **1067.6** 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: **400.00** lb/hour **1752.0** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **3.2 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **3.2 lb/ton of clinker x 125 tons/hr clinker = 400.00 lb/hr** **@ 8760 hr/year = 1752.0 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: **3.2 lb/ton of clinker**	4. Equivalent Allowable Emissions: **400.00** lb/hour **1752.0** 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: **15.00** lb/hour **65.7** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.12 lb/ton of clinker** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.12 lb/ton of clinker x 125 tons/hr clinker = 15.00 lb/hr @ 8760 hr/year = 65.7 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: **15.00** lb/hour **65.7** 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 **0.061** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **122 lbs/year** Reference: **Material Balance**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **122 lbs/year = 0.061 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: **122 lb/year**	4. Equivalent Allowable Emissions: lb/hour **0.061** 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 Handling & Silos

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 discharge. Clinker and additive handling from storage to the finish mill.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

Baghouses

Clinker transfer cooler discharge	**L03**
Clinker to clinker silo	**L06**
Clinker to clinker silo	**L08**
Clinker from clinker silos	**M08**

2. Control Device or Method Code(s): **016, 017**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **125 TPH from cooler, 159 TPH 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	days/week
	weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment: **Clinker rate of 125 tph is a 24-hour 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: **Clinker silo**

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

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

Clinker transfer cooler discharge	**L03**
Clinker to clinker silo	**L06**
Clinker to clinker silo	**L08**
Clinker from clinker silos	**M08**

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
L03	399.90	3181.91	32	1.60	268	3000	2	2133
L06	399.97	3181.91	203	1.60	268	4000	2	2844
L08	400.01	3181.91	203	1.60	268	4000	2	2844
M08	400.02	3181.90	25	1.60	250	4000	2	2917
								10739

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 3

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: **125**	5. Maximum Annual Rate: **1,095,000**	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, 125 tph is a 24-hour average rate**		

Segment Description and Rate: Segment 2 of 3

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: **125**	5. Maximum Annual Rate: **1,095,000**	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 enclosed silos at this facility, not piles. 125 tph is a 24-hour average rate.**		

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

Segment Description and Rate: Segment 3 of 3

<table>
<tr><td colspan="6">1. Segment Description (Process/Fuel Type):

Mineral Products: Cement Manufacturing: Dry Process: Clinker Transfer</td></tr>
<tr><td colspan="3">2. Source Classification Code (SCC):
3-05-006-16</td><td colspan="3">3. SCC Units: Tons Processed</td></tr>
<tr><td colspan="2">4. Maximum Hourly Rate:
159</td><td colspan="2">5. Maximum Annual Rate:
1,392,840</td><td colspan="2">6. Estimated Annual Activity Factor: N/A</td></tr>
<tr><td colspan="2">7. Maximum % Sulfur:
N/A</td><td colspan="2">8. Maximum % Ash: N/A</td><td colspan="2">9. Million Btu per SCC Unit:
N/A</td></tr>
<tr><td colspan="6">10. Segment Comment: Clinker and additives to finish mill. 159 tph is a 24-hour average rate.</td></tr>
</table>

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, 017**	**None**	**EL**
PM10	**016, 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: **0.92** lb/hour **4.0** 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 10739 dscfm x 60 min/hr 4 7000 gr/lb = 0.92 lb/hr** **@ 8760 hr/year = 4.0 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: **0.92** lb/hour **4.0** 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: **0.64** lb/hour **2.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 10739 dscfm x 60 min/hr 4 7000 gr/lb = 0.64 lb/hr @ 8760 hr/year = 2.8 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: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **0.64** lb/hour **2.8** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

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**	
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: **<u>Baghouses</u>** **Finish mill air separator N93** **Finish mill N94**
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: **Not applicable**
2. Maximum Production Rate: **159 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 days/week weeks/year **8760** hours/year
6. Operating Capacity/Schedule Comment: **Portland cement and masonry cement. 159 tph is a 24-hour 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: **Finish mill**	2. Emission Point Type Code: **3**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Finish mill air separator N93** **Finish mill N94**	
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
N93	400.03	3181.91	130	6.00	140	153871	2	132771
N94	400.06	3181.90	130	4.00	215	28937.9	2	22194
								154965

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

<table>
<tr><td colspan="3">1. Segment Description (Process/Fuel Type):

Mineral Products: Cement Manufacturing: Dry Process: Clinker Grinding</td></tr>
<tr><td colspan="2">2. Source Classification Code (SCC):
3-05-006-17</td><td>3. SCC Units: Tons Processed</td></tr>
<tr><td>4. Maximum Hourly Rate:
159</td><td>5. Maximum Annual Rate:
1,392,840</td><td>6. Estimated Annual Activity Factor: N/A</td></tr>
<tr><td>7. Maximum % Sulfur:
N/A</td><td>8. Maximum % Ash: N/A</td><td>9. Million Btu per SCC Unit:
N/A</td></tr>
<tr><td colspan="3">10. Segment Comment: Clinker plus additives. 159 tph is a 24-hour average rate</td></tr>
</table>

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: **13.28** lb/hour **58.2** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 154965 dscfm x 60 min/hr 4 7000 gr/lb = 13.28 lb/hr @ 8760 hr/year = 58.2 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: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **13.28** lb/hour **58.2** 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: **9.30** lb/hour **40.7** 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 154965 dscfm x 60 min/hr 4 7000 gr/lb = 9.30 lb/hr @ 8760 hr/year = 40.7 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: **9.30** lb/hour **40.7** 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, daily 6-minute**	
5. Visible Emissions Comment: **40CFR63.1347**	

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**	
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: **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 & Bagging

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:

Baghouses

Cement transfer from finish mill	**N91**
Cement silos	**Q25**
Cement silos	**Q26**
Truck loadout	**Q14**
Truck loadout	**Q17**
Packing plant	**R12A**

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 from finish mill	**N91**
Cement silos	**Q25**
Cement silos	**Q26**
Truck loadout	**Q14**
Truck loadout	**Q17**
Packing plant	**R12A**

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
N91	400.08	3181.91	46	2	200	8000	2	6275
Q25	400.10	3181.90	186	2.1	180	12000	2	9707.01
Q26	400.10	3181.90	186	2.1	180	12000	2	9707.01
Q14	400.11	3181.91	30	1.4	180	3000	2	2426.75
Q17	400.09	3181.91	30	1.4	180	3000	2	2426.75
R12A	400.12	3181.91	60	2.1	180	12000	2	9707.01
								40250

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: **159**	5. Maximum Annual Rate: **1,392,840**	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** **159 tons/hr x 8760 hr/year = 1,392,840 tons/year. 159 tph is a 24-hour average rate.**		

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: **1,392,840**	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: **3.45** lb/hour **15.1** 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 40250 dscfm x 60 min/hr 4 7000 gr/lb = 3.45 lb/hr @ 8760 hr/year = 15.1 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: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **3.45** lb/hour **15.1** tons/year
5. Method of Compliance: **Method 9 in lieu of Method 5**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed as BACT**	

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: **2.42** lb/hour **10.6** 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 40250 dscfm x 60 min/hr 4 7000 gr/lb = 2.42 lb/hr @ 8760 hr/year = 10.6 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: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **2.42** lb/hour **10.6** 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**	
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 railcar unloading to the pulverized fuel bin.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

Baghouses

Coal/coke mill	**S22**
Coal/coke bin	**S26**

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: **18.5 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: **18.5 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 mill**	2. Emission Point Type Code: **3**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Coal/coke mill S22** **Coal/coke bin S26**	
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
S22	399.82	3181.94	10	2.1	165	9074	2	7674
S26	399.84	3181.93	40	1.1	150	2000	2	1697
								9371

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

<table>
<tr><td colspan="3">1. Segment Description (Process/Fuel Type):

Mineral Products: Coal Cleaning : Material Handling : Crushing</td></tr>
<tr><td colspan="2">2. Source Classification Code (SCC):
3-05-010-10</td><td>3. SCC Units: Tons Processed</td></tr>
<tr><td>4. Maximum Hourly Rate:
18.5</td><td>5. Maximum Annual Rate:
134,904</td><td>6. Estimated Annual Activity Factor: N/A</td></tr>
<tr><td>7. Maximum % Sulfur:
N/A</td><td>8. Maximum % Ash: N/A</td><td>9. Million Btu per SCC Unit:
N/A</td></tr>
<tr><td colspan="3">10. Segment Comment: Coal or petroleum coke</td></tr>
</table>

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: **0.80** lb/hour **3.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.01 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.01 gr/dscf x 9371 dscfm x 60 min/hr 4 7000 gr/lb = 0.80 lb/hr** **@ 8760 hr/year = 3.5 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: **0.01 gr/dscf**	4. Equivalent Allowable Emissions: **0.80** lb/hour **3.5** 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: **2.49** lb/hour **10.9** 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.)

<u>**Potential/Estimated Fugitive Emissions**</u>

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: **0.56** lb/hour **2.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** ___ to ___ tons/year	
6. Emission Factor: **0.007 gr/dscf for baghouses** Reference: **Proposed as BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.007 gr/dscf x 9371 dscfm x 60 min/hr 4 7000 gr/lb = 0.56 lb/hr** **@ 8760 hr/year = 2.5 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: **0.007 gr/dscf**	4. Equivalent Allowable Emissions: **0.56** lb/hour **2.5** 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**	
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

<u>Additional Requirements for Air Construction Permit Applications</u>

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	

<u>Additional Requirements for Title V Air Operation Permit Applications</u> ☒ **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 fuel, raw material, and cement hauling; as well as paved road emissions from employee vehicle travel. Also included are unpaved road emissions from front-end loaders moving raw materials and fuels.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: • **Vacuum/Sweeper for paved road** • **Partial building enclosures for material handling areas** • **Covers for conveyors**
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: **Vehicle traffic is not expected between 8 PM and 4 AM, and the paved road sources were modeled accordingly.**		

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 2

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: **107163**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **See spreadsheet**		

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Other Not Classified: Unpaved 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: **3281**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **See spreadsheet**		

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: **See spreadsheet** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **0** to **25** 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: **Unpaved ~ 4.9 TPY PM** **Paved ~ 19.25 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: **See spreadsheet** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **0** to **6** 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: **Unpaved ~ 2.2 TPY PM** **Paved ~ 3.76 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

NATURAL RESOURCES OF CENTRAL FLORIDA, INC.
dba AMERICAN CEMENT COMPANY
Cement Plant
Sumterville, Sumter County, Florida

September 29, 2005

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
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352/377-5822 ▪ FAX/377-7158

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Attachment 1: Raw Material Specifications

Attachment 2: Flow Diagrams

Attachment 3: Emission Calculations

Attachment 4: Ambient Impact Analysis [CD]

1. Introduction

This report is in support of an application for an air construction permit. American Cement Company proposes to construct a new cement manufacturing plant.

The plant site consists of approximately 46 acres located within more than 1200 acres of limestone and overburden reserves. The plant will have a dry process preheater/precalciner kiln system, and will produce various types and grades of Portland cement and masonry cement. The cement will be stored in silos, will be shipped in bulk by trucks, and will be bagged and palletized for shipping by trucks. There is no rail access to the plant site.

1.1 Applicant

Cary Cohrs, General Manager
Natural Resources of Central Florida, Inc.
dba American Cement Company
P.O. Box 1209
Anthony, Florida 32617

1.2 Area Map Showing Facility Location

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

The cement plant will be located north of County Road 470, near Sumterville, Sumter County, Florida. The UTM coordinates of the Florida Mining Corporation facility are Zone 17, 399.8 km East and 3181.9 km North. See Figure 1 – Site Location Map. A property boundary drawing follows the site location map.

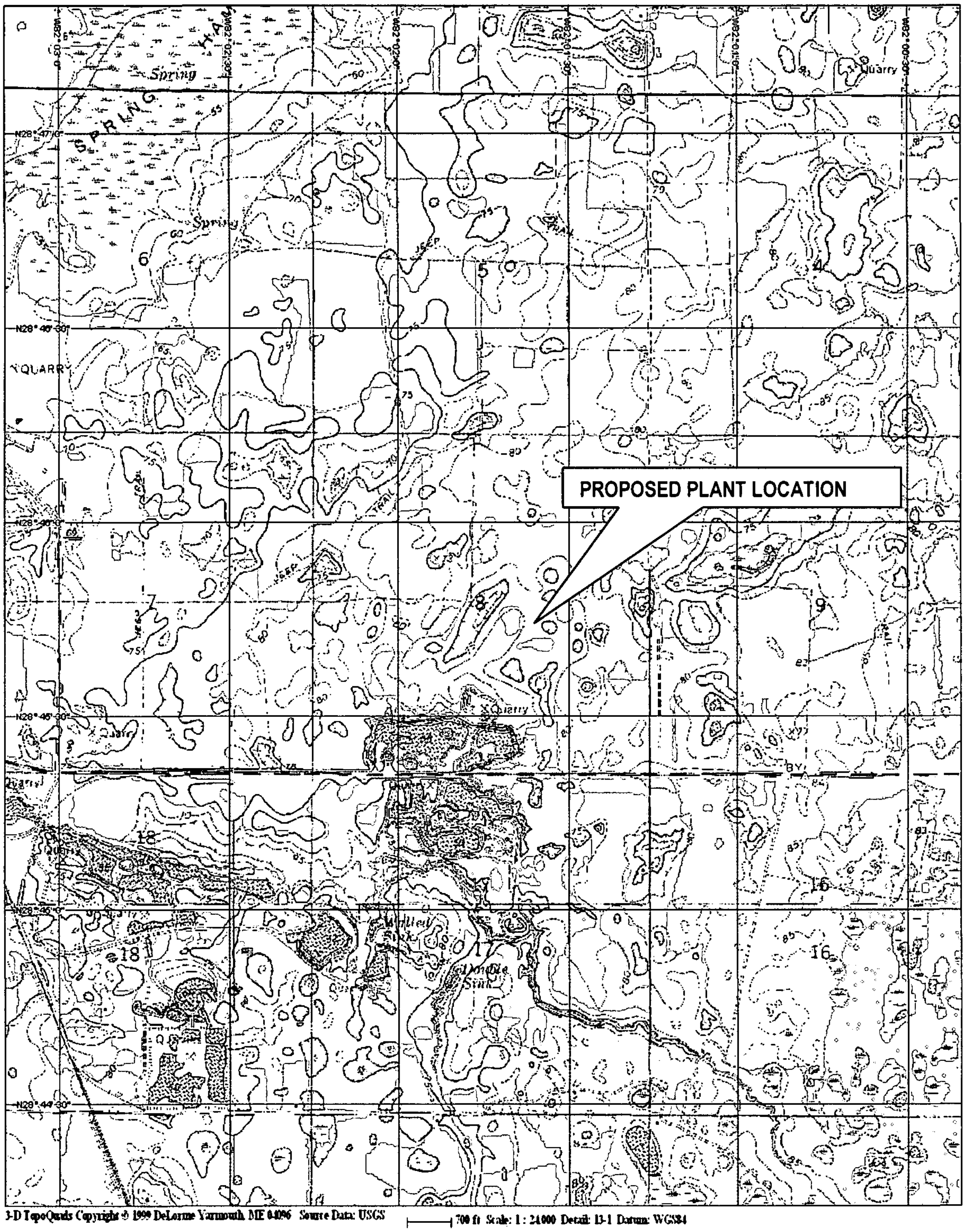
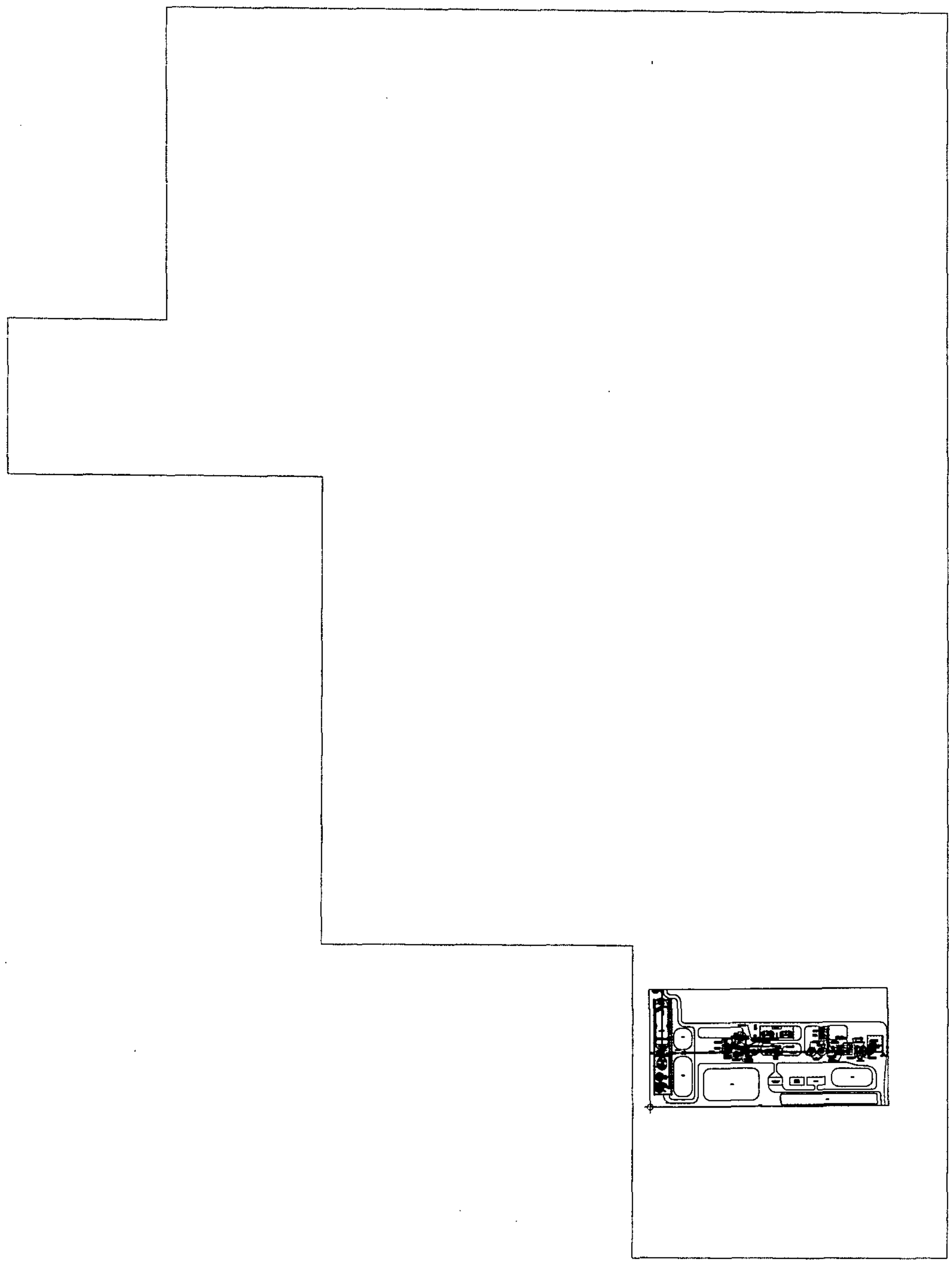


FIGURE 1 – SITE LOCATION MAP

PROPERTY BOUNDARY



2. Description of Proposed Construction

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

2.1.1 Raw Materials Handling & Storage

This section addresses raw material (limestone and overburden) processing from the quarry up to raw material storage. This emissions unit also addresses additives handling and storage, from delivery to storage. The additives include, but are not limited to, mill scale, feldspar, and flyash. Dozens of suitable materials are available as additives for cement manufacturing and will be used as the availability and the chemistry of the cement dictate.

Specifications for several of the raw materials are included in the Appendix.

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 with airslides 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 control device catch and the raw mill product will be conveyed to the blend silo or directly to the preheater.

This emissions unit also includes a 36 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 Raw Mill/Kiln/Cooler emissions unit.

This emissions unit will be located near the proposed raw materials storage area. The projected operations are 280 tons per hour of wet raw material to the raw mill, with a requested maximum operating schedule of 8760 hours/year.

2.1.3 Raw Mill/Kiln/Cooler

This emissions unit is the Raw Mill/Kiln, from the preheater to the clinker cooler discharge. 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 precalciner will be provided through a tertiary air duct from the clinker cooler. Fuels will be burned in the raw mill air heater when additional material drying is necessary. The kiln system will convert the raw meal into clinker, which consists primarily of gray, glass-hard, spherically shaped nodules. Upon discharge from the kiln, the clinker will be quenched in a reciprocating grate cooler and conveyed to the clinker storage silos.

This emissions unit will be located between the proposed raw mill and the proposed clinker silos. The projected operations are 125 tons per hour of clinker to the clinker cooler (24-average) and 3000 tons of clinker per day. The requested maximum operating schedule is 8760 hours/year. The maximum heat input rate is 400 million Btu/hr. Proposed fuels include coal, natural gas, fuel oil, petroleum coke, tires, and used oil.

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 Handling & Silos*

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

The clinker will be withdrawn from the clinker storage silos through flow control gates, and discharged onto the finish mill feed conveyor. The transfer points will be vented through a baghouse. The mill feed conveyor will be a covered conveyor. Gypsum and limestone will be received by truck and stored under cover.

This emissions unit will be located between the clinker cooler and the finish mill. The projected operations are 125 tons per hour, 24-hour average (and 3000 tons per day), of clinker from the clinker cooler and 159 tons per hour of clinker and additives, 24-hour average, to the finish mill, with a requested maximum operating schedule of 8760 hours/year.

Fabric filters are proposed to control particulate matter emissions.

2.1.5 *Finish Mill*

Clinker from the silos and additives will be transferred to the finish mill feed conveyor. The gypsum and limestone, grinding aids and other mineral additives will be interground with the clinker in the finish mill.

The finish mill will be in a closed circuit with a high efficiency air separator and cyclones. The mill will be vented by a fabric filter. A fabric filter will vent all the conveying equipment. The finished cement will be conveyed pneumatically to the cement storage silos.

This emissions unit will be located between the clinker silos and the cement silos. The projected operations are 159 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 & Bagging*

This emissions unit includes cement pneumatically conveyed into concrete silos, cement loadout to trucks from the cement silos, and cement bagging. Cement withdrawal will occur through rotary shut-off valves, flow control valves, and airslides to vented retractable loading spouts, or to a bagging machine. There will be a truck scale under the proposed silos. The loading spouts and the bagging machine will each be equipped with a fabric filter.

The cement bagging operation will consist of a screen, a surge hopper, a bucket elevator, and a packer. The bags will be palletized after being air cleaned. A fabric filter will vent all equipment, including the air cleaning device. The pallets will be moved by forklift to storage, where they will be loaded on trucks.

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 the bagging machine, with a requested maximum operating schedule of 8760 hours/year.

2.1.7 *Coal/Coke Mill*

This emissions unit is coal/coke handling from truck unloading to the pulverized coal/coke bin. Coal and coke will be received by truck. The coal/coke will be conveyed to a bucket elevator. The bucket elevator will discharge either into a covered storage facility or onto a belt and then to a bin. Coal/coke will be stockpiled in the covered storage facility or in uncovered piles and then reclaimed by a front-end loader through the unloading system.

The coal/coke will be conveyed from the bin to a vertical mill. The coal/coke will be dried in the mill with hot air drawn from the preheater downcomer duct. The milled coal/coke will be collected in a product fabric filter, and stored in a pulverized coal/coke bin. The bin will be vented through a fabric filter. The milled coal/coke will be pneumatically conveyed to the main burner and precalciner burner.

This emissions unit will be located near the plant access road. The projected grinding rate of coal and/or coke is 15.4 tons per hour, 30-day average to the mill, 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 fuels and raw materials hauling (inbound), cement hauling (outbound), and employee vehicle traffic. This section also addresses unpaved road emissions from front-end loader traffic in raw material and fuel storage areas. 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

A recent draft PSD permit for an expansion at a cement plant provides precautions to prevent emissions of unconfined particulate matter. Those precautions, with minor amendment, are reproduced in this section of the report. 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 oxide source (coal ash, iron ore, or other)
- Silica (sand, or other)
- Alumina (coal ash, bauxite or other)

- Gypsum
- Coal/coke/fuel oil.

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.
- Enclosure or covering of conveyor systems.

