Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

May 17, 2001

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Don Elias, Prinicpal
RTP Environmental Associates
239 U.S. Highway 22 East
Green Brook, New Jersey 08812

Re: Florida Crushed Stone Kiln 2
Permit AC27-274892(A)

Dear Mr. Elias:

This is in reply to your memoranda dated January 29 and May 8, 2001 regarding the approach to a re-determination of the Best Applicable Control Technology (BACT) applicable to the planned facility.

I would refer you to the Portland Cement Association to get a list of projects announced in recent years and then to the particular states that reviewed the projects. I refer you to the European Integrated Pollution Prevention and Control Bureau and their report "Reference Document on Best Available Techniques in the Cement and Lime Manufacturing Industries". The document is available at eippcb.jrc.es/

The European IPPC report has important information on nitrogen oxides emission control indicating that selective non-catalytic reduction (SNCR) had been installed at 15 plants in Europe by the year 2000 and that SCR was installed at a new plant in Germany. The German national standard (similar to an NSPS) is 500 mg/m^3 (roughly 2.3 lb/ton) on a short-term averaging basis. Examples of facilities where the target value is roughly 1 pound per ton of clinker are mentioned.

The document is also a good source of information regarding dust control. It indicates that much lower emissions can be realized than the limits included in typical permits. The report does not thoroughly address CO or VOC, but does highlight possible introduction of oily raw materials directly into the kiln to avoid evolution of VOC.

The permit issued to TXI at Midlothian is important because it required the first regenerative thermal oxidation system at a cement plant for CO and VOC. The resulting emission limits for these pollutants are probably the lowest in the country. The permit issued to Holnam at Midlothian is also important because it requires achievement of a NO_X emissions cap of 1540 tons per year. This equates to a long-term NO_X emission limit of 1.2 lb/ton of clinker. This is the lowest value in a permit in the United States.

Despite all of the references to sulfur dioxide from cement plants in the literature, it appears that this is not as important for cement plants in Florida. Therefore you do not need to conduct a very exhaustive review on this pollutant. The preheater/calciner design will insure that sufficient scrubbing of kiln gases by finely divided lime occurs prior to exhaust. Since the raw materials do not contain pyrites, the phenomenon of roasting in the preheater section to yield SO_2 will not occur to an appreciable degree.

I note that you included an existing preheater kiln in Siggenthal, Switzerland. The mentioned plant burns some dried sewage sludge in the main kiln burner. The active coke filter effectively removes volatile metals and cleans up remaining SO_2 and ammonia slip (from SNCR). These species are bled off via recycling of cement kiln dust to product rather than to the pyroprocess. Note that the plant has been in existence for quite a number of years and does not reflect what a new plant would need to achieve for NO_X control.

Along the same limes, I refer you to Jura Cement in Wildegg, Switzerland that has a preheater/calciner kiln built in the mid-1980's. This plant has a multi-stage combustion calciner and SNCR for NO_X control. It also has a tire gasification unit. Again, the limits may not reflect what would be required of a new plant in Switzerland. It is instructive in that it demonstrates that MSC can be combined with SNCR.

I recommend removal of your Tarmac references as they are for wet process kilns that will be replaced with a single preheater/calciner kiln. The new kiln will meet a limit of 2.38 lb/ton of clinker to avoid triggering PSD. I recommend inclusion of the Lonestar Davenport Plant in Santa Cruz California in your review. This preheater/calciner plant was permitted to achieve 2.5 lb/ton of clinker on a 24-hour basis at least 20 years ago. The plant met the objective prior to the existence of MSC technology, more advanced kiln burners, or SNCR.

Finally, I recommend that you also review the California Cement Colton Plant. This old "long kiln dry process" plant was recently able to significantly reduce NO_X emissions from roughly 6 lb/ton of clinker to less than 3 lb/ton of clinker. It may shed light on how the choice of kiln burner technology may contribute to reduction of NO_X.

We will conduct a proper review of the proposal when we receive it. This letter addresses only the obvious items and would require a much more exhaustive review to actually opine on what has been omitted in your initial compilation. If you have any questions regarding this matter, please call me at 850/921-9523.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/al

Cc: Mike Vardeman, Rinker (FCS)

U.S. Postal Service
CERTIFIED MAIL RECEIPT
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Mr. Don Elias, Principal

Street, Apt. No.; or PO Box No.
239 US Highway 22 East

City, State, ZIP+4
Green Brook, NJ 08812

PS Form 3800, February 2000 — See Reverse for Instructions

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1. Article Addressed to:

Mr. Don Elias, Principal
RTP Environmental Associates
239 U.S. Highway 22 East
Green Brook, NJ 08812

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FOR 11/29/00 meeting w/ Rinker/ FCS

APPLICATION REQUIREMENTS TO EXTEND FCS KILN 2 PERMIT TO 2005

- Submit extension request. No fee as facility has a Title V permit and extension will not trigger PSD. This should be submitted by FCS and should indicate the name of the engineer and consultant now representing FCS on permitting (Elias of RTP Associates or Koogler and Associates?)
- Include a sealed updated Best Available Control Technology (BACT) proposal. Take into consideration emission limits from Florida and other states. Some of these are not on RACT/BACT/LAER Clearinghouse. We can provide assistance on those that cannot be obtained easily.
- Agree to attached conditions that are included in permits for new cement kilns.
- Update and seal original application to reflect additional regulatory requirements of Cement Industry MACT for a new kiln at a brownfield site. Include also a requirement to continuously monitor VOC (THC) such as required at a greenfield site.
- In updating BACT, consider September 19, 2000 EPA document, "NO_X Control for the Cement Industry." See www.epa.gov/ttn/rto/fip/data/cement.pdf Also consider March, 2000 European Commission Document, "Best Available Techniques in the Cement and Lime Manufacturing Industries." See http://eippcb.jrc.es
- Evaluate suitability of VOC limit of 0.085 pounds per ton of clinker. Provide reasonable assurance that this value can be achieved. If it is increased, then the revised BACT will require public notice.
- Provide the names of contractors for process engineering and equipment supply (Penta and Polysius?) and for engineering and construction services. Provide a schedule by key activity (e.g. milestones for kiln system drawings, engineering, procurement, construction, etc.).
- Provide information of types of kiln burner and precalciner burners under consideration for NO_X minimization (e.g. Pillard Rotoflam, Fuller Swirlax, KHD Humboldt Wedag Pyrojet, Polysius ??, etc.). Provide process control programs under consideration that will optimize production and environmental objectives (e.g. Linkman).
- Provide information on NO_X control to be employed at the precalciner (e.g. multi-staged combustion – MSC, or SNCR or combinations of the two.)
- Provide details on the tire burning system that is presently permitted to burn 15 percent whole tires or TDF. Advise of any impacts on schedule (will this be achieved by 2005?)
- Recertification by P.E. on behalf of FCS of BACT prepared by Department prior to finalization and issuance of revised permit.

NEW CONDITIONS TO BE INCORPORATED IN CEMENT KILN PERMITS

- Tire wash for bulk transport trucks – this will decrease fugitive particulate matter carryout from heavy truck traffic.
- Ambient monitors (in accordance with FCS and Hernando County Agreement) for particulate matter of less than 10 microns (PM_{10}) and $PM_{2.5}$ at locations to be determined by the Department – monitors will provide data to Department and public on PM_{10} levels in ambient air of the county before construction and after operation.
- Ambient monitors for PM_{10} for monitoring specific impacts at locations to be determined by the Department. These monitors may be in addition to the countywide monitors and may be in different locations from the countywide monitors.
- Minimum level of training and experience required for managerial and operational staff – this will ensure the facility will be staffed with competent, trained personnel.
- Annual third party audit of maintenance records and physical condition of process equipment and control devices – this will ensure that the plant is being properly maintained so that emissions do not increase from deterioration of equipment.
- Installation of tire gasification system required if more than 10% of heat input derived from tires – this will provide for better control of combustion at higher tire firing rates.
- Continuous monitor data retrieval system required – this will allow the Department to access the continuous monitoring data whenever the Department wants.
- Software support to the Department for the data retrieval system for two years – this will allow the Department ample time to customize the reporting software for the data retrieval system so the Department can better verify compliance at all times.
- Requirement to post continuous monitor data to the Internet for public access – this will allow the public to access the continuous monitoring data at any time through the use of regular browser software so concerned citizens can verify compliance themselves.
- Operation and maintenance plan required for the particulate matter control equipment – this will ensure that the owner or operator has a written plan to properly maintain the control equipment for particulate matter.
- Continuous monitors are required for carbon monoxide (CO) – these monitors, which allow the operator to optimize combustion for lowest emissions, will be available for inspection by Department to assure compliance with the emission limits.
- Kiln components and control systems chosen by applicant will be specified in the permit (provided they constitute reasonable assurance per Rule 62-4.070, F.A.C.). For example the permit would include one selection from each of the first three categories below:

  Kiln: Polysius, KHD, Fuller? Size?
  Kiln Burner: multi-channel Low NO_X Rotoflam, Duoflex, Swirlax, Pyrojet?
  Calciner: multi-staged calciner (MSC), Low NO_X In-Line Calciner, Pyroclon with Pyrotop?
  Calciner burners: specify types in same manner as kiln burner.
  Add-on controls: specify all e.g. SNCR, RTO, Pulsed Jet Baghouse, ESPs, coke filter?
- Construction, with the exception of air emissions testing, is to be complete by production start-up.

Related to 11/29/00 meeting w/ Rinker/FCS

SOME FACTS ABOUT FCS KILN 2 PERMITTING

- The permit for FCS Kiln No. 2 was issued in late 1995 and re-issued in February 1997.
- Permit expires on January 31, 2002.
- An extension will be requested because the project cannot be completed by February 2002. New owner, Rinker, gave us a draft letter requesting an extension until January 2005. That is over nine years following issuance of original permit.
- EPA rules in 40CFR52.21 apply because kiln was included in certified facility.
- Commenced construction of a new source means "the owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification."
- They anticipate that it will take until late 2001 for review and approval of the plant design. Therefore they have even commenced construction as defined in 40CFR60.
- Previous consultant, RTP Associates, is aware of applicable 18-month requirement to begin construction and the requirement to avoid a hiatus of 18 months during construction in 40CFR52.21.
- Only minimal construction has been done to-date.
- In July 1998, new consultant (Koogler and Associates) represented to the Department that construction had begun and asked if permit was valid. They acknowledged applicability of 40CFR52.21(r)2
- Department responded that permit was valid was (given the statements), and re-iterated applicability of 40CFR52.21 and, specifically, the hiatus provision that could invalidate the permit.
- It is clear there has been at least one 18-month hiatus.
- There are, nevertheless, provisions for extensions.
- Project is near a Class I area.
- We are reviewing another application (Florida Rock) in the same area.

WHAT WE NEED FROM RINKER (DBA FLORIDA CRUSHED STONE)

- We need the technical equivalent of a new application in general and for Best Available Control Technology in particular. Other specific requirements include but are not limited to the following:
- We need a more detailed design for the kiln. Rinker needs to confirm manufacturer, process, etc.
- We need specification of process controls used to minimize air pollution emissions. Examples are computerized programs such as Linkman.
- We need to know about the Low NO_X capabilities of the main kiln burners and pre-calciner burners. Manufacturers other than Polysius are quite open with this information, whereas Polysius does not readily provide it.
- Require details about multi-stage calciner (MSC) to reduce NO_X formed by the kiln and to minimize additional NO_X formation. We require confirmation that an MSC device is planned for this project.
- Need to assess the level of NO_X control possible by SNCR alone, MSC alone, and MSC and SNCR together.
- Recommend proposing a lower NO_X limit based on the capability of the burners and of SNCR and MSC. The lowest listed emission rate in a permit is ~ 1.2 lb/ton clinker at Holnam in Midlothian, Texas.
- The German equivalent of an NSPS is 2.3 lb/ton of clinker. So is the value recommended by the European Community. The lowest value required in Europe is 1 lb/ton of clinker at an existing kiln. All of the manufacturers of cement kilns have European roots.
- FCS needs to provide reasonable assurance that the kiln will meet the very low VOC value of 0.085 lb/ton of clinker. This is in view of known problems at Florida Rock in Newberry and anecdotal problems at Rinker in Miami. Alternative may be a slightly higher BACT limit with public notice.
- Need to propose a lower PM_{10} emission limit consistent, e.g., with limit at Rinker in Miami.
- We need specifics on tire burning now. Any extension must cover the time to install the tire-burning facility. Otherwise we will limit tire burning to 10 percent and require a new application burn more than 10 percent tires.
- The NO_X limit must be met by the time that the NSPS tests are conducted. With the advances in NO_X controls and the mid-decade startup date, this should not be so difficult to achieve.
- We would appreciate the opportunity of meeting with design firm (Penta) to explain what the requirements are.
- We would still need to opportunity to review the update BACT for "completeness."

CSR
Rinker

Late October, 2000
meeting with Rinker / FCS
(Verdeman + Benyon)

DRAFT

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Crushed Stone- Extension of Air Construction Permit

Dear Mr. Linero:

As previously discussed CSR wishes to obtain an extension of Air Construction Permit # AC 27-274892 (A) currently scheduled to expire January 30, 2002. CSR America purchased this facility in July 2000 and intends to proceed with the expansion of the plant into a second kiln line. Currently CSR is in the process of :

- Reviewing current and long term operational plans made by the previous owners and to insure these meet the goals and standards of CSR America .
- Review the engineering, construction contracting, and scheduling activities to date of the expansion project while participating in the continuance of these activities
- Construct the second kiln line

It is however clear from the information currently available that the expiration of the Air Construction permit will occur sooner than the construction activities can possibly be completed and hence the need for an extension of this permit until January 2005.

Reviewing FCS documentation CSR can follow the following construction activities showing that construction of this project has been continuous from the time of the issuance of the permit

- FCS began purchasing used cement plant equipment in January 1996 with the intent of lowering the overall project costs of the expansion. This equipment consisted of a kiln, raw mill and roller mill.
- Expecting to receive the Air Construction permit imminently FCS began having this equipment delivered on site in late January 1997 and continuing through January 1998 as a part of the construction program. Total costs for these activities represented more than $4 MM dollars .
- Concurrently for layout and design purposes geotechnical borings were made in December 1997
- Industrial Bond Allocation Approval was received from Hernando County in December 1998
- Permitting and construction of Kiln #2 Construction Building was started in April 1999. This is a replacement building for the existing maintenance facility which stands in the path of new construction.
- Penta engineering continues layout and drawing of the plant general arrangements amounting to $280K from June 1999 to July 2000.
- Expenditures to Polysius of $1.07 MM for equipment from January 2000 to July 2000
- Watkins design work from general arrangements to final design from January 2000 to July 2000.
- July 2000 purchase of FCS by CSR

CSR Rinker Materials Corporation, 1200 N.W. 137 Avenue, Miami, FL 33182, PO Box 650679, Miami, FL 33265-0679
Telephone (305) 221-7645 Facsimile (305) 229-8015

- July 2000 – Penta, Watkins and Polysius continue with scheduled design activities under CSR review
- September 2000 commitment by CSR to complete construction building (replacement maintenance building) and four new 7500 ton silos to be completed while other design and mechanical evaluations and approvals are underway.
- To date approximately $6MM dollars- or 7% of the project budget have been committed.

The current project construction schedule (attached)from the time of final approval provides for a 24 month construction plan- which is achievable.

It is anticipated that review and final design approval would take until late 2001 putting completion of construction until approximately 2004. Allowing for construction not meeting the strict 24 month schedule and normal start up and commissioning activities CSR is asking for the extension until January 2005 with the hope that no additional time would be needed.

Part of the time being utilized now is review with Polysius (equipment supplier) of the raw materials and specific permit emission criteria to build into the contract guarantees that the provided equipment using expected raw materials can meet the criteria required in the Air Construction permit.

Sincerely,

Sharon DeHayes
Vice President Cement Division

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

April 28, 2000

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. C. David Brown II
Broad and Cassell
390 North Orange Avenue, Suite 1100
Orlando, Florida 32801

Re: Permit AC27-274892(A)

Dear Mr. Brown:

This is in reply to your letter dated April 13 to Mr. Denver Stutler requesting to know the party with whom you can discuss the status of Permit AC27-274892(A).

You stated that your client wishes to expand the manufacturing capacity from 800,000 short tons to 1,000,000 short tons. According to our records, the second Florida Crushed Stone Plant is permitted to operate at the rate of 104 tons per hour of clinker. That is equivalent to 911,040 tons per year, presuming continuous operation at full capacity. Assuming that there is 5 percent gypsum in the final product, the capacity for cement production is 959,000 tons per year. This excludes losses due to downtime and operation at less than full capacity.

A permit application is required to increase production. If emissions increase by certain thresholds, it may be necessary to re-evaluate the pollution control requirements. You may discuss the details with Mr. Al Linero, P.E. of the Bureau of Air Regulation. You may reach Mr. Linero at 850/921-9523.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/al

Cc: Denver Stutler

Department of
Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

FAX TRANSMITTAL COVER SHEET

922-6979

TO: Howard Rhodes / Clair Fancy

FROM: Mollie Palmer

DATE: 4.21.00 # OF PAGES INCLUDING COVER: 4

FAX#: _____ PHONE# : _____

MESSAGE: Howard & Clair - Dexter asked me to refer this to you. Please respond to Mr Brown.

cc: Kirby

Copies please to both

Mollie Glover Palmer, Deputy Chief of Staff
Office of the Secretary
3900 Commonwealth Boulevard, Mail Station 10
Tallahassee, Florida 32399
(850)488-1554 (FAX)488-7093
E-Mail: Mollie.Palmer@DEP.STATE.FL.US

Fax to Howard 922-6979

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C. DAVID BROWN, II, P.A.
Direct Facsimile (407) 650-0910
Email: dbrown@broadandcassel.com

April 13, 2000

cc. Kirby Green

VIA TELECOPY

Denver Stutler, Chief of Staff
Department of Environmental Protection, Executive Office
Douglas Building, 10th Floor
Commonwealth Boulevard
Tallahassee, Florida

Re: DEP Permit Number AC 27-274892 (A)

Dear Mr. Stutler:

This firm represents a major Peruvian company that specializes in concrete manufacturing and is a leader in this field ("Company"). We have been retained to assist Company with its due diligence investigation of Florida Crushed Stone Company ("FCS") in connection with Company's potential acquisition of an interest in FCS.

