Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

January 17, 1996

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, Colorado 80225

Re: Buckeye Florida, L.P.
No. 4 Lime Kiln Modification

Dear Mr. Bunyak:

Enclosed for your review and comment is the above referenced application. Please forward your comments to my attention at the letterhead address as soon as possible. The Bureau's Fax number is (904)922-6979.

If you have any questions, please contact Edward Svec at (904)488-1344.

Sincerely,

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

AAL/kt

Enclosures

cc: E. Svec

AIR CONSTRUCTION PERMIT APPLICATION FOR NO. 4 LIME KILN MODIFICATION

BUCKEYE FLORIDA, L.P.

Prepared For:

Buckeye Florida, L.P.
Route 3, Box 260
Perry, Florida 32347

Prepared By:

KBN Engineering and Applied Sciences, Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

January 1996
15236C

Buckeye Florida
Route 3, Box 260 • Perry, Florida 32347
Telephone: (904) 584-1121

8 January 1996

Mr. Alvaro A. Linero
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, FL 32399-2400

RE: Buckeye Florida, Limited Partnership
Facility: 31JAX620001
#4 Lime Kiln Proposed Modification (AO62-219150; AO62-219151)

Dear Mr. Linero,

Attached is our "Air Construction Permit Application for No.4 Lime Kiln Modification". The permit application package consists of two parts: The completed application for air permit - long form; and The PSD report.

Along with our application, we are submitting a permit processing fee in the amount of $7500 in compliance with Department Rules, Chapter 62-4.050(4).

Our environmental staff has arranged a meeting with your staff through Mr. Ed Svec for Friday, January 12 at 10:00 A.M. At that time we plan to discuss our proposed project, permit application and PSD Report.

Your efforts to process our application are greatly appreciated. We look forward to meeting with you Friday.

Sincerely,

C.S. Aiken
Plant Manager

Attachments

file: a:\lpermits\limekiln.doc

AIR CONSTRUCTION PERMIT APPLICATION FOR NO. 4 LIME KILN MODIFICATION

BUCKEYE FLORIDA, L.P.

Prepared For:

Buckeye Florida, L.P.
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EXECUTIVE SUMMARY

Buckeye Florida, Limited Partnership (BKI) operates a dissolving Kraft pulp mill located in Perry, Florida. The facility produces bleached market pulps and dissolving cellulose pulps. As part of the plant operation, BKI operates a lime kiln for recovery of chemicals used in the pulping of virgin wood.

BKI is proposing to increase the permitted production rate of the lime kiln from 650 tons per day to 750 tons per day of lime product. The increase in the permitted lime kiln production rate will allow the processing of additional water treatment lime mud, which will reduce the amount of purchased lime. Based on the federal and state prevention of significant deterioration (PSD) new source review regulations, the proposed project is subject to PSD review. Based on the PSD source applicability analysis, PSD review is indicated for the following pollutants: particulate matter [PM(TSP)]; particulate matter with an aerodynamic diameter of 10 microns or less (PM10); nitrogen oxides (NO_x); and beryllium (Be).

This application addresses the requirements of the PSD regulations. These requirements include providing project information, preconstruction air monitoring analysis, applying the best available control technology (BACT) for applicable pollutants, performing a source impact (modeling) analysis, and assessing potential impacts upon PSD Class I areas.

Predicted air quality impacts due to the proposed project do not exceed the federal and state significant impact levels or the air monitoring *de minimis* impact levels. As result, the proposed project will comply with all ambient standards and allowable PSD increments. In addition, the proposed project can be exempted from preconstruction air monitoring requirements.

The BKI lime kiln employs an electrostatic precipitator for particulate control, and an efficient combustion/burner system for NO_x control. These systems represent BACT for lime kilns in the pulp and paper industry.

Potential impacts upon soils, vegetation and visibility in the vicinity of the BKI mill, as well as in PSD Class I areas (St. Marks and other areas), were assessed. For PSD Class I areas, affects upon air quality related values (AQRVs) were also evaluated. This analysis demonstrated that no

significant impacts upon the nearby vicinity of the mill, or in PSD Class I areas, will result due to the small increase in emissions associated with the proposed project.

In summary, the application and PSD analysis presented herein satisfies the requirements of the state and federal PSD regulations. The analysis demonstrates that the proposed BKI project will comply with all applicable requirements of the PSD regulations.