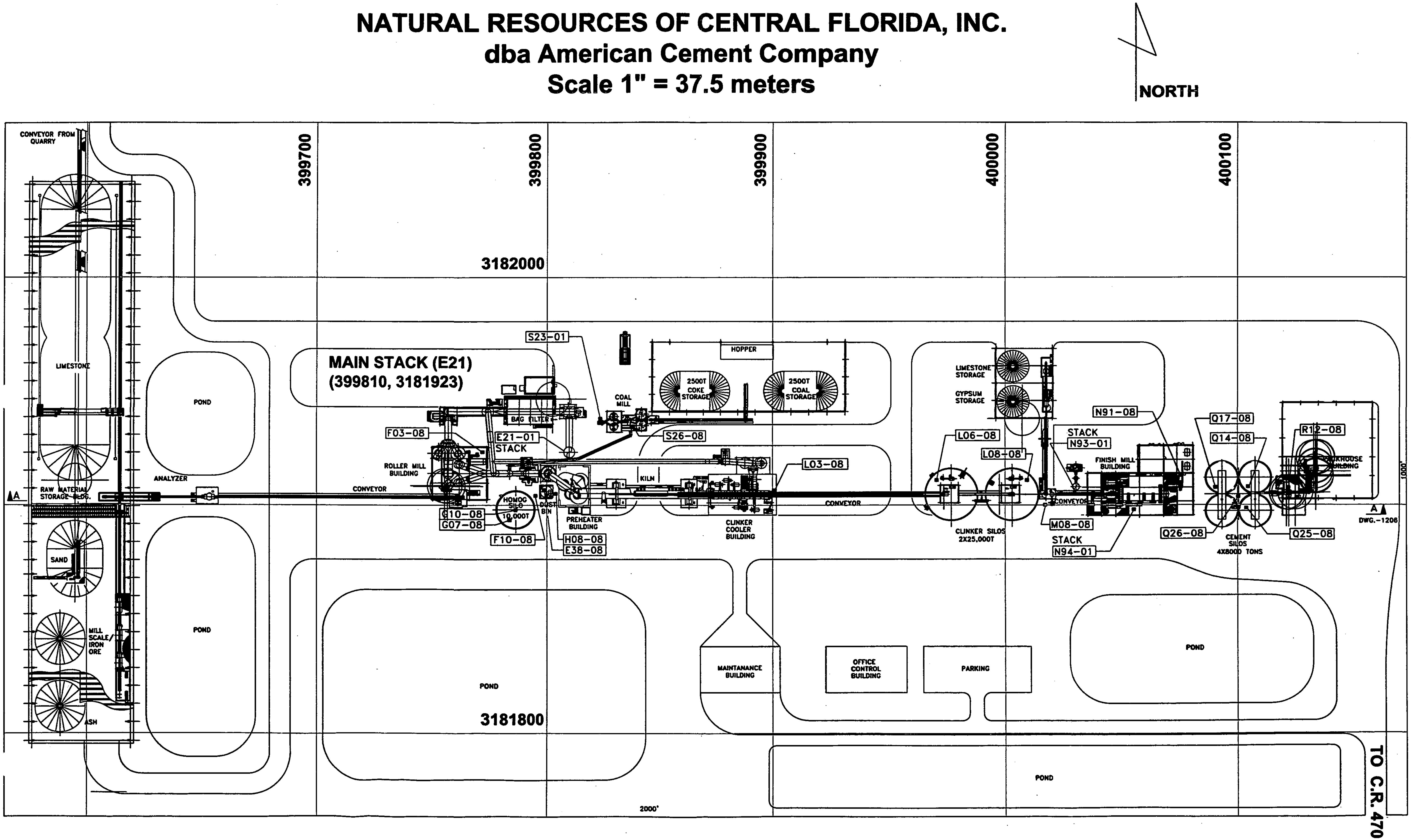
Additional reasonable precautions applicable to this facility are:

- 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.
- Vacuum Sweeper used on paved roads.

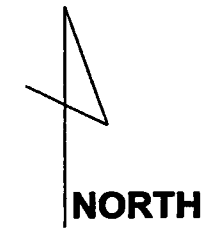
2.4 Facility Plot Plan

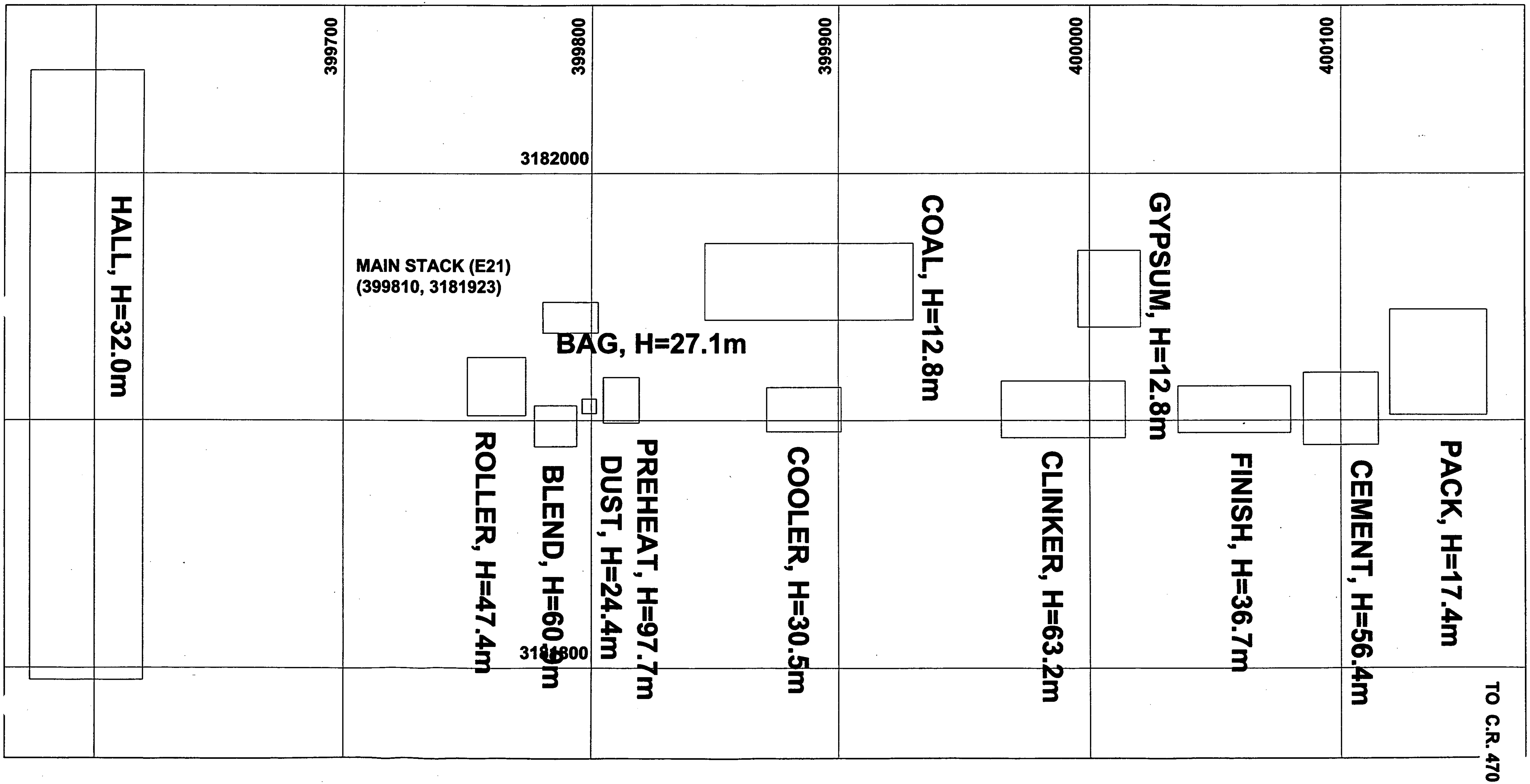
This report provides a plot plan of the facility showing the location of proposed manufacturing processes, control equipment, stacks, vents, identifiable sources of fugitive emissions and principal buildings. The plot plan is drawn to scale, shows the precise location of the new emissions units and their 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.

NATURAL RESOURCES OF CENTRAL FLORIDA, INC.
dba American Cement Company
Scale 1" = 37.5 meters



NATURAL RESOURCES OF CENTRAL FLORIDA, INC.
dba American Cement Company
Scale 1" = 37.5 meters

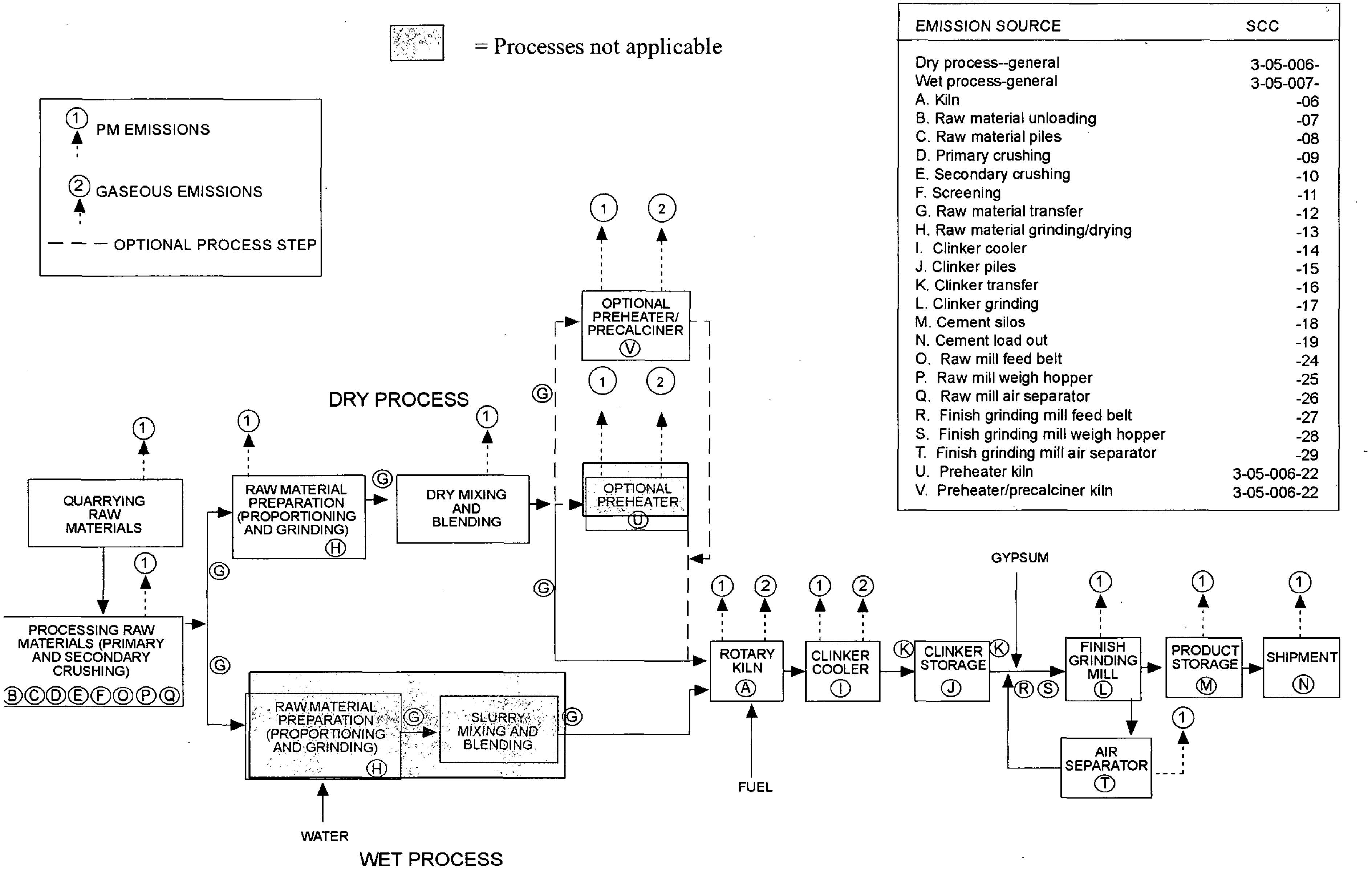




2.5 Process Flow Diagram

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. 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. See the Appendix for additional specifications for coal.

TABLE 1 – TYPICAL FUEL SPECIFICATIONS

Fuel	Density	Heat Value	Sulfur %	Nitrogen %	Ash %
Natural Gas[A,B]	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[AC]	7.7 lb/gal	140,000 Btu/gal	0.0 – 4.0	NOT DETERMINED	0.4 – 1.5
Petroleum Coke[A,D]	80-100 lb/ft^3	13,300 Btu/lb	1.5 – 10	NOT DETERMINED	0.05 – 2.8
Tires[E,F]	7.4 lb/ft^3	15,500 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}

A baghouse is proposed for the raw mill/kiln/clinker cooler. Baghouses are proposed for other material handling operations. Many 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.

[A] AP-42, Appendix A

[B] http://www-mugc.cc.monash.edu.au/~barbie/env3627/fossilfuel.htm

[C] XERAY Systems, December 1998; Rinker, April 1996.

[D] http://pangea.stanford.edu/~lbcf/meeting/chemeng.pdf

[E] *Scrap Tire & Rubber Users Directory,* Recycling Research Institute, 1998

2.7.2 NOx

Selective non-catalytic reduction (SNCR) or alternative pyroprocessing technology is proposed as necessary to achieve the BACT emissions limitation.

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. 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.

[F] *Air Emissions Associated with the Combustion of Scrap Tires for Energy Recovery,* Malcolm Pirnie, 1991

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 facility will be subject to applicable provisions of three New Source Performance Standards (NSPS) and applicable provisions of one National Emission Standards for Hazardous Air Pollutants (NESHAP).

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

Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants (40CFR60.670)

- For raw material processing prior to raw material storage

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

<u>(a) Relationship of General Preconstruction Review Requirements to Other Preconstruction Review Requirements</u>

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.

<u>(b) Pollutants Subject to General Preconstruction Review</u>

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

<u>(a) Required Information</u>

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.

(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 facility is not a proposed new minor facility. The facility is a proposed new major facility. The proposed project is not a proposed modification to a minor facility, nor a proposed modification to a major facility. The proposed project is not exempted under Rule 62-212.400(2)(a), (b) or (c), F.A.C.

The proposed project constitutes a proposed new major facility, 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	1752	YES
Nitrogen oxides	40	1068	YES
Sulfur dioxide	40	126	YES
Ozone	40 VOC	66 VOC	YES
Particulate matter	25	190	YES
PM_{10}	15	148	YES
Sulfuric acid mist	7	0.002	NO
Fluorides	3	0.5	NO
Lead	0.6	0.4	NO
Mercury	0.1	0.06	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 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)

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.

<u>(a) Relocatable Facilities</u>

The proposed facility is not a relocatable facility.

<u>(b) Voluntary Fuel Conversions (Reserved)</u>

<u>(c) Temporary Emissions</u>

No temporary emissions exemptions are being claimed.

<u>(d) Modifications Under Fifty Tons Per Year</u>

The facility (cement plant) was not in existence on March 1, 1978.

<u>(e) General Ambient Monitoring Exemption</u>

The general ambient monitoring exemption is discussed in the ambient impact analysis section of this report.

<u>(f) Temporary Exclusions From Increment Consumption</u>

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 facility, 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, if available. 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 2006. The applicant requests that the air construction permit be issued for 5 years, to allow for any unanticipated delays.

January 2006:
- Contractor selection
- Engineering Plans and specifications

July 2006:
- Site work and foundations
- Contractor mobilization

January 2007:
- Major equipment delivery
- Equipment erection

July 2007:
- Final equipment erected
- Component tie-in
- Control/Instrument set up

December 2007:
- Equipment check
- Raw material/Fuel delivery
- Electrical shake out
- Commissioning

BACT Proposal

The BACT section of this report 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 a 3-kilometer radius. This specific area is sparsely populated, and generally supports agricultural land uses. The closest contiguous county is greater than 7 kilometers from the facility.

Sumter County has experienced steady growth in most areas since 1977. The population was 22,324 in 1977 and was forecasted to be 65,522 in 2005. Total housing units increased from 11,083 in 1980 to 25,812 forecasted for 2005. Employment increased in the civilian labor force from 7,683 in 1977 to 19,228 forecasted for 2005. Manufacturing establishments increased from 11 in 1977 to 26 in 2002, while retail trade establishments decreased from 192 in 1977 to 121 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 facility, 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 facility 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 allowable 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 μg/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 source 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 inner 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 350 feet (106.7 meters).

Preheater tower height = 320.6 feet (97.7 meters)
Preheater tower width = 60.7 feet (18.5 meters)

Therefore, GEP stack height is described by

Hg = H + 1.5L, or Hg = 97.7 + 27.8 = 125.4 meters.

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, and the proposed stack heights were 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
E21	106.70	0.00	135.90	135.90
F03	15.20	0.00	135.90	135.90
F10	12.20	0.00	135.90	135.90
G07	61.00	0.00	135.90	135.90
G10	21.30	0.00	135.90	135.90
E38	24.40	0.00	135.90	135.90
H08	12.20	0.00	135.90	135.90
L03	9.80	0.00	127.92	127.92
L06	61.90	0.00	145.19	145.19
L08	61.90	0.00	145.19	145.19
M08	7.60	0.00	145.19	145.19
N93	39.60	0.00	138.77	138.77
N94	39.60	0.00	124.54	124.54
N91	14.00	0.00	120.08	120.08
Q25	56.70	0.00	118.68	118.68
Q26	56.70	0.00	118.68	118.68
Q14	9.10	0.00	118.68	118.68
Q17	9.10	0.00	118.68	118.68
R12A	18.30	0.00	118.68	118.68
S22	3.00	0.00	132.18	132.18
S26	12.20	0.00	132.70	132.70

4.3 Meteorological Data

Five years of representative meteorological data was used for the modeling. For the ISC modeling, surface data from Orlando, Florida was used with upper air data from Tampa, Florida for the period 1987-1991. These data are considered most representative of site conditions for two reasons:

1. The Orlando met station is located inland, as is the project location.
2. The Orlando met station at a distance of 48 miles is significantly closer to the site than is the Tampa met station, at a distance of 64 miles.

For CALPUFF modeling, SAMSON surface and upper air data from Tampa were used for the period 1986-1990. These data were used in order to provide the additional parameters for CALPUFF modeling, not available from the SCRAM data. SAMSON data from Orlando were not obtained.

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 CALPUFF, version 5.724 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 facility 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 25-meter spacing, discrete receptors on a polar grid with radial rings using 108 spacing from 1 kilometer meters to 15 kilometers at 1-kilometer intervals.

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 μg/m^3	5 μg/m^3	--	25 μg/m^3	--
PM_{10}	1 μg/m^3	5 μg/m^3	--	--	--
NO_2	1 μg/m^3	--	--	--	--
CO	--	--	500 μg/m^3	--	2000 μg/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

		1987	1988	1989	1990	1991
SO_2	Annual	Less than significant: Maximum impact = 0.02105 μg/m^3 [1991]				
	24-Hour	Less than significant: Maximum impact = 0.41573 μg/m^3 [1991]				
	3-Hour	Less than significant: Maximum impact = 1.94077 μg/m^3 [1989]				
PM_{10}	Annual	2 km	2 km	2 km	2 km	2 km
	24-Hour	2 km	3 km	3 km	2 km	2 km
NO_2	Annual	Less than significant: Maximum impact = 0.17811 μg/m^3 [1991]				
CO	8-Hour	Less than significant: Maximum impact = 13.84210 μg/m^3 [1989]				
	1-Hour	Less than significant: Maximum impact = 52.20193 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 3-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 minimis monitoring concentrations specified below. 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 these levels are not exceeded, monitoring is not required. Representative ambient monitoring data is available, which may exempt the applicant from preconstruction monitoring.

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 would not have an impact on any area equal to or greater than that listed in the following table.

TABLE 8 – DE MINIMIS AMBIENT IMPACTS

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	Modeled Concentration [H1H] ($\mu g/m^3$)
Nitrogen dioxide	Annual	14	0.17811 $\mu g/m^3$ [1991]
Sulfur dioxide	24-hour	13	0.41573 $\mu g/m^3$ [1991]
PM_{10}	24-hour	10	29.88643 $\mu g/m^3$ [1988]
Carbon monoxide	8-hour	575	13.84210 $\mu g/m^3$ [1990]
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 operates PM_{10} monitors in nearby Lake County. The Department has waived the requirement for ambient monitoring for PM_{10} at similar PSD facilities.

The applicant for the proposed facility 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 this pollutant 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.

TABLE 9 – PM_{10} MONITOR DATA FOR BACKGROUND CONCENTRATIONS

YEAR	MONITOR LOCATION	Concentration ($\mu g/m^3$) 1st High	Concentration ($\mu g/m^3$) Arithmetic Mean
1999	Lake, SR 19, Ocala National Forest	63	19
2000	Lake, SR 19, Ocala National Forest	60	20
2001	Lake, SR 19, Ocala National Forest	62	18
2002	Lake, SR 19, Ocala National Forest	54	16
2003	Lake, SR 19, Ocala National Forest	42	17
	24-hour maximum =	**63**	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 within the following counties:

- Citrus
- Hernando
- Hillsborough
- Lake
- Levy
- Marion
- Orange
- Osceola
- Pasco
- Polk
- Seminole
- Sumter
- Volusia

This master inventory included all permitted PM and PM_{10} sources in a 73-kilometer radius from the proposed facility. The modeling inventory for compliance with PSD increments and AAQS were developed from the master inventory. The master inventory, the 20-D inventory, and supporting spreadsheets are included with this application.

One 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.

In addition, all point sources from the Florida Mining Corporation application and from the Sumter Cement application were included in the modeled inventory.

The 20-D inventory is provided in the following table.

TABLE 10 – PM_{10} 20-D INVENTORY (FACILITIES)[G]

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	69	1385.83	**YES**
0570039	TAMPA ELECTRIC COMPANY	BIG BEND STATION	A	17	3074.91	363	7598	113	2262.36	**YES**
1010017	PROGRESS ENERGY FLORIDA, INC.	ANCLOTE POWER PLANT	A	17	3120.68	327	5490	95	1896.57	**YES**
1050004	LAKELAND ELECTRIC	C.D. MCINTOSH, JR. POWER PLANT	A	17	3106.2	409	2780	76	1525.57	**YES**

[G] Florida Mining Corporation (Mabel Cement Plant) and Sumter Cement Company (Center Hill Cement Plant) were also included, without using 20-D

TABLE 11 – PM_{10} 20-D INVENTORY (EMISSIONS UNITS)

Facility	EU	ID	type	X	Y	ELEV.	EMISSION	Height	Temp	Velocity	Diameter
PROGRESS ENERGY	Fossil Fuel Steam Generator Unit 1	INV1	0	334300	3204500	0	59.06	152	417	40.5	4.57
PROGRESS ENERGY	Fossil Fuel Steam Generator Unit 2	INV2	0	334300	3204500	0	75.51	153	422	48.8	4.88
PROGRESS ENERGY	Fossil Fuel Steam Generator-5	INV3	0	334300	3204500	0	83.97	183	396	21	7.77
PROGRESS ENERGY	Fossil Fuel Steam Generator-4	INV4	0	334300	3204500	0	83.97	183	396	21	7.77
PROGRESS ENERGY	Fly Ash Transfer From FFSG Unit 1	INV5	0	334300	3204500	0	0.44	2	298	18.4	0.24
PROGRESS ENERGY	Fly Ash Storage Silo for FFSG Units 1 & 2	INV6	0	334300	3204500	0	0.07	28	298	7.3	0.46
PROGRESS ENERGY	Fly Ash Transfer From (source 4) FFSG Unit 2	INV7	0	334300	3204500	0	0.28	0	298	22.2	0.24
PROGRESS ENERGY	Fly Ash Transfer From (source 5) FFSG Unit 2	INV8	0	334300	3204500	0	0.28	0	298	28.3	0.24
PROGRESS ENERGY	Cooling Towers for FFSG Units 1,2,3	INV9	0	334300	3204500	0	13.32	16	298	0.01	10.52
PROGRESS ENERGY	Bottom Ash Storage Silo for FFSG Units 1 & 2	INV10	0	334300	3204500	0	1.64	2	298	0.01	0.24
PROGRESS ENERGY	Cooling Towers for FFSG Units 4 & 5	INV11	0	334300	3204500	0	44.1	135	311	0.01	65.22
TAMPA ELECTRIC	Unit No. 1 Steam Generator	INV12	0	363150	3074910	0	50.86	149	419	35.3	7.31
TAMPA ELECTRIC	Unit No. 2 Steam Generator	INV13	0	363150	3074910	0	50.34	149	325	26.7	7.31
TAMPA ELECTRIC	Unit No. 3 Steam Generator	INV14	0	363150	3074910	0	51.84	152	410	14.3	7.31
TAMPA ELECTRIC	Unit No. 4 Steam Generator	INV15	0	363150	3074910	0	16.37	152	342	18.0	7.31
TAMPA ELECTRIC	Combustion Turbine No. 2: oil fired, 78 MW	INV16	0	363150	3074910	0	4.17	23	771	18.6	4.27
TAMPA ELECTRIC	Combustion Turbine No. 3: oil fired, 78 MW	INV17	0	363150	3074910	0	4.17	23	771	18.6	4.27
TAMPA ELECTRIC	Combustion Turbine No. 1: oil fired, 18 MW	INV18	0	363150	3074910	0	4.17	11	816	28.0	3.36
TAMPA ELECTRIC	Fly Ash Silo No. 1 Baghouse	INV19	0	363150	3074910	0	0.65	31	394	15.8	0.76
TAMPA ELECTRIC	Fly Ash Silo No. 2 Baghouse	INV20	0	363150	3074910	0	0.65	34	394	123.7	0.27
TAMPA ELECTRIC	SOLID FUEL YARD	INV21	0	363150	3074910	0	34.87	0	298	0.01	0.00
TAMPA ELECTRIC COMPANY	Truck Limestone Unloading Receiving Hopper	INV22	0	363150	3074910	0	0.09	0	298	0.01	0.00
TAMPA ELECTRIC	LIMESTONE SILO B W/ 2 BAGHOUSES	INV23	0	363150	3074910	0	0.01	31	339	14.0	0.15
TAMPA ELECTRIC	Fly Ash Silo No. 3 Baghouse	INV24	0	363150	3074910	0	0.03	42	333	18.0	0.49
TAMPA ELECTRIC	UNIT 1 COAL BUNKER W/ROTO-CLONE	INV25	0	363150	3074910	0	0.03	55	299	21.0	0.52
TAMPA ELECTRIC	UNIT 2 COAL BUNKER W/ROTO-CLONE	INV26	0	363150	3074910	0	0.03	55	299	21.0	0.52
TAMPA ELECTRIC	UNIT 3 COAL BUNKER W/ROTO-CLONE	INV27	0	363150	3074910	0	0.03	55	299	21.0	0.52
TAMPA ELECTRIC	Drops from limestone conveyors LE, LF, LG,silo C	INV28	0	363150	3074910	0	0.14	3	298	0.01	0.30
TAMPA ELECTRIC	Silo C with one baghouse	INV29	0	363150	3074910	0	0.02	3	298	0.01	0.30
TAMPA ELECTRIC	Lime silo with BH for WWTP for chloride	INV30	0	363150	3074910	0	0.03	3	298	0.01	0.30
TAMPA ELECTRIC	LIMESTONE CONVEYORS LB,LC,LD,&LE;	INV31	0	363150	3074910	0	0.08	0	255	0.01	0.00
PROGRESS ENERGY	STEAM TURBINE ANCLOTE UNIT NO. 1	INV32	0	327410	3120680	0	79.89	152	433	18.9	7.31
PROGRESS ENERGY	STEAM TURBINE ANCLOTE UNIT NO. 2	INV33	0	327410	3120680	0	78.05	152	433	18.9	7.31
LAKELAND ELECTRIC	McIntosh Unit 1- FFFSG	INV34	0	409000	3106200	0	11.97	46	409	24.7	2.74