FSC has obtained a permit from DEP with respect to the construction of an additional cement manufacturing plant to be located in Brooksville, Florida. The permit number is AC 27-274892 (A), with a current expiration of January 30, 2002 (the "Permit"). Were Company to take a position in FCS, Company would be interested in expanding the manufacturing capacity under the Permit from 800,000 short tons to 1,000,000 short tons.

We are seeking your advice as to the proper party to contact to discuss the status of the Permit, as well as enlargement of the Permit. We have a very short timeframe within which to obtain the necessary information and would greatly appreciate a prompt response to this inquiry. I am in Tallahassee today and would like to meet with you, if possible. I can be reached on my mobile phone at (407) 256-0006. I will be available all day, except between 4:00 p.m. and 5:00 p.m. when I will be meeting with the Governor. — called 4/21 1:30

Thank you in advance for your assistance in this matter. Should you have any questions, please do not hesitate to contact me.

Very truly yours,

BROAD AND CASSEL

C. David Brown, II, P.A.

4/19 cc KG
Reply - refer to Mr. Howard Rhodes.

CDB/dhj

BOCA RATON · FT. LAUDERDALE · MIAMI · ORLANDO · TALLAHASSEE · TAMPA · WEST PALM BEACH

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09999/9999 4/13/00 9:43 AM

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www.broadandcassel.com

C. DAVID BROWN, II, P.A.
DIRECT FACSIMILE: (407) 650-0310
EMAIL: dbrown@broadandcassel.com

April 13, 2000

cc: Kirby Green.

VIA FACSIMILE TRANSMISSION

Denver Stutler, Chief of Staff
Department of Environmental Protection, Executive Office
Douglas Building, 10th Floor
Commonwealth Boulevard
Tallahassee, Florida

Re: DEP Permit Number AC 27-274892(A)

Dear Mr. Stutler:

As a follow-up to our letter of earlier today, enclosed please find a chart listing all permits which Florida Crushed Stone currently holds with respect to the second manufacturing plant.

Thank you for your attention to this matter. Should you have any questions or comments, please do not hesitate to contact me.

Very truly yours,

BROAD AND CASSEL

By: C. David Brown/dwg
C. David Brown, II, P.A.

DHJ:ser

Enclosure

	ISSUING ENTITY	TYPE OF PERMIT	PERMIT NUMBER	EXPIRATION DATE
1	FDEP	Limestone Processing Plant	0530044-009-AO	10/28/01
2	FDEP	Domestic Wastewater Facility	FLA012042 FLA012036	10/21/02 05/01/02
3	FDEP	Waste Tire Facility	WT27-268487	12/10/00
4	FDEP	Cement Plant #2 Construction	AC27-274892(A)	01/30/02
5	FDE Reg.	Power Plant Site Cert.	PA82-17	
6	SWFWMD	General Water Use	200214.03	09/04/08
7	SWFWMD	Individual Water Use	200215.07	05/28/02
8	SWFWMD	Industrial Wastewater	1027-220264	02/01/98 (renewing)
9	SWFWMD	40D-45 Exemption	M190-025TA	
10	SWFWMD	MSSW (Pond #9)	4510189	
11	Hernando County	Special Executive Use	SE-99-10	1 year if construction has not started
12	Department of Army	Corp of Engineers (Wetlands)	1994036131P-MM	12/21/00
13	FDEP	Title V	0530021-002-AV	

AL Jerry Dotty K.C. Clay Howard 3/13

March 7, 2000

MEMORANDUM **PD-110**

TO: The Honorable Chairman and Members of the Board of County Commissioners

VIA: Paul McIntosh
County Administrator

VIA: Lawrence Jennings, Assistant County Administrator
Growth and Development Services

FROM: Dawn Durham, Environmental Planner
Hernando County Planning Department

SUBJECT: Information Relating to the Ambient Air Monitoring Requirement for Florida Crushed Stone's Second Kiln

As a condition of FCS's Special Exception Use Permit for a second kiln, the Board decided to require PM_{10} ambient air monitoring. Following the Boards action on November 23, 1999, staff wrote FDEP relaying the action and requesting technical assistance on the placement of the PM_{10} ambient air monitors and QA/QC data recording/reporting requirements. The specific condition regarding air monitoring was, "The petitioner shall provide for an air quality monitoring system for three sites with 4 air monitors consistent with FDEP monitor siting criteria, data recording/reporting requirements, and acceptable to both the County and FDEP. The County will request FDEP's technical assistance regarding monitoring parameter(s) required, monitor site placement, type, and number." FDEP's response was to offer another option for consideration. The FDEP option was for FCS to install two continuous $PM_{2.5}$ monitors; one located at the Parrott Middle School and one located on the fence line of FCS property where the anticipated modeled impacts should occur. FDEP based the costs on FCS's letter stating that they would spend up to $50,000 for set-up and $10,000 per year operating/maintenance of the stations.

Meanwhile, FSC has purchased four (4) PM_{10} Ambient Air Monitors (see attached letter). Planning Staff met with Pat Venable of FCS and Joe Cookey, their air quality consultant, to discuss FDEP's option. FCS staff favored PM_{10} monitoring in order to determine pre and post air quality impacts of the second kiln.

FDEP is basing their most recent option for continuous $PM_{2.5}$ monitors on the following assumptions:

- PM_{10} is not expected to exceed or significantly increase due to the FCS facility expansion.
- $PM_{2.5}$ monitors would provide data on health effects to determine if the County has

conditions considered detrimental to human health. Placing a $PM_{2.5}$ monitor at The Parrott Middle School would address the communities concerns regarding the health impacts to children (one of the closest vulnerable populations to this facility).

- FDEP is required by US EPA to submit a monitoring network description and begin submitting annual $PM_{2.5}$ data with network evaluations.

- While continuous $PM_{2.5}$ monitors are not approved by US EPA, FDEP finds them to be accurate when co-located with approved $PM_{2.5}$ monitors. FDEP Staff also found them to be more reliable and less costly to operate. If a problem was detected, an approved monitor could be installed, although FDEP staff couldn't commit to funding they implied their agency would assist the County if a problem was detected.

Based on research and conversations with US EPA and FDEP air monitoring/permitting staff, the following are the advantages and disadvantages of PM_{10} and $PM_{2.5}$ air monitors.

- While $PM_{2.5}$ provides the most advanced data that can be related to health effects, it is not a regulated pollutant at this time. (A standard for $PM_{2.5}$ has been set, but litigation has the current standard in limbo). PM_{10} is the regulated pollutant and can be enforced by FDEP.

- $PM_{2.5}$ data is needed to evaluate health risks since 2.5 micron sized particles are inhaled deep into the lungs and are thought to be carcinogenic.

- $PM_{2.5}$ particles also occur from atmospheric chemical reactions, therefore, it is difficult to attribute data results to a single source.

- $PM_{2.5}$ is presently more associated with ambient air monitoring than regulatory activities.

- Since PM_{10} is the regulated pollutant, there may be advantages to FSC for permitting purposes. For example, in the permitting of the facility FDEP uses the PM_{10} data from the nearest monitor. If there is not a monitor within the area, a conservative estimate based on data from a similar facility will be used in the permitting process.

- Continuous PM_{10} or $PM_{2.5}$ are more expensive initially to purchase but have a lower annual operating costs. The longer these monitors run the more competitive they become with respect to the initial cost of manual PM_{10} monitors. If travel time is included, operating continuous monitors become even more cost effective.

- An advantage to operating a manual PM_{10} monitor is the paper filter can later be analyzed to determine the constituents of the sample.

- The County has previous PM_{10} data which can be compared against new PM_{10} data.

The Board's direction during the FCS hearing was to use PM_{10} air monitors. This was a good, ligitimate decision. This memo is to relay information and is not an action item.

DMD

pc: Mike McHuge, FCS
Pat Venable, FCS
Mike Joyner, FDEP
Howard Rhodes, FDEP

Attachments: BCC Letter to FDEP Requesting Assistance on Placement of Air Monitors near FCS
Letter from FDEP Explaining their $PM_{2.5}$ option
FCS Letter - Purchase of PM_{10} air monitors
State Senator Ginny Brown-Waite's Letter regarding $PM_{2.5}$
EPA Fact Sheet from Office of Air Quality Planning & Standards (from the Internet)

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

February 1, 2000

Mr. Larry Jennings
County Planner
Hernando County Commission
20 North Main Sueet, Room 460
Brooksville, Florida 34601

Dear Mr. Jennings,

In response to your December 22 letter concerning the Florida Crushed Stone petition, my staff responded to the following request in the letter for "technical assistance as to the monitoring parameter(s) required, monitor site placement, type and number." This information was provided after the Board had approved the three PM_{10} monitoring sites. In the letter it stated "three PM_{10} monitoring sites, one preferably at the Parrott Middle School, since there was considerable concern for the children's health." My staff inferred from this statement that the health issue seemed paramount. With that concern in focus, the recommendation to concentrate on $PM_{2.5}$, which is a more conservative health parameter, seemed appropriate. Using the November 22 Florida Crushed Stone Company's statement that they were willing to pay up to $50,000 for monitors and $10,000 annually for their maintenance, a recommendation of two continuous $PM_{2.5}$ monitors was approximately within that budget.

To further assist your decision making, listed are some estimates of the costs for monitoring both manual and continuous PM_{10} and $PM_{2.5}$. It should be remembered that the continuous monitor runs all the time but the manual monitors run on an intermittent schedule. A manual PM_{10} normally runs once every six days but can be run every three days or even every day. A manual $PM_{2.5}$ runs once every three days but can be run every day if one wishes. If either of the manual monitors is run on an every day schedule it normally means doubling the number of monitors at a site so the technician can work on one monitor while the other is operating. The number of samples that have to be analyzed can vary significantly depending on the frequency of sampling. Once a decision is made on the number of samples to take, the analysis costs for manual testing can be calculated.

	Per Instrument Purchase Price	Annual Routine Maintenance
Manual PM_{10} Grasby 1200	$7,000	$500
Continuous PM_{10} R&P TEOM	$17,000*	$1,000
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Filter Analysis for Manual Instruments	DEP Lab Cost/Sample	Contractor Cost/Sample
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$PM_{2.5}$	$9.00**	$11.55**

Annual Personnel Costs Per Instrument	
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Continuous $PM_{2.5}$	$2,000*

*To purchase a shelter for sampler installation is an additional $5,000 and would generally require a security fence costing another $1,500. The standard installation into an existing interior temperature-controlled room is estimated at a one-time cost of $2,000. This installation does require electrical power, a phone line, and a hole being placed through the roof of the building.

**Filters must be shipped in a temperature-controlled environment, which can add to the total cost of filter handling.

***One monitoring site should contain a second collocated instrument for quality assurance purposes (this applies to only the manual methods).

Estimates do not include related monthly electric and phone costs.

As you can see from the above information, monitoring for $PM_{2.5}$ is only slightly more expensive than monitoring for PM_{10}. If you take into account that one less site is being monitored for $PM_{2.5}$, it becomes even more cost effective. As to the question of whether to monitor continuously or manually, you must consider the length of time the site will be operational. The longer the site is to be operational the more the continuous monitor becomes the cost-effective alternative. The continuous monitor has the advantage that it is always operating providing a constant record of what the air quality was in the area. The manual monitor has the advantage of a filter record that can be analyzed for chemical content if a problem is found.

Please remember, that though the $PM_{2.5}$ monitor gives a better indication of public health issues, the standard is presently unenforceable because of a federal court decision. The PM_{10} standard, at the present time, is the only enforceable standard for particulates.

I hope that this information helps you put the decision in perspective. If you have further questions, please feel free to contact Mr. Brian Kerckhoff at 850/921-9570 or Ms. Tammy Eagan at 850/921-9567.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources Management

HLR/daf

cc: Senator Ginny Brown-Waite
Representative David Russell, Jr.
Mr. Mike Joyner

Vawn

FLORIDA CRUSHED STONE COMPANY

CEMENT PLANT

RECEIVED
FEB 10 2000
PLANNING
DEPARTMENT

February 7, 2000

Mr. Larry Jennings
County Planner
Hernando County Commission
20 North Main Street, Room 460
Brooksville, Florida 34601

Subject: Florida Crushed Stone: Cement Kiln Expansion: Ambient Air Monitoring

Dear Mr. Jennings:

In agreement with Hernando County, Florida Crushed Stone has purchased four (4) PM10 Ambient Air Monitors from Ambient Air Services, Inc. of Starke, Florida. At this time we are prepared to place the monitors in the most effective configuration for the evaluation of area ambient air conditions.

The most effective configuration for the monitors was to be decided on by Hernando County, Florida Crushed Stone, FDEP and other technical experts. It is my understanding that two (2) sites have been agreed upon: one is the Parrot Middle School and the other is on a hill just east of the Florida Crushed Stone plant entrance. A third possible location recommended to us by Joe Cooksey of Ambient Air Services would be southwest of the plant near the intersection at Fort Dade Road and County Road 491.

It is our wish to proceed with the installation of the monitors as soon as possible in order to obtain as much information as possible prior to the start-up of the plant expansion.

If there are no objections, we will proceed with the installation on or around February 26, 2000.

Also, it is my understanding that Hernando County will choose a consultant to operate and monitor the sites. It is also my understanding that the county will pay for the monitoring services and will be reimbursed by Florida Crushed Stone. Unless you have objection, in the interest of time, initial monitoring will be conducted by Ambient Air Services who will be paid directly by Florida Crushed Stone. Other arrangements can be made as developments permit.

Should you require further information, please contact me at (352) 799-7881.

Sincerely,

Pat Venable, REM
Environmental Manager
Florida Crushed Stone

PV/daw

CC: Mike McHugh
Jake D. Varn
Joe Cooksey

10311 CEMENT PLANT ROAD (34601) / P.O. BOX 1508 / BROOKSVILLE, FL 34605-1508 USA / PHONE (352) 799-7881 / FAX (352) 796-6281

Dave

Board of County Commissioners

Hernando County

20 N. Main Street, Room 460
Brooksville, FL 34601
(352) 754-4000
FAX (352) 754-4477

December 21, 1999

Mr. Howard L. Rhodes, Division Director
FDEP, Division of Air Resource Management
Division of Recreation and Parks
2600 Blair Stone Rd. MS 5500
Tallahassee, FL 32399-2400

Re: Request for Assistance on Placement of Ambient Air Monitors at the Florida Crushed Stone (FCS) Cement Plant in Hernando County, Florida
Facility ID No.: 0530021

Dear Mr. Rhodes:

FCS recently petitioned the Hernando County Board of County Commissioners (the Board) to approve a special exception land use permit for their second kiln that had expired. This property initially received a special exception use permit for heavy manufacturing in December of 1982. In 1995, the petitioner received a special exception use permit for the second Kiln [FDEP Permit AC 27-274892 (A)]. The second kiln was not constructed within the three year time frame stipulated by the Planning and Zoning Commission; consequently, the special exception use permit expired. County staff recommended approval with conditions, including a condition that the petitioner shall re-evaluate and provide an air quality monitoring system consistent with FDEP monitor siting criteria, data recording/reporting requirements, and acceptable to both the County and FDEP. Also, the County would request FDEP's technical assistance regarding monitoring parameter(s) required, monitor site placement, type, and number.

The Board approved FCS's special use permit with FCS agreeing to provide ambient air quality monitoring. The above condition was slightly modified. FCS agreed to provide three (3) PM_{10} monitoring sites, one preferably at the Parrott Middle School since there was considerable concern for children's health. Also, they are to conduct some animal tissue sampling of the fish in the ponds on-site. A map showing the FCS cement plant location and the Parrott Middle School site is enclosed for your information.

Hernando County is requesting DEP's technical assistance regarding the placement of these ambient air monitors and QA/QC data recording/reporting requirements. We would appreciate your assistance in this matter and look forward to your response. If you should have any

questions, please contact Larry Jennings, Assistant County Administrator, Growth & Development at SUNCOM 669-4057 ext. 130, or Dawn Durham, Environmental Planner at SUNCOM 669-4057 ext. 131.

Sincerely,

Pat Novy
Chairman

DMD

pc: Larry Jennings, Assistant County Administrator
Growth & Development
Dottie Diltz, Air Monitoring Bureau Chief, FDEP
C.H. Fancy, Bureau Chief of Air Regulation, FDEP
Deborah Getzoff, District Director, FDEP (Tampa)
Richard Radacky, Deputy County Administrator
Bill Buztrey, Assistant County Attorney
BCC Read File

Attachments:
General Location Map with Parrott Middle School Location
Letter from FCS to the Board prior to Public Hearing on Land Use Permit

THE FLORIDA SENATE

Tallahassee, Florida 32399-1100

SENATOR GINNY BROWN-WAITE
10th District

COMMITTEES:
Criminal Justice,
Chairman
Banking and Insurance
Fiscal Policy,
Vice Chairman
Governmental Oversight and Productivity
Rules and Calendar

JOINT COMMITTEE:
Administrative Procedures

February 14, 2000

Board of County Commission
Honorable Paul Sullivan, Chairman
#20 North Main Street
Room #460
Brooksville, Florida 34601

RE: Attached correspondence - DEP

Dear Commissioner Sullivan:

I am enclosing a copy of the correspondence from DEP concerning the monitoring parameter (s). I have been in contact with the DEP and prompted them to recommend PM2.5 in lieu of PM10.

I urge the commission to support the PM2.5 because it is without doubt a better safeguard for Hernando's population. Some have compared the PM10's to testing an 80-year-old woman for pregnancy . . . of course the test will be negative!

As you can see from the letter, the cost factor is so minimal that it should not be a consideration. The PM10's are too liberal a standard for our air quality!

Please keep me advised.