APPLICATION FOR AIR PERMIT - LONG FORM

Department of Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

This section of the Application for Air Permit form provides general information on the scope of this application, the purpose for which this application is being submitted, and the nature of any construction or modification activities proposed as a part of this application. This section also includes information on the owner of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department on diskette, this section of the Application for Air Permit must also be submitted in hard-copy form.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility name, if any; and a brief reference to the facility's physical location. If known, also enter the ARMS or AIRS facility identification number. This information is intended to give a quick reference, on the first page of the application form, to the facility addressed in this application. Elsewhere in the form, numbered data fields are provided for entry of the facility data in computer-input format.

Buckeye Florida, Limited Partnership; Foley Mill; 31JAX620001

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	1-12-96
2. Permit Number:	1230001-004-AC
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

   Mr. C.S. Aiken, Plant Manager

2. Owner/Authorized Representative or Responsible Official Mailing Address:

Organization/Firm: **Buckeye Florida, Limited Partnership**
Street Address: **Route 3, Box 260**
City: **Perry** State: **FL** Zip Code: **32347**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

Telephone: **(904) 584-1121** Fax: **(904) 584-1220**

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative of the facility (non-Title V source) addressed in this Application for Air Permit or the responsible official, as defined in Chapter 62-213, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. If the purpose of this application is to obtain an air operation permit or operation permit revision for one or more emissions units which have undergone construction or modification, I certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted source.*

C. S. Aiken — Signature

1/5/96 — Date

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility (or Title V source). An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID / Description of Emissions Unit

Unit #	ARMS ID	Emissions Unit Name/Description
1	24	No. 4 Lime Kiln
2	26	2 Causticizing Lime Bins

See individual Emissions Unit sections for more detailed Emissions Unit descriptions.
Multiple ARMS IDs are indicated with an asterisk (*)

Purpose of Application and Category

Check one (except as otherwise indicated):

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit to be renewed: _____

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: _____

_____

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit. Give reason for the revision e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category II: All Air Construction Permit Applications Subject to Processing Under Rule 62-210.300(2)(b),F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s): _____

_____.

[ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g.; to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category III: All Air Construction Permit Applications for All Facilities and Emissions Units.

This Application for Air Permit is submitted to obtain:

[x] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: _____

AO62-219150; AO62-219151

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): _____

_____

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one:

[x] Attached - Amount: $ **$ 7,500.00** [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Increase in operating rate of No.4 Lime Kiln from 650 tons lime product per day to 750 tons lime product per day.

2. Projected or Actual Date of Commencement of Construction (DD-MON-YYYY):
1 Feb 1996

3. Projected Date of Completion of Construction (DD-MON-YYYY):
1 Sep 1996

Professional Engineer Certification

1. Professional Engineer Name: **David A. Buff**
   Registration Number: **19011**

2. Professional Engineer Mailing Address:
   Organization/Firm: **KBN Eng and Applied Sciences**
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**

3. Professional Engineer Telephone Numbers:
   Telephone: **(904) 336-5600** Fax: **(904) 336-6603**

4. Professional Engineer's Statement:

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

(1) To the best of my knowledge, there is reasonable assurance (a) that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; or (b) for any application for a Title V source air operation permit, that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application;

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

(3) For any application for an air construction permit for one or more proposed new or modified emissions units, the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

David A. Buff — Signature
(seal)

1/3/96 — Date

*Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:

   Cecile Hance, Environmental Technology Leader

2. Application Contact Mailing Address:

   Organization/Firm: **Buckeye Florida Limited Partnership**
   Street Address: **Route 3, Box 260**
   City: **Perry** State: **FL** Zip Code: **32347**

3. Application Contact Telephone Numbers:

   Telephone: **(904) 584-1339** Fax: **(904) 584-1220**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Name, Location, and Type

1. Facility Owner or Operator: **Buckeye Florida, Limited Partnership**

2. Facility Name: **Buckeye Florida Foley Mill**

3. Facility Identification Number: **31JAX620001** [ ] Unknown

4. Facility Location Information:
   Facility Street Address: **Route 3, Box 260**
   City: **Perry** County: **Taylor** Zip Code: **32347**