TABLE 11 – PM_{10} 20-D Inventory (Emissions Units) - Continued

LAKELAND ELECTRIC	Diesel Engine Peaking Unit 2	INV35	0	409000	3106200	0	0.22	6	653	23.5	0.79
LAKELAND ELECTRIC	Diesel Engine Peaking Unit 3	INV36	0	409000	3106200	0	0.22	6	653	23.5	0.79
LAKELAND ELECTRIC	Gas Turbine Peaking Unit 1	INV37	0	409000	3106200	0	1.53	11	755	24.2	4.11
LAKELAND ELECTRIC	McIntosh Unit 2 FFFSG	INV38	0	409000	3106200	0	14.04	48	409	22.3	3.20
LAKELAND ELECTRIC	McIntosh Unit 3 FFFSG	INV39	0	409000	3106200	0	34.41	76	348	25.2	5.49
LAKELAND ELECTRIC	250 MW Combustion Turbine UNIT 5	INV40	0	409000	3106200	0	17.58	26	864	25.2	8.53
Florida Mining Corporation	RAW1	INV41	0	404140	3162402	0	0.0219	6.1	298.2	0.01	0.3
Florida Mining Corporation	RAW2	INV42	0	404111	3162389	0	0.0219	45.7	298.2	0.01	0.5
Florida Mining Corporation	RAW3	INV43	0	404113	3162393	0	0.0364	48.8	298.2	0.01	0.5
Florida Mining Corporation	RAW4	INV44	0	404117	3162380	0	0.0364	27.4	298.2	0.01	0.5
Florida Mining Corporation	KILN	INV45	0	404162	3162242	0	3.1500	91.4	477.6	16.2	3.0
Florida Mining Corporation	BLEND2	INV46	0	404142	3162273	0	0.0154	15.2	422.0	0.01	0.5
Florida Mining Corporation	BIN	INV47	0	404160	3162265	0	0.0103	30.5	422.0	0.01	0.3
Florida Mining Corporation	BLEND1	INV48	0	404151	3162282	0	0.0992	76.2	394.3	0.01	0.8
Florida Mining Corporation	BLEND3	INV49	0	404163	3162257	0	0.0178	15.2	366.5	0.01	0.3
Florida Mining Corporation	COOLER	INV50	0	404203	3162172	0	1.2600	61.0	533.2	11.6	3.0
Florida Mining Corporation	CLINKER1	INV51	0	404188	3162187	0	0.0206	12.2	422.0	0.01	0.3
Florida Mining Corporation	CLINKER6	INV52	0	404218	3162124	0	0.0206	61.0	422.0	0.01	0.3
Florida Mining Corporation	CLINKER5	INV53	0	404190	3162111	0	0.0206	61.0	422.0	0.01	0.3
Florida Mining Corporation	CLINKER2	INV54	0	404226	3162121	0	0.0220	61.0	394.3	0.01	0.3
Florida Mining Corporation	CLINKER3	INV55	0	404204	3162113	0	0.0237	6.1	366.5	0.01	0.3
Florida Mining Corporation	CLINKER4	INV56	0	404191	3162111	0	0.0237	15.2	366.5	0.01	0.3
Florida Mining Corporation	MILL3	INV57	0	404154	3162106	0	0.7950	36.6	355.4	13.1	2.4
Florida Mining Corporation	MILL1	INV58	0	404178	3162100	0	0.2446	36.6	355.4	12.8	1.4
Florida Mining Corporation	MILL2	INV59	0	404156	3162095	0	0.0306	12.2	355.4	0.01	0.5
Florida Mining Corporation	CEMENT1	INV60	0	404304	3162098	0	0.0947	61.0	344.3	0.01	0.9
Florida Mining Corporation	CEMENT2	INV61	0	404309	3162083	0	0.0947	61.0	344.3	0.01	0.9
Florida Mining Corporation	CEMENT3	INV62	0	404300	3162093	0	0.0257	7.6	338.7	0.01	0.3
Florida Mining Corporation	BAG	INV63	0	404278	3162076	0	0.0962	30.5	338.7	1.0	0.9
Florida Mining Corporation	COAL1	INV64	0	404204	3162195	0	0.1482	61.0	344.3	1.6	3.0
Florida Mining Corporation	COAL2	INV65	0	404206	3162196	0	0.0189	24.4	344.3	0.01	0.3
Sumter Cement Company	Kiln	INV66	0	403754.4	3167562	0	4.41E+00	130.2	384.57	16.13	5
Sumter Cement Company	CoalMill	INV67	0	403804.2	3167516	0	4.75E-01	41.15	338.71	13.67	1.68
Sumter Cement Company	FM1Sep	INV68	0	404012.6	3167569	0	9.48E-01	39.93	352.59	14.72	2.29

TABLE 11 – PM_{10} 20-D Inventory (Emissions Units) - Continued

Sumter Cement Company	FM1Sw	INV69	0	403993.7	3167556	0	2.35E-01	39.93	383.15	14.15	1.22
Sumter Cement Company	FM2Sep	INV70	0	404012.9	3167540	0	9.48E-01	39.93	352.59	14.72	2.29
Sumter Cement Company	FM2Sw	INV71	0	403993.7	3167554	0	2.35E-01	39.93	383.15	14.15	1.22
Sumter Cement Company	CH_P_001	INV72	0	403720.2	3167568	0	2.16E-02	9.14	366.48	0.01	0.3
Sumter Cement Company	CH_P_002	INV73	0	403724.7	3167570	0	2.35E-02	18.29	505.37	0.01	0.3
Sumter Cement Company	CH_P_003	INV74	0	403725.6	3167531	0	2.16E-02	4.57	366.48	0.01	0.3
Sumter Cement Company	CH_P_004	INV75	0	403715	3167543	0	6.12E-02	73.15	366.48	0.01	0.43
Sumter Cement Company	CH_P_005	INV76	0	403711.8	3167546	0	3.60E-02	13.72	366.48	0.01	0.3
Sumter Cement Company	CH_P_006	INV77	0	403725.8	3167550	0	2.16E-02	4.57	366.48	0.01	0.3
Sumter Cement Company	CH_P_007	INV78	0	403734.3	3167550	0	3.96E-02	105.2	366.48	0.01	0.34
Sumter Cement Company	CH_P_008	INV79	0	403746.7	3167529	0	5.00E-02	54.86	316.48	0.01	0.34
Sumter Cement Company	CH_P_009	INV80	0	403745.3	3167528	0	2.08E-02	6.1	316.48	0.01	0.3
Sumter Cement Company	CH_P_010	INV81	0	403836.2	3167547	0	2.50E-02	12.19	422.04	0.01	0.3
Sumter Cement Company	CH_P_011	INV82	0	403909.1	3167545	0	1.00E-01	56.69	422.04	0.01	0.61
Sumter Cement Company	CH_P_012	INV83	0	403935.6	3167545	0	9.38E-02	56.69	422.04	0.01	0.61
Sumter Cement Company	CH_P_013	INV84	0	403889.6	3167546	0	6.88E-02	30.48	422.04	0.01	0.46
Sumter Cement Company	CH_P_014	INV85	0	403921.9	3167549	0	6.69E-02	6.1	394.26	0.01	0.46
Sumter Cement Company	CH_P_015	INV86	0	403921.9	3167546	0	6.69E-02	6.1	394.26	0.01	0.46
Sumter Cement Company	CH_P_016	INV87	0	403950	3167547	0	5.38E-02	21.34	294.26	0.01	0.34
Sumter Cement Company	CH_P_017	INV88	0	403956.3	3167547	0	1.61E-01	6.1	394.26	0.01	0.91
Sumter Cement Company	CH_P_018	INV89	0	403986.3	3167548	0	4.01E-02	12.19	394.26	0.01	0.34
Sumter Cement Company	CH_P_019	INV90	0	404017	3167559	0	5.85E-02	13.72	354.82	0.01	0.43
Sumter Cement Company	CH_P_020	INV91	0	404017	3167549	0	5.85E-02	13.72	383.15	0.01	0.43
Sumter Cement Company	CH_P_021	INV92	0	404022.6	3167556	0	3.44E-02	22.86	383.15	0.01	0.3
Sumter Cement Company	CH_P_022	INV93	0	404034	3167559	0	4.60E-02	57	344.26	0.01	0.34
Sumter Cement Company	CH_P_023	INV94	0	404048.4	3167559	0	3.83E-02	57	344.26	0.01	0.3
Sumter Cement Company	CH_P_024	INV95	0	404062.8	3167559	0	5.75E-02	57	344.26	0.01	0.37
Sumter Cement Company	CH_P_025	INV96	0	404034	3167551	0	3.22E-02	10.67	327.59	0.01	0.3
Sumter Cement Company	CH_P_026	INV97	0	404048.4	3167550	0	3.22E-02	10.67	327.59	0.01	0.3
Sumter Cement Company	CH_P_027	INV98	0	404062.8	3167550	0	3.22E-02	10.67	327.59	0.01	0.3
Sumter Cement Company	CH_P_028	INV99	0	404089.3	3167550	0	1.29E-01	10.67	327.59	0.01	0.61
Sumter Cement Company	CH_P_029	INV100	0	403804.8	3167527	0	1.56E-02	25.91	338.71	0.01	0.3
Sumter Cement Company	CH_P_030	INV101	0	403804.8	3167520	0	1.56E-02	25.91	338.71	0.01	0.3

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 500-meter by 500-meter receptor fine-grid was centered in the area of the high value receptors (southeast corner of property). The greatest regulatory concentration values from the modeling runs were used to demonstrate compliance with PSD increments.

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 was performed only if the SIA determination modeling indicated that the new sources would have a significant impact on air quality. 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.

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.

Class II Increment 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 Class II Increments included the sources under review as well as all sources in the 20-D inventory.

The ambient air impacts were evaluated with respect to the allowable PSD Class II increments. The 20-D inventory includes those facilities that have consumed the available PSD Class II increments, and were modeled with the facility's emissions to determine compliance with the

PSD increments. The emission sources from the proposed facility were modeled with the emission sources from the 20-D inventory (including point sources from two other cement plant applications), with the receptors described above.

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

	1987	1988	1989	1990	1991
Annual H1H < 17 μg/m^3	5.3 μg/m^3	6.1 μg/m^3	6.0 μg/m^3	5.4 μg/m^3	5.4 μg/m^3
24-Hour H2H < 30 μg/m^3	25.3 μg/m^3	28.7 μg/m^3	28.6 μg/m^3	22.4 μg/m^3	24.5 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 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} because the SIA determination modeling indicated that the new sources would have a significant impact on air quality. The purpose of NAAQS compliance modeling is 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, plus 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.

TABLE 13 – NAAQS ANALYSIS [PM_{10}]

	1987	1988	1989	1990	1991
Annual H1H < 50 $\mu g/m^3$ Background = 20	25.3 $\mu g/m^3$	26.1 $\mu g/m^3$	26.0 $\mu g/m^3$	25.4 $\mu g/m^3$	25.4 $\mu g/m^3$
24-Hour H6H < 150 $\mu g/m^3$ Background = 63	89.7 $\mu g/m^3$				

4.4.8 Federal Class I Areas

The nearest Class I areas and distances from the main stack for the facility are shown in the following table.

TABLE 14 - CLASS I AREAS

Class I Area	**Federal Land Manager**	**Distance from Stack to Nearest Receptor**
Chassahowitzka Wilderness Area	Fish & Wildlife Service	58 km
Okefenokee Wilderness Area	Fish & Wildlife Service	200 km
St. Marks Wilderness Area	Fish & Wildlife Service	239 km
Bradwell Bay Wilderness	Forest Service	270 km
Everglades National Park	National Park Service	324 km

Ambient and visibility impacts were determined for the nearest Class I area (Chassahowitzka National Wilderness Area).

a. <u>Class I Area Modeling Protocol</u>

Modeling to assess impacts at the Class I areas utilized the CALPUFF modeling system in screening mode. The CALPUFF modeling followed the guidance documents entitled *"Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II Summary Report and Recommendations for Modeling Long Range Transport Impacts"* and *"Federal Land Managers' Air Quality Related Values Workgroup (Flag) Phase I Report (December 2000)", and "Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling System (Earth Tech, September 2001)"*. There were three key components of the Class I analysis: a Class I increment analysis, a visibility analysis, and a nitrogen deposition analysis.

Class I 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 consisted of an initial "screening analysis" to determine whether the new or modified source will have a significant impact on air quality in the Class I area. The approach involved using CALPUFF in the screening mode. The determination was made by comparing the projected impacts from the point sources under review to the Class I "Significance Levels" proposed by EPA, as shown in the following table.

TABLE 15 – CLASS I AREA SIGNIFICANCE

Pollutant	Averaging Period	Significance Level (μg/m³)	Maximum Modeled Concentration (μg/m³)	Significant?
PM_{10}	Annual	0.2	0.010 (1990)	No
	24-hour	0.3	0.095 (1990)	No
Sulfur dioxide	Annual	0.1	0.004 (1987)	No
	24-hour	0.2	0.032 (1990)	No
	3-hour	1.0	0.136 (1990)	No
Nitrogen dioxide	Annual	0.1	0.023 (1987)	No

Reference: 61FR38292, July 23, 1996

As all pollutants and averaging periods are less than significant, no further review for compliance with Class I PSD increments is required. As impacts are below the Class I significance levels, then the increment portion of the Class I analysis is complete.

c. Visibility Analysis

IWAQM guidance (USEPA 1998) recommends non-steady state air quality modeling systems for screening and refined analyses. The IWAQM recommendations are adaptations and refinements of the CALPUFF dispersion modeling system. This modeling system consists of diagnostic meteorological models; a Gaussian puff dispersion model with algorithms for chemical transformation, wet and dry deposition, and complex terrain; and a post processor (CALPOST) for calculating concentration and deposition fields and visibility impacts. Additional guidance was from the Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report (December 2000). FLAG was formed to develop a more consistent approach for the Federal Land Managers (FLMs) to evaluate air pollution effects on their resources.

The recommended modeling systems and techniques provided ground level concentrations of visibility impairing pollutants. These concentrations were then used to calculate the extinction due to these pollutants, using the relationships outlined in Appendix 2.A. In this case, the model calculates visibility impairment. The results were compared against a reference level derived from aerosol information (relative humidity adjusted hygroscopic and non-hygroscopic concentrations plus Rayleigh extinction) given in Appendix 2.B for each Class I area. This reference level is a function of relative humidity. The approach, for screening level analyses, was to use the quarterly averaged reference levels given in Table 2.B-1 that are based on spatially interpolated seasonal relative humidity values and empirically derived f(RH) adjustment factors (IMPROVE 2000). FLAG recommends basing the analyses on block 24-hour averages (i.e., daily) of modeled visibility.

If a single project's visibility impairment, compared against natural conditions, is below certain analysis thresholds, then the FLMs are not likely to object to the project or ask that a cumulative analysis be performed before the project proceeds. If a new or modified source can demonstrate that its contribution to a change in extinction is <5.0%, compared against natural conditions, for all days, then the FLM is not likely to object to the issuance of the PSD permit based on visibility impacts.

TABLE 16 – CLASS I AREA VISIBILITY IMPAIRMENT

1986	1987	1988	1989	1990
2.80%	2.15%	2.48%	2.90%	2.19%

The proposed facility's visibility impairment at any receptor in the Class I area is less than 5% change in extinction for any 24-hour period.

For this project, visibility analyses conducted using the EPA-approved CALPUFF model in the screening mode demonstrated that the impacts to visibility at the nearest Class I area will be less than 5%. This demonstration is expected to be satisfactory to the Federal Land Manager.

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*.[H] 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% 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 S 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 Sumterville Cement Plant, as modeled using CALPUFF. The N DAT represents total N, including both wet and dry deposition. Total nitrogen includes NO, NO2, HNO3, NO3, NH3, and NH4. Total N was selected in order to be consistent with conventions used in deposition loading, to represent the total amount of N inputs received in an ecosystem and to be compatible with CALPUFF model outputs.

The DAT for nitrogen in Eastern Class I parks and refuges is: 0.01 kg/ha/yr N.

Guidance for using the CALPUFF modeling system to estimate nitrogen deposition was obtained from *Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling System,* from Earth Tech, Inc., dated September 2001. The outputs for the previous CALPUFF runs included all concentrations and deposition fluxes written to binary files. The 5 CALPUFF runs, one for each year modeled (1986-1990), resulted in 5 sets of binary files. Each set included one file for the modeled concentrations, one file for the modeled dry deposition fluxes, and one

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[H] http://www2.nature.nps.gov/air/Permits/flag/docs/N_SDATGuidance.pdf file for the modeled wet deposition fluxes, calculated at every receptor, for each hour of the year. Using these files, the post-processing tasks included characterizing peak concentrations of several species for several averaging times, characterizing peak annual deposition rates of total nitrogen, and characterizing the change in visibility.

Prior to applying CALPOST to obtain the deposition outputs, POSTUTIL was used to consolidate the deposition fluxes. In particular, POSTUTIL was used to sum the wet and dry deposition fluxes into the total deposition flux of each species, and it converted various fluxes to the total nitrogen fluxes.

A CALMET file was not needed for this application because no nitrate partitioning was calculated. Two CALPUFF binary tiles were needed for this application: one for the dry deposition flux, and one for the wet deposition flux. Full years of 8760 hours (8784 hours for leap years) were processed in the screening assessments.

The 5 MESOPUFF II chemical transformation species were needed to compute the total nitrogen fluxes (the sum of the wet and dry fluxes):

- SO_2
- SO_4
- NO_X
- HNO_3
- NO_3

The postprocessing included the information required to compute the new species, using a weighted sum of the deposition fluxes of the stored species. Nitrogen mass is contributed by SO_4 (CALPUFF tracks ammonium sulfate as SO_4), NOx, HNO_3, and NO_3 (CALPUFF tracks ammonium nitrate as NO_3). The atomic weights for the constituent elements are sulfur = 32, oxygen = 16, nitrogen = 14, and hydrogen = 1. The molecular formula for ammonium sulfate is $(NH_4)_2S0_4$ and ammonium nitrate is $(NH_4)NO_3$. Therefore:

- 1 g of SO_4 contributes 0.291667 g of N
- 1 g of NOx contributes 0.304348 g of N
- 1 g of HNO_3 contributes 0.222222 g of N
- 1 g of NO_3 contributes 0.451613 g of N

The peak total nitrogen deposition flux was then estimated using CALPOST. The maximum total annual nitrogen deposition was for 1987, and was $2.90e^{-11}$ g/m2/sec. This is equivalent to 0.009 kg/ha/yr. As this value is less than the DAT for nitrogen in Eastern Class I parks and refuges of 0.01 kg/ha/yr, estimated impacts from the proposed new source are considered insignificant by the Federal Land Manager.

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 CALPUFF 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, 3 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[I] 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[J] for deposition for sulfur and nitrogen were compared to site-specific modeling results, generated through the use of the CALPUFF modeling system for this near-field application. Radial receptors were used on radii from 500 meters to 3 kilometers, at 100 meter increments. The directional lines were set equal to 36 directions (e.g., N, NNE, NE) with 10 degree spacing.

[I] A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals, EPA 450/2-81-078, December 1980.

[J] A Screening Procedure to Evaluate Air Pollution Effects on Class I Wilderness Areas, United States Department of Agriculture, General Technical Report RM168, 1989.

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.

5.1.1 Soils

The soils in the impact area are described by the *Soil Survey of Sumter County*. The general soils map in the soil survey shows three major soil complexes within the area of significant impact:

- 5. Sparr-Millhopper-Sumterville
- 8. Sumterville-Mabel-Ft. Green
- 10. Myakka-Placid-Ona

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.

5. Sparr-Millhopper-Sumterville

Nearly level to strongly sloping, somewhat poorly drained and moderately well drained, sandy soils that are sandy to a depth of more than 80 inches. The soils in this map unit are on low knolls and ridges on the uplands. The slopes range from 0 to 5 percent. Most of these soils are in the northern part of Sumter County.

8. Sumterville-Mabel-Ft. Green

Nearly level to gently sloping, somewhat poorly drained and poorly drained, sandy soils; most have a clayey subsoil. The soils in this map unit are on broad ridges and knolls on the uplands. The slopes range from 0 to 5 percent. Most of these soils are in the central part of Sumter County.

10. Myakka-Placid-Ona

Nearly level, poorly drained and very poorly drained, sandy soils; some have a sandy, dark subsoil, and some are sandy throughout and do not have a subsoil. The soils in this map unit are on the flatwoods, mainly in the east-central part of Sumter County that is adjacent to Lake County and west of Coleman. The slopes range from 0 to 2 percent.

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 CALPUFF modeling system 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 0.15 kg/ha/year; and the maximum modeled sulfur deposition rate at any receptor was 0.28 kg/ha/year. As these deposition rates are well below the Green Line screening values, no further analysis was conducted.

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*. The soils in the impact area are described by the *Soil Survey of Sumter County*.

5. Sparr-Millhopper-Sumterville

The native vegetation is mostly live oak, water oak, and turkey oak. The understory is pineland threeawn, saw palmetto, and greenbrier. Most of the acreage in this map unit is used as improved pasture. Some areas are used for cultivated crops or as woodland.

8. Sumterville-Mabel-Ft. Green

The native vegetation is scattered slash pine, loblolly pine, live oak, laurel oak, water oak, sweetgum, and cabbage palm. The understory is waxmyrtle, briers, saw palmetto, paspalums, panicums, and native grasses. Most of the acreage in this map unit is used as pasture, with the remaining acreage in native vegetation.

10. Myakka-Placid-Ona

The native vegetation is longleaf pine, slash pine, gallberry, and saw palmetto and also cypress in depressional areas. Most of the acreage in this map unit is used as rangeland or woodland.

A more detailed review of commercially significant vegetation was conducted for the major soil types described within the general soil types:

- 10. Sparr
- 11. Millhopper
- 23. Ona
- 27. Sumterville
- 30. Placid
- 31. Myakka
- 39. Mabel
- 46. Ft. Green

Various tables in the Soil Survey were reviewed for these soil types.

Table 4. --Land Capability Classes And 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	Watermelons (tons)	Tomatoes (tons)	Cucumbers (tons)	Bell Peppers (bushels)	Squash (bushels)	Bahiagrass (animal unit/month)	Sorghum Silage (tons)
10: Sparr	10	10	8	600	150	9.0	9
11: Millhopper	15	17	8	700	150	8.5	10
23: Ona	10	12	8	600	500	8.5	10
27: Sumterville	10	9	---	---	---	9.0	10
30: Placid	---	---	---	---	---	---	---
31: Myakka	10	8	8	400	200	8.0	8
39: Mabel	10	9	---	500	---	9.0	10
46: Ft. Green	---	12	10	600	200	8.0	10

TABLE 7.--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
10: Sparr	Slash pine, loblolly pine, longleaf pine
11: Millhopper	Slash pine, loblolly pine, longleaf pine
23: Ona	Slash pine, longleaf pine
27: Sumterville	Slash pine, loblolly pine
30: Placid	None recommended
31: Myakka	Slash pine, longleaf pine
39: Mabel	Slash pine, loblolly pine, longleaf pine
46: Ft. Green	Slash pine, loblolly pine

TABLE 8.--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	Golf fairways
10: Sparr	Severe	Severe	Severe	Severe	Moderate
11: Millhopper	Severe	Severe	Severe	Severe	Moderate
23: Ona	Severe	Severe	Severe	Severe	Severe
27: Sumterville	Severe	Severe	Severe	Severe	Moderate
30: Placid	Severe	Severe	Severe	Severe	Severe
31: Myakka	Severe	Severe	Severe	Severe	Severe
39: Mabel	Severe	Severe	Severe	Severe	Moderate
46: Ft. Green	Severe	Severe	Severe	Severe	Severe

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 (1987-1991).