Very truly yours,

Ginny Brown-Waite
State Senate District 10

REPLY TO:
☐ Hernando Government Complex, 20 North Main Street, Room 200, Brooksville, Florida 34601 (352) 544-2344
☐ 314 Senate Office Building, 404 South Monroe Street, Tallahassee, Florida 32399-1100 (850) 487-5040
1-800-94 WAITE

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Jeb Bush
Governor

David B. Struhs
Secretary

February 1, 2000

Mr. Larry Jennings
County Planner
Hernando County Commission
20 North Main Street, Room 460
Brooksville, Florida 34601

Dear Mr. Jennings,

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FEB - 3 2000

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I hope that this information helps you put the decision in perspective. If you have further questions, please feel free to contact Mr. Brian Kerckhoff at 850/921-9570 or Ms. Tammy Eagan at 850/921-9567.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources Management

HLR/daf

cc: Senator Ginny Brown-Waite
Representative David Russell, Jr.
Mr. Mike Joyner

United States Environmental Protection Agency
Office of Air & Radiation
Office of Air Quality Planning & Standards

FACT SHEET

July 17, 1997

HEALTH AND ENVIRONMENTAL EFFECTS OF PARTICULATE MATTER

Why are We Concerned About Particulate Matter?

- Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (larger than 2.5 micrometers) come from a variety of sources including windblown dust and grinding operations. Fine particles (less than 2.5 micrometers) often come from fuel combustion, power plants, and diesel buses and trucks.
- These fine particles are so small that several thousand of them could fit on the period at the end of this sentence.
    - They are of health concern because they easily reach the deepest recesses of the lungs.
- Batteries of scientific studies have linked particulate matter, especially fine particles (alone or in combination with other air pollutants), with a series of significant health problems, including:
    - Premature death;
    - Respiratory related hospital admissions and emergency room visits;
    - Aggravated asthma;
    - Acute respiratory symptoms, including aggravated coughing and difficult or painful breathing;
    - Chronic bronchitis;
    - Decreased lung function that can be experienced as shortness of breath; and
    - Work and school absences.

Who is Most at Risk from Exposure to Fine Particles?

- The Elderly:
    - Studies estimate that tens of thousands of elderly people die prematurely each year from exposure to ambient levels of fine particles.
    - Studies also indicate that exposure to fine particles is associated with thousands of hospital admissions each year. Many of these hospital admissions are elderly people suffering from lung or heart disease.
- Individuals with Preexisting Heart or Lung Disease:
    - Breathing fine particles can also adversely affect individuals with heart disease, emphysema, and chronic bronchitis by causing additional medical treatment. Inhaling fine particulate matter has been attributed to increased hospital admissions, emergency room visits and premature death among sensitive populations.
- Children:
    - The average adult breathes 13,000 liters of air per day; children breathe 50 percent more air per pound of body weight than adults.

- Because children's respiratory systems are still developing, they are more susceptible to environmental threats than healthy adults.
- Exposure to fine particles is associated with increased frequency of childhood illnesses, which are of concern both in the short run, and for the future development of healthy lungs in the affected children.
- Fine particles are also associated with increased respiratory symptoms and reduced lung function in children, including symptoms such as aggravated coughing and difficulty or pain in breathing. These can result in school absences and limitations in normal childhood activities.

- Asthmatics and Asthmatic Children:
  - More and more people are being diagnosed with asthma every year. Fourteen Americans die every day from asthma, a rate three times greater than just 20 years ago. Children make up 25 percent of the population, but comprise 40 percent of all asthma cases.
  - Breathing fine particles, alone or in combination with other pollutants, can aggravate asthma, causing greater use of medication and resulting in more medical treatment and hospital visits.

How do Particulate Matter and Fine Particles Effect the Environment?

- The same fine particles linked to serious health effects are also a major cause of visibility impairment in many parts of the U.S.
- In many parts of the U.S. the visual range has been reduced 70% from natural conditions. In the east, the current range is only 14-24 miles vs. a natural visibility of 90 miles. In the west, the current range is 33-90 miles vs. a natural visibility of 140 miles.
- Fine particles can remain suspended in the air and travel long distances. For example, a puff of exhaust from a diesel truck in Los Angeles can end up over the Grand Canyon, where one-third of the haze comes from Southern California. Emissions from a Los Angeles oil refinery can form particles that in a few days will effect visibility in the Rocky Mountain National Park. Twenty percent of the problem on dirtiest days in that Park is attributed to Los Angeles-generated smog.
- Airborne particles can also cause soiling and damage to materials.

What Improvements Would Result from EPA's New Standards?

- EPA's new standards will provide increased health protection from the following effects:
  - About 15,000 lives each year will be saved, especially among the elderly and those with existing heart and lung diseases.
  - Reduced risk of hospital admissions by thousands each year, and fewer emergency room visits, especially in the elderly and those with existing heart and lung diseases.
  - Reduced risk of symptoms associated with chronic bronchitis, tens of thousands fewer cases each year.
  - Reduced risk of respiratory symptoms in children, hundreds of thousands fewer incidences each year of symptoms such as aggravated coughing and difficult or painful breathing.
  - Reduced risk of aggravation of asthma, hundreds of thousands fewer incidences each year, in children and adults with asthma.
  - Reduced risks of susceptibility to childhood illnesses.
- Improved visibility over broad regions in the east and urban areas:
  - The Clean Air Act placed special emphasis on preserving visibility in certain national

parks and wilderness areas. In response, EPA is developing a "regional haze" program intended to ensure all parts of the country make continued progress toward the national visibility goal of "no manmade impairment."

- New standards that EPA has promulgated, together with the "regional haze" program under development, will protect against visibility impairment, soiling and material damage effects, and will further reduce acid rain.

Background: What is Particulate Matter and What are "Fine" Particles?

- Particulate matter originates from a variety of sources, including diesel trucks, power plants, wood stoves and industrial processes. The chemical and physical composition of these various particles vary widely. While individual particles cannot be seen with the naked eye, collectively they can appear as black soot, dust clouds, or grey hazes.
- Those particles that are less than 2.5 micrometers in diameter are known as "fine" particles; those larger than 2.5 micrometers are known as "coarse" particles. Fine particles result from fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces and wood stoves. Fine particles can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds. Coarse particles are generally emitted from sources such as vehicles traveling on unpaved roads, materials handling, and crushing and grinding operations, and windblown dust.
- EPA is also maintaining a national air quality standard focused on small particles less than 10 micrometers in diameter (known as "PM_{10}") to protect against coarse particle effects. Ten micrometers are about one-seventh the diameter of a human hair.
- Before 1987, EPA's standards regulated larger particles (so called "total suspended particulates"), including those larger than 10 micrometers. By 1987, research had shown that the particles of greatest health concern were those equal to or less than 10 micrometers that can penetrate into sensitive regions of the respiratory tract. At that time EPA and states took action to monitor and regulate particulate matter 10 micrometers and smaller.
- In the years since the previous standard was enacted, hundreds of significant new scientific studies have been published on the health effects of particulate matter. Recent health effects studies suggest those adverse public health effects, such as premature deaths and increased morbidity in children and other sensitive populations, have been associated with exposure to particle levels well below those allowed by the current standard.

Jeb Bush
Governor

Department of
Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

February 14, 2000

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Fla. Crushed Stone

Ms. Dawn Durham, Environmental Planner
Planning Department
Hernando County Board of County Commissioners
20 North Main Street, Room 262
Brookesville, Florida 34601-2828

Dear Ms. Durham:

We received your letter dated February 4 requesting technical assistance in the review of a document titled "Verification of Current BACT limits for Cement Kilns." The document was prepared by RTP Environmental Associates to demonstrate that the second Florida Crushed Stone kiln will be built "to current BACT Standards."

"Best Available Control Technology" or "BACT" is defined as an emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

The facility already has a valid permit from the Department. A permit issued today would have at least a few changes. The first is that particulate matter (PM) would be restricted to 0.2 pounds per ton of kiln feed for the combined emissions from the kiln and cooler. Presently, this limit is 0.3 lb/ton. Emissions of particulate matter smaller than 10 microns (PM_{10}) would be restricted to 0.17 lb/ton for the combined emissions from the kiln and cooler. The present limit is also 0.3 lb/ton. The baghouse technology such as proposed by Florida Crushed Stone would provide reasonable assurance that such limits can be met. Based on data compiled by EPA,[1] for existing precalciner kilns using baghouses, it appears that the lower limits can be met.

The second requirement would be for a separate line calciner and multi-stage combustion (MSC) to provide reasonable assurance that the low nitrogen oxides limit of 2.8 lb/ton of clinker can be achieved. The report from RTP Environmental Associates indicates that the limit is "aggressive." The MSC (or selective non-catalytic reduction) may be installed by the company if the 2.8 lb/ton BACT limit proves to be difficult to achieve (during the "testing period" provided in their permit).

[1] Federal Register Vol. 63, 63 No. 56. March 24, 1998. Proposed cement MACT Rule.

The final change would be a requirement to implement new source Maximum Achievable Control Technology (MACT) for the control of hazardous air pollutants (HAPs). Draft permits issued since mid-1997 require either a case-by-case MACT determination or implementation of EPA's final MACT rule at startup. The only practical effect is to require a dioxins/furans limit and certain temperature regimes to minimize their formation.

Your letter indicates that the scope is limited to BACT and not MACT. As mentioned in the RTP Environmental Associates report, the kiln will have to comply with existing source MACT (that also includes dioxin standards and temperature regimes). Existing sources are required to install MACT controls by mid-2002 so it is not likely that FCS will operate for long without them. More likely, they will meet MACT for existing units at startup.

Please note that the discussion above relates to a BACT actually issued today. If today we received an application for a new unit we would make a new case-by-case determination. It is possible that such a determination could be different based on information supplied by the applicant, other installations, control equipment manufacturers, interested agencies, the public, and from our own research.

We generally do not re-open BACT determinations due to advances made while a facility is under construction. However, we can require that the adequacy of a BACT determination be demonstrated if construction is phased or delayed in accordance with provisions in 40CFR52.21 and Rules 62-4 and 62-212, F.A.C. If you have any questions regarding this matter, please call me at 850/921-9523.

Sincerely,

A. A. Linero, P.E. Administrator
Bureau of Air Regulation

AAL/al

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Ms. Dawn Durham
Planning Dept.
Hernando Co. Board of CC
20 N. Main St. Rm 262
Brooksville, Fl 34601-2828

4a. Article Number
Z 031 391 861

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
BROOKSVILLE FL FEB 17 2000 34601

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X Mary L Pearson

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Z 031 391 861

US Postal Service
Receipt for Certified Mail
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Do not use for International Mail *(See reverse)*

Sent to Dawn Durham	
Street & Number Hernando Co	
Post Office, State, & ZIP Code Board of C Comm. Brooksville Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	2-14-00

PS Form **3800**, April 1995

Board of County Commissioners

Hernando County

PLANNING DEPARTMENT

Government Center / Administration Building
20 North Main Street, Room 262
Brooksville, Florida 34601 - 2828

Planning - (352) 754-4057
Fax -(352) 754-4420
E-Mail: planning@co.hernando.fl.us

February 4, 2000

RECEIVED
FEB 10 2000
BUREAU OF AIR REGULATION

Al Linero, Administrator of New Source Review Section
FDEP, Division of Air Resource Management
Bureau of Air Regulations
2600 Blair Stone Rd, MS 5505
Tallahassee, FL 32399-2400

Re: BACT Determination for Kiln II at Florida Crushed Stone (FCS) in Hernando County
DRAFT Permit #: 0530021-002-AV
Facility ID No.: 0530021

Dear Mr. Linero:

One of the re-zoning conditions for the second kiln at FCS is regarding BACT standards. Based on the Board of County Commissioners approval, the condition FCS must meet is as follows, "the facility shall be built to current BACT Standards." Based on this condition, FCS has submitted a Verification of Current BACT Limits for Cement Kilns. Hernando County Planning Staff respectfully requests your technical assistance in the review of this document. Staff wants to ensure that this facility is constructed to BACT standards.

Please review the attached document and let me know your opinion and if any action is needed by the County. We appreciate your review of this matter and look forward to your response. If you should have any questions, please contact me at SUNCOM 669-4057 ext. 131 or (352) 754-4057 ext. 131, or Larry Jennings, Assistant County Administrator, Growth & Development at SUNCOM 669-4057 ext. 130.

Sincerely,

Dawn Durham
Environmental Planner

DMD
e-mail: Larry Jennings, Assistant County Administrator
Growth & Development

E:\WPDATA\DMD\DEP\AIR\FCSBACT.LTR

RECEIVED
JAN 0 5 2000
PLANNING
DEPARTMENT

VERIFICATION OF CURRENT BACT LIMITS FOR CEMENT KILNS

RTP Environmental Associates, Inc. (RTP) assisted Florida Crushed Stone (FCS) in obtaining an approved Air Construction Permit from the Florida Department of Environmental Protection (FDEP) to construct a second cement kiln at the Brooksville facility in November, 1995 and again in February, 1997. The permits issued by the FDEP and the associated air permit applications submitted by the applicant provided extensive analyses supporting the determinations of Best Available Control Technology (BACT) for the proposed FCS Unit II cement kiln. The BACT pollutant emission levels determined by the FDEP are presented in the final air permit dated February 6, 1997. Thus, the information previously presented is relatively recent and is included by reference. A copy of the BACT determination is attached.

Based on a staff recommendation by the Hernando County Planning Department, RTP has conducted a review of the recently issued air permits for cement kilns in Florida and the rest of the United States to verify that the FCS kiln and associated control equipment will be designed and built to current BACT standards relative to more recently permitted facilities. RTP reviewed the BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse and other United States Environmental Protection Agency's (USEPA's) databases for recent data. In addition, RTP reviewed the most recent permits for similar cement kiln facilities issued by the FDEP. Review of the data did not indicate that any significant changes in the proposed emission values or proposed control technologies for the FCS facility were warranted.

The pollutants subject to BACT standards according to the Prevention of Significant Deterioration (PSD) regulations are sulfur dioxide (SO_2), total suspended particulates (TSP), particulate matter less than 10 microns (PM_{10}), carbon monoxide (CO), and nitrogen oxides (NO_x).

RECENT BACT DETERMINATIONS

Table 1 provides the permitted BACT emission levels for the PSD significant pollutants as excerpted from Appendix BD of the existing FCS permit. Table 2 presents recent BACT determinations for facilities that have been constructed and/or are operational in comparison with the FCS BACT determinations. Several facilities appear to have been updated in the USEPA Technology Transfer Network (TTN) BACT/LAER database. These are the Roanoke Cement Company of Virginia, Mountain Cement Company in Wyoming, Illinois Cement Company in Illinois, and LaFarge Corporation in Missouri. In addition, RTP reviewed recently issued permits to Florida Rock Industries and Suwanee American Cement Company, Inc. in Florida. As can be seen, some more recent permits contain emission levels for CO and particulates that are lower than those established in the FCS permit.

BACT UPDATE FOR NOx EMISSIONS

Based on the BACT values listed in Table 2, it appears that FCS has the most restrictive BACT NO_x emission level. FCS considers the proposed NO_x BACT emission limit of 2.8 pounds per ton (lbs/ton) clinker to be an extremely aggressive NO_x standard that very few plants have demonstrated the ability to meet. Furthermore, existing data of facilities emitting NO_x at these levels has been shown to be of questionable quality. FCS has proposed to construct a kiln technology that typically exhibits lower NO_x emissions (Precalciner kiln) , but there is still risk associated with this type of kiln and the feed materials used at FCS. Thus, the FCS permit allows at least eighteen (18) months after initiating commercial operation to optimize facility operations in order to meet the specified NO_x permit limit.

BACT FOR CO EMISSIONS

As noted on Table 2, the Puerto Rican Cement Company and LaFarge Corporation both have lower permitted CO emissions (1.74 and 1.64 lbs CO per ton clinker produced, respectively) than

the proposed FCS facility at 2.0 lbs per ton clinker produced. However, both of these facilities have permitted NO_x emissions that are significantly higher 5.17 and 3.68 lbs NO_x per ton clinker produced, respectively) than the FCS facility at 2.8 lbs per ton clinker produced. The FDEP has required some of the lowest NO_x emission levels in the country in recent permits issued to FCS, Florida Rock Industries, Florida Mining and Materials, and Suwanee American Cement Co., Inc. In so doing, the FDEP has recognized the inverse relationship of NO_x and CO formation in the combustion zone of a cement kiln. Combustion conditions that reduce NO_x formation favors CO formation, and combustion conditions that reduce CO formation favor NO_x formation. This is discussed on page B-11 of the attached BACT section of the Suwanee American Cement Co., Inc.'s air permit (No. 1210465-001-AC).

Therefore, we consider the proposed CO emission level of 2.0 lbs per ton clinker produced, relative to the proposed NO_x emission level of 2.8 lbs per ton clinker produced to be equivalent or more restrictive than the CO limits established for the Puerto Rican Cement Company and the LaFarge Corporation facilities relative to their permitted NO_x limits. Furthermore, it appears that the FCS values are more restrictive than the two cement kiln permits most recently issued by the FDEP, Florida Rock Industries and Suwanee American Cement Company.

BACT UPDATE FOR SO_2 EMISSIONS

As noted in Table 2, it appears that the FCS permit contains the most restrictive emissions limit for SO_2 of the facilities reviewed. The proposed limit is 0.23 lbs SO_2 per ton clinker produced. Since more recent facilities have been permitted at higher levels, it would appear that the FCS permit limit for SO_2 is more restrictive than what is considered current BACT.

BACT UPDATE FOR PM/PM_{10}

Table 3 provides a comparison of permitted particulate emissions for the several facilities listed in Table 2 with those for the proposed FCS Unit II kiln. The PM emissions are divided between

the precalciner/kiln and the clinker cooler. In many facilities, these have separate control devices and stack exhausts. In the case of FCS, the facility will utilize a single control device and exhaust point.