5. Facility UTM Coordinates:
   Zone: **17** East (km): **256.7** North (km): **3328.7**

6. Facility Latitude/Longitude:
   Latitude (DD/MM/SS): **30 / 3 / 59** Longitude: (DD/MM/SS): **83 / 33 / 12**

7. Governmental Facility Code:	8. Facility Status Code:	9. Relocatable Facility?	10. Facility Major Group SIC Code:
0	**A**	[ ] Yes [X] No	**26**

11. Facility Comment:

Facility Contact

1. Name and Title of Facility Contact:
   Bruce Harding, Plant Environmental Control Manager

2. Facility Contact Mailing Address:
   Organization/Firm: **Buckeye Florida Limited Partnership**
   Street Address: **Route 3, Box 260**
   City: **Perry** State: **FL** Zip Code: **32347**

3. Facility Contact Telephone Numbers:
   Telephone: **(904) 584-1106** Fax: **(904) 584-1694**

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [x] No [ ] Unknown
2. Title V Source? [x] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes, [x] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [x] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [x] No
6. Major Source of HAPs? [x] Yes [ ] No [ ] Possible
7. Synthetic Minor Source of HAPs? [ ] Yes [x] No
8. One or More Emissions Units Subject to NSPS? [x] Yes [ ] No
9. One or More Emissions Units Subject to NESHAP? [ ] Yes [x] No
10. Title V Source by EPA Designation? [ ] Yes [x] No
11. Facility Regulatory Classifications Comment:

B. FACILITY REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of federal, state, and local regulations applicable to the facility as a whole. (Regulations applicable to individual emissions units within the facility are addressed in Subsection III-B of the form.)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

Not Applicable

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

62-212.300
62-212.400
62-212.410

C. FACILITY POLLUTANT INFORMATION

This subsection of the Application for Air Permit form allows for the reporting of potential and estimated emissions of selected pollutants on a facility-wide basis. It must be completed for each pollutant for which the applicant proposes to establish a facility-wide emissions cap and for each pollutant for which emissions are not reported at the emissions-unit level.

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

D. FACILITY SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the facility as a whole. (Supplemental information related to individual eissions units within the facility is provided in Subsection III-I of the form.) Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location:
   [X] Attached, Document ID: Fig.2-2 PSD Rpt
   [ ] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [X] Attached, Document ID: Fig.2-3 PSD Rpt
   [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [ ] Attached, Document ID(s): _____
   [X] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: PSD Report
   [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

7. List of Insignificant Activities:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

8. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID: _____
   [ ] Equipment/Activities Onsite but Not Required to be Individually Listed
   [X] Not Applicable

9. Alternative Methods of Operation: [ ] Attached, Document ID: _____ [x] Not Applicable
10. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID: _____ [x] Not Applicable
11. Enhanced Monitoring Plan: [ ] Attached, Document ID: _____ [x] Not Applicable
12. Risk Management Plan Verification: [ ] Plan Submitted to Implementing Agency - Verification Attached Attached, Document ID: _____ [ ] Plan to be Submitted to Implementing Agency by Required Date [x] Not Applicable
13. Compliance Report and Plan [ ] Attached, Document ID: _____ [x] Not Applicable
14. Compliance Statement (Hard-copy Required) [ ] Attached, Document ID: _____ [x] Not Applicable

Emissions Unit Information Section 1 of 2

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

Type of Emissions Unit Addressed in This Section

Check one:

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.

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

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section:

   No. 4 Lime Kiln

2. ARMS Identification Number: [ ] No Corresponding ID [ ] Unknown

   24

3. Emissions Unit Status Code:	4. Acid Rain Unit?	5. Emissions Unit Major Group SIC Code:
A	[ ] Yes [X] No	**26**

6. Initial Startup Date (DD-MON-YYYY):

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: Model Number:

9. Generator Nameplate Rating: MW

10. Incinerator Information:

Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

11. Emissions Unit Comment:

Emissions Unit Control Equipment Information

A.

1. Description:

Electrostatic Precipitator

2. Control Device or Method Code: **10**

B.

1. Description:

Process Controls

2. Control Device or Method Code: **46**

C.