Pollutant	Averaging Time	Screening Concentration	Modeled Concentration
SO_2	1 hour	917 $\mu g/m^3$	3.76 $\mu g/m^3$
	3 hours	786 $\mu g/m^3$	1.94 $\mu g/m^3$
	1 year	18 $\mu g/m^3$	0.02 $\mu g/m^3$
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/m^3	14.75 μg/m^3
	8 hours	3760 μg/m^3	8.43 μg/m^3
	1 month	564 μg/m^3	0.51 μg/m^3
	1 year	94 μg/m^3	0.18 μg/m^3
CO	24 hours	1 week = 1,800,000 μg/m^3	5.77 μg/m^3
	1 month		0.84 μg/m^3

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 Sumter County is described the Florida Natural Areas Inventory. An online search showed 75 Total Elements (biological occurrences) in Sumter County. The lists included the following:

- Amphibians
- Reptiles
- Birds
- Mammals
- Gastropods (Snails and Allies)
- Plants

Although the lists included certain plants, commercially significant vegetation was identified by the soil survey and is discussed above. The soil survey also included a table describing potential as habitat for openland wildlife, woodland wildlife, and wetland wildlife.

TABLE 9.--WILDLIFE HABITAT

Map Unit	Potential for habitat for:		
	Openland wildlife	Woodland wildlife	Wetland wildlife
10: Sparr	Fair	Fair	Poor
11: Millhopper	Fair	Fair	Very poor
23: Ona	Fair	Fair	Fair
27: Sumterville	Fair	Fair	Very poor
30: Placid	Very poor	Very poor	Good
31: Myakka	Fair	Poor	Poor
39: Mabel	Fair	Good	Poor
46: Ft. Green	Fair	Fair	Fair

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. The screening procedures were not applicable for this project.

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 80-100 new jobs at the cement plant. Sumter County's unemployment rate was 4.0% in April 2005 (preliminary) and the unemployment number was 871. 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 3 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 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 requirement is 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 for each regulated pollutant with a significant emissions increase at the source. Therefore, in the case of the proposed cement plant a BACT analysis must be performed for PM/PM_{10}, SO_2, NO_X, VOC, and CO. A detailed "top-down" BACT analysis is described below for each emission unit for the applicable pollutants.

The proposed Portland Cement manufacturing 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 and the vendor has not been selected. 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 the facility's point sources, and by the prevention of generation of particles from fugitive sources. Common control devices for stack gases include fabric filters (baghouses), and electrostatic precipitators (ESP). Fabric filters (baghouses) and electrostatic precipitators (ESPs) are considered equivalent for particulate control, with both types of devices achieving removal efficiencies of over 99.9 percent. ESPs and baghouses are used extensively as control devices for kilns and coolers at cement plants. Baghouses are typically used to control particulate emissions from most material handling operations at a cement plant.

Inertial separators (cyclones) can have efficiencies over 90 percent within narrow particle size ranges, but their overall efficiencies are generally less than 85 percent. Inertial separators have not been demonstrated as effective controls at cement plants, but they are used extensively as process devices for material recovery.

6.2.1 Proposed BACT

The cement kiln, raw mill and clinker cooler will all exhaust through a common particulate matter control device and stack. The control device proposed is a baghouse and the proposed emission limits are 0.18 pounds pf PM per ton of clinker and 0.156 pounds of PM_{10} per ton of clinker.

The control device for material handling sources will be baghouses with discharge limits of 0.01 grains of PM per dry standard cubic foot and 0.007 grains of PM_{10} per dry standard cubic foot.

6.2.2 Particulate Matter Sources

It is proposed that there will be 21 point sources of PM/PM_{10} emissions at the American Cement Company plant. The major emission point will be a single particulate matter control device and stack exhausting the kiln/raw mill and cooler. The remaining 20 emission points will be for finish mills and material handling equipment.

6.2.3 Description of Control Technologies

A summary of PM/PM_{10} control devices, including the control efficiencies, is detailed in Table 6-1. These types include the following:

Precleaners;

Wet scrubbers;

Electrostatic precipitators (ESPs);

Fabric filters;

Paper/nonwoven filters.

The various types of control techniques, some of which are obviously not practical for cement plant application, are described in detail below.

Precleaners

This type of technology reduces the inlet loading of PM to downstream collection devices by removing larger, abrasive particles. Precleaners include cyclones, mechanically-aided separators, momentum separators, and settling chambers.

Cyclones remove PM by centrifugal and inertial forces, induced by forcing particle-laden gas to change direction. Cyclones are also referred to as cyclone collectors, cyclone separators, centrifugal separators, and inertial separators. 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 also used primarily to control larger sized PM.

Wet Scrubbers

Wet scrubbers remove PM and acid gas from a waste 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 wet scrubbers include:

- Spray tower;
- Cyclonic spray tower;
- Dynamic scrubber (mechanically-aided);
- Tray tower;
- Venturi scrubber;
- Orifice scrubber;
- Condensation scrubber; and
- Mist eliminators (fiber-bed).

These types of scrubbers are described below.

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 upstream 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 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. Venturi scrubbers are typically utilized where a 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 waste 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 a 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 Kiln 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, which is where gaseous ions flow. 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 easier to handle the disposal of the waste material. 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, flue 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 filter, and are referred to as baghouses. Groups of bags are placed in compartments to allow cleaning or 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 can provide 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.

Paper/Nonwoven Filters

The two common types of paper/nonwoven filters are high efficiency particle air (HEPA) filter/ultra low penetration air (ULPA) filter and cartridge collectors. HEPA/ULPA filters and cartridge collectors generally contain paper media, but may also contain nonwoven media. In HEPA/ULPA filters, the filter media is sometimes made out of matted glass fiber. The small fiber diameter and high packing density of both the paper and nonwoven media allow for the efficient collection of submicron PM. The gas stream passes through the filter media and the PM collects on the media. The dust cake that accumulates on the filter media can increase the collection efficiency.

HEPA and ULPA filters are usually the final component in a PM removal system since they require larger PM to be removed. HEPA and ULPA filters cannot be operated in moist environments since they will easily plug from "sticky" PM. Therefore, since the moisture content of the gas stream is typically 8-16 percent (varies depending on if the raw mill is running) from the Cement Kiln, this technology is considered to be technically infeasible.

In cartridge filters the media is usually made of natural or synthetic material such as cellulose or fiberglass. The media is supported by inner and outer wire frames. The gas stream is passed through the filter and the PM is collected on the filter. The dust cake that accumulates on the filter media can increase the collection efficiency.

Cartridge filters cannot be operated in moist environments since they will easily plug from "sticky" PM. Therefore, since the moisture content of the gas stream is typically 8-16 percent (varies depending on if the raw mill is running) from the Cement Kiln, this technology is considered to be technically infeasible.

6.2.4 Technically Feasible Options

The control techniques that are considered technically infeasible (refer to discussion above) for PM/PM_{10} control at a Cement Kiln and Clinker Cooler include HEPA/ULPA filters and cartridge collectors. Also, condensation scrubbers have not been proven on this type of operation. A summary of the remaining proven and technically feasible control techniques ranked by the order of control efficiency is listed in Table 6-2. There are two control techniques that have the top ranking (greater than 99 percent control efficiency); ESPs and fabric filters.

6.2.5 Previous BACT Determinations

Kiln/Raw Mill/Cooler

A review of previous BACT determinations for Preheaters, Precalciners, Calciners, and Cement Kilns is presented in Table 6-3. 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 (hourly) or 0.46 lb/ton (annual) for PM and 0.48-0.52 lb/ton (hourly) or 0.39 lb/ton (annual) for PM_{10}.

A review of previous BACT determinations for Clinker Coolers is presented in Table 6-4. 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 (dry basis) for PM and 0.02-0.13 lb/ton (dry basis) for PM_{10}.

The proposed American Cement Company plant will have a common particulate matter control device and stack for the kiln/raw mill/cooler. The proposed BACT PM limits for this point source are 0.18 pounds of PM and 0.156 pounds of PM_{10} per ton of clinker. 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 included in Table 6-5. From this review it is evident that the only type of add-on control technology that has been applied to this type of operation are baghouses. Other types of particulate control include water sprays, covered conveyors, enclosed buildings, etc., to minimize the generation of fugitive PM/PM_{10} emissions. PM/PM_{10} emission limits have ranged from 0.005 to 0.1 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 6-6. From this review it is evident that the only type of add-on control technology that has been applied to this type of operation are baghouses. PM emission limits have ranged from 0.017 gr/dscf to 0.1 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 limitation for the kiln/raw mill/cooler is 0.18 lb/ton clinker for PM and 0.156 lb/ton clinker for PM_{10}. PM/PM_{10} emissions are to be controlled using a baghouse (fabric filter). The final plant design has not been completed; therefore the baghouse selection has not been made. 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 for the kiln/raw mill/cooler combination. The proposed emission limits of 0.18 lb/ton clinker and 0.156 lb/ton clinker for PM and PM_{10}, respectively, are reasonable based on the most recent BACT determinations listed on the Clearinghouse. 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 and Material Handling Equipment

The only add-on control technology that is listed on the Clearinghouse for Finish Mills and material handling sources located at cement plants are fabric filters/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 the Finish Mills and the Material Handling Equipment. 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 has not been made. This information will be provided when available.

6.3 Sulfur Dioxide

SO_2 can be generated from organic or pyritic sulfur compounds in the raw material that can be oxidized to SO_2 in the preheater and from sulfur in the fuel. In Florida there is very little, if any, 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 0.23 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 and raw material management to avoid materials with organic or pyritic sulfur.

6.3.2 Generation of SO_2

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.

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. This sulfur cycles in the calciner and kiln; with the cycle dependent upon the sulfur/alkali balance, the oxidizing/reducing conditions in the 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.

If excess sulfur is still present, it will be absorbed by the calcium oxide to form a calcium sulfate that will eventually decompose in the kiln to SO_2 and calcium oxide; thus creating a sulfur cycle in the kiln/calciner. If excessive sulfur is present, plugging problems will occur in the calciner causing plant operating problems well before the sulfur could break through and result in SO_2 emissions. Thus, the release of SO_2 generated by fuel combustion is extremely unlikely as plant operating problems, potentially resulting in a plant shutdown, would occur first.

As a result of the self-limiting mechanism just described, SO2 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 fuel firing, the primary fuel firing scenarios include the firing of pulverized coal or a mixture of coal and petroleum coke through the kiln burner and calciner burner.

In general the ratio of the heat input between the kiln and calciner is about 40 percent of the heat value fired at the kiln burner and about 60 percent of the heat value fired at the calciner burner. The heat input ratio between burners is somewhat independent of fuel mixtures and operating conditions. 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 of various fuel mixtures can vary. Typically, the kiln burner will burn coal at 100 percent, but may burn a mixture of about 30 percent coke and 70 percent coal. Typically, the calciner burner will burn coal at 100 percent, but may burn a mixture of about 30 percent coke and 70 percent coal, or other fuels in various combinations with or without coal. Other fuels described in the application 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 system is determined by the raw material feed rate to the kiln and the burnability of the raw materials. 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 most dependent on the chemistry of the onsite raw materials and the raw meal fineness from the raw mill.

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. Emissions variations over long averaging times are expected to be minimal in terms of concentration or mass per unit time. Most pollutant emissions are assumed as 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 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 are not typically exceeded during startup.

Regarding potential SO_2 emissions from raw materials, because of the inherent low pyritic and/or organic sulfur content of raw materials used in Florida cement plants, the potential for sulfur compounds to be released and converted to SO_2 in the preheater is minimal.

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.

6.3.3 Description of Control Technologies

A summary of the available SO_2 control technologies are listed in Table 6-7, including the respective control efficiencies. These techniques include the following:

- Absorption;
- Adsorption; and
- Low sulfur fuels.

These types of controls are described in detail below.

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 concentration. 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's 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 if necessary.

Low Sulfur Fuels and/or Raw Materials

This technique is discussed in other sections.

6.3.4 Technically Feasible Options

All of the control techniques included in Table 6-7 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 6-8. 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.

6.3.5 Previous BACT Determinations

A review of previous BACT determinations from the last ten years was performed for SO_2 emissions from Preheaters, Calciners, and Cement Kilns at Portland Cement Plants and is presented in Table 6-9. 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 American Cement Company plant is 0.23 pounds of SO_2 per ton of clinker. This emission limit is proposed as a three-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 an acceptably low sulfur content in all raw materials.

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. These emissions can be reduced by minimizing fuel combustion; or conversely, by increasing the thermal efficiency of the kiln system. 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.[1]

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; dependent 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. In general, thermal NOx levels increase sharply above a flame temperature of approximately 850°F.

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 precalciner burner) affects NOx formation as a result of differing heat release requirements.

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 leading to 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 is lower than coal and it burns with a lower flame temperature.

The location at which fuel is introduced and the combustion requirements also affects 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. Both of these conditions contribute to the formation of thermal NOx. The burner design, as it affects flame shape, and the fuel to air mixture, can mitigate NOx formation. 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 the riser duct where it is burned in contact with the raw meal. In either case, the temperature required is in the range 900-1100°C which is much lower than 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 precalciner 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 a selective non-catalytic reduction (SNCR), low-NOx burners and kiln design. The kiln burner will be a Pillard, Greco or equivalent and the calciner burner will be supplied by the plant designer. This BACT limit has been recently applied to two, and possibly a third cement plant permitted in Florida. The limit is the lowest established BACT limit for NOx in the U.S. and there has been no long-term operations at any plant that has demonstrated a lower limit is achievable long-term.

6.4.2 Description of Control Technologies

A summary of available NOx control technologies and their associated control efficiencies is listed in Table 6-10. Control technologies for NO_x can be divided into two categories: pre-combustion or process changes, and post-combustion or add-on controls. The available types of NO_x controls are:

<u>Pre-combustion controls:</u>

- Plant design;
- Fuel switching;
- Overfire air (OFA);
- Flue gas recirculation (FGR);
- Low-NO_x burners (LNB); and
- Reburn.

<u>Post-combustion/add-on controls:</u>

- Selective non-catalytic reduction (SNCR); and
- Selective catalytic reduction (SCR).

These controls are described in detail below.

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.

Fuel Switching

One option for reducing NO_x emissions is to switch to a low-nitrogen content fuel. In the cement kiln, natural gas combustion with a high flame temperature and low fuel nitrogen generates a larger quantity of NO_x than does oil or coal. Oil and coal have higher fuel nitrogen contents but burn with lower flame temperatures. Since the availability of fuels is driven by economics and availability, fuel switching is considered impractical.

Overfire Air

Overfire air (OFA) combustion is when burners are fired more fuel rich that normal while the remaining combustion air is admitted through overfire air ports or an idle top row of burners. OFA is usually used on large units since larger proportional increases in furnace size and cost may be required to assure complete fuel combustion.

Flue Gas Recirculation

Flue gas recirculation (FGR) is a process where a portion of the flue gas is recycled back to the primary combustion zone. NO_x formation is reduced by two mechanisms. The first is heating in the primary combustion zone lowers the peak flame temperature, which reduces thermal NO_x formation. The second is reducing thermal NO_x formation by lowering the oxygen content in the primary flame zone. This type of control technique is typically applied to boilers, and is not a proven control technique for a cement kiln operation. Therefore, this control technique is not considered further.

Low-NO_x Burners

The main kiln burner for the American Cement project will be a low NOx burner supplied by Pillard, Greco or equivalent. The burner will be indirectly fired. The calciner burner will be provided by the plant designer and will be indirectly fired.

Low NOx burners are multi-channeled burners. Typically fuel (oil, pulverized coal or pulverized petroleum coke) is fired with minimal combustion air through a central channel. The pressure of the primary air is controlled to obtain optimum exit momentum and ignition distance. Additional primary air is introduced through one or more channels to provide a fuel-rich combustion zone in which the initial fuel combustion occurs. Because of the fuel-rich characteristics of this zone (i.e. low oxygen), thermal NOx formation is minimized. The amount and pressure of the primary air controls the flame shape and flame intensity as required for desired heat and flame shape distribution in the kiln. Secondary air from the clinker cooler is introduced downstream to provide sufficient oxygen for the complete burn-out of the fuel.

The staging of the primary and secondary combustion air and the total amount of combustion air controls thermal NOx formation. To minimize thermal NOx emissions, cement kilns are typically operated with 1-2 percent oxygen in the gases leaving the kiln. With add-on NOx control technology such as SNCR, the oxygen in the gases leaving the kiln can be increased to 3-4 percent. This has a tendency to improve kiln stability and reduce material build up in the riser duct and in the calciner.

Reburn

Reburn technology involves passing the burner zone products through a secondary flame or fuel-rich combustion zone. A portion of the fuel is diverted to create a secondary flame downstream of the primary combustion zone. Reburn has only been tested on a cement kiln by a pilot project performed by Acurex Environmental Corporation. Therefore, since it has not been used on any practical applications of a cement kiln of this design, this is not considered to be a proven control technology for this type of cement kiln.

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). A nitrogen-based reagent, such as ammonia or urea, is injected into the post-combustion flue gas. 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:

$$2NO + 2NH_3 + \frac{1}{2} O_2 \rightarrow 2N_2 + 3\ H_2O$$

The urea reaction is as follows:

$$2NO + CO(NH_2)_2 + \frac{1}{2} O_2 \rightarrow 2N_2 + CO_2 + 2H_2O$$

This technology is discussed in detail in subsequent sections.

SCR

Selective catalytic reduction (SCR) chemically reduces the NO_x molecule into N_2 and H_2O vapor. A nitrogen-based reagent such as ammonia or urea is injected into the ductwork downstream of the combustion unit. The waste gas mixes with the nitrogen-based reagent and then enters a reactor that contains the catalyst. 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 the catalyst and oxygen.

For the SCR system to operate properly, the flue gas must be between approximately 200°C to 600°C. Therefore, to install an SCR system to control NO_x emissions from a cement plant, the SCR would have to be installed prior to the baghouse or after the baghouse with a reheat system.

This technology is discussed in detail in subsequent sections.

6.4.3 Technically Feasible Options

The NO_x control technologies are listed in Tables 6-10 and 6-11.

6.4.4 NOx Control Technology Review

A review was made of the most recently issued permits for Portland cement plants. The NOx emission levels established as BACT were documented 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 selective non-catalytic reduction (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 distractors. 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 and a half years.

As an overall observation on the review of the BACT/LAER Clearing House, it was noted that in the 1980's, some exceeding stringent NOx limits were established for Portland cement plants as BACT. 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.

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 is almost identical to the Florida Rock Industries No. 2 Plant. The NOx emission limit is the same as that for the Florida Rock Industries Plant No. 2.

Suwannee American Cement – Plant No. 2
Branford, Florida
Permit Pending

Suwannee American Cement has proposed a second plant for their Branford, Florida facility. The air construction permit for this plant should be issued shortly. The plant is designed for a clinker production rate of 127 tons per hour and 1,055,000 tons per year of clinker. The plant design is very similar to that of the Florida Rock Industries Plant No. 2 and the Rinker/Florida Crushed Stone Plant. It is anticipated that SNCR will be required and that the NOx emission limit will be 1.95 pounds per ton of clinker, 30-day rolling average.

Drake Cement

Drake, Arizona

Permit Pending

The plant is a grass roots 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, will request 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 multi-stage 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 multi-stage 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 multi-stage 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 over operating without the inlet burner but with combustion air staging.

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

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 multi-stage combustion (without a separate combustion chamber). The precalciner 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 states of these plants are 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, but not a permit condition, of 2.75 pounds per ton of clinker.

Texas Industries

Riverside Cement

Oro Grande, California

Information Date: 8/5/99

NOx Limit - 2.8 lb/ton clinker, 30-day rolling average, and 700 lb/hr

Compliance - CEMS

Control - Low NOx burners, MCS

National Cement

Lebec, California

Information Date: 10/2000 – 10/2001

NOx Limit - 3.4 lb/ton clinker, 30-day rolling average, and 481.7 lb/hr

Compliance - CEMS

Control - Low NOx burners

Mitsubishi Cement

Lucerne Valley, California

Information Date: 2000

NOx Limit - 6.4 lb/ton clinker, 30-day rolling average with relief granted during startup and shutdown

Compliance - CEMS

Control - Biosolids

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

California Portland Cement

Mojave, California

Information Date: 12/2000 – 12/2001

NOx Limit - 855.0 lb/ton clinker, hourly average

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

6.4.5 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 (2.3-2.5 pounds per ton of clinker), and for existing plants, the limit is 800 milligrams per normal cubic meter (3.7-4.0 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) are of the preheater design or the traveling rate design. Two plants in Sweden of the preheater-precalciner design employ SNCR.

Through a joint funded project, a SCR pilot study was carried out at the Solnhofer Portland Zementwerke AG plant in Solnhofer, Germany. The pilot study was successful and a full scale SCR system was installed on the plant and began operating in about late 1999. To date, the system has operated approximately five and a half 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 control 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 multi-stage 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 Solnhofer, 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 and a half years with minimal problems. The major concern of applying SCR to cement plants is the high dust loading to which the catalyst would be exposed. To achieve a gas temperature range of 300-400°C (the range in which SCR is most effective) the optimum location of a SCR location is following the preheater. At this location, the proper gas temperature range is achieved; however, the dust loading is in the range of 30-35 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 Solnhofer has demonstrated the long-term effectiveness of SCR catalyst in a high dust loading environment. While lower NOx emission levels have been demonstrated to be achievable, the Solnhofer 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 Feasible NOx Control Options

6.4.6.1 Plant Design

The formation of NOx in the pyroprocessing system of a Portland cement plant is a function of energy release. Thus, designs that minimize the energy required for clinker production will generally reduce the formation and emissions of NOx.

As points of comparison, a long wet process cement kilns require approximately 6.0 mmBTU per ton of clinker and the long dry process kilns require 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 order of 3.5-3.8 mmBTU per ton of clinker while dry process plants with both a precalciner and preheater have heat input requirements in the range of 2.6-3.0 pounds per ton of clinker.

6.4.6.2 Combustion Control

The control of combustion and the staging of fuel firing 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 35-50 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 an 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 the desired 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 accurately 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. is minimized.

Other factors related to fuel firing in the kiln are the method in which the fuel is transported 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. The ground fuel is stored in a fuel storage bin. From the fuel storage bin, the ground fuel is conveyed to the burner with the optimum amount of primary combustion air.

In a direct-fired kiln, the primary combustion air is typically 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 as secondary combustion air. This both reduces the formation of NOx and increases the thermal efficiency of the pyroprocessing system.

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 process reduces the flame turbulence, it establishes a fuel-rich zone for initial combustion, and delays the mixing of fuel with secondary combustion air. The longer, 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 other general location of firing fuel in a modern 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 850-900°C; which is much lower than the temperature required in the kiln for clinkering. As this fuel is burned at a lower temperature, NOx formation is minimized.

The concept of staged combustion can also be employed in preheater-precalciner kilns. The staging can involve either the staging of fuel combustion, the staging of combustion air or both. The basic multi-stage 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 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.

The multi-stage combustion system can also be operated with combustion at various points being 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 1000-1100°C. Under these high temperature reducing conditions, a good portion of the NOx generated in the kiln is converted to elemental nitrogen; thus reducing the NOx emissions. This concept is similar to that referred to as "reburning".

The fuel fired in the precalciner (either the riser duct or a separate combustion chamber) can also take place with sub-stoichiometric combustion air. This minimizes the NOx formation from the combustion of this fuel and further decreases NOx generated in the kiln as described above.

The final stage of combustion is the introduction of additional hot combustion air recovered from the clinker cooler. This air is fed into the system above the precalciner and results in the burnout of the remaining fuel and the oxidation of a considerable amount of CO.

The multi-stage combustion system 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 precalciner (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. Again, this is analogous to "reburning". 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. In other words, the NOx reduction achieved with air staging was just as effective to that achieved with fuel and air staging.

NOx emissions from a preheater-precalciner plant with the multi-stage 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 multi-stage combustion system operating under oxidizing conditions.

6.4.6.3 Effect of Feed Mix Composition and Fuel on NOx Emissions

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 both a lower nitrogen content and 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.

6.4.6.4 Add-On Control Technology

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 250-450°C and employs a catalyst to facilitate the reaction between ammonia and NOx.

6.4.6.5 Selective Non-Catalytic Reduction

SNCR is based on the chemical reduction of NOx into molecular nitrogen and water vapor. The reducing agent is most commonly an ammonia based compound such as urea, ammonia water or anhydrous ammonia. 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 is typically reduced to slightly below 20 percent.

The basic reactions that occur following ammonia injection are the decomposition of ammonia in the presence of OH* radicals to a NH_2* radical and water vapor. The NH_2* radical then reacts with NOx to produce elemental nitrogen and water vapor. As previously stated the optimum temperature range for SNCR is 850-1150°C. Above this temperature, ammonia will oxide, generating additional NOx and below this temperature range, the reaction slows and ammonia slip (unreacted ammonia in the stack gas) increases. The other requirement for SNCR is excess oxygen; the source of the OH* radicals.

In modern preheater-precalciner cement plants operating with multi-stage combustion, the optimum location for the introduction of ammonia is between the point where the final combustion air is added and the first (bottom) stage cyclone of the preheater. Between these points, oxygen is available and the 850-1150°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 multi-stage combustion plant system operating under reducing conditions is that the introduction of combustion air is required to complete the burnout of fuel and to oxide 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), sufficient gas residence time must be achieved between the introduction of tertiary air and the introduction of ammonia for CO oxidation to occur. Considering these factors, it has been found that the optimum point of ammonia injection is just before the first stage of the preheater.