As shown in Table 3, permitted total PM emission values ranged from 0.27 to 0.57 lbs per ton clinker for the precalciner/kiln and from 0.29 to 0.45 lbs per ton clinker for the clinker cooler. Thus, the lowest emission values for each show an approximate 35-40% reduction from the permitted FCS values. This percentage reduction is within the capabilities of the particulate control device planned for the facility exhaust. Although the air pollution control vendor has not yet been chosen, the particulate control equipment is typically constructed with a minimum 50% design margin to provide a level of safety for compliance assurance. Therefore, the particulate control equipment will be designed and built to reduce facility particulate emissions to levels below current permitted BACT levels in order to maintain continuous compliance with the proposed FCS permitted emission limits.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPs)/MACT

The NEHSAPs for the Portland Cement Manufacturing Industry was promulgated and published in the Federal register on June 14, 1999. The NESHAPs limits PM [surrogate for Hazardous Air Pollutant (HAP) metals] emissions, as well as opacity from new and existing Non-Hazardous Waste Burning (NHW) kilns, inline kilns/raw mills, and clinker coolers and limits opacity from raw material dryers and handling processes at Portland Cement plants which are major sources. The proposed FCS Unit II kiln would be categorized as an existing facility because construction had begun (as defined by the regulation) prior to the rule proposal.

The NESHAPs established for the Portland Cement Industry are equivalent to the New Source Performance Standards for particulate matter, which are:

a) 0.30 lbs PM per ton dry kiln feed and opacity ≤ 20 % for the inline kiln/raw mill.

b) 0.10 lbs PM per ton dry kiln feed and opacity ≤ 10% for the clinker cooler.

The NESHAP also includes a limit for dioxins and furans, which varies by the temperature of the particulate control device:

a) 0.2 ng TEQ/dscm corrected to 7% O_2 at temperatures >400°F

b) 0.4 ng TEQ/dscm corrected to 7% O_2 at temperatures ≤400°F

In this case (TEQ) stands for PCDD/PCDF Toxic Equivalent values and (dscm) is dry standard cubic meters of flue gas. The proposed FCS Unit II kiln permit contains PM emission levels lower than the established NESHAPs. In addition, the proposed emissions of PCDD/PCDF (TEQ) are also lower than the most restrictive criteria of 0.2 ng TEQ/dscm. Therefore, the proposed Unit II kiln will be in conformance with the newly promulgated NESHAPs/MACT.

BACT SUMMARY

RTP Environmental Associates, Inc. has reviewed recently issued air permits for Portland Cement producing facilities as indicated on USEPA databases and as acquired from FDEP personnel. Based on this review, the air pollution control technologies specified in the air construction permit for the proposed FCS Unit II kiln will be designed and built to achieve emissions reductions equivalent to or lower than what is considered current BACT for all PSD applicable pollutants.

REFERENCES

Florida Department of Environmental Protection (FDEP), 1995. Permit for No. 2 Cement Kiln and Associated Equipment, AC27-274892 & PSD-FL-227. November 17, 1995.

RTP Environmental Associates, Inc. (RTP), 1995a. Application to Construct a Second 600,000 Ton Per Year Cement Kiln at the Florida Crushed Stone Facility in Brooksville, Florida. March, 1995.

United States Environmental Protection Agency (USEPA), 1999. December 6, 1999 search of RACT/BACT/LAER Clearinghouse (main and transient databases) on the Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) Bulletin Board System.

USEPA, 1995. Compilation of Air Pollutant Emission Factors, Fifth Edition. January, 1995.

USEPA, 1994. Emission Factor Documentation for AP-42 Section 11.6, Portland Cement Manufacturing, Final Report. May, 1994.

USEPA, 1994. Alternative Control Techniques Document - NO_x Emissions from Cement Manufacturing, EPA-453/R-94-004, March, 1994.

RTP Environmental Associates, Inc. (RTP), 1996. Proposed Modifications to Air Construction Permit AC27-274892 to Construct a Second Cement Kiln at the Florida Crushed Stone Facility..., September, 1996.

FDEP, 1997. Air Construction Permit: Portland Cement Plant No. 2 for Florida Crushed Stone Company, Permit No. AC27-274892(A) and PSD-FL-227(A), February 10, 1997.

FDEP, 1999. Best Available Control Technology (BACT) Determination for Suwanee American Cement Company, Inc., Branford Plant, Permit No. 1210465-001-AC and PSD-FL-259, 1999.

USEPA, 1999. National Emission Standards for Hazardous Air Pollutants for Source Categories; Portland Cement Manufacturing Industry; Final Rule, June 14, 1999 Federal Register.

FDEP, 1996. Best Available Control Technology (BACT) Determination Portland Cement Manufacturing Facility, Florida Rock Industries, Permit No. AC01-267311 and PSD-FL-228, December, 1996.

TABLE 1

PROPOSED BACT EMISSION LEVELS
MAIN STACK

POLLUTANT	BACT EMISSION LIMIT	
	lbs/ton clinker	lbs/ton dry feed
PM/PM_{10} (kiln)	0.306	0.200
SO_2	0.230	0.150
NO_x*	2.800	1.830
CO	2.000	1.307

Note: * FCS has up to 18 months after start-up of commercial operation to achieve this standard.

TABLE 2

COMPARISON OF PROPOSED BACT EMISSION LEVELS FOR THE FCS MAIN STACK WITH BACT DETERMINATIONS FOR PORTLAND AND NON-PORTLAND CEMENT KILNS CONSTRUCTED AND OPERATED SINCE NOVEMBER 1, 1996

FACILITY	LAST UPDATE	POLLUTANT	EMISSION LIMIT (LB/TON CLINKER)	BASIS
Proposed FCS Limit		**CO**	**2**	
SUWANNEE AMERICAN CEMENT COMPANY, INC.			3.6	BACT
FLORIDA ROCK INDUSTRIES			3.6	BACT
FACILITY[1]	05/12/99		4.00	BACT-PSD
PUERTO RICAN CEMENT COMPANY, INC.	05/06/98		1.74	BACT-PSD
LAFARGE CORPORATION	03/24/98		1.64	BACT-PSD
ASH GROVE CEMENT COMPANY	02/18/98		4.34	BACT-PSD
ROANOKE CEMENT COMPANY	05/07/97		2.53	BACT-OTHER
Proposed FCS Limit		**NO_X**	**2.8**	
SUWANNEE AMERICAN CEMENT COMPANY, INC.			2.9	BACT
FLORIDA ROCK INDUSTRIES			2.8	BACT
MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	05/12/99		7.20	BACT-PSD
ILLINOIS CEMENT COMPANY	04/15/99		4.5	BACT-PSD
LAFARGE CORPORATION	03/24/98		3.68	BACT-PSD
ROANOKE CEMENT COMPANY	05/07/97		6	BACT-OTHER
PUERTO RICAN CEMENT COMPANY, INC.[2]			5.17	(2)
Proposed FCS Limit (Total PM Combined Kiln and Cooler)		**PM/PM_{10}**	**0.45/0.45**	
SUWANNEE AMERICAN CEMENT COMPANY, INC.			0.34/0.29	BACT
FLORIDA ROCK INDUSTRIES			0.47/0.39	BACT
MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	05/12/99		0.57	BACT-PSD
ILLINOIS CEMENT COMPANY[3]	04/15/99		0.208	BACT-PSD
LAFARGE CORPORATION	03/24/98		0.270	BACT-PSD
ROANOKE CEMENT COMPANY	05/07/97		0.50/0.43	NSPS
Proposed FCS Limit		**SO_2**	**0.23**	
SUWANNEE AMERICAN CEMENT COMPANY, INC.			0.27	BACT
FLORIDA ROCK INDUSTRIES			0.28	BACT
MOUNTAIN CEMENT COMPANY-LARAMIE FACILITY	05/12/99		8.96	BACT-PSD
ILLINOIS CEMENT COMPANY	04/15/99		0.8	BACT-PSD
LAFARGE CORPORATION	03/24/98		2.64	BACT-PSD
ROANOKE CEMENT COMPANY	05/07/97		4.99	BACT-OTHER

Notes:

(1) Facility does not employ a precalciner.

(2) Emission value from original permit. According to Frank Jon of U.S. EPA Region II, the source of the reported value, the 5.17 lb/ton clinker produced number is the permitted emission limit but is not considered BACT.

(3) Cooler is a separate emissions unit from the kiln. Unfortunately, the BACT/RACT/LAER database entry and the designated contact only had data on the PM permitted emission limits for the kiln.

TABLE 3

FACILITY PERMITTED PM/PM_{10} EMISSION LIMITS (LBS/TON CLINKER)

POLLUTANT	FCS	SUWANEE	FLORIDA ROCK	MOUNTAIN CEMENT	ILLINOIS CEMENT	LAFARGE	ROANOKE
PM (Precalciner/Kiln)	0.3	0.22	0.31	0.47	0.208	0.170	0.404
PM_{10} (Precalciner/Kiln)	0.3	0.19	0.26	ND	ND	ND	0.345
PM (Cooler)	0.15	0.12	0.16	0.15*	ND	0.1	0.1
PM_{10} (Cooler)	0.15	0.10	0.13	ND	ND	ND	0.084
PM (Total)	0.45	0.34	0.47	0.57	ND	0.27	0.504
PM_{10} (Total)	0.45	0.29	0.39	ND	ND	ND	0.429

*Value is listed as 0.10 lbs PM per ton dry kiln feed multiplied by the FCS ratio of tons dry kiln feed to tons clinker produced (159.4/104.2).

ND = No Data Available

ATTACHMENT 1

FDEP BACT DETERMINATION
FOR
FLORIDA CRUSHED STONE COMPANY
UNIT II KILN

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

FLORIDA CRUSHED STONE COMPANY
PORTLAND CEMENT PLANT NO. 2 AND ASSOCIATED EQUIPMENT
Brooksville, Florida
Hernando County

The applicant, Florida Crushed Stone Company (FCS), plans to construct a 104.2 ton per hour (maximum TPH as clinker) dry process portland cement kiln with a *preheater/precalciner design* at its existing cement plant approximately 3.5 miles northwest of Brooksville, Hernando County, Florida. The project includes a single kiln and clinker cooler along with raw mill, finish mill, cement and clinker handling equipment, coal handling equipment, silos, and air pollution control equipment. The facility will produce 912,500 tons per year (maximum TPY as clinker) and approximately 1,004,000 TPY of portland cement.

The Department issued a construction permit and a BACT determination for Cement Plant No. 2 utilizing the preheater (PH) design (1995). This revised BACT analysis will consider the proposed preheater/precalciner (PH/PC) design that may be utilized by FCS in lieu of the permitted PH kiln. An extensive analysis supporting the BACT determination requested by FCS was submitted with the original application and is included by reference along with the original BACT Determination made by the Department and the additional information submitted with the present application.

A detailed process description is included in the Technical Evaluation and Preliminary Determination.

Following is the BACT determination proposed by the applicant:

BACT DETERMINATION REQUESTED BY THE APPLICANT:

POLLUTANT	EMISSION LIMIT
Particulate Matter (kiln)	0.2 lb/ton of dry kiln feed
Particulate Matter (cooler)	0.1 lb/ton of dry kiln feed
Particulate Matter (material handling, conveying, storage	0.01 gr/dscf, baghouses
Sulfur Dioxide (kiln)	0.23 lb/ton clinker
Nitrogen Oxides (kiln)	2.8 lb/ton clinker
Carbon Monoxide (kiln)	2.0 lb/ton clinker

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

A single, large, fabric filter system (baghouse) will be used to capture particulate matter from the kiln and the cooler. Baghouses will also be used to limit particulate emissions from other process emission points. Table 1-1 is a list of the emission units to be controlled by baghouses.

Portland cement installations are among the major facilities listed in Table 212.400-1, F.A.C., "Major Facilities Categories." A BACT determination is required for each pollutant exceeding the significant emission rates in Table 212.400-2, "Regulated Air Pollutants Significant Emissions Rates," which in this case are particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), and nitrogen oxides (NOx).

This facility is also subject to the following requirements given in Rule 62-208.800, F.A.C., "Federal Regulations adopted by Reference:"

- 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants.
- 40 CFR 51, Subpart P - Protection of Visibility.

Date of Receipt of a BACT Application:

September 11, 1996

Review Group Members:

Teresa Heron and A. A. Linero of the New Source Review Section.

BACT DETERMINATION PROCEDURE

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determination of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or

economically unfeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- Particulate matter from kilns and coolers (PM/PM_{10} and VE). Controlled generally by add-on particulate collection equipment such as baghouses or electrostatic precipitators.

- Products of combustion and incomplete combustion (e.g., SO_2, NO_x, CO, VOC). Control is largely achieved by good combustion practices, reactions with clinker and raw materials and removal in add-on control equipment.

- Emissions from materials handling, conveyance, and storage (primarily PM). Controlled generally by fabric filters and reasonable precautions.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO_2, H_2SO_4, fluorides, etc.), if a reduction in "non-regulated "air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT DETERMINATION ANALYSIS:

PARTICULATE MATTER (PM/PM_{10})

Particulate Matter is generated by the various physical and chemical processes at a cement manufacturing plant. Sources of particulate matter at cement plants include (1) quarrying and crushing, (2) raw material storage, (3) grinding and blending, 4) clinker production, 5) finish grinding, and 6) packaging and loading. Additional sources of PM are raw material storage piles, conveyers, storage silos, and unloading facilities. The largest emission source of PM within cement plants is the pyroprocessing system that includes the kiln and clinker cooler exhaust stacks (in this case, common kiln/cooler stack). Emissions from kilns are affected by several factors, including differences in convective patterns, material movement patterns, burner locations and insertion lengths, heat transfer mechanisms, and the type of clinker cooler that supplies secondary air to the kiln for combustion. Typically, dust from the pollution control equipment servicing the kiln and cooler is collected and recycled into the kiln and thus incorporated into the clinker. According to FCS, virtually all of the cement kiln dust (CKD) generated from Cement Plant 1 is captured in the baghouse and returned to the pyroprocessing system as raw material. A small amount is removed every few weeks and sold to avoid build-up of thallium in the product. It is expected that most of the CKD from Cement Plant 2 will be recycled, while any excess will be stored in a silo for sale.

Common control devices for stack gases include settling chambers, inertial separators, impingement separators, wet scrubbers, fabric filters, and electrostatic precipitators. Fabric filters (baghouses) and electrostatic precipitators (ESPs) are generally considered equivalent for particulate control. Both types of devices can achieve removal efficiencies of over 99%. ESPs and baghouses are used extensively as control devices at cement plants. ESPs are generally specified for kiln and clinker cooler exhaust gases because of their ability to operate effectively at varying temperatures. Baghouses are also used at facilities for particulate control from kilns and coolers. Both types of control equipment provide for the recovery/recycling of collected dust back into the process stream. Baghouses are also used to control particulate emissions from most other material processing operations at cement plants.

Common controls to limit particulate emissions from fugitive sources (such as roadways, stockpiles, and material processing and conveying equipment) include wet suppression, sweeping, application of surfactants, paving of roads and covering of stockpiles to reduce wind erosion. Wet suppression of fugitive particulate emissions is considered as BACT for most material handling operations and unpaved roads. Dust from stockpiles can be minimized by relatively high material moisture content with additional water spraying as necessary.

Small quantities of beryllium (Be), mercury (Hg) and lead (Pb) are generated by the combustion of coal and fuel oil blends. Be and Pb will be generated as particulate emissions from the combustion of fuels, and will be removed by incorporation into the product clinker or controlled by the kiln/cooler baghouse. Hg can exist in both particulate and gaseous form and can only be partially removed by the process and control equipment The applicant projects such low emissions of these metals that they will not be subject to BACT.

A review of the BACT Clearinghouse indicates that baghouses and ESPs are widely used to control particulate matter from process emission units at cement plants. They are commonly accepted as BACT.

The applicant has proposed kiln particulate emissions of 0.2 pounds per ton of dry kiln feed (lb/ton kiln feed) and cooler particulate emissions equal to the New Source Performance Standards (NSPS) limit of 0.1 lb/ton kiln feed as BACT for this source. This compares with the proposed values in the original application for the PH kiln of 0.3 and 0.1 lb/ton kiln feed for the two units, respectively.

PRODUCTS OF COMBUSTION AND INCOMPLETE COMBUSTION

Nitrogen Oxides

Emissions of NO_x from dry process cement plants with a preheater/precalciner include the kiln, the calcining loop, and any fuel-fired support operation. NO_x is generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NO_x) and by thermal fixation of nitrogen in the combustion air (thermal NO_x). As flame temperature increases, the amount of thermally generated NO_x increases. Fuel type affects the quantity and type of NO_x generated. Generally, natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NO_x than oil or coal, which have higher fuel nitrogen content, but exhibit lower flame temperatures.

NO_x emissions represent a significant portion of the total emissions generated by this project, and shall be minimized using BACT.

The emissions of NO_x can potentially be reduced at Portland cement plants by two methods:

1. Minimizing the quantity of NO_x generated during combustion (combustion modifications).

2. Reducing the quantity of NO_x in the flue gas stream (flue gas controls).

A review of EPA BACT/LAER Clearinghouse (BACT Clearinghouse) information indicates that NO_x emissions at most facilities are minimized by process control and good combustion practices.

The applicant stated that NO_x emissions at this facility will be controlled through "proper combustion practices" such as burner design with primary combustion air control. Burning a portion of the fuel in the precalciner, introduction of tires in the material feed end of the kiln, and indirect firing will spread out the thermal load and will help minimize NO_x emissions.

In its original submittal, the applicant ruled out Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR) as technically unfeasible or cost prohibitive. The applicant gave subsequent consideration to other possible control methods following a request by the Department for additional details justifying the selected method. The applicant rejected Low NO_x Burners, low Nitrogen Fuel, Flue Gas Recirculation, Fuel Reburning, and Contemporaneous Reductions from the on-site power plant and cement kiln as options which are allegedly ineffective, undemonstrated, or beyond the control of the applicant.