1. Description:

2. Control Device or Method Code:

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:	**210** mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr tons/day
3. Maximum Process or Throughput Rate:	**118,463** **lb/hr lime mud**
4. Maximum Production Rate:	**See Comment**
5. Operating Capacity Comment:	**Maximum Production Rate: 62,500 lbs/hr lime product. Lime product is approximately 90% CaO. Refer to Attachment A for process input rate calculation.**

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:

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

B. EMISSIONS UNIT REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

40CFR60. 7(a)(4)
40CFR60. 7(b)
40CFR60. 7(c)
40CFR60. 7(d)
40CFR60. 7(f)
40CFR60. 7(g)
40CFR60. 8
40CFR60.11(a)
40CFR60.11(d)
40CFR60.12
40CFR60.13(a)
40CFR60.13(b)
40CFR60.13(c)(2)
40CFR60.13(d)(1)
40CFR60.13(e)(2)
40CFR60.13(f)
40CFR60.14(a)
40CFR60.14(b)
40CFR60.14(f)
40CFR60.14(g)
40CFR60.19
40CFR60.282(a)(3)
40CFR60.283(a)(5)
40CFR60.284(a)(2)
40CFR60.284(c)(1)
40CFR60.284(c)(2)
40CFR60.284(c)(3)
40CFR60.284(d)(2)
40CFR60.284(e)(2)
40CFR60.285(a)
40CFR60.285(b)
40CFR60.285(d)
62-210.500
62-210.550
62-212.300(1)(a)
62-212.300(2)
62-212.300(3)
62-212.400
62-296.310(2)
62-296.310(3)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

62-296.320(2)
62-296.330
62-296.400
62-296.404(3)(e)(2)
62-296.404(4)(b)
62-296.404(5)(a)
62-296.404(5)(b)
62-296.404(6)(a)
62-296.404(6)(b)
62-296.404(6)(c)2.
62-296.404(6)(c)4.
62-296.404(6)(d)
62-296.800(2)(a)33.
62-296.800(3)
62-296.800(4)

C. EMISSION POINT (STACK/VENT) INFORMATION

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

Emission Point Description and Type

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

   LK4

2. Emission Point Type Code:

   [x] 1 [ ] 2 [ ] 3 [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

5. Discharge Type Code:

   [ ] D [ ] F [ ] H [ ] P
   [ ] R [x] V [ ] W

6. Stack Height:	**125**	ft
7. Exit Diameter:	**7.3**	ft
8. Exit Temperature:	**550**	°F
9. Actual Volumetric Flow Rate:	**135,800**	acfm
10. Percent Water Vapor:	**35**	%
11. Maximum Dry Standard Flow Rate:	**46,150**	dscfm
12. Nonstack Emission Point Height:		ft

13. Emission Point UTM Coordinates:

Zone: East (km): North (km):

14. Emission Point Comment:

See Attachment A for derivation of acfm and dscfm. Values shown in fields 8,9,10 and 11 represent maximums.

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 1 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Lime Kiln**	
2. Source Classification Code (SCC): **3-07-001-06**	
3. SCC Units: **Tons Air-Dried Unbleached Pulp Produced**	
4. Maximum Hourly Rate: **105.5**	5. Maximum Annual Rate: **924,180**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Based on permitted rate of batch digester system (see Attachment A).**	

Segment Description and Rate Information: Segment 2 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **No. 6 Fuel Oil; In-Process Fuel Use; Residual Oil; Lime Kiln**	
2. Source Classification Code (SCC): **3-90-004-03**	
3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **1.4**	5. Maximum Annual Rate: **12,264**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **2.5**	8. Maximum Percent Ash: **0.1**
9. Million Btu per SCC Unit: **150**	
10. Segment Comment:	

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 3 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **In-Process Fuel Use; Natural Gas; Lime Kiln**	
2. Source Classification Code (SCC): **3-90-006-03**	
3. SCC Units: **Million Cubic Feet Processed**	
4. Maximum Hourly Rate: **0.202**	5. Maximum Annual Rate: **1,769**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash: **0**
9. Million Btu per SCC Unit: **1,040**	
10. Segment Comment: **Maximum Percent Sulfur: 0.001**	

Segment Description and Rate Information: Segment _____ of _____

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode):	
2. Source Classification Code (SCC):	
3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment:	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 1 of 7

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **010**
4. Secondary Control Device Code:
5. Potential Emissions: **20** lbs/hr **87.6** tons/yr
6. Synthetically Limited? [ ] Yes [**X**] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **0.0451 gr/dscf @10% O2** Reference: **BACT**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**X**] 5
10. Calculation of Emissions: **See PSD Report**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:	**OTHER**
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	**0.0451 gr/dscf @10% O2**
4. Equivalent Allowable Emissions:	**20** lbs/hr **87.6** tons/yr
5. Method of Compliance:	**Annual Stack Test using EPA Method 5**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	**Based on BACT**