Even after optimizing the point of ammonia injection, it has been found that carbon monoxide emissions increase with SNCR. At a molar ratio of ammonia to NOx of 0.4, the CO emissions 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.

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 among other things from the reaction between ammonia, chlorides and/or SO_2 in the stack gas.

In summary, SNCR is effective in 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. The other consequence of SNCR is that under typical SNCR operating conditions, CO emissions will increase up to 1.0 pounds per ton of clinker and there is a potential of a visible plume.

6.4.6.6 Selective Catalytic Reduction

SCR operates on the same basic principle as SNCR, but in a lower temperature range. The optimum temperature range for SCR is 250-950°C. This temperature window is normally found near the kiln I.D. fan; downstream of the preheater. The particulate matter loading in the dust stream at this point is typically in a range of 30-35 grains per dry standard cubic foot.

With SCR, an ammonia based reagent is injected into the ductwork upstream of the SCR catalyst unit. The ammonia mixes in the gas stream and enters the catalyst where the reduction of NOx occurs. The chemistry of the reaction is essentially the same as that described for SNCR.

One of the main obstacles encountered in applying SCR to Portland cement plants is the high dust loading (30-35 grains per dry standard cubic foot). Experience has shown that SCR catalysts designed for high dust loading can effectively operate in this range with an operating life in excess of three years. This operation requires periodic cleaning (analogous to soot blowing in coal and oil fired boilers) and a by-pass which automatically opens if the gas stream temperature approaching the catalyst exceeds the temperature limit 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.

Experience at the Solnhofer, Germany plant has demonstrated that NOx emissions as low as 100 milligrams per normal cubic meter (approximately 0.5 pounds per ton of clinker) can be achieved. As stated previously however, the plant typically operates at a NOx reduction efficiency necessary only to achieve the regulatory NOx emission limit of 500 milligrams per normal cubic meter. Thus, long-term operating characteristics at high NOx reduction efficiencies have not been fully evaluated. A disadvantage of the SCR system over other NOx control technologies is that it has a significantly higher capital and operating cost and it introduces a system at a cement plant that is foreign to normal cement plant operations.

Regarding the practical application of SCR in the U.S., it is difficult to get firm commitments from vendors as this would be a first-time application of the technology in this country. Indications from vendors are that a pilot scale operation would first be required at the candidate cement plant to fully evaluate conditions at the point where the SCR unit would be installed. It is expected with the pilot scale work, the engineering and final installation of a full scale SCR system, 2-3 years would be required.

6.4.7 BACT Selection

The Portland cement plant proposed by the American Cement Company is a modern preheater-precalciner plant with multi-stage 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. A kiln inlet burner is not proposed, however, the use of Tire Derived Fuel (TDF) will be an option. When used, TDF introduced at the kiln inlet, will account for up to 15 percent of the pyroprocessing heat requirement. The introduction of TDF will function similar to a kiln inlet burner. 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 a combination of the two is used, 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 (typically up to 30 percent of the plant heat input),
- Low-NOx burners (Pillard, Greco or equivalent),
- 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, American Cement is proposing SNCR to further reduce NOx emissions. The SNCR will operate in conjunction with the multi-stage combustion. SNCR and multi-stage 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.

Assuming a nominal clinker production of 1.0 million tons per year, an uncontrolled NOx emission rate of 3.2 pounds per ton of clinker and a controlled emission rate of 1.95 pounds of NOx per ton of clinker achievable with multi-stage combustion and SNCR, the SNCR will reduce NOx emissions by nominally 625 tons per year. Using various cost models and cost information developed for Florida plants, it has been estimated that the annual cost of operating a SNCR system at American Cement (including capital recovery) will be approximately $1,300,000 per year. This total is comprised of about $1,000,000 per year for aqua ammonia (at $1000 per ton for 19 percent solution), $250,000 for operating costs exclusive of reagent and $50,000 for O/M. With the 625 ton per year reduction of NOx achieved by SNCR, the cost of removal will be approximately $2100 per ton.

The alternative to SNCR is the application of SCR along with the other design and operating parameters that American Cement will employ. Various cost models for SCR systems result in an estimated cost of removing the 625 tons of NOx per year in the range of $10,000 per ton.

Because of the cost differential between SNCR and SCR, the fact that operating experience with SCR systems on Portland cement plants is much more limited than with SNCR systems, the fact that a SCR system will in all likelihood require a pilot study before final design can be implemented and the fact that the NOx emission limit proposed by American Cement (1.95 pounds of NOx per ton of clinker) is the lowest BACT established NOx emission rate for any Portland cement plant in the U.S., SNCR along with the previously described designed and operating characteristics is proposed as BACT. The proposed NOx BACT emissions limit is 1.95 pounds 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 at 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 3.2 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 CO from 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 multi-stage combustion (MSC) is used to control nitrogen oxides. If MSC 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 with the introduction of secondary or tertiary combustion air prior to the bottom cyclone of the preheater (the Stage 1 cyclone). The mechanism of this oxidization is a function of plant design which is discussed in the following paragraphs. The degree of reduction in the carbon monoxide entering the Stage 1 cyclone becomes a function of the residence time and turbulence in the calciner following the introduction of secondary or tertiary air.

In the F.L. Smidth supplied plants, the typical calciner design is that of an inline calciner (ILC). The current configuration of the F.L. Smidth (FLS) calciner is dictated by the requirements for using 100 percent petroleum coke as a fuel.[2] A calciner cannot operate at a temperature in excess of 850-900°C in the presence of significant uncalcined raw meal because of the equilibrium temperature for calcination. At this temperature even finely ground petroleum coke (petcoke) burns quite slowly, resulting in a burnout time that would require an excessively large calciner. As a solution to this impediment, FLS created a "hot spot" in the lower stage of the ILCby the tangential introduction of some of the raw meal from the second stage cyclone. This creates an environment relatively free of raw meal in which the petcoke can burn at a temperature of approximately 1050°C. In addition to allowing the petcoke fired in the calciner to burn more rapidly, the high temperature in the "hot spot" has an effect on the carbon monoxide in the system.

FLS also increases the residence time in the calciner up to seven seconds by means of a long U-shaped duct between the calciner vessel and the Stage 1 cyclone. This duct and a sharp bend at the top of the loop are designed to promote the mixing of the calciner gases to aid the complete burnout of petcoke.[2] Coincidentally, this long residence time and turbulence also results in the burnout of a considerable amount of CO.

FLS reports[2] that the original design of the ILC for coal combustion provided a residence time of approximately three seconds. While this was adequate for the combustion of coal, petcoke could not be efficiently burned because of the lower volatility and hence, the slower burning characteristics. In summary, the ILC design presently used by FLS causes the CO levels at Stage 1 cyclone to be quite low even though the design of the ILC was dictated by the requirement to burn petcoke.

The Titan America plant in Dade County (designed and supplied by FLS) reportedly operates with a CO emission rate as low as 1.0 pound per ton of clinker.[3] It should be noted that for the period of record for which data were made available, the Titan plant operated at approximately 82 percent capacity, was fired with coal and used bauxite as an alumina source; not flyash. It is not known what the CO emission rate would be from the plant when operating at capacity, firing petcoke for which it was designed and using flyash as an alumina source.

Another approach for providing residence time for fuel and CO burnout is the Pyrotop® design of KHD Humboldt Wedag. The Pyrotop® is a proprietary design that incorporates a cyclonic mixing chamber in the duct between the top of the calciner and the Stage 1 cyclone. KHD claims the Pyrotop® provides a residence time of approximately three seconds.[4]

The design commonly used by the Krupp Polysius Corporation (Polysius) provides a separate calciner for hard-to-burn fuels such as petcoke. This design is referred to as the *Multi-Stage Combustion-Combustion Chamber* design or MSC-CC. Polysius can provide this plant with a kiln inlet burner where up to ten percent of the total pyroprocessing heat can be fired. The American Cement Company (ACC) does not intend to use a kiln inlet burner if the Polysius design is selected.

With the MSC-CC design, the calciner fuel or fuels are burned in a separate combustion chamber. From the combustion chamber, the gases enter the riser duct where they mix with the gases exiting the kiln. As a further option, tires can be used as a supplemental fuel; fired at the base of the riser duct onto the feed shelf of the kiln.

Depending upon the amount of Tire Derived Fuel (TDF) used and the amount of combustion air provided to the combustion chamber, the conditions in the riser duct can vary from reducing conditions to slight oxidizing conditions. The condition maintained depends upon the degree of MSC used for nitrogen oxide control.

With MSC-CC design, raw meal from the second stage cyclone is introduced tangentially into the combustion chamber and enters the riser duct with the combustion gases. This reduces the

temperature in the riser duct to 850-900°C (the equilibrium temperature for calcination). In effect, the "hot spot" of the Polysius design occurs in the combustion chamber, away from the combustion CO from the kiln that is in the riser duct. To provide for the burnout of any residual fuel and CO, Polysius adds tertiary combustion air at the top of the riser duct.
Following the introduction of tertiary air, Polysius has incorporated a U-shaped duct between the top of the calciner and the Stage 1 cyclone that has a self-cleaning inner edge to promote turbulence to facilitate the burnout of CO. The residence time in the Polysius calciner loop is approximately five seconds. Consequently, the carbon monoxide exiting the preheater is minimized to an equivalent emission rate of approximately 2.0 pounds per ton of clinker, absent any raw material influence or effects of the SNCR system.

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.[5]

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 the preheater would be in the range of 2.0-3.0 pounds per ton of clinker from the combustion related CO.

6.5.3 CO from 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.

ACC 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 (which will comprise approximately 4-6 percent of the raw meal). ACC's reason for not introducing the flyash into the calciner is one of quality control, as ash is a byproduct and the characteristics are variable. ACC is of the opinion that the introduction of a material with variable characteristics into the pyroprocessing system can potentially lead to clinker quality issues. ACC 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 it into the pyroprocessing system.

Another factor that influences potential CO emissions from feed materials is the volatility of the carbon in the feed. It was reported[6] 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 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.

6.5.4 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[7], 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.

Considering that combustion related CO without SNCR is approximately 2.0 pounds per ton of clinker, considering that SNCR at a molar ratio of 0.8 could increase CO emissions 0.3-1.0 pounds per ton of clinker, and considering 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 0-10 percent), a CO emission rate, without add on controls, a range of 2.7-3.6 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 ACC plant of 3.2 pounds per ton of clinker, 30-day rolling average can be expected.

6.5.5 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.[7]

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.[7]

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.[8] Using cost figures developed by TCEQ and scaling to the ACC 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[8] 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.

6.5.6 Previous BACT Determinations

A summary of previous CO BACT determinations from the last ten years is listed is Table 6-13. As shown, the only means of controlling CO emissions has been good combustion practices and kiln design. Two RTOs have been installed on cement kilns in the past, but neither were required by BACT.

6.5.7 BACT Selection

The operation of an RTO at ACC 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 3.2 pounds per ton of clinker, 30-day rolling average. This is proposed as BACT for the American Cement Company 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 and tire derived fuel. No waste fuels (other than tires) are considered. This discussion is so limited as the raw materials mined onsite in Florida are essentially free of organic materials that could contribute significantly to hydrocarbon emissions and the raw materials procured off-site can be managed to minimize the content of organic materials that could 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 remainder 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 Stage 1 cyclone.

The selection of raw materials can be managed such that VOC emissions from the proposed American Cement Company plant will be limited to 0.12 pounds of VOC per ton of clinker; the proposed BACT emission limit for the plant. For a nominal 1,000,000 tons of clinker, this emission rate is equivalent to approximately 15 pounds of VOC per hour or 60 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 American Cement Plant, a control cost of approximately $140,000 per ton of VOC removed has been estimated.[8] 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 6-14. The BACT limit proposed by American Cement 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 American Cement Company plant 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 122 pounds per year or to 0.000128 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 122 pounds per year, American Cement 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 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 by American Cement 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.

American Cement 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.

SECTION 6 REFERENCES

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3 Pajonke, W. and Mersmann, M. *Modifications of Kiln Plants to Meet Russian Demands.* KHD Humboldt Wedag AG, Germany. Date unknown.

4 Erpelding, R. M. *Latest Developments in NOx Reduction Technology in the Cement Industry.* Cement Plant Environmental Handbook, 2003.

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6 FDEP. *Technical Evaluation and Preliminary Determination* – CRS Rinker Materials Corporation. Miami-Dade County, Florida, December 14, 2004.

7 Texas Commission on Environmental Quality. *Construction Permit Amendment – Review Analysis and Technical Review, Permit No. 1360A/PSD-TX-632M1.* September 9, 2005.

8 Tokheim, L.A. *The Impact of Staged Combustion on the Operation of a Precalciner Cement Plant.* Thesis for degree of Dr. Ing, Telemark College, Porsgrann, Norway. 1999.

Table 6-1. 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 6-2. 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 6-3. 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 PRODUCT!	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 6-4. 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 6-6. 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 6-9. 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 6-7. 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				
Packéd 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

Table 6-5. 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 M1	6/29/2001	QUARRYING, Q-1		NONE	14.61	LB/H; 13.49 TPY
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	6/29/2001	TRANSPORT TO RAW MATERIAL/STORAGE BINS, RMS			5.58	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	ADDITIVES ELEVATOR, D-28		BAGHOUSE	0.94	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	BLENDING SILO, F-11		BAGHOUSE	1.03	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	RETURN ELEVATOR, F-12		BAGHOUSE	0.26	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	AEROPOL FEED, H-06		BAGHOUSE	0.17	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	ELEVATOR, H-07		BAGHOUSE	0.21	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	CLINKER ELEVATOR, L-12		BAGHOUSE	0.45	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	HOT CLINKER, L-13		BAGHOUSE	0.43	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	DOME 1, L-14		BAGHOUSE	0.45	LB/H
TX-0355	*PORTLAND CEMENT MANUFACTURING PLANT*	*TX*	*PSD-TX-145 M1*	*6/29/2001*	*DOME 1 BOTTOM, L-15*		*BAGHOUSE*	*0.32*	*LB/H*
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	TRUCK LOADOUT SILO, L-16		BAGHOUSE	1.03	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	CLINKER DOME 2 BOTTOM, L-18		BAGHOUSE	0.21	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	CLINKER DOME 2, L-19		BAGHOUSE	0.12	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	ADDITIVE BELT, M-02		BAGHOUSE	0.25	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	ADDITIVE BELT, M-04		BAGHOUSE	0.15	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	REVERSIBLE BELT/GYP BIN, M-06		BAGHOUSE	0.25	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	CLINKER/LIMESTONE BINS, M-09		BAGHOUSE	0.3	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	SPECIAL CLINKER BIN, M-10		BAGHOUSE	0.21	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	CLINKER FEEDER BELT, M-28		BAGHOUSE	0.33	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	6/29/2001	FM NO. 1 ELEVATOR, N-09		BAGHOUSE	0.15	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 1 SEPARATOR , N-13		BAGHOUSE	2.52	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FLY ASH BINS, N-20		BAGHOUSE	0.17	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 1 AIRSLIDES, N-22		BAGHOUSE	0.72	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 2 ELEVATOR, N-59		BAGHOUSE	0.15	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 2 SEPARATOR, N-63		BAGHOUSE	2.52	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	FM NO. 2 AIRSLIDES, N-69		BAGHOUSE	0.72	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	6/29/2001	FM NO. 2 BELT, N-95		BAGHOUSE	0.25	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	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 M1	6/29/2001	ROTARY BAGGING ELEVATOR, R-70		BAGHOUSE	1.26	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	MANNED BAGGER ELEVATOR, R-90		BAGHOUSE	1.26	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	MATERIAL HANDLING, F-1		NONE	5.02	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	COAL/COKE STOCKPILES, S-01		NONE	0.6	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	6/29/2001	COAL AND COKE UNLOADING, S-44		BAGHOUSE	0.64	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	COAL MILL, S-30		BAGHOUSE	2.14	LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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
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 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 OMPACTION 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 TANK 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-H-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 (PM[illegible])								
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
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 M1	6/29/2001	QUARRYING, O-1	0 000 T/YR	NONE	8.64 LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 M1	6/29/2001	MATERIAL HANDLING, F-1		NONE	2.37 LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	6/29/2001	COAL/COKE STOCKPILES, S-01		NONE	0.28 LB/H
TX-0355	PORTLAND CEMENT MANUFACTURING PLANT	TX	PSD-TX-145 M1	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 I
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 LIMESTONI	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
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	0.03 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-O-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	DAOE-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/I	
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/I	
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/I	
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	
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/I	
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	

Source: EPA's RACT/BACT/LAER Clearinghouse, 2005.

(1) Source: Department of Natural Resoucres, Missouri Air Conservation Commission, June 8, 2004.

Table 6-8. 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

Table 6-10. Summary of Available NO_x Control Technologies and the Associated Control Effi and Technical Feasibility

Control Technique	Control Efficiency (%)	Proven and Technically Feasible? (Y/N)	Ranking Based on Efficiency
Pre-Combustion			
Plant Design	< 50	Y	7
Fuel Switching	Minimal	Y	9
Overfire Air (OFA)	20 - 30	Y	8
Flue Gas Recirculation (FGR)	50 - 80	N	3
Low NO_x Burners (LNB)/Staged Combustion	35 - 55	Y	5
Reburn	50 - 60	N	4
Post-Combustion			
Selective Non-Catalytic Reduction (SNCR)	30 - 50	Y	6
SCR	70 - 90	N	2
LNB with SCR	50 - 80	N	3
LNB with OFA and SCR	85 - 95	N	1

Table 6-11. 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 6-12. 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-AC	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-AC	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 6-13. 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				660,000 TON CLINKER/YR; MAX: 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 6-14. 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 M1	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 allowable emission rates of particulate matter (PM), particulate matter (PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC) and mercury from the American Cement Company cement plant 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 from the application and report provide the Department with reasonable assurance that the construction and operation, of the facility will not discharge, emit, or cause pollution in contravention of Department standards or rules.

ATTACHMENT 1

SGS

TO: STEVE CULLEY:

TYPICAL MILLSCALE ANALYSIS.

CORRESPONDENCE TO:
NG & ENGINEERING CO.
216 OXMOOR CIRCLE
BIRMINGHAM, AL 35209
TEL: (205) 942-8120
FAX: (205) 942-0914

February 16, 2004

Levand House
1849 Crestwood Blvd
Irondale Al 35210

377-7158

FRU-CON

www.frucon.com

Kind of sample reported to us	Millscale - Axis, A
Sample taken at	------
Sample taken by	Levand House
Date sampled	------
Date received	November 21, 2003

Analysis report no. 73-41724

% Moisture = 0.06

Analyte	Result
Iron, Ferrous	56.66 %
Iron, Ferric	14.23 %
Oil & Grease	0.02 %
Iron, Total	71.61 %
Iron, Metallic	0.72 %
Carbon	0.201 %
Sulfur	0.01
Aluminum Oxide, Al_2O_3	0.26
Silicon Dioxide, SiO_2	0.74
Calcium	0.18
Tin	40 ug/g
Magnesium	0.08
Manganese	0.77
Potassium	0.01
Sodium	0.04

MEMBER ACIL

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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Client:	**Natural Resources of Central Florida, Inc.**	CTL Project No.:	**404394**
Project:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
Contact:	**Cary Cohrs**	Approved:	
Submitter:	**Cary Cohrs**	Date Analyzed:	**Various**
Date Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID:	Hole #1 29'-36.5'	Hole #1 36.5'-46.5'	Hole #1 46.5'-56.5'	Hole #1 56.5'-66.5'	Hole #1 66.5'-76.5'	Hole #1 76.5'-86.5'	Hole #1 86.5'-96.5'	Hole #1 96.5'-106.5'
Material type:	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone
CTL Sample ID:	1377901	1377902	1377903	1377904	1377905	1377906	1377907	1377908
Analyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
SiO_2	0.10	0.06	0.03	0.02	0.09	<0.01	0.23	<0.01
Al_2O_3	0.03	0.12	0.08	0.02	0.07	<0.01	0.08	0.05
Fe_2O_3	0.06	0.07	0.06	0.06	0.07	0.02	0.07	0.06
CaO	55.94	56.00	55.50	54.70	55.03	54.85	55.19	55.68
MgO	0.48	0.51	0.51	0.51	0.49	0.31	0.51	0.50
SO_3	0.03	0.02	0.02	0.08	0.03	<0.01	0.03	0.04
Na_2O	0.03	0.05	0.02	0.03	0.03	0.03	0.04	0.05
K_2O	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.01	0.01
TiO_2	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
P_2O_5	0.05	0.05	0.05	0.03	0.02	0.04	0.03	0.01
Mn_2O_3	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
SrO	0.01	0.02	0.02	0.02	0.02	<0.01	0.01	0.01
Cr_2O_3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ZnO	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
L.O.I. (950°C)[2]	43.48	43.46	43.66	43.90	43.97	44.03	43.68	43.86
Total	100.21	100.39	99.98	99.40	99.83	99.31	99.89	100.30
Alkalies as Na_2O	0.03	0.06	0.02	0.03	0.03	0.03	0.04	0.06
Calculated Compounds								
Ca as $CaCO_3$	99.82	99.93	99.04	97.62	98.20	97.89	98.49	99.36
Mg as $MgCO_3$	1.00	1.07	1.08	1.07	1.02	0.65	1.07	1.05
$CaCO_3$+$MgCO_3$ as CO_2	44.41	44.49	44.10	43.48	43.70	43.38	43.86	44.23
L.O.I. / CO_2 Balance	0.98	0.98	0.99	1.01	1.01	1.02	1.00	0.99

Notes:
1. This analysis represents specifically the sample submitted.
2. Sample results reported on an dry 105°C weight basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000°C with $Li_2B_4O_7/LiBO_2$.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.
5. This report may not be reproduced except in its entirety.