The applicant has proposed for this kiln with a preheater/precalciner design a NO_x emission rate of 292 lb/hr and 2.8 lb/ton clinker. This value is substantially less than the one FCS proposed in its original application (4.3 lb/ton clinker) and, on a unit basis, is equal to the BACT Determination made by the Department in 1995. It is compared below with previous determinations documented by the BACT Clearinghouse.

Previous BACT Determinations

BASIS	Least Stringent	Most Stringent	Proposed
	Year 1978	Year 1981	Year 1996
lb/ton clinker	11.13	0.85	2.8

It is important to note that the facility which was given the 0.85 lb/ton clinker NO_x limit has not been able to meet it since construction. A dry process plant with a preheater/precalciner received a NO_x limit of 1.11 lb/ton clinker but was never built. Another dry process plant with a preheater/precalciner received a BACT determination of 2.09 lb NO_x/ton clinker. However, it appears that since that time a less stringent standard was applied. One dry process preheater/precalciner kiln in California received a NO_x BACT determination of 2.5 lb/ton clinker. The Department made a BACT Determination of 2.8 lb/ton clinker in 1995 for the proposed Florida Rock Industries Cement Plant in Newberry, Florida. The main reason it was higher than the one for the California plant was that Florida limestone is wetter and requires more heat input to dry. A claim by the kiln manufacturer that differences in volatility between Eastern and Western coal should be reflected in an even higher emission limit for the Florida kiln was rejected by the Department.

A review of the NO_x emission rate summary indicates that the applicant's proposal is representative of the most stringent BACT determinations made to date for plants utilizing dry processes. The dry process with a

preheater/precalciner is considered to be the most energy-efficient process. Therefore it is expected that the lower fuel use will result in relatively low NO_x. Additionally, the lower flame temperature realized when burning coal, spreading the thermal load over various burn points, indirect firing, as well as documented reductions from tire burning, are further reasons to a expect low emission rate from the proposed preheater/precalciner kiln.

The Department also reviewed a paper presented at the Air and Waste Management Association (AWMA) International Specialty Conference on Waste Combustion in Boilers and Industrial Furnaces. The paper, "Reduction of NO_x Emissions from Cement Kiln/Calciner through the Use of the NOxOUT Process," which was written by representatives of Nalco and Ash Grove Cement, suggests that SNCR is a viable control method. A level as low as 1.0 lb/ton of clinker was reached based on demonstration tests conducted at the Ash Grove cement plant in Seattle, Washington. However the process has not been demonstrated on a long term basis and FCS' kiln designer, Polysius, has not been willing to guarantee its performance or the quality of cement produced when using this control process.

Recently a proposed cement plant (Great Star Cement, Clark County, Nevada) was permitted with the urea-based SNCR/NOxOUT process as BACT. The process relies on the reaction between ammonia and NO_x to yield molecular nitrogen. The delivery system consists of urea injectors in one of the preheater sections. The objective was to achieve 50% reduction of NO_x emissions. At that level there should be no ammonia slip while meeting a BACT limit of 3.1 lb/ton clinker.

A survey of stack test data from various kilns around the country, operating for more than three years, suggests that the proposed emission limit for NO_x is low but achievable

The USEPA Technology Transfer Network (TTN) BACT/LAER/RACT Clearinghouse database was reviewed for more recent data. Review of this data does not change the Department's original review.

Sulfur Dioxide

Sulfur dioxide (SO_2) may be generated both from sulfur compounds such as sulfates in the raw materials and from sulfur in the fuel. The sulfur content of both raw materials and fuels varies from plant to plant and with geographic location. Sulfur dioxide at this facility will be generated by the combustion of coal and tires in the kiln and generation of sulfur gases from the raw materials.

The exhaust gas from a cement kiln can contain varying amounts of SO_2. Under low oxygen conditions, sulfates in the raw materials can be converted to SO_2. At high temperature and excess air conditions, some of the sulfur introduced into the cement kiln with the raw materials, and most of the sulfur contained in the fuel, are converted to SO_2. Most of the SO_2 subsequently reacts with oxygen and alkali compounds (such as Na_2O and K_2O vaporized at sintering temperatures) to form alkali sulfates, which are found in cement clinker and in kiln dust. The amount of SO_2 released in the kiln flue gases will vary with the amount of excess alkali available for absorption. Additional SO_2 may be removed through contact with the incoming raw materials and, to some extent, in the particulate control equipment.

SO_2 control processes can be classified into five categories: fuel/material sulfur content limitations, absorption by a solution, adsorption on a solid bed, direct conversion to sulfur, or direct conversion to sulfuric acid.

FCS proposes to limit SO_2 emissions by taking advantage of the alkaline environment in the kiln, preheater, and raw mill to effect substantial removal of SO_2. Ultimately the sulfur is incorporated into the clinker lattice structure, thus minimizing the amount emitted to the atmosphere. Some additional SO_2 removal through contact with particulate matter may also take place in the kiln/cooler baghouse.

A review of the BACT determinations for cement plants as contained in the BACT Clearinghouse indicates SO_2 reduction levels from 70 to 96% (percent) from facilities utilizing the dry processes. The Department did not find instances of BACT involving measures beyond those proposed by FCS. Some plants use baghouses as proposed by FCS instead of Electrostatic Precipitators (ESPs) for particulate control. It is possible that the filter cake on the bags enhances SO_2 removal compared with an ESP. However, the difference is marginal compared with the primary removal mechanism involving oxidation of SO_2 to SO_3, alkali reactions, and subsequent removal of sulfates as particulate matter and with the clinker.

The SO_2 limit proposed by the applicant, 0.23 lb/ton clinker, is substantially less than the 0.55 lb/ton value proposed in the original application submitted by FCS in 1995 and is equal to the BACT emission limit (on a unit basis) set by the Department in its review of the previous preheater (PH) kiln proposal. A survey of stack test data from different facilities around the country operating for at least three years demonstrates that the proposed limit is low but achievable.

Carbon Monoxide and Volatile Organic Compounds

Carbon monoxide (CO) is a pollutant formed by the incomplete combustion (oxidation) of carbon containing compounds in the cement kiln fuel and during the transformation of cement raw materials to cement clinker. When insufficient oxygen is provided, more CO and less CO_2 are formed than under excess air conditions. Substantial quantities of CO and CO_2 are also generated through calcining of limestone and other calcareous material. This calcining process thermally decomposes $CaCO_3$ to CaO and CO_2. The calcining of limestone in the cement manufacturing process liberates large amounts of CO_2, which is available for dissociation into CO.

Emissions of CO can potentially be reduced at portland cement plants by two main methods: utilization of proper combustion practices to maximize the oxidation of CO to CO_2 and reducing the quantity of CO in the flue gas stream (flue gas control).

VOC is also a pollutant formed by the incomplete combustion of fuel or hydrocarbons contained in the raw materials. The temperatures of the gases in the kiln will reach between 3700 to 3800 degrees Fahrenheit. At these high temperatures, virtually all VOCs will be consumed or destroyed regardless of their source (limestone, mill scale, coal, fuel oil, etc.). Clinker production requires certain temperatures, residence time, and turbulence within the kiln. These factors are sufficient to ensure the destruction of almost all VOCs at cement plants.

Emissions of VOC can be controlled by add-on control devices by the mechanisms of adsorption, absorption, or incineration (afterburning). Incineration processes include flame incineration, thermal incineration, and catalytic incineration. No add-on controls for CO or VOC have been demonstrated for cement plants.

The high temperatures and control of excess air and fuel, typically results in simultaneous optimization for control of products of incomplete combustion and NO_x. The applicant proposes proper combustion practices as BACT to control emissions of CO from this plant. The applicant estimates low emissions of VOC such that the new kiln will not be subject to BACT for this pollutant.

A review of the BACT Clearinghouse reveals that for CO and VOC, BACT from cement plants for these pollutants is proper combustion practices.

BACT DETERMINATION BY DEP:

Particulate Matter Determination

BACT for visible emissions was determined to be more stringent than the NSPS for Portland Cement Plants, 40 CFR 60, Subpart F. With respect to the kiln, BACT for PM was also determined to be more stringent than the NSPS for Portland Cement Plants, 40 CFR 60, Subpart F. This value of 0.2 lb/ton kiln feed is equal to the Department's previous BACT determination for the PH kiln and equal to the proposed determinations made for the Florida Rock Industries kiln in Newberry and the Southdown Cement Plants in Brooksville.

Based on actual data the kiln and cooler PM limits are considered to be low and achievable.

For each small baghouse in the material handling process the exhaust gases must not exhibit greater than 5 percent opacity. The Department has determined that 5 percent opacity is BACT, and is attainable with a baghouse.

Nitrogen Oxides Determination

The Department has determined that the NO_x level proposed by the applicant is similar to the lowest emission limits from plants already in operation throughout the country and reflects recent BACT determinations for Florida portland cement plants.

FCS previously ruled out SNCR as unfeasible for the previous PH design because the "optimum temperature range to drive the SNCR reactions between 1600-2000 degrees F is encountered in a typical kiln system only in the kiln itself." FCS contended that injection of ammonia/urea in the kiln will cause increases in NO_x. In the new PH/PC arrangement, the temperature range for SNCR will occur outside of the kiln and its use is at least plausible.

The Department believes that the proposed NO_x limit of 2.8 lb/ton clinker (at 104.2 TPH clinker production) is BACT for this plant. Therefore, BACT for NO_x emissions from the cement kiln is determined to be equal to 2.8 lb/tons of clinker. The Department believes that this limit can be achieved by the technology proposed by FCS. If it is not met within the time allotted in the proposed construction permit, then FCS must examine the option of employing SNCR or propose an alternative technology to accomplish the same end.

Sulfur Dioxide Determination

The Department has also determined that the SO_2 BACT limit proposed by the applicant is also one of the lowest in the country and is equal to recent BACT Determinations by the Department for this pollutant. It is the conclusion of the Department that the key factors in SO_2 removal are maintaining proper ratios of sulfur and alkali in the kiln environment and intimate contact between raw materials and exhaust gases. This is considered by the Department to be the mechanism by which the proposed limit of 0.23 lb/ton clinker will be achieved.

The Department believes that FCS will meet the SO_2 limits as proposed. This is substantiated by the letter of October 28, 1983 from Sholtes and Koogler, Environmental Consultants, regarding the existing PH kiln at FCS. Per page 13, "Polysius (cement plant designer) states that if only sulfur dioxide from the cement plant were considered, sulfur dioxide emissions as low as 20 pounds per hour could be expected from the cement plant." This is further proved by actual emissions tests from the original kiln which average about 10 lb of SO_2 per hour or approximately 0.1 lb/ton clinker.

The Department has also concluded that sulfuric acid mist emissions are not expected to be significant because free sulfite (SO_3) will preferentially react with clinker and kiln dust in the alkali environment of the kiln. Also, little water is available to complete the reaction to acid mist. No BACT determination was required for sulfuric acid mist (H_2SO_4).

An emission limit of 0.23 lb SO_2/ton clinker will insure that ambient SO_2 concentration increases will be less than the applicable National Park Service Significant Impact Level. Although it appears that FCS can achieve even lower values, it would be prudent to allow sufficient flexibility such that emissions of all combustion products can be minimized simultaneously. To provide further assurance that this limit will be met, the Department proposes a limit on the sulfur content of the coal of 1.25 percent.

CO Determination

BACT for CO was determined to be 2.0 lb/ton clinker. This value is equivalent to that proposed by FCS and the Department's previous BACT determination for Cement Plant 2. It is lower than the value given in AP-42 and will provide sufficient flexibility to minimize NO_x and SO_2 emissions. The Department requests that FCS continue to be judicious in its procurement of raw materials such as coal ash with low levels of unburned carbon to minimize CO generation in the PH.

Other Pollutants

No BACT determination was required for VOC as it will not be emitted in significant amounts.

No BACT determination was required for Pb. The limit requested by FCS insures BACT will not be triggered. Removal will be accomplished by the particulate control system and incorporation into the clinker matrix.

No BACT was required for Be. The adopted value will result in emissions less than the PSD significant threshold value. The particulate control system will remove Be which will also be largely incorporated into the clinker matrix.

No BACT was required for Hg. The estimate provided by FCS will result in emissions less than the applicable BACT threshold. This is consistent with information available to the Department on mercury levels in raw materials and coal as well as tests conducted at kilns in Florida.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

The BACT emissions established by the Department are summarized as follows:

SOURCE	POLLUTANT EMISSION LIMIT
KILN	
Kiln (PM/PM_{10})	0.2 lb/ton kiln feed (dry basis) and 0.3 lb/ton clinker - 1 hour average
Kiln (VE)	Visible emissions not to exceed 10 percent opacity
Kiln (SO_2)	0.23 lb/ton clinker 24 hr rolling average
Kiln (NOx)	2.8 lb/ton clinker - 24 hr rolling average
Kiln (CO)	2.0 lb/ton clinker - 1 hr average
Kiln (SO_3)	0.014 lb/ton clinker (non-BACT)
Kiln (VOC)	0.085 lb/ton clinker (non-BACT)
Kiln (Be)	8.5×10^{-7} lb/ton clinker (non-BACT)
Kiln (Hg)	2.4×10^{-5} lb/ton clinker (non-BACT)
Kiln (Pb)	5.2×10^{-4} lb/ton clinker (non-BACT)
Fuels	Coal (1.25 % S), blend of fuel oil and on-spec used oil (1.5 % S), tires (up to 15% of heat input), and natural gas are the <u>only</u> fuels allowed
COOLER	
Cooler (PM/PM_{10})	0.1 lb/ton kiln feed (dry basis) and 0.15 lb/ton clinker
Cooler (VE)	Visible emissions not to exceed 10% opacity

ASSOCIATED EQUIPMENT

Minor points with baghouses	Visible emissions not to exceed 5% opacity

FUGITIVES SOURCES

Fugitive sources	Visible emissions not to exceed 10% opacity

COMPLIANCE

Compliance with the particulate emission limitations shall be demonstrated using EPA Reference Method 5 as contained in Appendix A, 40 CFR 60, and set forth in Subsection 60.64 of the NSPS for Portland Cement Plants, 40 CFR 60.

Compliance with opacity standards (minor sources controlled by baghouses) shall be determined by conducting observations in accordance with 40 CFR 60, Appendix A, Method 9.

Continuous Opacity Monitors (kiln and cooler) shall meet the requirements of the 40 CFR 60, Appendix B and 40 CFR 60, Subpart F, NSPS for Portland Cement Plants. Compliance with the opacity standard for the kiln and cooler shall be demonstrated by EPA Reference Method 9 as contained in Appendix A, 40 CFR 60.

Compliance with the opacity standards for fugitive sources shall be determined by EPA reference Method 9 as contained in Appendix A, 40 CFR 60.

Compliance with the SO_2 and NO_x emission limitations shall be demonstrated using CEMs. The CEMs shall meet all the applicable requirements of 40 CFR 60, Appendix B and Appendix F.

Compliance with the CO limitations shall be demonstrated by 3 one-hour tests using EPA Method 10.

Pursuant to F.A.C. 62-4.070(3), 62-212.400(6) and 62-296.520, the kiln/cooler exhaust system shall be equipped with continuous monitors to record NO_x and SO_2 for the purposes of compliance; opacity at the stack to indicate proper maintenance and operation; and CO and/or O_2 to optimize combustion conditions for pollution control.

Compliance with the VOC limitations shall be demonstrated (on a one time basis) by three one hour stack tests using Method 25 or 25A to confirm emission rate is less than the PSD significant emission rate.

Compliance with the Pb, Hg, and Be limitations shall be demonstrated (on a one time basis) by three one-hour stack tests using EPA Method 29 to confirm emission rate is less than the PSD significant emission rate.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

BACT/LAER/RACT CLEARINGHOUSE DATABASE COMPARISON

The following table is to be used for reference and comparison with portland cement facilities listed in the BACT/LAER/RACT Clearinghouse database:

POLLUTANT	lb/ton clinker	lb/ton $kiln_{ph}$ feed	lb/ton kiln feed	lb/MM BTU
PM/PM_{10} (kiln)	0.3	0.18	0.2	0.09
SO_2 (kiln)	0.23	0.14	0.15	0.07
NO_x (kiln)	2.80	1.68	1.83	0.89
CO (kiln)	2.0	1.20	1.31	0.64
VOC (kiln)	0.085	0.05	0.06	0.03
H_2SO_4 (kiln)	0.014	8.37 E-03	0.009	4.46 E-03
Be (kiln)	8.5 E-07	5.10 E-07	5.55 E-07	2.72 E-07
Hg (kiln)	2.4 E-05	1.44 E-05	1.57 E-05	7.69 E-06
Pb (kiln)	5.2 E-04	3.13 E-04	3.40 E-04	1.67 E-04
PM/PM_{10} (Cooler)	0.15	0.09	0.1	0.04

Based on the following FCS process rates:
Preheater feed rate ($kiln_{ph}$ feed) : 173.2 TPH
Kiln feed rate : 159.4 TPH
Clinker production : 104.2 TPH
Heat Input : 325 MMBTU/hr

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING

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New Source Review Section
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Bureau of Air Regulation
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Recommended By:

C. H. Fancy, P.E., Chief
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Date: 2/7/97

Approved By:

Howard L. Rhodes, Director
Division of Air Resources Management

Date: 2/9/97

ATTACHMENT 2

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION FOR THE SUWANEE AMERICAN CEMENT COMPANY, INC. BRANFORD PLANT PERMIT NO. 1210465-001-AC AND PSD-FL-259

Suwannee American Cement Company, Inc.
Branford Plant
PSD-FL-259 and 1210465-001-AC
Suwannee County

1. BACKGROUND

The Suwannee American Cement Company, Inc. plans to construct a dry process, preheater/precalciner type portland cement plant to be located at US Highway 27 at County Road 49, Suwannee County.