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 2 of 7

1. Pollutant Emitted: **PM10**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **010**
4. Secondary Control Device Code:
5. Potential Emissions: **20** lbs/hr **87.6** tons/yr
6. Synthetically Limited? [ ] Yes [**x**] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **0.0451 gr/dscf @10% O2** Reference: **BACT**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**x**] 5
10. Calculation of Emissions: **See PSD Report.**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: **0.0451 gr/dscf @10% O2**		
4. Equivalent Allowable Emissions:	**20** lbs/hr	**87.6** tons/yr
5. Method of Compliance: **Annual stack test using EPA Method 5**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Based on BACT**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 3 of 7

1. Pollutant Emitted: **NOX**
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: **68.44** lbs/hr **299.8** tons/yr
6. Synthetically Limited? [ ] Yes [x] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **2.19 lb/ton CaO** Reference: **NCASI Bltn No. 646**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [x] 5
10. Calculation of Emissions: **See PSD Report.**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **68.44 lb/hr**	
4. Equivalent Allowable Emissions:	**68.44** lbs/hr **299.8** tons/yr
5. Method of Compliance: **Annual stack test using EPA Method 7 or 7E**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Based on BACT**	

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 4 of 7

1. Pollutant Emitted: CO
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 12.8 lbs/hr 56.1 tons/yr
6. Synthetically Limited? [ ] Yes [x] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: 0.41 lb/ton CaO Reference: NCASI Bltn No 416
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [x] 5
10. Calculation of Emissions: **See PSD Report.**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 5 of 7

1. Pollutant Emitted: **VOC**
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: **7.38** lbs/hr **32.3** tons/yr
6. Synthetically Limited? [ ] Yes [**X**] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **0.236 lb/ton CaO** Reference: **NCASI Bltn No. 646**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**X**] 5
10. Calculation of Emissions: **See PSD Report.**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 6 of 7

1. Pollutant Emitted: **TRS**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **046**
4. Secondary Control Device Code:
5. Potential Emissions: **2.64** lbs/hr **11.68** tons/yr
6. Synthetically Limited? [ ] Yes [**x**] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **7 ppmvd @10% O2** Reference: **Escape PSD**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**x**] 5
10. Calculation of Emissions: **See PSD Report, Table 2-2**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **7 ppmvd @10% O2**	
4. Equivalent Allowable Emissions:	**2.64** lbs/hr **11.58** tons/yr
5. Method of Compliance: **Continuous TRS monitor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Permit Limit will allow No.4 Lime Kiln to escape PSD for TRS.**	

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 7 of 7

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: **31.25** lbs/hr **136.9** tons/yr
6. Synthetically Limited? [ ] Yes [X] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **1 lb/ton CAO** Reference: **NCASI Bltn No. 646**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [X] 5
10. Calculation of Emissions: **See PSD Report.**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

F. VISIBLE EMISSIONS INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

Visible Emissions Limitations: Visible Emissions Limitation 1 of 1

1.	Visible Emissions Subtype: VE
2.	Basis for Allowable Opacity: [X] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: 20 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **Annual Stack Test using EPA Method 9**
5.	Visible Emissions Comment: **62-296.310(2)**

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor 1 of 1

1.	Parameter Code: **TRS**
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: **STI** Model Number: **100-DP** Serial Number:
4.	Installation Date (DD-MON-YYYY): **1 Jan 1986**
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **62-296.404(5). Monitor also measures oxygen.**

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review persuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissons Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [x] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[X] C	[ ] E	[ ] Unknown
	SO_2	[X] C	[ ] E	[ ] Unknown
	NO_2	[X] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	0 lbs/hr	0	tons/yr
	SO_2	0 lbs/hr	0	tons/yr
	NO_2		259.8	tons/yr
5.	PSD Comment:			
	NOx baseline based on maximum permitted operation (650 TPD lime and 2.19 lb/ton) since kiln did not start up until March 1987.			