Client:	**Natural Resources of Central Florida, Inc.**	CTL Project No.:	**404394**
Project:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
Contact:	**Cary Cohrs**	Approved:	
Submitter:	**Cary Cohrs**	Date Analyzed:	**Various**
Date Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID:	Hole #2 Composite	Hole #3 16'-31	Hole #3 31'-41'	Hole #3 41'-51'	Hole #3 51'-61	Hole #3 61'-71'	Hole #3 71'-81'
Material type:	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone
CTL Sample ID:	1377986	1377922	1377923	1377924	1377925	1377926	1377927
Analyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
SiO_2	0.16	0.05	<0.01	0.10	0.20	0.10	<0.01
Al_2O_3	0.02	0.07	0.02	0.10	0.12	0.03	0.08
Fe_2O_3	0.06	0.06	0.06	0.06	0.08	0.06	0.07
CaO	55.59	55.41	54.35	55.02	54.24	55.29	55.49
MgO	0.55	0.44	0.52	0.54	0.59	0.66	0.53
SO_3	0.07	0.01	0.02	0.03	0.10	0.18	0.07
Na_2O	0.02	0.02	0.03	0.04	0.05	0.02	0.03
K_2O	0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01
TiO_2	0.02	0.02	0.02	0.02	0.02	0.02	0.02
P_2O_5	0.04	0.05	0.05	0.03	0.04	0.04	0.02
Mn_2O_3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SrO	0.02	0.02	0.01	0.01	0.02	0.02	0.02
Cr_2O_3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ZnO	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
L.O.I. (950°C)[2]	43.68	43.68	43.80	43.77	43.73	43.83	43.86
Total	100.25	99.83	98.88	99.72	99.18	100.27	100.19
Alkalies as Na_2O	0.03	0.02	0.03	0.04	0.05	0.03	0.03
Calculated Compounds							
Ca as $CaCO_3$	99.21	98.87	96.98	98.18	96.78	98.66	99.03
Mg as $MgCO_3$	1.15	0.92	1.08	1.14	1.24	1.38	1.11
$CaCO_3$+$MgCO_3$ as CO_2	44.21	43.95	43.20	43.76	43.20	44.10	44.12
L.O.I. / CO_2 Balance	0.99	0.99	1.01	1.00	1.01	0.99	0.99

Notes:
1. This analysis represents specifically the sample submitted.
2. Sample results reported on an dry 105°C weight basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000°C with $Li_2B_4O_7/LiBO_2$.
4. *Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.*
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Client:	**Natural Resources of Central Florida, Inc.**	CTL Project No.:	**404394**
Project:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
Contact:	**Cary Cohrs**	Approved:	
Submitter:	**Cary Cohrs**	Date Analyzed:	**Various**
Date Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID:	Hole #4 Composite	Hole #5 24'-31'	Hole #5 31'-41'	Hole #5 41'-51'	Hole #5 51'-61'	Hole #5 61'-71'	Hole #5 71'-81'	Hole #5 81'-91'
Material type:	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone
CTL Sample ID:	1377987	1377941	1377942	1377943	1377944	1377945	1377946	1377947
Analyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
SiO_2	0.09	0.08	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
Al_2O_3	0.12	0.07	0.03	0.03	<0.01	0.01	0.01	0.03
Fe_2O_3	0.03	0.07	0.06	0.06	0.06	0.06	0.05	0.06
CaO	55.48	55.43	55.02	55.50	55.40	55.49	55.20	55.14
MgO	0.52	0.48	0.45	0.44	0.51	0.52	0.52	0.54
SO_3	0.04	0.02	0.02	0.03	0.04	0.05	0.04	0.04
Na_2O	0.02	0.01	0.01	<0.01	0.01	<0.01	0.01	0.02
K_2O	0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
TiO_2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
P_2O_5	0.05	0.03	0.08	0.03	0.03	0.02	0.02	0.01
Mn_2O_3	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SrO	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cr_2O_3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ZnO	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
L.O.I. (950°C)[2]	43.63	43.97	44.08	44.06	44.04	44.09	44.18	44.07
Total	100.02	100.22	99.82	100.18	100.13	100.27	100.06	99.94
Alkalies as Na_2O	0.03	0.02	0.01	<0.01	0.02	<0.01	0.01	0.02
Calculated Compounds								
Ca as $CaCO_3$	99.00	98.92	98.17	99.04	98.86	99.01	98.50	98.40
Mg as $MgCO_3$	1.09	1.01	0.94	0.93	1.06	1.08	1.10	1.13
$CaCO_3$+$MgCO_3$ as CO_2	44.09	44.02	43.65	44.03	44.02	44.10	43.88	43.85
L.O.I. / CO_2 Balance	0.99	1.00	1.01	1.00	1.00	1.00	1.01	1.00
Chloride (wt % Cl)	0.003							

Notes:
1. This analysis represents specifically the sample submitted.
2. Sample results reported on an dry 105°C weight basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000°C with $Li_2B_4O_7$/$LiBO_2$.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.
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ent:	**Natural Resources of Central Florida, Inc.**	CTL Project No.:	**404394**
oject:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
ntact:	**Cary Cohrs**	Approved:	
bmitter:	**Cary Cohrs**	Date Analyzed:	**Various**
te Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

ient's Sample ID:	Hole #6 Composite	Hole #7 30'-36'	Hole #7 36'-46'	Hole #7 46'-56'	Hole #7 56'-66'	Hole #7 66'-76'	Hole #7 76'-86'	Hole #7 86'-96'	Hole #7 96'-106'	Hole #8 Composite
aterial type:	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone	Limestone
TL Sample ID:	1377988	1377963	1377964	1377965	1377966	1377967	1377968	1377969	1377970	1377989
alyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
O_2	0.09	0.21	0.03	0.19	0.03	0.01	0.03	0.01	<0.01	<0.01
$_2O_3$	0.03	0.08	0.04	0.11	<0.01	0.04	0.02	0.10	<0.01	<0.01
$_2O_3$	0.03	0.07	0.05	0.07	0.06	0.07	0.08	0.06	0.06	0.07
aO	55.95	54.42	54.79	54.21	55.11	54.70	54.28	53.73	55.01	55.07
gO	0.61	0.67	0.67	0.72	0.72	0.75	0.68	0.56	0.68	0.46
O_3	0.04	0.05	0.05	0.07	0.06	0.06	0.06	0.05	0.05	0.03
a_2O	0.03	0.02	0.02	0.03	<0.01	0.01	0.02	0.02	0.01	0.01
O	<0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
O_2	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
O_5	0.05	0.11	0.06	0.05	0.04	0.05	0.03	0.03	0.03	0.09
n_2O_3	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
O	<0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01
$_2O_3$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
nO	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
O.I. (950°C)[2]	43.55	43.90	44.03	43.92	44.06	44.02	44.03	44.05	44.10	43.57
tal	100.41	99.58	99.78	99.39	100.12	99.75	99.27	98.64	99.96	99.33
kalies as Na_2O	0.03	0.03	0.02	0.03	0.01	0.01	0.02	0.02	0.01	0.01
alculated Compounds										
a as $CaCO_3$	99.84	97.11	97.77	96.73	98.34	97.60	96.86	95.88	98.16	98.28
g as $MgCO_3$	1.28	1.41	1.40	1.50	1.50	1.57	1.42	1.18	1.42	0.97
aCO_3+MgCO_3 as CO_2	44.56	43.43	43.71	43.31	44.02	43.73	43.33	42.77	43.90	43.71
O.I. / CO_2 Balance	0.98	1.01	1.01	1.01	1.00	1.01	1.02	1.03	1.00	1.00

otes:
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2. Sample results reported on an dry 105°C weight basis.
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oject:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
ntact:	**Cary Cohrs**	Approved:	
bmitter:	**Cary Cohrs**	Date Analyzed:	**Various**
te Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

ient's Sample ID:	Hole #2 0'-5'	Hole #2 10'-15'	Hole #3 0'-5'	Hole #3 5'-9'	Hole #3 9'-16'	Hole #4 0'-10'	Hole #4 10'-20'	Hole #5 5'	Hole #5 10'	Hole #5 15'	Hole #5 22'
aterial type:	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
TL Sample ID:	1377909	1377910	1377919	1377920	1377921	1377928	1377929	1377937	1377938	1377939	1377940
nalyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
O_2	98.26	90.72	91.60	43.31	33.56	81.20	64.07	97.98	63.70	23.72	9.13
$_2O_3$	0.49	5.09	4.31	25.29	22.96	6.72	21.95	0.34	18.91	12.27	2.18
$_2O_3$	0.35	0.45	0.60	3.43	2.28	0.75	1.84	0.15	1.61	1.53	0.25
aO	<0.01	<0.01	0.28	8.34	16.89	4.39	0.76	<0.01	1.60	31.77	47.74
gO	0.02	0.11	0.13	0.71	0.73	0.18	0.47	0.01	0.63	0.47	0.43
O_3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.01
a_2O	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.04	0.05
O	<0.01	0.02	0.01	0.11	0.11	0.05	0.12	<0.01	0.11	0.06	0.02
O_2	0.25	0.40	0.32	0.85	0.72	0.46	0.88	0.27	0.64	0.46	0.08
O_5	0.05	0.25	0.07	0.39	0.36	0.13	0.36	0.04	1.00	0.97	0.17
n_2O_3	0.03	0.03	0.03	0.07	0.02	0.03	0.05	0.03	0.03	0.04	<0.01
O	<0.01	<0.01	<0.01	0.02	0.03	<0.01	0.08	<0.01	0.10	0.04	0.01
$_2O_3$	0.01	0.02	0.02	0.05	0.04	0.03	0.04	0.02	0.05	0.03	<0.01
iO	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	<0.01
O.I. (950°C)[2]	0.66	2.99	2.79	16.77	22.85	6.45	9.67	0.73	10.96	28.94	39.22
tal	100.15	100.09	100.19	99.37	100.59	100.42	100.31	99.59	99.38	100.37	99.29
kalies as Na_2O	<0.01	0.01	0.01	0.09	0.09	0.04	0.08	<0.01	0.07	0.09	0.07

otes:
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2. Sample results reported on an dry 105°C weight basis.
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oject:	**Chemical Analysis**	CTL Proj. Mgr.:	**R. Stevenson**
		Analyst:	**Barats, King**
ntact:	**Cary Cohrs**	Approved:	
bmitter:	**Cary Cohrs**	Date Analyzed:	**Various**
te Received:	**June 27, 2006**	Date Reported:	**July 22, 2006**

REPORT OF CHEMICAL ANALYSIS

ient's Sample ID:	Hole #6 0'-5'	Hole #6 5'-10'	Hole #6 10'-15'	Hole #6 15'-20'	Hole #6 20'-25'	Hole #7 0'-10'	Hole #7 10'-20'	Hole #8 0'-5'	Hole #8 5'-10'	Hole #8 10'-20'
aterial type:	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
TL Sample ID:	1377948	1377949	1777950	1377951	1377952	1377961	1377962	1377971	1377972	1377973
nalyte	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
O_2	98.48	82.36	66.24	23.23	4.99	98.75	93.94	99.27	90.35	69.83
$_2O_3$	0.45	10.53	20.13	3.72	1.17	0.71	2.78	0.68	5.54	12.79
$_2O_3$	0.16	0.73	1.47	0.37	0.16	0.19	1.21	0.11	0.83	1.29
aO	<0.01	0.27	1.28	38.73	50.75	<0.01	<0.01	<0.01	<0.01	6.05
gO	0.03	0.21	0.50	0.48	0.56	0.03	0.06	0.04	0.10	0.41
O_3	<0.01	<0.01	<0.01	0.03	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
$_2O$	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
O	<0.01	0.06	0.17	0.03	0.01	<0.01	0.01	<0.01	0.02	0.10
O_2	0.25	0.49	0.72	0.13	0.05	0.25	0.13	0.28	0.38	0.50
O_5	0.04	0.56	0.64	0.24	0.11	0.04	0.12	0.04	0.10	0.40
$_2O_3$	0.03	0.03	0.03	0.01	<0.01	0.03	0.03	0.03	0.03	0.03
O	<0.01	0.13	0.07	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.02
$_2O_3$	0.01	0.03	0.05	<0.01	<0.01	0.02	0.02	0.01	0.02	0.05
iO	0.03	0.02	0.03	<0.01	<0.01	0.03	0.02	0.03	0.02	0.02
O.I. (950°C)[2]	0.49	4.42	8.13	33.12	41.68	0.51	1.85	0.43	2.31	9.08
otal	99.97	99.85	99.48	100.11	99.54	100.56	100.17	100.91	99.70	100.57
kalies as Na_2O	<0.01	0.04	0.14	0.02	0.01	<0.01	0.01	<0.01	0.01	0.07

otes:
1. This analysis represents specifically the sample submitted.
2. *Sample results reported on an dry 105°C weight basis.*
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Contact:	**Cary Cohrs**	Approved:	
Submitter:	**Cary Cohrs**	Date Analyzed:	**Various**
Date Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID:	OU-BA	OU-UI	OU-UII
Material type:	Ash	Ash	Ash
CTL Sample ID:	1377982	1377983	1377984
Analyte	**Weight %**	**Weight %**	**Weight %**
SiO_2	52.70	52.22	50.27
Al_2O_3	26.58	27.19	26.03
Fe_2O_3	10.26	8.03	9.14
CaO	1.44	1.44	1.39
MgO	1.24	1.22	1.17
SO_3	<0.01	0.04	<0.01
Na_2O	0.57	0.47	0.51
K_2O	2.36	2.59	2.40
TiO_2	1.36	1.43	1.37
P_2O_5	0.18	0.27	0.23
Mn_2O_3	0.07	0.07	0.07
SrO	0.17	0.22	0.21
Cr_2O_3	0.04	0.05	0.04
ZnO	0.03	0.04	0.04
L.O.I. (950° C)[2]	2.49	4.38	6.48
Total	99.51	99.64	99.35
Alkalies as Na_2O	2.13	2.17	2.08
Thermogravimetric Analysis - (As Received Basis)			
Free moisture (Ambient-105° C	0.36	0.26	0.37
L.O.I. (105° C - 750° C)	2.41	4.39	6.49
L.O.I. (750° C - 950° C)	0.07	-0.02	-0.04
Calculations per ASTM C 618-01			
SiO2+Al2O3+Fe2O3	89.5	87.4	85.4
L.O.I. 750° C (dry 105° C basis	2.42	4.40	6.51

Notes:
1. This analysis represents specifically the sample submitted.
2. Results reported on an oven dry (105°C) basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000°C with $Li_2B_4O_7/LiBO_2$.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature ignition and fusion.
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		Analyst:	**Barats, King**
Contact:	**Cary Cohrs**	Approved:	
Submitter:	**Cary Cohrs**	Date Analyzed:	**Various**
Date Received:	**June 27, 2005**	Date Reported:	**July 22, 2005**

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID:	OU-FCSG
Material type:	Gypsum
CTL Sample ID:	1377985

Analyte	Weight %
SiO_2	1.73
Al_2O_3	0.15
Fe_2O_3	0.14
CaO	37.97
MgO	0.97
SO_3	48.07
Na_2O	0.55
K_2O	0.11
TiO_2	0.02
P_2O_5	0.08
Mn_2O_3	0.02
SrO	0.03
Cr_2O_3	<0.01
ZnO	0.01
Chloride (Cl)	2.54
L.O.I. (950°C)[3]	8.79
Total	101.19

Calculated per ASTM C 471M-96, Section 16.	
Gypsum % purity	24.99
SO_3 combined as Gypsum	11.62
excess SO_3	36.45
% Anhydrite, $CaSO_4$	61.96
%CaO combined as Gypsum	8.14
%CaO combined as Anhydrite	25.52
excess CaO	4.31
$\%CaCO_3$	7.70
% $MgCO_3$	2.03
L.O.I. (ambient - 45 °C)	60.58
L.O.I. (45 - 220 °C)	2.02
L.O.I. (220 - 550 °C)	0.38
L.O.I. (550 - 950 °C)	1.07

Notes:
1. This analysis represents specifically the sample submitted.
2. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000°C with $Li_2B_4O_7/LiBO_2$.
3. Results reported on an oven dry 45°C basis.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature ignition and fusion.
5. Calculated compounds per ASTM C 471M-96, Section 16.
6. This report may not be reproduced except in its entirety.

Lab No. 50616904

Date Rec'd. 6/17/2005

Date Sampled

Sampled By YOURSELVES

#1

STANDARD LABORATORIES, INC.
Box 606
Whitesburg, KY 41858
Tel: (606) 633-8373
Fax: (606) 633-8136

NEW RIVER ENERGY, LLC
ATTN: NEAL STIDHAM
7009 SOUTH FORK RD
POUND, VA 24279

K6 STOKER Jacoma

	%Moisture	%Ash	%Volatile	Fixed Carbon	BTU/LB	%Sulfur
As Rec'd.	2.72	8.05	XXXX	XXXX	13554	0.86
Dry Basis	------	8.28	XXXX	XXXX	13932	0.88
M-A-Free					15190	

LBS SO2 / MMBTU: 1.26 LBS ASH / MMBTU: 5.94

HARDGROVE GRINDABILITY INDEX: 41.0

NOTE: XXXX INDICATES ANALYSIS WAS NOT PERFORMED

Respectfully Submitted, Billy Mullins

Rick Champion / Billy Mullins, Mgrs.

MINERAL LABS, INC.
Box 549
Salyersville, Kentucky 41465
Phone (606) 349-6145

Company

CERTIFICATE OF ANALYSIS

APPALACHIAN FUELS
ATTN: JEFF LOWE
1500 NORTH BIG RUN ROAD
P.O. BOX 5130
ASHLAND, KY 41105

Lab No. 015086696 4459
Date Rec'd. 8/19/2005
Date Analyzed 8/19/2005 Y

SAMPLE IDENTIFICATION AS SUPPLIED BY SAMPLER

Sampled By CUSTOMER Sample Type AUTOMATIC

(D3302-99)	% Moisture	% Ash D3174-97	% Volatile D3175-97	% Fixed Carbon (Calculated)	BTU® D5865-99a	% Sulfur D4239-97 (Method C)
As Rec'd.	5.04	10.00	XXX	XXX	12,857	0.79
Dry Basis		10.53	XXX	XXX	13,539	0.83
M.A.F.B.T.U. (Calculated)					15,132	

Free Swelling Index No. D720-91 XXX

Grindability Index No. D409-97a XXX

-FUSION TEMPERATURE OF ASH- D1857-87 (1994)

	Reducing		Oxidizing	
Initial	XXX	°F	XXX	°F
Softening	XXX	°F	XXX	°F
Hemispherical	XXX	°F	XXX	°F
Fluid	XXX	°F	XXX	°F

SCREEN ANALYSIS D 4749-87

X X X X X X X X

X X X X X X X X

X X X X X X X X

WEIGHT DETERMINATION

Average Light Draft	X X X
Average Loaded Draft	X X X
Weight of Coal Loaded	X X X Tons

88344 3

Submitted By

NATURAL RESOURCES OF CENTRAL FLORIDA, INC.

FACSIMILE TRANSMITTAL SHEET

TO: John Koogler	FROM: C. Cohrs
COMPANY: [redacted]	DATE: 9/21/2005
FAX NUMBER: 352-377-7158	TOTAL NO. OF PAGES INCLUDING COVER: 3
PHONE NUMBER:	SENDER'S REFERENCE NUMBER:
RE: Coal Analysis	YOUR REFERENCE NUMBER:

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

John:

Attached are some additional coal analysis reports for your use. This now provides three separate coal prospects (I gave one analysis to Steve).

You have the raw materials analysis, an ash analysis and can use a standard mill scale analysis. If you don't have one let me know so I can find one.

Cary

STANDARD LABORATORIES, INC.
Box 606
Whitesburg, KY 41858
Tel: (606) 633-9373
Fax: (606) 633-8136

Lab No. 50827989

Date Rec'd. 8/27/2005

Date Sampled 8/27/2005

Sampled By YOURSELVES

NEW RIVER ENERGY, LLC
P.O. BOX 826
POUND, VA 24279

5A #1

	%Moisture	%Ash	%Volatile	Fixed Carbon	BTU/LB	%Sulfur
As Rec'd.	5.11	9.51	XXXX	XXXX	12763	1.34
Dry Basis	——	10.02	XXXX	XXXX	13451	1.41
M-A-Free					14949	
Method:	D3302	D3174	D3175	D3172	D5865	D4239C

LBS SO2 / MMBTU: 2.10 LBS ASH / MMBU: 7.45

NOTE: XXXX INDICATES ANALYSIS WAS NOT PERFORMED

THIS DOCUMENT HAS BEEN PRINTED ON CONTROLLED PAPER STOCK. NOT VALID IF ALTERED.

Respectfully Submitted, Billy Mullins

Rick Champion / Billy Mullins, Mgrs.

ATTACHMENT 3

															PM Total Emissions				PM10 Total Emissions			
Control	Description	ID	Type	X	Y	Base El	Rate (TPI	Flow (acfm)	Temp (F)	Temp C	Temp R	Temp K	H2O	Flow (dscfm)	Factor	Units	lb/hour	TPY	Factor	Units	lb/hour	TPY
Baghouse	Kiln/cooler/raw mill	E21	0	399810	3181923	0	125	472558	308	153	768	426	2	318,523	0.18	lb/ton clink	22.50	98.6	0.153	lb/ton clink	19.13	83.8
Baghouse	Raw meal transfer F01	F03	0	399773	3181923	0		1,000	200	93	660	366	2	784	0.01	gr/dscf	0.07	0.3	0.007	gr/dscf	0.05	0.2
Baghouse	Raw meal transfer F02/F04	F10	0	399795	3181904	0		1,000	200	93	660	366	2	784	0.01	gr/dscf	0.07	0.3	0.007	gr/dscf	0.05	0.2
Baghouse	*Raw meal to homogenizing silo*	G07	0	399784	3181893	0		22,000	180	82	640	355	2	17796	0.01	*gr/dscf*	1.53	6.7	0.007	*gr/dscf*	1.07	4.7
Baghouse	Homogenizing Silo Bin Vent	G10	0	399787	3181898	0		5,000	180	82	640	355	2	4045	0.01	gr/dscf	0.35	1.5	0.007	gr/dscf	0.24	1.1
Baghouse	Dust bin	E38	0	399799	3181907	0		6,000	350	177	810	450	2	3834	0.01	gr/dscf	0.33	1.4	0.007	gr/dscf	0.23	1.0
Baghouse	Raw meal from homogenizing silo	H08	0	399804	3181905	0		1,000	180	82	640	355	2	809	0.01	gr/dscf	0.07	0.3	0.007	gr/dscf	0.05	0.2
Baghouse	Clinker transfer cooler discharge	L03	0	399901	3181907	0		3,000	268	131	728	404	2	2133	0.01	gr/dscf	0.18	0.8	0.007	gr/dscf	0.13	0.6
Baghouse	Clinker to clinker silo	L06	0	399971	3181911	0		4,000	268	131	728	404	2	2844	0.01	gr/dscf	0.24	1.1	0.007	gr/dscf	0.17	0.7
Baghouse	Clinker to clinker silo	L08	0	400010	3181911	0		4,000	268	131	728	404	2	2844	0.01	gr/dscf	0.24	1.1	0.007	gr/dscf	0.17	0.7
Baghouse	Clinker from clinker silos	M08	0	400018	3181900	0		4,000	250	121	710	394	2	2917	0.01	gr/dscf	0.25	1.1	0.007	gr/dscf	0.17	0.8
Baghouse	Finish mill air separator	N93	0	400031	3181908	0		153871	140	60	600	333	2	132,771	0.01	gr/dscf	11.38	49.8	0.007	gr/dscf	7.97	34.9
Baghouse	*Finish mill*	N94	0	400056	3181898	0		28938	215	102	675	375	2	22,194	0.01	*gr/dscf*	1.90	8.3	0.007	*gr/dscf*	1.33	5.8
Baghouse	Cement transfer from finish mill	N91	0	400075	3181914	0		8,000	200	93	660	366	2	6275	0.01	gr/dscf	0.54	2.4	0.007	gr/dscf	0.38	1.6
Baghouse	Cement silos	Q25	0	400104	3181899	0		12,000	180	82	640	355	2	9707	0.01	gr/dscf	0.83	3.6	0.007	gr/dscf	0.58	2.6
Baghouse	Cement silos	Q26	0	400101	3181904	0		12,000	180	82	640	355	2	9707	0.01	gr/dscf	0.83	3.6	0.007	gr/dscf	0.58	2.6
Baghouse	Truck loadout	Q14	0	400105	3181908	0		3,000	180	82	640	355	2	2427	0.01	gr/dscf	0.21	0.9	0.007	gr/dscf	0.15	0.6
Baghouse	*Truck loadout*	Q17	0	400090	3181908	0		3,000	180	82	640	355	2	2427	0.01	*gr/dscf*	0.21	0.9	0.007	*gr/dscf*	0.15	0.6
Baghouse	Packing plant	R12A	0	400123	3181908	0		12,000	180	82	640	355	2	9707	0.01	gr/dscf	0.83	3.6	0.007	gr/dscf	0.58	2.6
Baghouse	Coal/coke mill	S22	0	399824	3181938	0		9,074	165	74	625	347	2	7,674	0.01	gr/dscf	0.66	2.9	0.007	gr/dscf	0.46	2.0
Baghouse	Coal/coke bin	S26	0	399838	3181935	0		2,000	150	66	610	339	2	1697	0.01	gr/dscf	0.15	0.6	0.007	gr/dscf	0.10	0.4
																	Total =	**189.9**			**Total =**	**147.7**
																	Road =	19.2			Road =	3.8
																		209				**151**

PM				**209**
PM10				**151**
SO2	0.23	lb/ton clinker	28.75	**126**
NOx	1.95	lb/ton clinker	243.75	**1068**
CO	3.2	lb/ton clinker	400.00	**1752**
VOC	0.12	lb/ton clinker	15.00	**65.7**
SAM	0.000003	lb/ton clinker	0.00	**0.002**
Fluorides	0.0009	lb/ton clinker	0.11	**0.5**
Mercury	122	lb/yr	0.01	**0.06**
Lead	0.000075	lb/ton clinker	0.01	**0.0**

Paved Road Emissions Estimation

	Mode 1: Cement trucks - empty			Mode 2: Cement trucks - loaded			Mode 3: Coal trucks - loaded		
No truck traffic expected between 8 pm and 4 am	PM10	PM		PM10	PM		PM10	PM	
E = PM10 (lb/VMT)	0.0318	0.1628		0.1383	0.7088		0.1383	0.7088	
k = base emission factor for particle size	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	
W = average weight of vehicles (tons)	15			40			40		
Road segments for this mode	R1-R50			R51-R57	R32-R1		R1-R41	R58-R77	
Customer roads, length (ft)	2400	Paved		1872	Paved		2928	Paved	
Road segments	50			39			61		
Length per segment	48			48			48		
Rate, (tph)	216.0			216.0			24.4		
Capacity (tons) per truck	25			25			25		
Number of vehicles per hour	8.6			8.6			1.0		
Hours per year	8760			8760			8760		
Vehicle miles traveled per hour for this mode	3.93			3.06			0.54		
Vehicle miles traveled per year for this mode	34403	PM		26834	PM		4741	PM	
Emission rate (lb/hr)	0.12	0.64		0.42	2.17		0.07	0.38	
Emission rate (tpy)	0.55	2.80		1.86	9.51		0.33	1.68	
Emission rate (g/sec)	0.0157			0.0534			0.0094		
Emission rate per segment for this mode	0.0003	PER 14.62m (48') SINGLE PASS		0.001	PER 14.62m (48') SINGLE PASS		0.0002	PER 14.62m (48') SINGLE PASS	
Cross check	0.0003			0.001			0.000155		

	Mode 4: Coal trucks - empty			Mode 5: Gypsum/limestone trucks - loaded			Mode 6: Gypsum/Limestone trucks - empty		
No truck traffic expected between 8 pm and 4 am	PM10	PM		PM10	PM		PM10	PM	
E = PM10 (lb/VMT)	0.0318	0.1628		0.1383	0.7088		0.0318	0.1628	
k = base emission factor for particle size	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	
W = average weight of vehicles (tons)	15			40			15		
Road segments for this mode	R77-R65	R78-R80	R48-R57, R32-R1	R1-R41	R58-R69		R69-R65	R78-R80	R48-R57, R32-R1
Customer roads, length (ft)	2784	Paved		2544	Paved		2400	Paved	
Road segments	58			53			50		
Length per segment	48			48			48		
Rate, (tph)	24.4			7.8			7.8		
Capacity (tons) per truck	25			25			25		
Number of vehicles per hour	1.0			0.3			0.3		
Hours per year	8760			8760			8760		
Vehicle miles traveled per hour for this mode	0.51			0.15			0.14		
Vehicle miles traveled per year for this mode	4508	PM		1317	PM		1242	PM	
Emission rate (lb/hr)	0.02	0.08		0.02	0.11		0.00	0.02	
Emission rate (tpy)	0.07	0.37		0.09	0.47		0.02	0.10	
Emission rate (g/sec)	0.0021			0.0026			0.0006		
Emission rate per segment for this mode	0.00004	PER 14.62m (48') SINGLE PASS		0.00005	PER 14.62m (48') SINGLE P		0.00001	PER 14.62m (48') SINGLE PASS	
Cross check	0.00004			0.00005			0.00001		