This facility will consist of a portland cement plant and associated quarry, and raw material and cement handling operations. The plant will combine raw materials and utilize a preheater/precalciner kiln with in-line raw mill to produce clinker. The clinker will be milled and combined with gypsum to produce portland cement. The plant will have a capacity of 178 tons per hour of material fed to the preheater (dry basis), 105 tons per hour of clinker production, and 150 tons per hour of portland cement production. Annual production will be limited (on a rolling 12-month basis) to 1,427,880 tons per year of material fed to the preheater (dry basis), 839,500 tons per year of clinker production, and 1,191,360 tons per year of portland cement production. Fuels allowed to be used in the pyroprocessing system are natural gas, coal, petroleum coke, whole tires and tire derived fuel (TDF). The plant may include a tire gasification system that will utilize heat from the pyroprocessing system to decompose tires to gas, coke and wire which will be utilized in the kiln and pyroprocessing system in an enclosed process. The plant will also include a coal processing operation that will crush coal and petroleum coke and will have an annual processing capacity of 127,896 tons of coal and petroleum coke. Fuel usage will be 14.6 tons per hour of coal, based on a heat content of 12,500 Btu per pound, or 13.0 tons per hour of petroleum coke, based on a heat content of 14,000 Btu per pound. At 40% of maximum heat input, usage of tires will be 5.2 tons per hour, based on a heat content of 14,000 Btu per pound.

Emissions units addressed by this permitting action are:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	1000 TPH primary crusher and associated unenclosed belt conveyors to raw material storage – fugitive emissions
002	Raw material processing – baghouses for transfer points
003	Raw material processing – unenclosed conveyor transfer points
004	In line kiln/raw mill – main stack controlled by baghouse
005	Clinker cooler controlled by ESP
006	Clinker and cement processing – baghouses for transfer points
007	Clinker and cement processing – unenclosed conveyor transfer points
008	Coal mill and coal transfer system baghouses
009	Unenclosed coal conveying equipment
010	Natural gas fired emergency generator set [1]

[1] Emissions unit 010 is exempt from permitting (exempt emissions unit) pursuant to Rule 62-210.300(3)(a)20, F.A.C., provided that total fuel consumption by the generator is limited to 4.4 million cubic feet per year of natural gas. Estimated maximum potential emissions from the generator set are: NOx, 8.5 lb/hr, CO 4.1 lb/hr, and VOC 0.5 lb/hr.

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), or volatile organic compounds (VOC) will exceed 100 tons per year (TPY).

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions will be greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The proposed project is subject to the provisions of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD), because it will be a new major facility. This review consisted of a determination of Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions.

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-204, 62-210, 62-212, 62-214, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).

This facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment for the criteria pollutants ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide, and designated as unclassifiable for PM_{10}.

The applicant stated that this facility is a major source of hazardous air pollutants (HAPs), because the plant may be a major source of hydrochloric acid. As provided by the federal requirements, the applicant may perform stack testing to confirm whether the facility is or is not a major source of hydrochloric acid.

The emissions units included in this project are subject to regulation under the New Source Performance Standards, 40 CFR 60 Subpart A, General Provisions, Subpart F, Standards of Performance for Portland Cement Plants, Subpart Y Standards of Performance for Coal Preparation Plants, and Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants (all revised as of July 1, 1997). Some of these emissions units are also subject to 40 CFR 63 Subpart LLL, National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry (40 CFR 63.1340 – 63.1359), revised as of May 14, 1999 and 40 CFR 63 Subpart A, revised as of February 12, 1999. These emissions units are also subject to the requirements of the state rules as indicated in this permit, particularly Rule 62-212.400, F.A.C., Prevention of Significant Deterioration, effective February 5, 1998. Some emissions units are subject to Rule 62-296.701, F.A.C., Portland Cement Plants, effective March 2, 1999. Additionally the permit references the test methods of 40 CFR 60, Appendix A, Test Methods; 40 CFR 63, Appendix A, Test Methods; 40 CFR 51, Appendix M, Recommended Test Methods for State Implementation Plans; 40 CFR 61, Appendix B, Test Methods.

Particulate matter emissions from the in-line kiln/raw mill will be controlled by a baghouse and from the clinker cooler will be controlled by an electrostatic precipitator. Particulate matter emissions from other sources will be controlled by baghouses. Sulfur dioxide emissions are limited by the process. NOx emissions will be controlled by multistage combustion. Carbon monoxide and VOC emissions will be limited by process control.

The total annual air pollutant potential emissions in tons per year from the facility (not including the emergency generator set – emissions unit 010 – will be:

POLLUTANT	PSD SIGNIFICANCE LEVELS [1]	MAXIMUM EMISSIONS	SUBJECT TO PSD REVIEW?
PM	25	226.0	Yes
PM_{10}	15	193.3	Yes
SO_2	40	113.4	Yes
NOx	40	1217.5 [2]	Yes
CO	100	1511.1	Yes
VOC	40	50.4	Yes

[1] Florida Administrative Code 212.400-2.

2 Emissions of NOx for the first year of operation will be 1595.4 tons per year. NOx emissions shown in the table are emissions after the first year of operation. Excess emissions resulting from two startup procedures per year are included in these estimates.

Maximum emissions of mercury will be 184 pounds per year. Control of mercury emissions will result from limiting the mass of mercury introduced into the pyroprocessing system from the preheater feed and fuels. Maximum emissions of dioxin will be 0.002 pounds per year. Dioxin emissions will be controlled by limiting the temperature of the inlet of the baghouse for the in-line kiln/raw mill pursuant to federal NESHAP regulation. Mercury and dioxin are not subject to PSD review.

Emissions of PM and PM_{10} from the unenclosed conveying equipment are expected to be insignificant because of inherent moisture and moisture applied to comply with the reasonable precautions for control of unconfined particulate matter emissions.

2. DATE OF RECEIPT OF A BACT APPLICATION

November 30, 1998
Additional information received February 25, 1999; March 19, 1999; April 21, 1999; May 4, 1999 May 27, 1999 and May 28, 1999.
Additional information and comments on the preliminary draft permit and related documents were received from Koogler & Associates dated November 8, 1999.
Revised permit application and modeling information were received from Koogler & Associates by electronic mail on November 11, 1999.

3. BACT DETERMINATION REQUESTED BY THE APPLICANT

The applicant proposed BACT for the PSD pollutants to be control equipment for particulate matter, process control for SO_2, multistage combustion with a separate line combustion chamber for NOx, and combustion control for CO and VOC.

4. REVIEWER

Joseph Kahn, P.E., prepared BACT determination

5 DETAILED PROCESS DESCRIPTION

The project is a dry process preheater/precalciner type portland cement plant. Portland cement is a fine powder, usually gray in color, that consists of a mixture of dicalcium silicate, tricalcium silicate, tricalcium aluminate, and tetracalcium aluminoferrate, and small amounts of magnesium oxide, sodium, potassium and sulfur, to which one or more forms of calcium sulfate have been added. About 95% of the cement production in the U.S. is portland cement. Masonry cement represents the balance of the domestic cement production.

The proposed preheater/precalciner process is a dry manufacturing process in which thermal efficiency and production capacity have been improved by adding process vessels arranged vertically before the kiln, wherein the hot gases pass counter to the material flow, effecting heat transfer through the intimate contact between the two streams. The improved heat transfer allows the kiln length to be reduced. This arrangement also allows the hot gases from the preheater tower to be used to dry raw materials in the raw mill. In the preheater/precalciner process, fuel combustion is divided between the kiln and a preheater vessel below the preheater tower. This arrangement provides for greater thermal efficiency than the preheater process. A relatively new innovation is the use of a separate line combustion chamber for the preheater burner, so called because it is installed to the side (separate) of the material flow through the precalciner region. This device aids in the control of NOx emissions. The applicant proposed to use the

dry preheater/precalciner process, with a separate line combustion chamber for the calciner burner, in an in-line arrangement with the raw mill.

The process for this plant is discussed in more detail below.

Limestone will be mined primarily below the water table. The overburden, consisting of sand and clay, will be removed from the limestone surface and stockpiled in the vicinity of the crusher. The crusher will be portable, and will be relocated periodically in accordance with the mining plan. The overburden and the limestone will be fed into the crusher with front end loaders in the ratios dictated by the target chemical composition of the desired raw mix. The quarry mix will be delivered to a covered storage hall by a conveyor belt system. The quarry mix will have a moisture content of 10-20%. The storage hall will have space devoted to storage of the other raw materials: iron ore and coal ash, sand, and limestone. The other raw materials will be transported to the facility by truck.

Fugitive emissions from raw material handling and conveying will be minimized by inherent moisture and by the application of water for suppression of unconfined emissions of particulate matter. Unpaved roads will be sprayed by a water truck as required to prevent unconfined particulate matter emissions. Material stockpiles at the plant will be covered to limit particulate matter generated by wind erosion.

The quarry mix and other raw materials will be conveyed to the raw mill feed bin with a capacity of 90 short tons. Raw materials will be fed from the raw mill feed bin to the raw mill. The raw mill will grind and mix the raw materials, and dry the raw materials with the hot gases from the pyroprocessing system. Emissions from the raw mill (and in-line kiln) will be controlled by a baghouse. The baghouse is kept under slight negative pressure with an induced draft fan discharging into a stack. The baghouse catch (kiln dust) and the raw mill product will be conveyed to the homogenization silo of 8,000 tons capacity. (Because the baghouse catch is re-introduced to the process, this cement plant will not generate cement kiln dust (CKD) as a waste product.) Other enclosed emission sources will be controlled by baghouses (fabric filters).

The kiln feed from the homogenization silo will be conveyed to the preheater by means of an airlift. The feed will enter the top stage of the preheater or, during wet material conditions, drop into the next lower stage of the preheater to increase the gas temperature to the raw mill. Gases from the pyroprocessing system will flow counter to the material direction to the raw mill and the baghouse.

Coal and petroleum coke will be burned in the precalciner separate line combustion chamber near the inlet to the kiln as well as at the main burner at the discharge end of the kiln. Natural gas will be used as a startup and supplemental fuel and to fire a small supplementary air heater for the raw mill. The plant will also burn tires and tire derived fuel either directly at the transition from the preheater to the kiln feed end, or via a tire gasification system, as described previously. Combustion air for the precalciner will be provided through a tertiary air duct from the clinker cooler. Multi-stage combustion will control NOx emissions.

The pyroprocessing system will transform the raw meal from the homogenization silo into clinker. The pyroprocessing system will produce 105 tons per hour of clinker, from 178 tons of dry preheater feed per hour. This amount of clinker will produce 150 tons of cement per hour. The plant will be limited by permit to an annual production rate of 839,500 tons of clinker and 1,191,360 tons of portland cement.

After discharge from the kiln, the clinker will be cooled with ambient air in a reciprocating grate cooler equipped with an electrostatic precipitator (ESP) and ID fan for particulate control. A portion of the clinker cooler gases will be ducted to the coal mill to dry the coal. These gases will then exhaust through the coal mill fabric filter into another stack. A portion of the clinker cooler gases will be ducted to the precalciner, the precalciner combustion chamber and the tire gasification system, if installed.

The clinker will be conveyed to one of two clinker silos with a capacity of 25,000 short tons each. The clinker will be withdrawn from the silos by vibrating feeders, and discharged onto the finish mill feed belt. Enclosed clinker handling operations and storage silos will be controlled with baghouses.

Gypsum and limestone will be received by truck and stored under cover in stockpiles. Each material will be transferred by a front end loader to feed hoppers, and conveyed to the finish mill. The finish mill can produce up to 150 tons per hour of cement.

All enclosed sources associated with the finish milling operation will be controlled with baghouses. Fugitive emissions from gypsum and limestone handling and conveying associated with the finish milling operation will be minimized by inherent moisture and by the application of water for suppression of unconfined emissions of particulate matter.

Finished cement will be stored in five concrete silos. Cement will be withdrawn from the silos and loaded into tanker trailers for bulk shipment or into bags which will be cleaned and placed on pallets for shipment. All product will be transported by truck.

All enclosed sources associated with the cement handling operation will be controlled with baghouses.

Coal and petroleum coke will be received by truck. These will drop into a hopper and be conveyed to a bucket elevator at a rate of 200 TPH. The bucket elevator will discharge either into a covered storage facility or onto a belt and then to a bin. Coal and petroleum coke in covered storage will be reclaimed by a front end loader through unloading system. Coal and petroleum coke will be metered from the bin to a vertical mill, for milling and drying with hot gases from the clinker cooler. The milled fuels will be stored in a pulverized fuel storage bin for pneumatic conveyance to the main burner and precalciner burner.

All enclosed sources associated with the coal and petroleum coke handling and milling operation will be controlled with baghouses. Fugitive emissions from coal and petroleum coke handling and conveying will be minimized by inherent moisture and by the application of water for suppression of unconfined emissions of particulate matter.

6. BACT Determination Procedure

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques for control of each such pollutant. In addition, Rule 62-212.400(6)(a), F.A.C., states that in making the BACT determination, the Department shall give consideration to:

1. Any Environmental Protection Agency determination of BACT pursuant to Section 169 of the Clean Air Act, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
2. All scientific, engineering, and technical material and other information available to the Department.
3. The emission limiting standards or BACT determination of any other state.
4. The social and economic impact of the application of such technology.

The EPA currently directs that BACT should be determined using the "top-down" approach. In this approach, available control technologies are ranked in order of control effectiveness for the emissions unit under review. The most stringent alternative is evaluated first. That alternative is selected as BACT unless the alternative is found to not be achievable based on technical considerations or energy, environmental or economic impacts. If this alternative is eliminated for these reasons, the next most stringent alternative is considered. This top-down approach is continued until BACT is determined. In general EPA has identified five key steps in the top-down BACT process: Identify alternative control

technologies; eliminate technically infeasible options; rank remaining control technologies by control effectiveness; evaluate most effective controls; select BACT.

BACT evaluation should be performed for each emissions source and pollutant under consideration. All of the combustion emissions from the plant are associated with the in-line kiln/raw mill. BACT for particulate matter can be treated separately for the in-line kiln/raw mill, clinker cooler, the enclosed material handling processes and the unenclosed conveyors.

The Department will consider the control or reduction of "non-regulated" air pollutants when determining the BACT limit for regulated pollutants, and will weigh control of non-regulated air pollutants favorably when considering control technologies for regulated pollutants. The Department will also favorably consider control technologies that utilize pollution prevention strategies. These approaches are consistent with EPA's consideration of environmental impacts.

The EPA has determined that a BACT determination shall not result in a selection of a control technology which would not meet any applicable emission limitation under 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). This project is subject to such standards as described above.

In addition to the information submitted by the applicant and that information mentioned above, the Department may rely upon other available information in making its BACT determination. For this project, the Department relied upon information from the EPA Publication: Alternative Control Techniques Document – NOx Emissions from Cement Manufacturing, March 1994. The Department also relied upon recent BACT determinations it made for similar facilities and information in EPA's BACT/LAER Clearinghouse, and BACT guidelines for the California Air Resources Board, South Coast Air Quality Management District, and Bay Area Air Quality Management District.

7. BACT POLLUTANT ANALYSIS AND DEPARTMENT'S DETERMINATION

For this project the PSD pollutants of concern are PM, PM_{10}, SO_2, NOx, CO and VOC. The applicant proposed control strategies for these pollutants for the emission sources at this facility. The applicant's proposal and the Department's BACT for each pollutant and source is discussed below.

Nitrogen Oxides (NOx)

Emissions of NOx from cement plants result from fuel combustion in the pyroprocessing system. Oxides of nitrogen (NOx) are generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NOx) and by oxidation of elemental nitrogen in the combustion air (thermal NOx). The thermal NOx reaction occurs in regions of high temperature associated with the combustion of fuel. As flame temperature increases, the amount of thermal NOx increases. Fuel type affects the quantity and type of NOx generated. Pipeline natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NOx than coal, which has higher fuel nitrogen content, but exhibits lower flame temperatures.

The emissions of NOx can potentially be reduced at cement plants by two methods: Minimizing the quantity of NOx generated during combustion through combustion process controls and modifications; or reducing the quantity of NOx in the flue gas stream through flue gas controls.

A review of the EPA's BACT/LAER Clearinghouse indicates that NOx emissions at all operating facilities are minimized by combustion process control.

The applicant proposed that NOx emissions at this facility will be controlled through multistage combustion with a separate line combustion chamber (MSC-CC). The applicant considered other possible control methods, and rejected Selective Catalytic Reduction and Low NOx burners as not feasible for this project. The applicant performed a control cost analysis for Selective Non-catalytic

Reduction (SNCR) and MSC-CC. MSC-CC is the more cost effective control technology at $360 per ton of NOx controlled, versus $1251 for SNCR. The applicant did not reject SNCR based on cost alone, but further because MSC-CC will result in a higher level of control guaranteed by the plant manufacturer, because the plant will be more energy efficient using the MSC process, and because of concerns about handling the non-catalytic reactant. Possible reactants considered by the applicant were ammonia water and anhydrous ammonia, both of which present concerns over transport, handling and storage at the proposed location. Ammonia slip is another concern, and is a consideration of the Department. MSC-CC is also a pollution prevention technique. The Department also considered another SNCR reagent, cyanuric acid, that is listed as a control technology in the Bay Area BACT guideline. This reactant will decompose to isocyanic acid at 320°C, well below the required temperature for reaction. Cyanide compounds are classified as hazardous air pollutants pursuant to Department rule, and the Department rejects this reagent on this basis. Also, SNCR systems using this reagent are not likely to be less expensive than SNCR systems using ammonia.

MSC works by staging the introduction of fuel, combustion air, and raw meal in a manner to reduce NOx formation and reduce NOx to nitrogen. NOx formed in the kiln's sintering zone is chemically reduced by maintaining a reducing atmosphere at the kiln feed end by firing fuel in this region. The reducing atmosphere is maintained in the calciner region by controlling combustion air such that the calcining fuel is first burned under reducing conditions to reduce NOx, then under oxidizing conditions to complete the combustion reaction. Controlling the introduction of raw meal allows for control over temperature in the calciner. Through these mechanisms, both fuel NOx and thermal NOx are controlled. The combustion chamber allows for improved control over introduction of tertiary air in the calciner region, helping to promote the proper reducing environment for NOx control.