I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: Fig.2-1 PSD Rpt	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[X] Attached, Document ID: See Sec. III.D.	
	[ ] Not Applicable	[ ] Waiver Requested
3.	Detailed Description of Control Equipment	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
4.	Description of Stack Sampling Facilities	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
5.	Compliance Test Report	
	[ ] Attached, Document ID: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
8.	Supplemental Information for Construction Permit Application	
	[X] Attached, Document ID: PSD Report	[ ] Not Applicable
9.	Other Information Required by Rule or Statute	
	[X] Attached, Document ID: PSD Report	[ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10.	Alternative Methods of Operation [ ] Attached, Document ID: _____ [X] Not Applicable
11.	Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID: _____ [X] Not Applicable
12.	Enhanced Monitoring Plan [ ] Attached, Document ID: _____ [X] Not Applicable
13.	Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [X] Not Applicable
14.	Acid Rain Permit Application [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [X] Not Applicable

Emissions Unit Information Section 2 of 2

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

Type of Emissions Unit Addressed in This Section

Check one:

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.

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

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section:

   Two Causticizing Lime Storage Bins with Baghouse

2. ARMS Identification Number: [ ] No Corresponding ID [ ] Unknown

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3. Emissions Unit Status Code:	4. Acid Rain Unit?	5. Emissions Unit Major Group SIC Code:
A	[ ] Yes [X] No	**26**

6. Initial Startup Date (DD-MON-YYYY):

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: Model Number:

9. Generator Nameplate Rating: MW

10. Incinerator Information:

    Dwell Temperature: °F
    Dwell Time: seconds
    Incinerator Afterburner Temperature: °F

11. Emissions Unit Comment:

Emissions Unit Control Equipment Information

A.

1. Description:

   Baghouse

2. Control Device or Method Code: **18**

B.

1. Description:

2. Control Device or Method Code:

C.

1. Description:

2. Control Device or Method Code:

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: mmBtu/hr
2. Maximum Incineration Rate: lbs/hr tons/day
3. Maximum Process or Throughput Rate: **See Comment**
4. Maximum Production Rate:
5. Operating Capacity Comment: **Maximum Process/Throughput Rate: 62,500 lb/hr lime product; 88,000 lb/hr purchased lime**

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:			
24	hours/day,	**7**	days/week,
52	weeks/yr	**8,760**	hours/yr

B. EMISSIONS UNIT REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

62-296.310(1) - Process Weight Table
62-296.310(2) - General Visible Emissions

C. EMISSION POINT (STACK/VENT) INFORMATION

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

Emission Point Description and Type

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

   Lime Bins

2. Emission Point Type Code:

   [x] 1 [ ] 2 [ ] 3 [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

5. Discharge Type Code:

   [ ] D [ ] F [x] H [ ] P
   [ ] R [ ] V [ ] W

6. Stack Height:	**124**	ft
7. Exit Diameter:	**1**	ft
8. Exit Temperature:	**77**	°F
9. Actual Volumetric Flow Rate:	**2,000**	acfm
10. Percent Water Vapor:		%
11. Maximum Dry Standard Flow Rate:	**2,000**	dscfm
12. Nonstack Emission Point Height:		ft
13. Emission Point UTM Coordinates:		
Zone: East (km): North (km):		
14. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See . instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 1 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Sulfate (Kraft) Pulping; other not classified**	
2. Source Classification Code (SCC): **3-07-001-99**	
3. SCC Units: **Tons Air-Dried Unbleached Pulp Produced**	
4. Maximum Hourly Rate: **105.5**	5. Maximum Annual Rate: **924,180**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Rate refers to lime kiln production. Based on permitted rate of batch digester system (see Attachment A).**	

Segment Description and Rate Information: Segment 2 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Sulfate (Kraft) Pulping; other not classified**	
2. Source Classification Code (SCC): **3-07-001-99**	
3. SCC Units: **Tons Air-Dried Unbleached Pulp Produced**	
4. Maximum Hourly Rate: **146.66**	5. Maximum Annual Rate: **1,284,800**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Rate refers to purchased lime. Equivalent to 88,000 lb/hr purchased lime to lime bins. Based on 0.3 tons of lime product/ton air-dried unbleached pulp.**	

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 1 of 2

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **018**
4. Secondary Control Device Code:
5. Potential Emissions: **0.343** lbs/hr **1.5** tons/yr
6. Synthetically Limited? [ ] Yes [**X**] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **0.02 gr/scf** Reference: **Manufacturer's data**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**X**] 5
10. Calculation of Emissions: **0.02 gr/scf x 2,000 scf/min x 60 min/hr / 7,000 gr/lb = 0.343 lb/hr**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 2 **of** 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	**0.343** lbs/hr **1.5** tons/yr
5. Method of Compliance: **Annual VE test using EPA Method 9**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Based on Permit AO62-219151**	