	Mode 7: Ash/iron trucks - loaded			Mode 8: Ash/iron trucks - empty			Mode 9: Employee cars 2-way				
No truck traffic expected between 8 pm and 4 am	PM10	PM		PM10	PM		PM10	PM			
E = PM10 (lb/VMT)	0.1383	0.7088		0.0318	0.1628		0.0015	0.0079			
k = base emission factor for particle size	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			
W = average weight of vehicles (tons)	40			15			2				
Road segments for this mode	R1-R41	R58-R77	RA1-RA33	R77-R65	R78-R80	R48-R57, R32-R1, RA1-RA33	R1-R30	RE1-RE13			
Customer roads, length (ft)	4512	Paved		2784	Paved		2064	Paved			
Road segments	94			58			43				
Length per segment	48			48			48				
Rate, (tph)	35.1			35.1			90.0	employees			
Capacity (tons) per truck	25			25			25				
Number of vehicles per hour	1.4			1.4			5.0				
Hours per year	8760			8760			8760				
Vehicle miles traveled per hour for this mode	1.20			0.74			1.95				
Vehicle miles traveled per year for this mode	10510	PM		6485	PM		17122	PM		107163	
Emission rate (lb/hr)	0.17	0.85		0.02	0.12		0.00	0.02			
Emission rate (tpy)	0.73	3.72		0.10	0.53		0.01	0.07		3.76	19.25
Emission rate (g/sec)	0.0209			0.0030			0.0004			PM10, tpy	PM,tpy
Emission rate per segment for this mode	0.0002	PER 14.62m (48') SINGLE		0.00005	PER 14.62m (48') SINGLE PASS		0.000009	PER 14.62m (48') SINGLE PASS			
Cross check	0.000222			0.00005			0.000018	PER 14.62m (48') DOUBLE PASS			

Unpaved Roads Emissions Estimation		**Front-End Loader Traffic at Piles/Hoppers**								
Emission factor calculation		**Raw Mat'l**	**Coal/Coke**	**Gypsum/limestone**						
E = PM10 emission factor (lb/vehicle-mile traveled)		1.33	1.33	1.33						
k = particle size multiplier for PM10		0.36	0.36	0.36						
s = silt content of road surface material (percent)	Georgia EPD Guidance	7	7	7						
S = average speed (mph)		10	10	10						
W = mean loader weight (tons)		28.25	28.25	28.25						
w = average number of wheels		4	4	4						
p = number of days per year with precipitation		120	120	120						
Road length, 48' segments		192	192	96						
Material handling rate, TPH		43	16	6						
d (trips/hour) capacity = 6 tons		7.1	2.7	1.0						
VMT/hour		0.26	0.10	0.02		**0.37**	**3281.018**			
Emission rate (lb/hr)		0.35	0.13	0.02	**0.50**		**2.2**	**1.11**		**4.9**
Number of road segments (48 ft)		4	4	2	lb/hr		tpy	lb/hr		tpy
Control eficiency from enclosures (EPA450-3-88-008), %		80	80	80		PM10			PM	
Emission rate per segment (g/s)		**0.0022**	**0.0008**	**0.0003**						
	PER 48' SINGLE PASS	0.0022	0.0008	0.0003						
		RU1-4	**RU5-8**	**RU9-10**						

Fugitive Emissions Calculations

Pit established as an volume source					PM					PM10				
ID	**Control**	**Description**	**Rate (TPH**	**Control fa**	**Factor**	**Units**	**Referen**	**lb/hour**	**TPY**	**Factor**	**Units**	**Reference**	**lb/hour**	**TPY**
PIT	None	Primary Crushing	154	0	0.0012	lb/ton processe	AP-42 1·	0.18480	0.8	0.00054	lb/ton proc	AP-42 11.1	0.083	0.36
PIT	None	Material transfer	154	0	0.00014	lb/ton processe	AP-42 1·	0.02156	0.1	0.000046	lb/ton proc	AP-42 11.1	0.007	0.03
HOP1	Enclosure	Material transfer	42.8	80	0.00014	lb/ton processe	AP-42 1·	0.00120	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
HOP2	Enclosure	Material transfer	16	80	0.00014	lb/ton processe	AP-42 1·	0.00045	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
HOP3	Enclosure	Material transfer	6	80	0.00014	lb/ton processe	AP-42 1·	0.00017	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP1	Enclosure	Material transfer	154	80	0.00014	lb/ton processe	AP-42 1·	0.00431	0.0	0.000046	lb/ton proc	AP-42 11.1	0.001	0.01
LSP2	Enclosure	Material transfer	19.4	80	0.00014	lb/ton processe	AP-42 1·	0.00054	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP3	Enclosure	Material transfer	4	80	0.00014	lb/ton processe	AP-42 1·	0.00011	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP4	Enclosure	Material transfer	19.4	80	0.00014	lb/ton processe	AP-42 1·	0.00054	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP5	Enclosure	Material transfer	8	80	0.00014	lb/ton processe	AP-42 1·	0.00022	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP6	Enclosure	Material transfer	8	80	0.00014	lb/ton processe	AP-42 1·	0.00022	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP7	Enclosure	Material transfer	3	80	0.00014	lb/ton processe	AP-42 1·	0.00008	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
LSP8	Enclosure	Material transfer	3	80	0.00014	lb/ton processe	AP-42 1·	0.00008	0.0	0.000046	lb/ton proc	AP-42 11.1	0.000	0.00
RSP1	Enclosure	Reclaim from pile	154	80	0.000016	lb/ton processe	AP-42 1·	0.00049	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP2	Enclosure	Reclaim from pile	19.4	80	0.000016	lb/ton processe	AP-42 1·	0.00006	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP3	Enclosure	Reclaim from pile	4	80	0.000016	lb/ton processe	AP-42 1·	0.00001	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP4	Enclosure	Reclaim from pile	19.4	80	0.000016	lb/ton processe	AP-42 1·	0.00006	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP5	Enclosure	Reclaim from pile	8	80	0.000016	lb/ton processe	AP-42 1·	0.00003	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP6	Enclosure	Reclaim from pile	8	80	0.000016	lb/ton processe	AP-42 1·	0.00003	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP7	Enclosure	Reclaim from pile	3	80	0.000016	lb/ton processe	AP-42 1·	0.00001	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
RSP8	Enclosure	Reclaim from pile	3	80	0.000016	lb/ton processe	AP-42 1·	0.00001	0.0	0.000016	lb/ton proc	AP-42 11.1	0.000	0.00
								0.2	0.9				**0.1**	

Stockpile Emissions Estimation

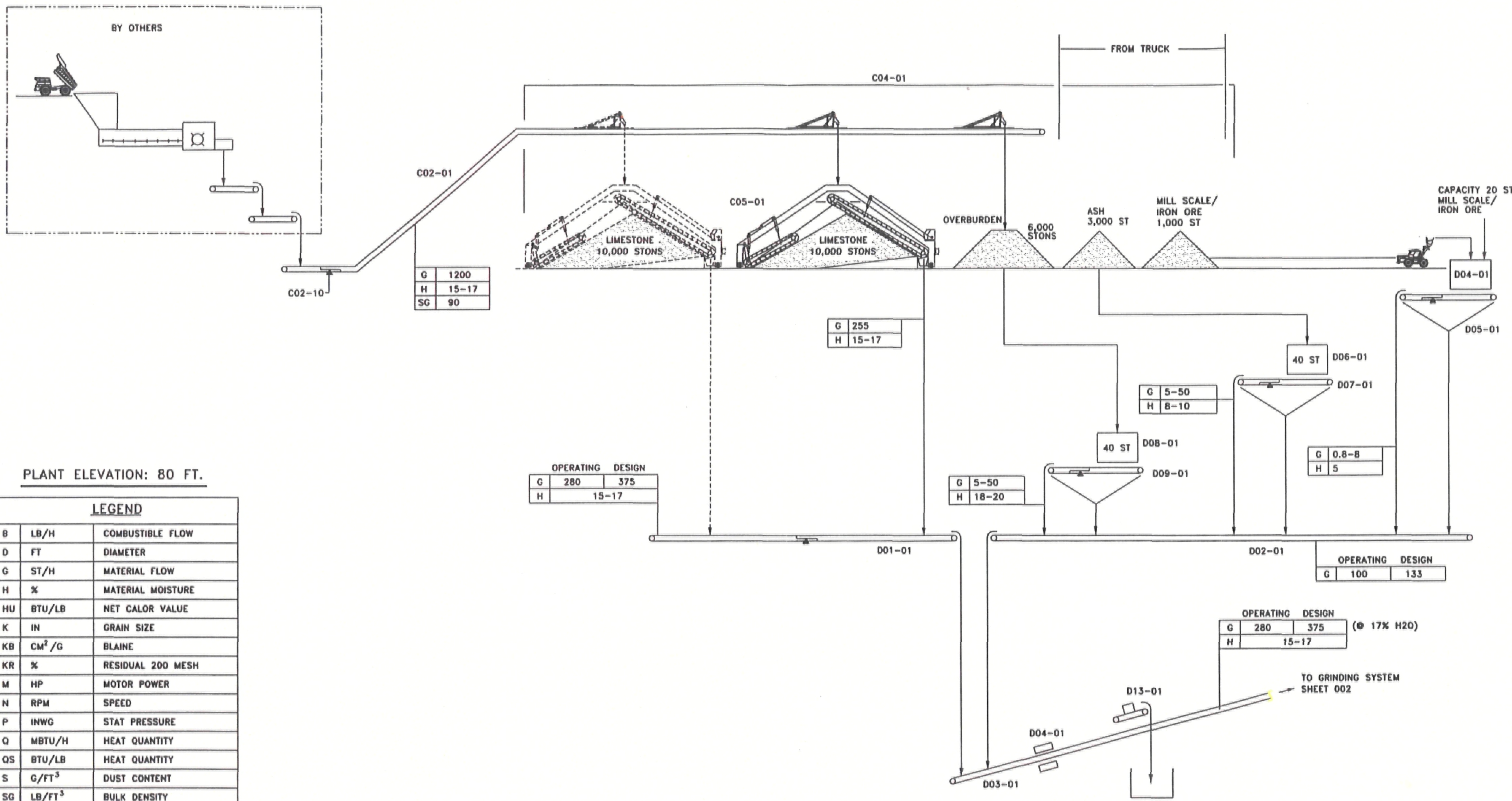
Wind Erosion		**g/s/m^2**	
E = PM10 emission factor (lbs/day/acre)	0.9137	**0.000001**	Georgia EPD Guidanc
s = silt content (%)	1.6		Georgia EPD Guidanc
p = number of days per year with precipitation	120		AP-42
f = time wind speed > 12 mph, (%)	14.5		Orlando 1964-1993

ID	TYPE		X	Y	BASE EL	EMISSION
SP1		2	399580	3181910	0	0.000001
SP2		2	399583	3181860	0	0.000001
SP3		2	399578	3181830	0	0.000001
SP4		2	399578	3181801	0	0.000001
SP5		2	399850	3181943	0	0.000001
SP6		2	399896	3181943	0	0.000001
SP7		2	399995	3181955	0	0.000001
SP8		2	399995	3181939	0	0.000001

ATTACHMENT 4

CD Disc
(not included)

ATTACHMENT 2



PLANT ELEVATION: 80 FT.

LEGEND

B	LB/H	COMBUSTIBLE FLOW
D	FT	DIAMETER
G	ST/H	MATERIAL FLOW
H	%	MATERIAL MOISTURE
HU	BTU/LB	NET CALOR VALUE
K	IN	GRAIN SIZE
KB	CM^2/G	BLAINE
KR	%	RESIDUAL 200 MESH
M	HP	MOTOR POWER
N	RPM	SPEED
P	INWG	STAT PRESSURE
Q	MBTU/H	HEAT QUANTITY
QS	BTU/LB	HEAT QUANTITY
S	G/FT^3	DUST CONTENT
SG	LB/FT^3	BULK DENSITY
T	°F	TEMPERATURE
TP	°F	DEW POINT
UT	°F WINTER SUMMER	AMBIENT TEMPERATURE: 32°F MIN; 59°F AVG. 108°F MAX; 96–102°F AVG. RELATIVE HUMIDITY: 100%
V	%	VOLATILE MATTER
VB	ACFM	GAS FLOW
VN	SCFM	GAS FLOW
VS	SCF/LB	GAS FLOW
VV	FT^3/S	GAS FLOW

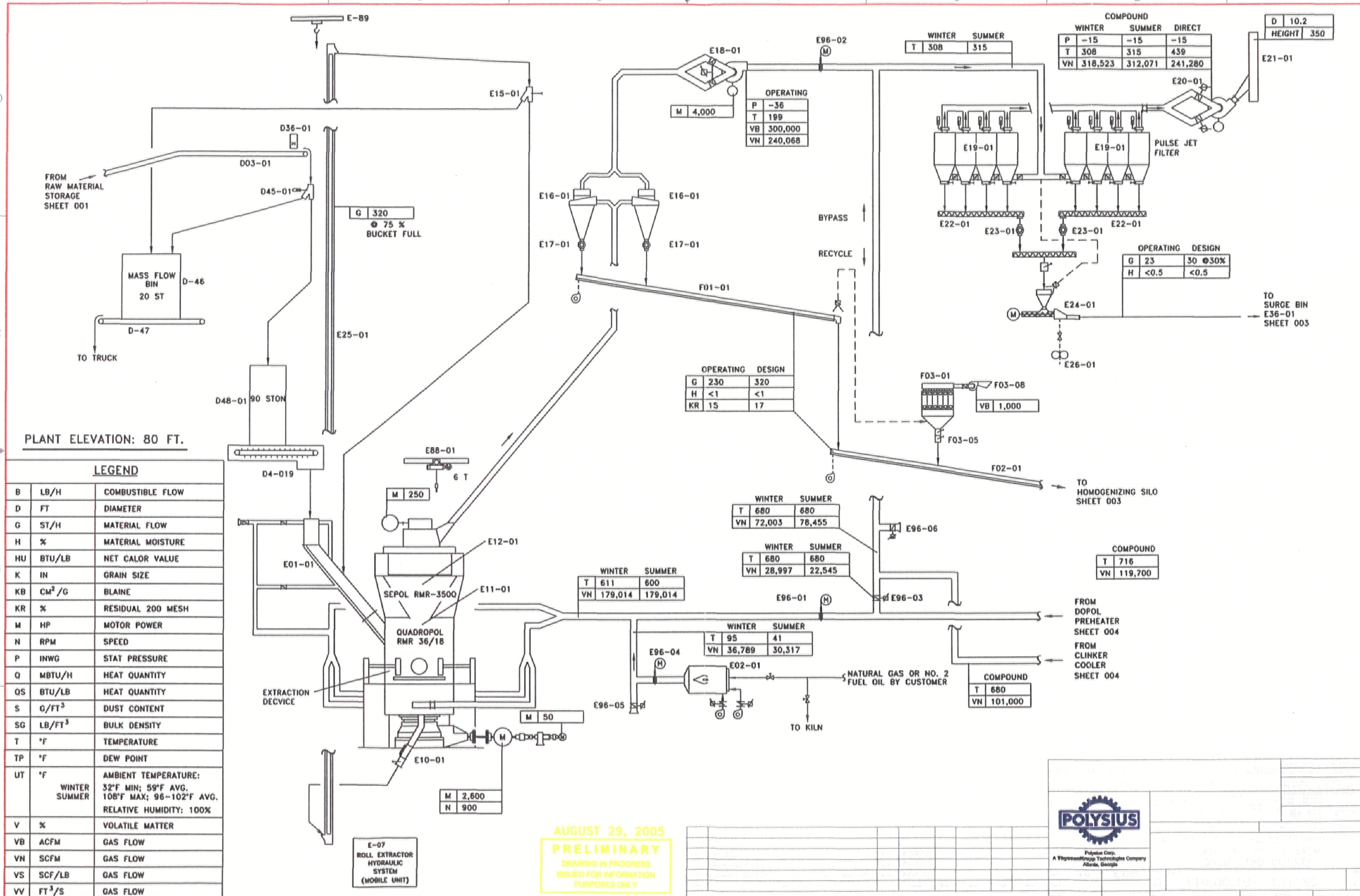
AUGUST 29, 2005

PRELIMINARY
DRAWING IN PROGRESS
ISSUED FOR INFORMATION
PURPOSES ONLY

POLYSIUS

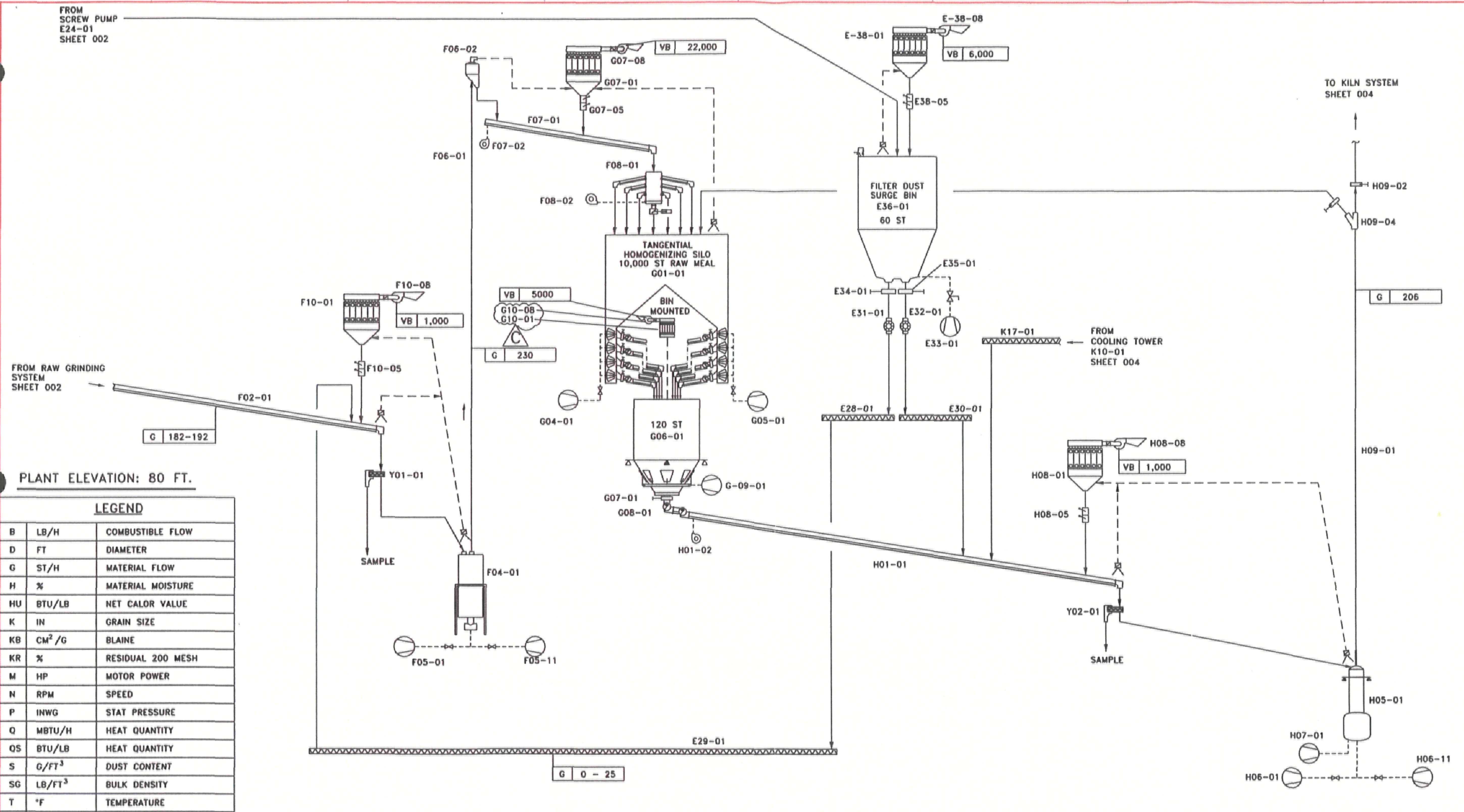
Polysius Corp.
A ThyssenKrupp Technologies Company
Atlanta, Georgia

MECHANICAL PROCESS FLOW SHEET
RAW MATERIAL CRUSHING & STORAGE
5000 STPD CLINKER



LEGEND

B	LB/H	COMBUSTIBLE FLOW
D	FT	DIAMETER
G	ST/H	MATERIAL FLOW
H	%	MATERIAL MOISTURE
HU	BTU/LB	NET CALOR VALUE
K	IN	GRAIN SIZE
KB	CM^2/G	BLAINE
KR	%	RESIDUAL 200 MESH
M	HP	MOTOR POWER
N	RPM	SPEED
P	INWG	STAT PRESSURE
Q	MBTU/H	HEAT QUANTITY
QS	BTU/LB	HEAT QUANTITY
S	G/FT^3	DUST CONTENT
SG	LB/FT^3	BULK DENSITY
T	°F	TEMPERATURE
TP	°F	DEW POINT
UT	°F WINTER SUMMER	AMBIENT TEMPERATURE: 32°F MIN; 59°F AVG. 108°F MAX; 96-102°F AVG. RELATIVE HUMIDITY: 100%
V	%	VOLATILE MATTER
VB	ACFM	GAS FLOW
VN	SCFM	GAS FLOW
VS	SCF/LB	GAS FLOW
VV	FT^3/S	GAS FLOW



PLANT ELEVATION: 80 FT.