One public commentor suggested combusting the fuels in the pyroprocessing system with pure oxygen, presumably to reduce the formation of thermal NOx. The pure oxygen would be supplied from a liquid air fractionation plant which would be located at or near the facility. The Department considered this suggestion but rejected it for the following reasons. The facility will have large combustion air requirements and would require large volumes of pure oxygen to offset the air required, at a significant cost; this technology has not been demonstrated to be feasible for the production of cement or for similar pyroprocessing processes; oxygen actively supports combustion to the extent that it is explosive on contact with heat or oxidizable materials, thus presenting a safety hazard; and use of pure oxygen will do nothing to prevent the formation of fuel NOx. This suggestion can best be characterized as speculative, and extensive redesign and pilot study of the entire pyroprocessing system would be required to accomplish pure oxygen firing, if it is possible at all; such a change would completely alter the mass and heat transfer characteristics of the plant. MSC-CC is an effective control technology that will reduce both thermal NOx and fuel NOx.

Except for emissions during startup of the kiln, the applicant has proposed a NOx emission rate of 3.0 pounds per ton of clinker produced. The applicant advised that excess emissions of NOx during a startup of the pyroprocessing system when there is no material in the kiln may be as high as 600 pounds per hour for up to an hour.

We note that no plant has been constructed in the U.S. with SNCR as a control technology. The Department's research of EPA's BACT/LAER Clearinghouse found one plant achieving a permitted limit less than 2.8 pounds per ton of clinker: A Lone Star facility in California that uses a preheater/precalciner design, and meets a limit of 2.5 lb/ton clinker. In its previous BACT determinations for Florida Rock Industries and Florida Crushed Stone, the Department determined that this value is equal to 2.8 lb/ton clinker when corrected for the additional heat requirement necessary to process the higher moisture limestone mined in Florida. The proposed plant will utilize rock with a higher moisture content than the Florida Rock Industries plant, so the applicant proposed a higher NOx limit than the BACT limit of 2.8 lb/ton clinker imposed for Florida Rock Industries. The three factors most affecting NOx emissions at

portland cement plants are fuel volatility, burnability of the material mix and moisture content. The Department considered these factors in previous BACT determinations for cement plants, and in making its determination for this plant, and concluded that moisture content is the factor that warrants most consideration in setting BACT for NOx for cement plants.

The dry process with preheater/precalciner proposed by the applicant is the most energy-efficient process for the production of portland cement. Therefore, one would expect the increased efficiency and consequent lower fuel consumption to result in the lowest possible emissions compared to wet process or other dry process operations, all else being equal. Additionally, the lower flame temperature realized when burning coal compared with burning natural gas, as well as documented NOx reductions from tire burning (tires have a higher heat content and lower nitrogen content than coal), are further reasons to expect the lowest possible emission rate among kilns employing the preheater/precalciner design. MSC-CC is a pollution prevention technique that is integrated into the energy efficient design of the preheater/precalciner process.

The Department agrees with the applicant that MSC-CC is the most cost effective control technology and is BACT for NOx for this project. However, considering the additional benefits that will be derived from the separate line combustion chamber, the Department has determined that the emission limit for this control technology at this facility shall be 2.9 pounds of NOx per ton of clinker produced, and 304.5 pounds per hour. The Department has determined that the appropriate averaging time for this emission limit at this facility shall be a rolling 24 hour period.

The applicant requested a higher limit for NOx for two years after startup, to allow time for adjustment of the plant controls to assure that compliance with the BACT limit will be attained. The Department commented to the applicant that although the temporary exemption language of Department rules provides for exemption from certain PSD requirements for emissions lasting up to two years, such time period for NOx seems excessive given the plant manufacturer's experience with the startup of similar facilities, and the experience it will gain with the startup of the similar Florida Rock plant (which is scheduled to begin operation prior to completion of this facility). The applicant subsequently revised its request to a period of one year after startup, and the Department agrees that such a period is reasonable. During first year after startup, the kiln shall not exceed a NOx limit of 3.8 lb/ton clinker, and 399.0 pounds per hour; the limit of 2.9 lb/ton clinker (304.5 lb/hr) shall be imposed thereafter. Emissions of NOx up to 600 lb/hr for up to one hour in duration shall be allowed for startup of the pyroprocessing system when there is no material in the kiln. (Assuming that two of these startups occur per year, excess NOx emissions will be 591 pounds per year greater than allowable.)

Sulfur Dioxide (SO_2)

Sulfur dioxide is generated from volatilization and subsequent oxidation of sulfur compounds in the raw materials within the preheater and precalciner regions, and by oxidation of sulfur compounds in the fuel during combustion. Sulfur dioxide at this facility will be generated through these mechanisms. The sulfur content of both raw materials and fuels varies based on the raw materials and fuels available at a given location, and consequently sulfur dioxide emissions vary with these factors. As is typical of conditions in Florida, the limestone, which is the principal raw material, will be low in sulfur compounds. Sulfur compounds present in the other raw materials such as the iron sources, which represent a small proportion of the total raw materials, will most significantly contribute to sulfur dioxide emissions.

Most of the sulfur dioxide formed subsequently reacts with alkaline compounds present in the pyroprocessing environment to form alkali sulfates, which become incorporated in the cement clinker. The amount of sulfur dioxide released in the flue gases will vary with the amount of excess alkali available for absorption. The pyroprocessing system is very alkaline, and will be quite effective at removing sulfur dioxide formed from fuel sulfur. A significant proportion of sulfur dioxide from sulfur in raw materials will be removed through intimate contact with the incoming alkaline raw materials which

flow counter to the gas flow. Further contact is achieved in the raw mill where the flue gases are used to dry incoming material feed.

Control for sulfur dioxide applicable to the project are use of low sulfur raw materials; process control to assure a sufficiently alkaline environment is present for reaction with sulfur dioxide formed during pyroprocessing, and to assure intimate contact between flue gases and incoming materials; and flue gas controls – principally scrubbers.

The applicant proposes to limit sulfur dioxide emissions through process control. This will be accomplished by taking advantage of the alkaline environment in the kiln, preheater/precalciner, and raw mill to effect substantial removal of sulfur dioxide. Ultimately, the sulfur is incorporated into the clinker, thus minimizing the amount emitted to the atmosphere. The applicant proposed a sulfur dioxide limit of 0.28 pounds per ton of clinker produced.

Several cement plants in the U.S. use scrubbers for control of sulfur dioxide, ammonia and visible plumes that occur at some plants. Many more plants use process control for sulfur dioxide control. The Department investigated the applicability of a dry circulating scrubber for sulfur dioxide control for this project, and requested comments from the applicant. The applicant provided information regarding control cost for wet scrubbing, and discussed problems with installing the dry circulating bed system at this facility. The applicant demonstrated that wet scrubbing is not cost effective, having estimated a control cost for wet scrubbing of $29,700 per ton. Despite the problems pointed out by the applicant, the Department estimated the control cost for the dry circulating scrubber, assuming, to simplify the cost estimate, the originally proposed ESP for the in-line kiln/raw mill could be used for reagent recovery. (The applicant has changed the design to use a baghouse for particulate control for the in-line kiln/raw mill.) Based on a capital cost estimate of $8 million and 20 year depreciation period and estimated 90% efficiency, provided by Ken Olen, Ph.D., the control cost was estimated to be $7,400 per ton. It is possible that an additional ESP would be required to effect proper operation of the dry circulating scrubber at this facility, raising this cost estimate substantially. The applicant's engineer commented by letter dated November 8, 1999 that he believes that such additional equipment is necessary. The Department agrees with the applicant that flue gas controls are not cost effective for this project, and are not required as BACT.

The Department believes that process control is the appropriate technology for control of sulfur dioxide emissions for this project and is BACT. The Department considered imposing limitations on the sulfur content of the fuels and the raw materials used, but determined that such limits are not required. Fuel sulfur is largely irrelevant because of the substantial exposure and contact between sulfur dioxide formed from fuel sulfur and the alkaline materials. Sulfur limits on the raw materials are not needed because the primary raw material, limestone, will be naturally low in sulfur. The other raw materials will be obtained by the applicant, which will acquire materials with regard to the alkali available in the process for control of sulfur dioxide formed from volatilization and oxidation of sulfur compounds in these materials. The Department will require a continuous emission monitor system for sulfur dioxide, which will offer a continuous demonstration of compliance with the emission limit, as well as process control data for the plant operators. The use of a CEM system ensures that process control will be effective, and eliminates the need for a limit on sulfur in raw materials.

The Department has determined that BACT for sulfur dioxide is process control. The BACT sulfur dioxide emission limit for this plant shall be 0.27 pounds/ton of clinker produced, and 28.4 pounds per hour, based on a rolling 3-hour averaging time. Process control will allow for sulfur dioxide emissions to be minimized by maintaining a sufficient alkaline environment in the pyroprocessing system and by intimate contact between raw materials and exhaust gases. The sulfur dioxide that would result from fuel sulfur, as well as that resulting from volatilization and oxidation of sulfur from raw materials, will be controlled in this manner.

Particulate Matter (PM and PM_{10})

Particulate matter results from the various physical and chemical processes at a cement manufacturing plant such as: quarrying and crushing, material transfer and storage, grinding and blending, clinker production, finish grinding, and packaging and loading. As is typical of cement plants, the largest emission source of particulate matter at this facility will be the pyroprocessing system that includes the in-line kiln/raw mill and clinker cooler. At this facility, all cement kiln dust (CKD) captured in the in-line kiln/raw mill baghouse will be returned to the pyroprocessing system as raw material. Emissions from enclosed fuel and material handling and storage operations represent another significant source of emissions at this facility. Unenclosed sources represent the smallest sources of emissions, given the use of proper controls. The limestone will primarily be mined below the water table and have an average moisture of 10-20%. The quarrying activities and associated crushing and transport will involve moist or wet raw materials with negligible unconfined emissions.

Common control devices for controlling emissions of particulate matter at cement plants are fabric filters (baghouses) and electrostatic precipitators (ESPs). Baghouses and ESPs are generally considered equivalent for particulate control. Both types of devices can achieve removal efficiencies of over 99%. ESPs and baghouses are used extensively as control devices at cement plants. ESPs are generally specified for kiln and clinker cooler exhaust gases because of their ability to operate effectively at varying temperatures, although baghouses are also used at some facilities for this purpose. Both types of control equipment provide for the recovery and recycling of CKD back into the process stream. ESPs offer the advantage of having no fabric filters that will wear and break and require routine replacement, while baghouses offer the advantage of providing for "passive" control in the event of an electrical power failure. A review of the BACT/LAER Clearinghouse shows that baghouses and ESPs are widely used to control particulate matter from process emission units at cement plants. Both offer an essentially equivalent level of control and are commonly accepted as BACT. Baghouses are also generally used to control particulate emissions from most other material processing operations at cement plants.

Common controls to limit particulate emissions from fugitive sources (such as roadways, stockpiles, and material processing and conveying equipment) include application of water for dust suppression, removal of dust, application of water and other dust suppressants, paving of roads and covering of stockpiles to reduce wind erosion. These methods of controlling fugitive particulate matter emissions are generally considered to be BACT for most material handling operations and unpaved roads.

The applicant proposed respective PM and PM_{10} emission limits of 0.20 and 0.17 pounds per ton of dry preheater feed for the in-line kiln/raw mill, and 0.10 and 0.085 pounds per ton of dry preheater feed for the clinker cooler. After comment from the Department that lower limits are found in the BACT/LAER Clearinghouse, the applicant revised the PM_{10} limits to 0.11 and 0.06 pounds per ton of dry preheater feed (equivalent to 19.6 and 10.7 lb/hr at maximum process rate) for the in-line kiln/raw mill and clinker cooler, respectively. The applicant originally proposed to achieve these limits using an ESP for the in-line kiln/raw mill and an ESP for the clinker cooler, with other enclosed sources controlled by baghouses. The applicant later revised its design to use a baghouse for the in-line kiln/raw mill.

The Department agrees with the applicant's proposal, but has instituted additional limits for PM of 0.13 and 0.07 pounds per ton of dry preheater feed (and 23.1 and 12.5 lb/hr) for the in-line kiln/raw mill and clinker cooler, respectively. BACT is the use of a baghouse to control particulate matter emissions from the in-line kiln/raw mill and an ESP to control particulate matter emissions from the clinker cooler to the PM and PM_{10} limits noted above. Visible emissions from these sources shall not exceed 10 percent opacity. BACT for other enclosed emission sources will be control of particulate matter emissions using baghouses to meet respective PM and PM_{10} emission limits of 0.01 and 0.0085 grains per dry standard cubic foot. Visible emissions from these sources shall not exceed 5 percent opacity.

BACT for unenclosed sources is generally control of particulate matter emissions by inherent or applied moisture. Unpaved roads will be sprayed with water or dust suppressants to prevent unconfined particulate matter emissions. Material and fuel storage piles will be stored under roof or in enclosed vessels. Storage piles shall be shaped, compacted and oriented to minimize wind erosion. Storage piles shall be wetted with devices located near such piles when visual inspection determines wetting is needed. Water spray bars shall be located at each unenclosed conveyor and used for wetting of materials and fuel if inherent or previously-applied moisture is insufficient to prevent unconfined PM emissions. Paving of the manufacturing area and access roadways is required. Bulk transport trucks leaving the plant must travel through a tire wash prior to traveling on access roadways.

The Department believes that these controls and emission limits constitute BACT for particulate matter.

Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

Carbon monoxide is a pollutant formed by the incomplete combustion of carbon in the fuels fired during pyroprocessing. When insufficient oxygen is provided or poor combustion conditions occur, more CO and less CO_2 is formed than under ideal conditions. VOC is also a pollutant formed by the incomplete combustion of fuel.

Emissions of CO and VOC are controlled by utilization of proper combustion practices to maximize the oxidation of carbon to CO_2 instead of CO, and by flue gas controls. No add-on controls for CO or VOC have been demonstrated for cement plants. The high temperatures and control of excess air, process temperatures and fuel typically results in simultaneous optimization for control of CO, VOC and NOx. CO and NOx generally show an inverse relationship in cement plants as in many combustion processes, so reduction of NOx results in higher CO emissions. The applicant proposed combustion control as BACT for CO and VOC from this plant, and proposed emission limits of 3.6 and 0.12 pounds per ton of clinker produced for CO and VOC, respectively.

The Department agrees with the applicant. BACT for CO and VOC shall be combustion control. The emission limit for CO shall be 3.6 pounds per ton of clinker produced, and 378.0 pounds per hour, based on a 3 hour average. The averaging time is that of the annual test. A CEM will not be required for CO. However, the facility will install process monitors for CO to provide for the use of CO as a short-term measure of the efficacy of combustion control. The emission limit for VOC shall be 0.12 pounds per ton of clinker produced, and 12.6 pounds per hour, based on a 30 day averaging time. This averaging time is consistent with the NESHAP requirements.

Based on the information provided by the applicant and the informed judgement of the Department, BACT for PM, PM_{10}, SO_2, NOx, CO and VOC for the emission sources at this facility is determined to be the control technologies and emission limits discussed above.

8. COMPLIANCE

The compliance methods are briefly summarized here. Except for PM, PM_{10} and CO, compliance with the emission and process limitations for the in-line kiln/raw mill shall be demonstrated on a regular basis through a variety of continuous monitoring systems, and by record keeping for some production parameters. Compliance with the visible emissions limitation for the clinker cooler shall be regularly demonstrated using COM system clinker cooler stack. Annual emission tests will be required for all emission-limited pollutants, including visible emissions, from the in-line kiln/raw mill and the clinker cooler. Tests conducted for the annual RATA can satisfy the annual test requirements for the in-line kiln/raw mill. Initial compliance testing to demonstrate compliance with the emission limits for the three largest process sources controlled by baghouses will be required; thereafter, no subsequent tests will be required if these sources meet a visible emissions limit of 5% opacity. Initial and annual tests for the other process sources controlled by baghouses is not required if these sources meet a visible emissions limit of 5% opacity. The opacity limit for the clinker cooler is 10%. Compliance with the mercury

throughput limitation will be demonstrated via sampling and analysis of the materials and fuels. Compliance with the dioxin emissions limit of the NESHAP shall be demonstrated via testing, and continuous monitoring of the temperature at the inlet of the baghouse for the in-line kiln/raw mill, in accordance with that rule.

The Department will require that the data from continuous monitors for emissions be available to the Department via a data retrieval system to one of the Department's offices. This data will also be posted to an Internet site by the permittee, if technically feasible.

12

Board of County Commissioners

Hernando County

20 N. Main Street, Room 460
Brooksville, FL 34601
(352) 754-4000
FAX (352) 754-4477

December 21, 1999

Mr. Howard L. Rhodes, Division Director
FDEP, Division of Air Resource Management
Division of Recreation and Parks
2600 Blair Stone Rd. MS 5500
Tallahassee, FL 32399-2400

Dotty - could you take Leah on this?
Thx
Howard
1/4

Re: Request for Assistance on Placement of Ambient Air Monitors at the Florida Crushed Stone (FCS) Cement Plant in Hernando County, Florida
Facility ID No.: 0530021

xc: CLAIR

Dear Mr. Rhodes:

FCS recently petitioned the Hernando County Board of County Commissioners (the Board) to approve a special exception land use permit for their second kiln that had expired. This property initially received a special exception use permit for heavy manufacturing in December of 1982. In 1995, the petitioner received a special exception use permit for the second Kiln [FDEP Permit AC 27-274892 (A)]. The second kiln was not constructed within the three year time frame stipulated by the Planning and Zoning Commission; consequently, the special exception use permit expired. County staff recommended approval with conditions, including a condition that the petitioner shall re-evaluate and provide an air quality monitoring system consistent with FDEP monitor siting criteria, data recording/reporting requirements, and acceptable to both the County and FDEP. Also, the County would request FDEP's technical assistance regarding monitoring parameter(s) required, monitor site placement, type, and number.

The Board approved FCS's special use permit with FCS agreeing to provide ambient air quality monitoring. The above condition was slightly modified. FCS agreed to provide three (3) PM_{10} monitoring sites, one preferably at the Parrott Middle School since there was considerable concern for children's health. Also, they are to conduct some animal tissue sampling of the fish in the ponds on-site. A map showing the FCS cement plant location and the Parrott Middle School site is enclosed for your information.