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 2 of 2

1. Pollutant Emitted: **PM10**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **018**
4. Secondary Control Device Code:
5. Potential Emissions: **0.343** lbs/hr **1.5** tons/yr
6. Synthetically Limited? [ ] Yes [x] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **0.02 gr/scf** Reference: **Manufacturer's Data**
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [x] 5
10. Calculation of Emissions: **0.02 gr/scf x 2,000 scf/min x 60 min/hr / 7,000 gr/lb = 0.343 lb/hr**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 2 of 2

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

F. VISIBLE EMISSIONS INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

Visible Emissions Limitations: Visible Emissions Limitation 1 of 1

1.	Visible Emissions Subtype: **VE**
2.	Basis for Allowable Opacity: [**X**] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: **5** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **Annual VE testing using EPA Method 9**
5.	Visible Emissions Comment: **62-297.620(4)**

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review persuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissons Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [x] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[X] C	[ ] E	[ ] Unknown
	SO_2	[ ] C	[ ] E	[ ] Unknown
	NO_2	[ ] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	0 lbs/hr	0	tons/yr
	SO_2	lbs/hr		tons/yr
	NO_2			tons/yr
5.	PSD Comment:			

I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: PSD Report	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
3.	Detailed Description of Control Equipment	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
4.	Description of Stack Sampling Facilities	
	[ ] Attached, Document ID: _____	
	[X] Not Applicable	[ ] Waiver Requested
5.	Compliance Test Report	
	[ ] Attached, Document ID: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
8.	Supplemental Information for Construction Permit Application	
	[X] Attached, Document ID: PSD Report	[ ] Not Applicable
9.	Other Information Required by Rule or Statute	
	[ ] Attached, Document ID: _____	[X] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation

[ ] Attached, Document ID: _____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)

[ ] Attached, Document ID: _____ [X] Not Applicable

12. Enhanced Monitoring Plan

[ ] Attached, Document ID: _____ [X] Not Applicable

13. Identification of Additional Applicable Requirements

[ ] Attached, Document ID: _____ [X] Not Applicable

14. Acid Rain Permit Application

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: _____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: _____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: _____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: _____

[X] Not Applicable

PSD REPORT

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2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

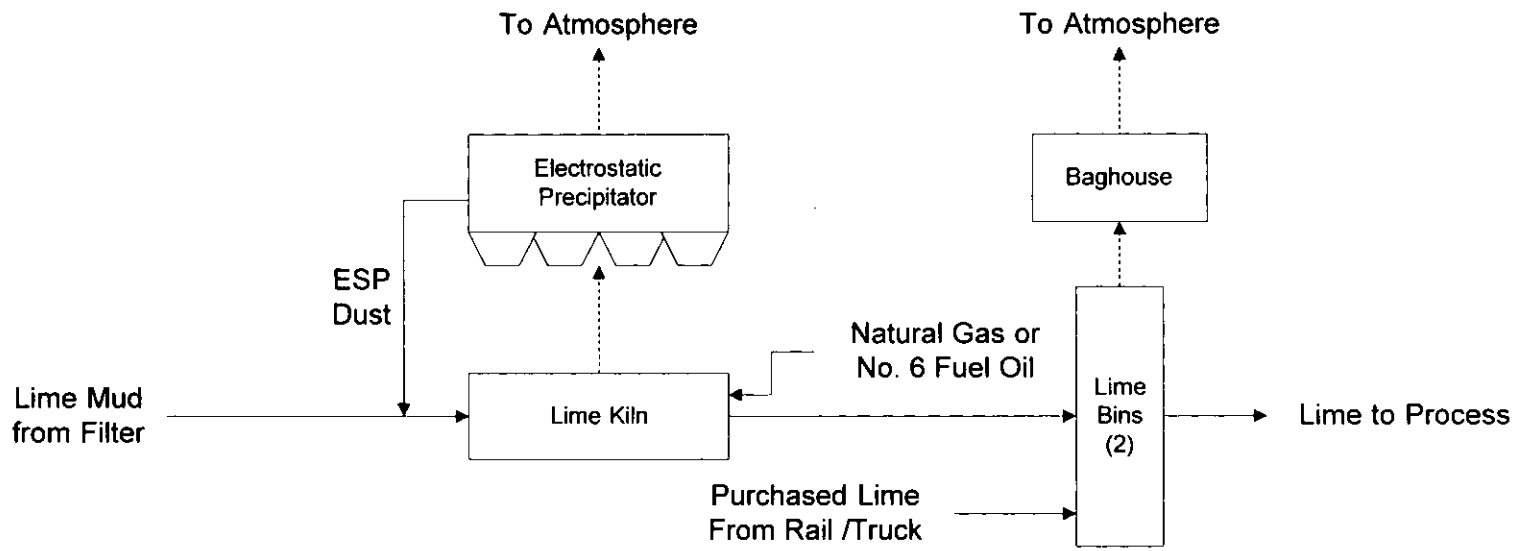
Buckeye Florida, Limited Partnership (BKI) operates a dissolving Kraft pulp mill located in Perry, Florida. The mill consists of two batch digester systems, several multiple effect evaporator (MEE) systems, recovery boilers and smelt tanks, lime kiln, tall oil plant, steam boilers, and other equipment to produce pulp products from virgin wood.