LEGEND

B	LB/H	COMBUSTIBLE FLOW
D	FT	DIAMETER
G	ST/H	MATERIAL FLOW
H	%	MATERIAL MOISTURE
HU	BTU/LB	NET CALOR VALUE
K	IN	GRAIN SIZE
KB	CM^2/G	BLAINE
KR	%	RESIDUAL 200 MESH
M	HP	MOTOR POWER
N	RPM	SPEED
P	INWG	STAT PRESSURE
Q	MBTU/H	HEAT QUANTITY
QS	BTU/LB	HEAT QUANTITY
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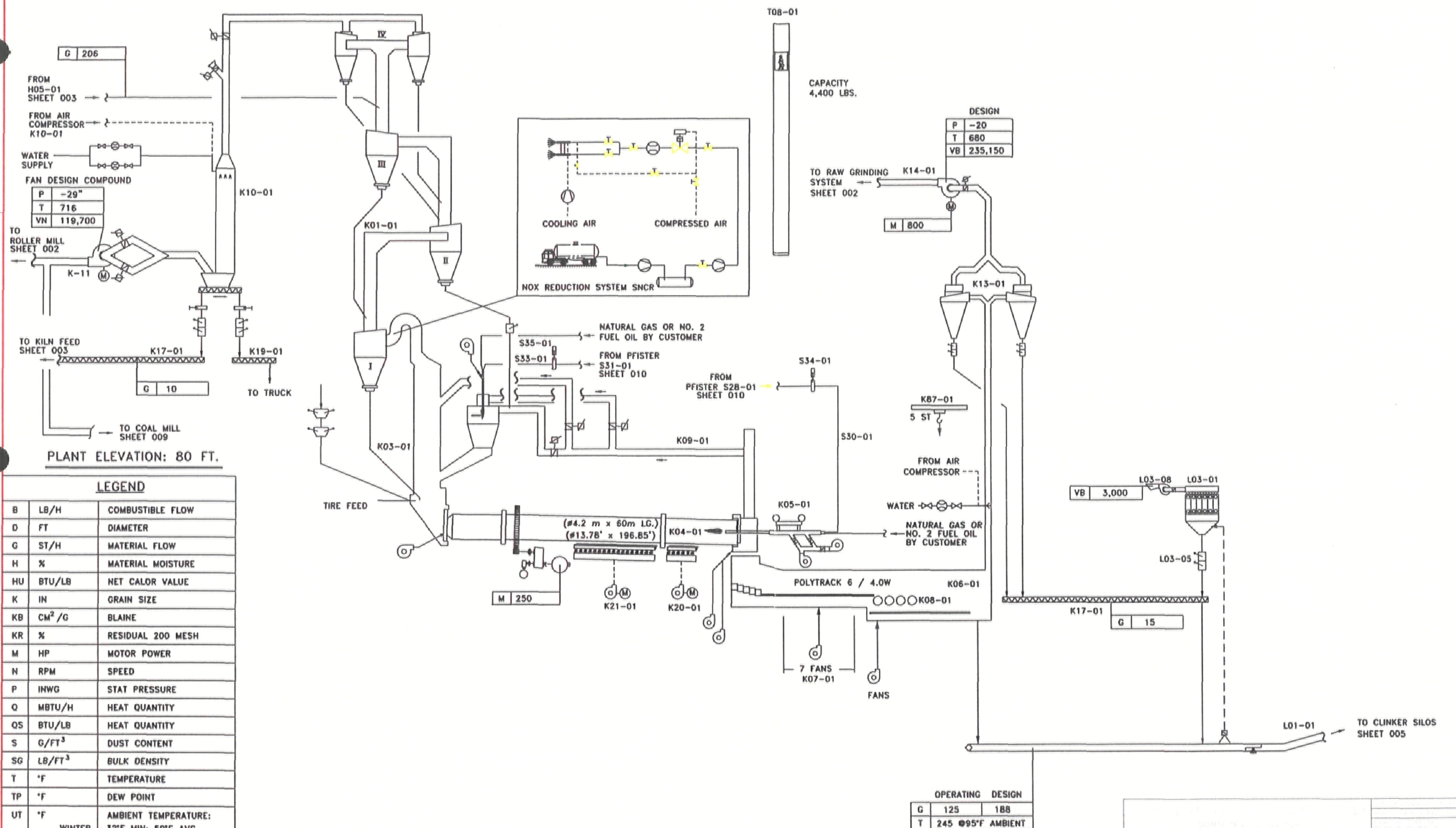
A ThyssenKrupp Technologies Company
Atlanta, Georgia



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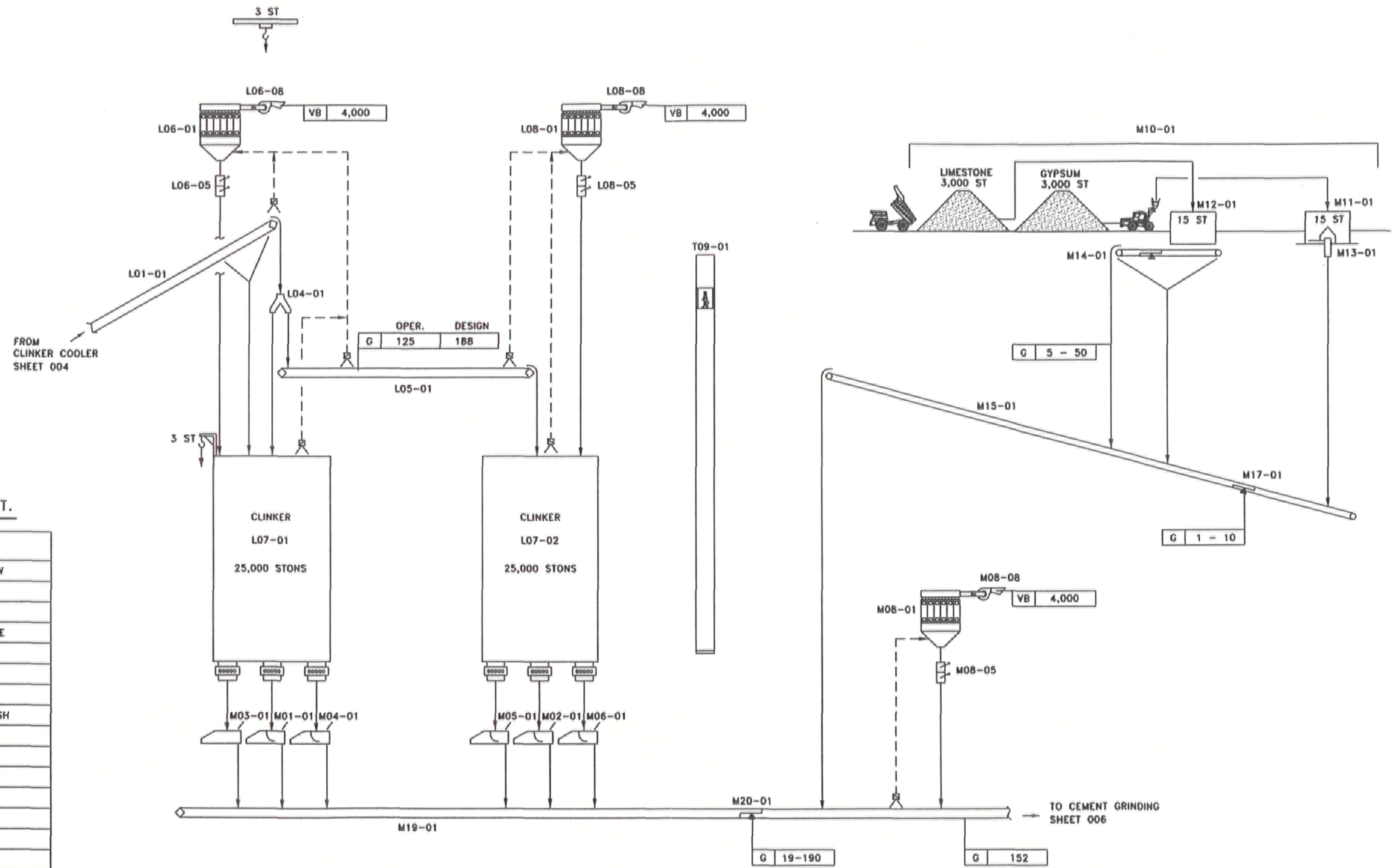

PLANT ELEVATION: 80 FT.

LEGEND

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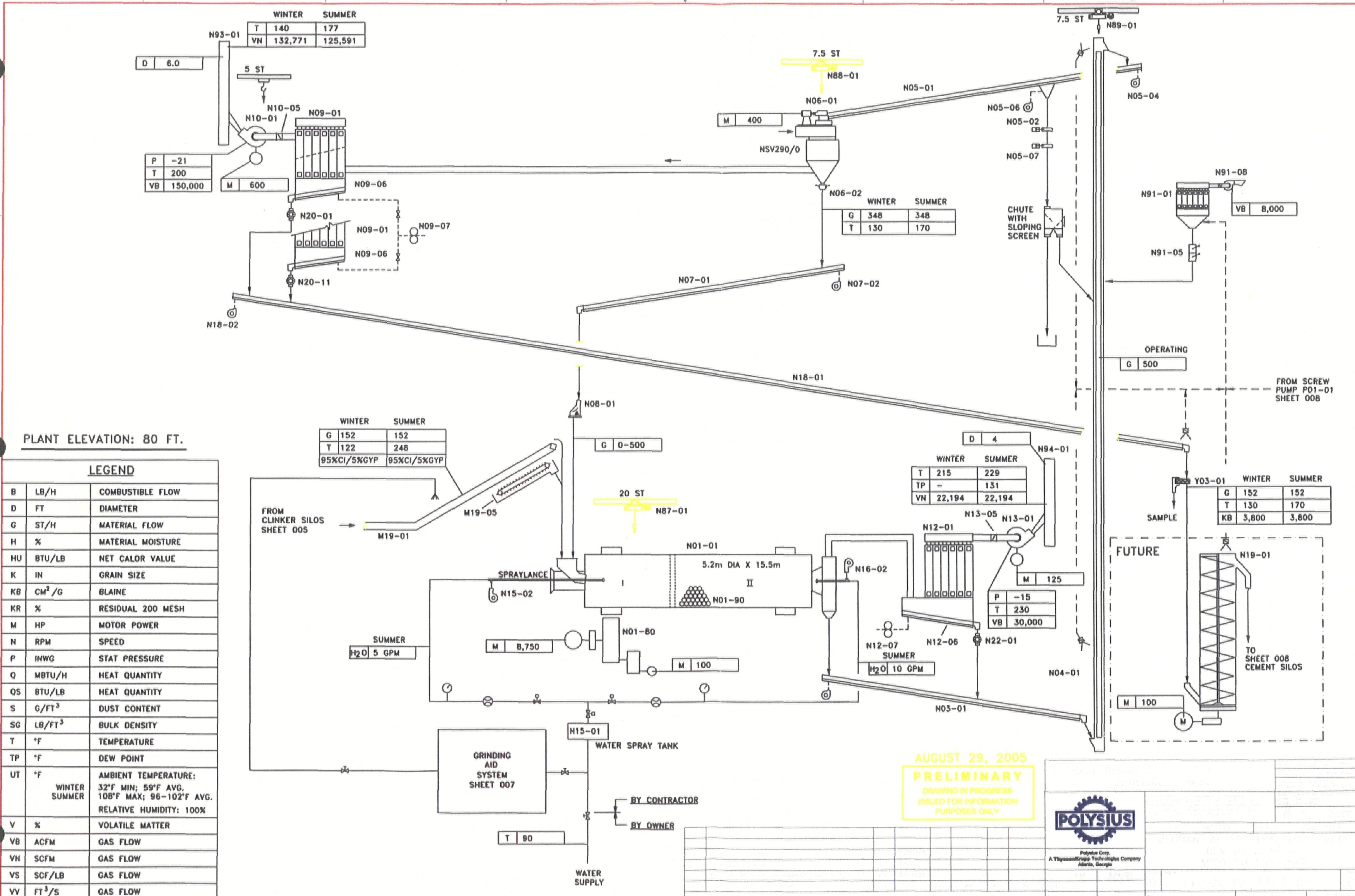

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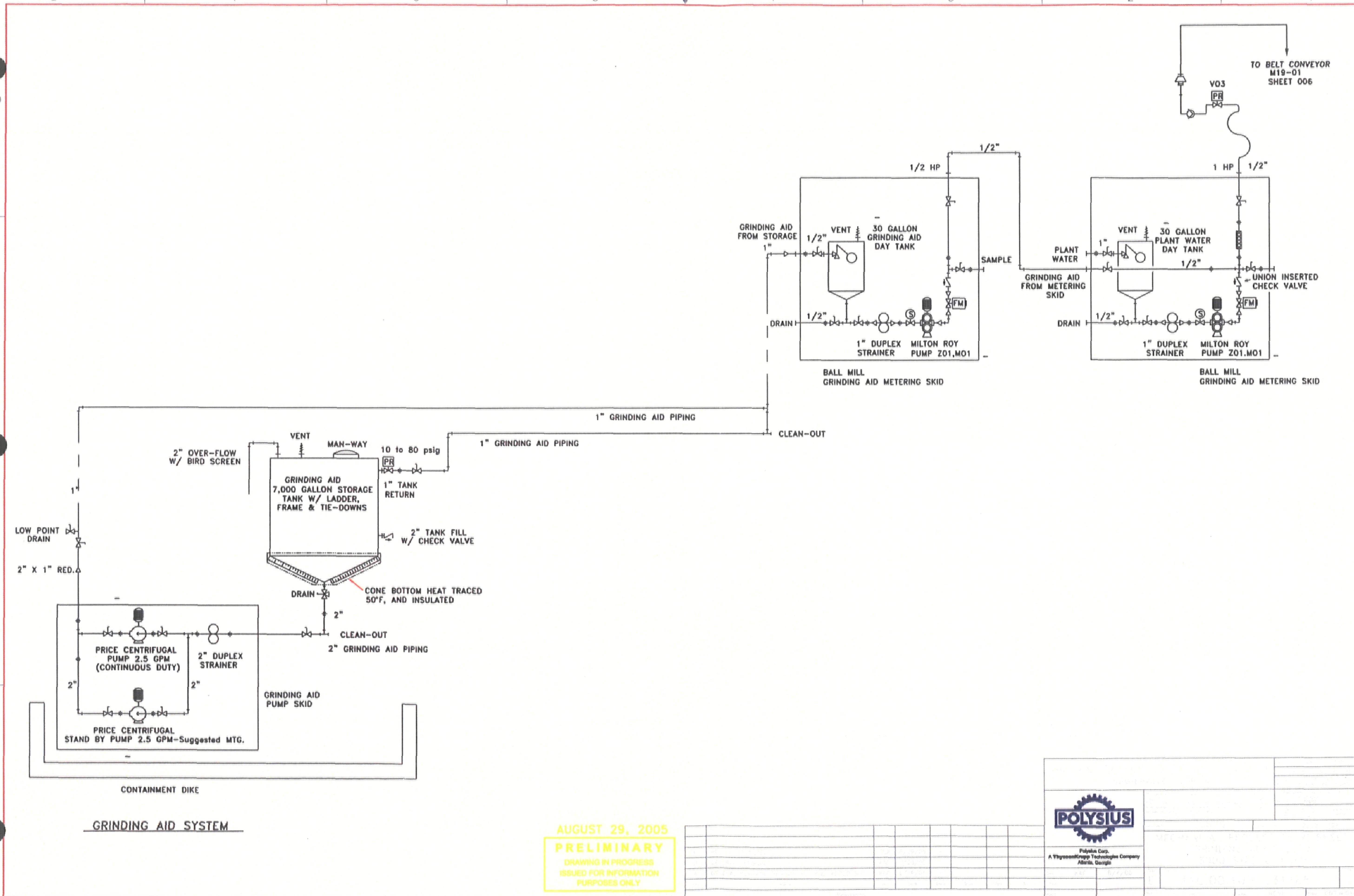

TO BELT CONVEYOR M19-01 SHEET 006
V03
PR
1/2"
1/2 HP
1 HP
1/2"
GRINDING AID FROM STORAGE
1"
1/2"
VENT
30 GALLON GRINDING AID DAY TANK
SAMPLE
FM
S
DRAIN
1/2"
1" DUPLEX STRAINER
MILTON ROY PUMP Z01.M01
BALL MILL GRINDING AID METERING SKID
PLANT WATER
1"
VENT
30 GALLON PLANT WATER DAY TANK
1/2"
GRINDING AID FROM METERING SKID
UNION INSERTED CHECK VALVE
FM
S
DRAIN
1/2"
1" DUPLEX STRAINER
MILTON ROY PUMP Z01.M01
BALL MILL GRINDING AID METERING SKID
1" GRINDING AID PIPING
CLEAN-OUT
1" GRINDING AID PIPING
VENT
MAN-WAY
10 to 80 psig
PR
2" OVER-FLOW W/ BIRD SCREEN
GRINDING AID 7,000 GALLON STORAGE TANK W/ LADDER, FRAME & TIE-DOWNS
1" TANK RETURN
1"
LOW POINT DRAIN
2" TANK FILL W/ CHECK VALVE
2" X 1" RED.
DRAIN
CONE BOTTOM HEAT TRACED 50°F, AND INSULATED
2"
CLEAN-OUT
2" GRINDING AID PIPING
PRICE CENTRIFUGAL PUMP 2.5 GPM (CONTINUOUS DUTY)
2" DUPLEX STRAINER
2"
2"
GRINDING AID PUMP SKID
PRICE CENTRIFUGAL STAND BY PUMP 2.5 GPM-Suggested MTG.
CONTAINMENT DIKE
GRINDING AID SYSTEM
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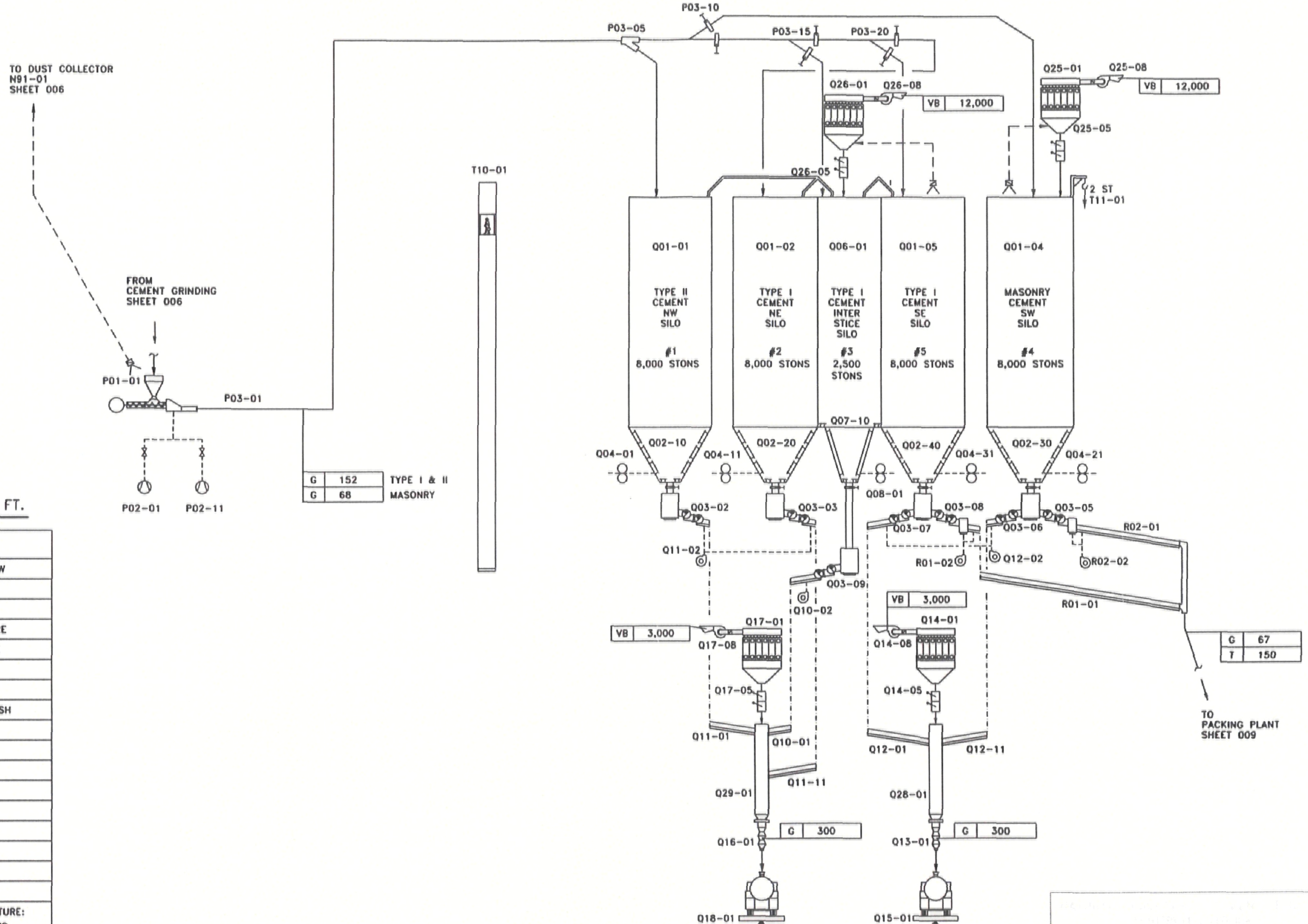

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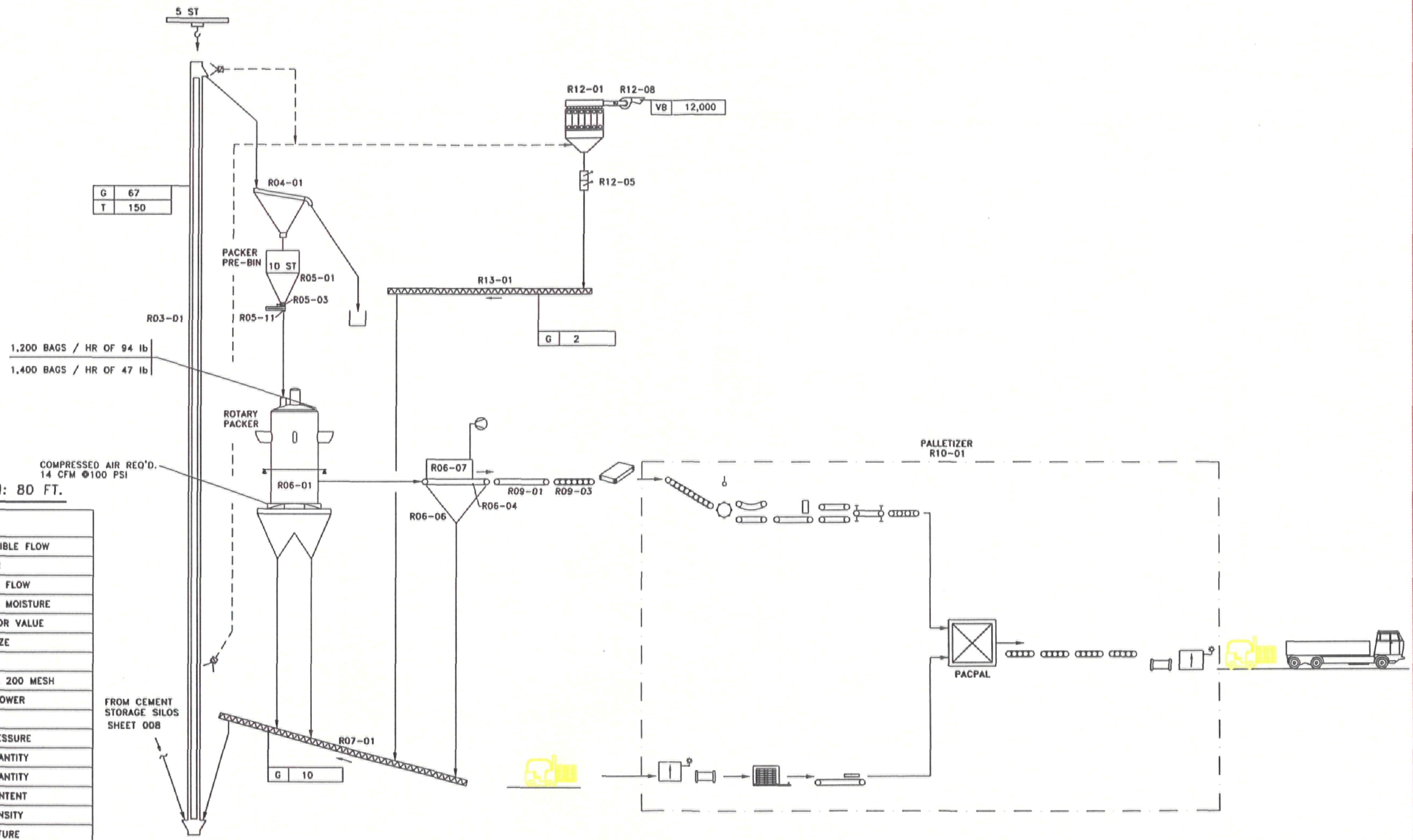

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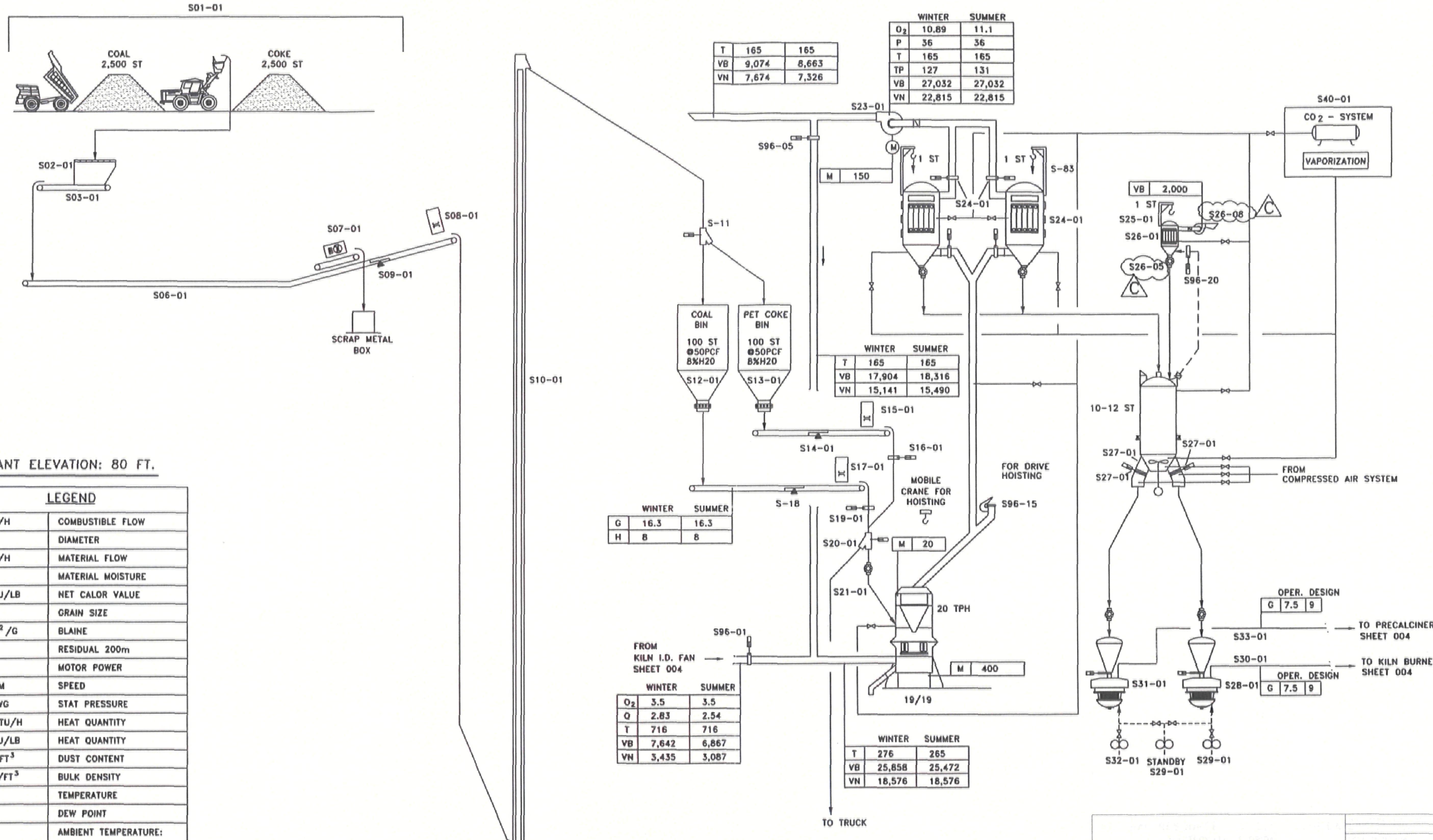

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NOTE: COAL MILL, DUCTS, COAL DUST BIN AND BAGFILTERS ARE DESIGNED FOR 50 PSIG.

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