Hernando County is requesting DEP's technical assistance regarding the placement of these ambient air monitors and QA/QC data recording/reporting requirements. We would appreciate your assistance in this matter and look forward to your response. If you should have any

questions, please contact Larry Jennings, Assistant County Administrator, Growth & Development at SUNCOM 669-4057 ext. 130, or Dawn Durham, Environmental Planner at SUNCOM 669-4057 ext. 131.

Sincerely,

Pat Novy
Chairman

DMD

pc: Larry Jennings, Assistant County Administrator
Growth & Development
Dottie Diltz, Air Monitoring Bureau Chief, FDEP
C.H. Fancy, Bureau Chief of Air Regulation, FDEP
Deborah Getzoff, District Director, FDEP (Tampa)
Richard Radacky, Deputy County Administrator
Bill Buztrey, Assistant County Attorney
BCC Read File

Attachments:
General Location Map with Parrott Middle School Location
Letter from FCS to the Board prior to Public Hearing on Land Use Permit

E:\WPDATA\DMD\DEP\AIR\FCSMONPL.LTR

FLORIDA CRUSHED STONE COMPANY

April 6, 1999
FCS990406MMC

Mr. Al Linero
Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road, *Twin Towers Office Building*
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

As discussed, we are sending this letter to update your files on the construction activities and schedule related to Kiln #2 at Florida Crushed Stone Company (FCS). As noted in your July 23, 1998 letter to Mr. Ron Aliff of FCS, construction began on February 3, 1997. The following schedule describes activities that have occurred and documents that we have maintained continuous construction as required by 40 CFR 52.21(r)(2). It should be noted that the following information includes estimated activities up to the estimated date of initial operation.

DATE	ACTIVITY
February 3, 1997	Construction Start
December, 1997	Geotechnical Evaluation for Plant Foundations.
January, 1996 through January, 1998	Equipment Purchases and Delivery and Construction Planning
December 22, 1998	Hernando County Industrial Bond Allocation Approval
April, 1999	Permitting and Construction of Kiln #2 Construction Building

I trust the above schedule satisfies your concerns related to our construction activities. Should you require any additional information, please feel free to call me at (352) 799-7881.

Sincerely,

Michael T. McHugh
Vice President

cc: D. Allen, BAR

MM/cmp

cc: Ron Aliff
Don Elias

FLORIDA CRUSHED STONE COMPANY

RECEIVED

APR 08 1999

BUREAU OF
AIR REGULATION

April 5, 1999
FCS990405MMC

Mr. A. A. Linero, P.E.
Division of Air Resources Management, Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

Florida Crushed Stone Company (FCS) is hereby notifying the Department of its decision to construct a precalciner kiln in accordance with Air Construction Permit AC27-274892(A). As required by Section I of the aforementioned 1997 permit, FCS is therefore surrendering its earlier 1995 Air Construction Permit (AC27-274892) for a gepol tower kiln.

Sincerely,

Michael T. McHugh
Vice President

MM/cmp

cc: Ron Aliff
Don Elias

P.O. BOX 1508 / 10311 CEMENT PLANT ROAD (34601) / BROOKSVILLE, FL 34605-1508 USA / PHONE (352) 799-7881 / FAX (352) 796-6281

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

July 23, 1998

CERTIFIED MAIL -RETURN RECEIPT REQUESTED

Mr. Ron Aliff
Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, FL 34601

RE: Current Status of Kiln 2 Construction Permit
AC27-274892(A) and PSD-FL-227(A) issued on February 2, 1997

Dear Mr. Aliff:

We have reviewed the request from Dr. John Koogler, in behalf of your company, regarding the current status of the Kiln 2 construction permit, AC27-274892(A) and PSD-FL-227(A). This permit expires on January 30, 2002. It is our understanding FCS started construction pursuant to 40 CFR 52.21(b)(11) and Rule 62-210.200 F.A.C., Definitions. In accordance with provisions of 40 CFR 52.21(r)(2).* the above permit and the associated BACT analysis are still valid for this project as FCS has met this federal requirement.

Since FCS has in possession two similar permits for the same project (Kiln No. 2 and associated equipment), it is necessary for FCS to surrender one of the permits issued (1995 & 1997). As stated in the 1997 permit (page 3), FCS shall surrender one of the permits to the DEP Bureau's of Air Regulation after the decision to construct the selected kiln (gepol tower or precalciner) has been made or before the construction of the selected kiln takes place.

If you have any questions regarding this matter, please call me or Teresa Heron (Review Engineer) at (850) 921-9529.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/th

cc: Mr. John Koogler, P.E
Mr. Bill Thomas, SWD
Mr. Lawrence Jennings, Hernando Co.

*Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 month or more, or if construction is not completed within a reasonable time. The Administrator may extend the 18 month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date. [40 CFR 52.21(r)(2)].

KA 307-98-07

MEMORANDUM

To: Teresa Heron, FDEP
Al Linero, FDEP

From: John Koogler

Date: July 21, 1998

Subject: Request for FDEP Letter on Status of Permit
Kiln 2, Florida Crushed Stone
Permit AC27-274892 and PSD-FL-227

This is a follow up to Pradeep Raval's telephone conversation with you yesterday regarding a letter from FDEP confirming the validity of the current construction permit issued to FCS for Kiln 2. Such a letter is requested to satisfy FCS financial officers.

Soon after the permit was issued, construction activities began in February of 1997. The site preparation work, land use permitting, equipment ordering and receiving, placing kiln components and associated equipment on site, etc., has already been accomplished at the cost of several million dollars. Presently, although the construction is not completed, the construction activities are still ongoing.

It is our understanding, based on the provisions of 40 CFR 52.21 (r)(2), that the authorization to construct is valid for the proposed project as construction activities have been ongoing from the time the permit was issued. A prompt letter from FDEP would reassure FCS that the permit, as issued, is still valid.

We appreciate your kind assistance in this matter.

JBK.par

Encl.

c: Ron Aliff, FCS

2-2-96

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re:	)	
Florida Crushed Stone Company	)	
Power Plant Certification	)	OGC NO. 94-1980
Modification Request	)	
No. PA 82-17E	)	
Hernando County, Florida	)	
_____/		

CORRECTED FINAL ORDER
MODIFYING CONDITIONS OF CERTIFICATION

The Department of Environmental Protection, after notice and opportunity for hearing, modifies the Conditions of Certification for the Florida Crushed Stone (FCS) power plant in Brooksville pursuant to the Florida Electrical Power Plant Siting Act, Section 403.516(1), Florida Statutes, and Condition XXV, Modification of Conditions, which delegates authority to modify conditions to the Department.

In March 1995, a request for modification was filed to allow construction and operation of a second cement kiln and related facilities on the site. Upon review of all submitted material, the Department recommends that the requests be approved.

Copies of the department's proposed action were distributed to all parties to the certification proceeding and made available for public review. On June 9, 1995, a Notice of Proposed Modification of Power Plant Certification was published in the Florida Administrative Weekly. As of June 7, 1995, all of the parties to the original proceeding had received copies, sent by certified mail, of the intent to modify. The notice specified that a hearing would be held if a party to the original certification hearing objects within 45 days from receipt of the proposed notice of modification or if a person whose substantial interests will be affected by the proposed modification objects in writing within 30 days after issuance of the public notice. No timely objection to the proposed modifications was received by the Department.

Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to the conditions of certification for the Florida Crushed Stone power plant are approved. The Department hereby approves the modification, and, pursuant to section 403.516(1)(b), F.S., the Department hereby modifies the conditions of certification for the Florida Crushed Stone facility as follows:

I. Air

The construction and operation of the Florida Crushed Stone Company (FCS) steam electric power plant site shall be in accordance with all applicable provisions of Chapters 62-2, 62-4, and 62-210 through 62-297, ~~17-2, 17-4, and 17-17~~ Florida Administrative Code (FAC). In addition to the foregoing, the permittee shall comply with the following specific conditions of certification:

A. Emission Limitations

1. a. No change

   b. NOx - 0.7 lb. per million BTU heat input, averaging time per Rule 62-297, FAC, not to exceed 846 lb/hr.

   c. Particulates (PM/PM10) - 0.0135 lb. per million BTU heat input, average time per 40 CFR 60.46.

   d. Visible emissions - 10% opacity, 6-minute average, except for one 6-minute period per hour of not more than 17% opacity.

2. Stack emissions from the combined cement plant I, lime plant and power plant boiler shall not exceed the following site specific limitations:

   a. No change

   b. NOx - 0.7 lb. per million BTU heat input plus 2.9 lb. per ton of kiln feed (dry basis), averaging time per Rule 62-297, FAC, not to exceed 1205 lb/hr.

   c. PM/PM10 - 0.0135 lb. per MMBTU (25.0 lbs per hour at 1,850 MMBTU/hr) plus 0.3 lb from cement kiln I and 0.1 lb from clinker cooler I per ton of kiln feed (dry basis), averaging time per 40 CFR 60.46.

~~3. When the power plant boiler is operating alone and cement plant I is not in operation, the maximum heat input rate of the boiler shall not exceed the site specific limit of 1,000 million BTU per hur, maximum three-hour average.~~

4-12. No change

13. In accordance with Rules 62-210.700 (1) and (6), excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for longer duration. In case of excess emissions resulting from malfunctions, the permittee shall notify the Department in accordance with Rule 62-4.130, Florida Administrative Code. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department.

14-15. No change

16. Stack emissions from cement plant II shall not exceed the following site specific limitations for the cement kiln, clinker cooler, raw mill and preheater as given in Permit No. AC95-274892:

(dry basis)	Emission Limits	MAX. ALLOWABLE EMISSIONS	
POLLUTANT	LBS/TON KILN FEED	LBS./HR.	
TONS/YR.			
Particulate (Cooler)	0.1	12.7	55.6
Particulate (Kiln)	0.2	25.4	111.3
SO_2	0.18	22.4	98.2
NOx	1.83	232.4	1018

The measured emission rates will be the combined rates from the Unit II cement kiln stack. Visible emissions shall not be equal to or greater than 10% opacity, also determined at the Unit II

cement plant stack. Permit No. AC95-274892 also specifies:

a. The raw and finished material feed rates and fuel types for cement plant II;
b. The operating conditions required for proper operation and startup/shutdown periods; and
c. The testing, monitoring, recordkeeping, and reporting requirements for cement plant II.

17. Minor source cement plant II particulate emissions due to the storage and/or use of raw materials, intermediate (cement kiln dust) and final (clinker) products will be controlled through the use of silos and/or covered conveyors equipped with fabric filter baghouses designed for outlet grain loading of 0.01 gr/acf. A visible emission reading of 5% opacity or less may be used to establish compliance with the lb/hour emission limits for each source given in the permits. A visible emission reading greater than 5% opacity will require the permittee to perform a stack test using EPA Methods contained in 40 CFR 60, Appendix A with minimum requirements for stack sampling facilities, source sampling and reporting in accordance with 62.297, FAC.

B. Air Monitoring Program

1. A flue gas oxygen meter shall be installed for the unit to continuously monitor a representative sample of the flue gas. The oxygen monitor shall be used with automatic feedback or manual controls to continuously maintain air/fuel ratio parameters at an optimum. Performance tests shall be conducted and operating procedures established. The document □Use of Flue Gas Oxygen Meter as BACT for Combustion Controls□ may be used as a guide. The permittee shall install and operate continuous monitoring devices for the boiler/cement plant I exhaust for sulfur dioxide and opacity to demonstrate compliance with the pound-per-hour SO_2 emission limits and visible emission limits, respectively, in Conditions I.A.1.a and I.A.2.a. The monitoring devices shall meet the applicable requirements of Section 62-297.500, FAC. and 40 CFR 60.45, and 40 CFR 60.13. including certification of each device. The permittee will provide

the department with 30 days notice on each certification.

4. The permittee shall provide stack sampling facilities as required by Rule 62-297, F.A.C.,

C. Stack Testing

2. Performance tests shall be conducted and data reduced in accordance with methods and procedures outlined in Rule 62-297, F.A.C.

6. Instruments shall be installed, calibrated, and maintained to continuously measure the amounts of coal and limestone used in the boiler, material fed to cement kiln I, and clinker produced by cement kiln I. The records of coal and limestone used in the boiler, fuel analysis, daily cement kiln I feed and clinker produced shall be reported quarterly to the Department's Southwest District Office.

D. Reporting

1. Stack monitoring, fuel usage and fuel analysis data shall be reported to the Department's Southwest District Office and to the Hernando County Health Department on a quarterly basis commencing with the start of commerical operation in accordance with 40 CFR 60.7 and Rule 62-297.500, FAC.

G. The heat input rate of the boiler, with or without cement kiln I operating shall not exceed the maximum necessary to produce 150 MW of power and shall in no case exceed 1,850 MMBTU/hr, maximum three-hour average.

H. Cement Kiln #2 , and its associated equipment, shall be constructed and operated in accordance with PSD FL 22.

NOTICE OF RIGHTS

Any party to this Order has a right to seek judicial review of this Order pursuant ot Section 120.68, Florida Statutes, by the Filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of appeal. The Notice of Appeal must be filled within 30 days from the date this Order is filed with the clerk of the Department.

DONE AND ORDERED this 2nd day of February, 1996 in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52
Florida Statutes, with the designated
Department Clerk, receipt of which
is hereby acknowledged.

Clerk — Date: 2-6-96

Virginia B. Wetherell, Secretary

Certificate of Service

I hereby certify that a copy of the Final Order Modifying Conditions of Certification of the Florida Crushed Stone company was sent to the following parties by United State mail on the 6th day of February, 1996.

Karen Brodeen, Esquire
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100

Lynn Capehart, Esquire
1601 NW 35th Way
Gainesville, FL 32605

Bob Elias, Esquire
Florida Public Service Commission
Gerald L. Gunter Bldg.
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Robert Bruce Snow, Esquire
Post Office Box 2060
Brooksville, FL 33512

William H. Green, Esquire
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123 S. Calhoun Street
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Johnson Blakely etal
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Tampa, FL 33601-1100

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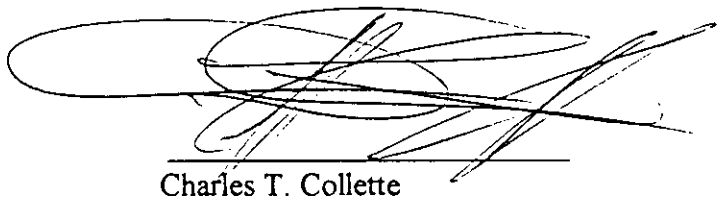
Holland & Knight
Post Office Drawer 810
Tallahassee, FL 32302-0810

Martin D. Hernandez, Esquire
Southwest Florida Water
Management District
2370 Broad Street
Brooksville, Florida 34609-6899



Charles T. Collette
Assistant General Counsel

State of Florida
Department of Environmental Protection
3900 Commonwealth Blvd., MS 35
Tallahassee, FL 32399-3000
Telephone: (904) 488-9730

ATP ENVIRONMENTAL ASSOCIATES INC.®

MEMORANDUM

FAXED
9/12 F15:
SEP 20 1995

Bureau of
Air Regulation

TO: Teresa Heron

FROM: Donald F. Elias, William E. Corbin

DATE: September 12, 1995

SUBJECT: Florida Crushed Stone Emissions as compared to 62-296 FAC limits

The NO_x RACT limit for cement plants is given as 2.0 lbs/MMBTU at 62-296.570(4)(b)(8) FAC. The current air permit for the existing cement kiln limits the sum total maximum heat input to the equivalent of 10.3 tons/hour of coal. Due to the variability in coal heat contents, there is no limit in the existing kiln permit for the total heat input in units of MMBTU/hour. We adopted the same language in the proposed draft permit provided to you on July 17th -- namely a maximum coal feed rate but no maximum heat input rates.

In the permit application forms on page 19, we provided an estimate of the maximum heat input rate as 276.62 MMBTU/hour based on a July 1994 coal sample showing 13,428 BTU/lb. Based on historical data, the maximum tested coal sample was 14,029 BTU/lb, giving a heat input rate to the cement kiln of 289.00 MMBTU/hr. At the proposed NO_x emission limit of 359 lbs/hour, these heat inputs would give NO_x emissions of 1.24 to 1.30 lbs/MMBTU. Due to the variability in coal shipments, we have revised page 19 of the air permit application forms (attached) utilizing a 5% factor on the recent measurement, yielding 14,730 BTU/lb. This gives a maximum heat input of about 303 MMBTU/hr and a NO_x emission rate of 1.18 lbs/MMBTU. All of these lb/MMBTU emission factors are very much less than the RACT limit of 2.0 lbs/MMBTU and would allow for any variation in the coal heat contents.

The PM emission limit for new plants is given as 0.3 lbs/ton feed for the kiln and 0.1 lbs/ton feed for the clinker cooler at 62-296.407 FAC[a]. We adopted these NSPS limits in our proposed draft permit for the cement kiln. At the kiln feed rate of 127 tons/hour, NSPS translates to total PM emissions of 50.8 lbs/hour from the kiln and clinker cooler. In order to conform with the existing cement kiln permit, we also adopted an hourly emission limit of 49.5 lbs/hour (approximately 0.39 lbs/ton feed total) in the proposed draft permit.

If you have any questions or need any additional information, please feel free to contact us at 908-968-9600. If you need any assistance, either technical or clerical, please don't hesitate to call.

cc: T.Mountain
L.Curtin
M.Hober/M.Lewis/FCS Project File

[a]These PM emission limits are more restrictive than the RACT PM emission limits for cement

cc: Buck
Hernando Co
EPA - SWD

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		303 mmbtu/hr
2. Maximum Incineration Rate:	lb/hr	**Not Applicable** tons/day
3. Maximum Process or Throughput Rate:		**Not Applicable**
4. Maximum Production Rate:		**83 tons clinker/hour**
5. Operating Capacity Comment:		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:

24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

Revised 09/12/95