A flow diagram of the No. 4 Lime Kiln is presented in Figure 2-1. The No. 4 Lime Kiln is equipped with an electrostatic precipitator to control particulate matter emissions. The associated lime bins, which are equipped with a baghouse for particulate control, are also shown on the flow diagram. The diagram shows lime mud entering the lime kiln from the mud filters. Lime mud (CaCO3) is converted to lime (CaO) in the lime kiln. The lime product is stored in the two lime bins. Purchased lime can also be received and stored in the lime bins. The No. 4 Lime Kiln is permitted to burn natural gas and No.6 fuel oil. Air pollutants are emitted from the lime kiln stack and the lime bin baghouse.

The No. 4 Lime Kiln is currently operated under permit No. AO62-219150. The lime bins are operated under permit No. AO62-219151. Copies of the current operating permits and the previous construction permits for the lime kiln and lime bins are presented in Attachment C.

BKI is proposing to increase the permitted lime production of the No. 4 Lime Kiln from 650 TPD to 750 TPD of lime product. There are several reasons for the requested rate increase:

1. BKI has purchased significant amounts of lime in the past. The increased production rate will allow purchased lime quantities to be reduced in the future.
2. BKI periodically stockpiles excess lime mud at the facility, e.g., during kiln outages. This lime mud must be reprocessed through the kiln at a later time. The increased lime kiln production rate will allow more timely processing of the stockpiled lime mud.
3. BKI's water treatment system uses approximately 100 TPD of lime, most of which is lost to the wastewater treatment system. The increased lime kiln production capacity will allow BKI to recover and re-process up to 100 percent of this water treatment lime on a continuous basis.



Process Flow Legend	Buckeye Florida Limited Partnership Perry, FL Figure 2-1	*Emission Unit:* LIME KILN *Process Area:* Overall Plant *Filename:* LIMEPSD.VSD *Latest Revision Date:* 10/23/95 02:19 PM	KBN Engineering and Applied Sciences, Inc.
Gas Flow Solid / Liquid Flow			

The existing No. 4 Lime Kiln with an associated electrostatic precipitator operates at a maximum of 170,000 ft^3/hr gaseous fuel or a maximum of 1,214 gallons per hour of liquid fossil fuel. The future maximum heat input rate will be 210 MMBtu/hr, which equates to a maximum of 201,923 ft^3/hr gaseous fuel or a maximum of 1,400 gallons per hour of liquid fossil fuel. A new burner will be installed on the lime kiln in order to accommodate these higher fuel flows. The derivation of process and fuel rates, and flue gases flow rates for the kiln are presented in Attachment A.

Other process units at the facility will not be affected due to this increased production capacity. The increased lime production will offset purchased lime amounts; therefore the total lime amount available is not expected to increase.

2.2 CURRENT AIR EMISSIONS

The No. 4 Lime Kiln is currently subject to the New Source Performance Standards (NSPS) for Kraft Pulp Mills (40 CFR 60, Subpart BB). The NSPS emission limits for PM are 0.067 gr/dscf at 10 percent O_2 when gaseous fuel is being burned or 0.13 gr/dscf at 10 percent O_2 when liquid fossil fuel is burned. The NSPS limit for total reduced sulfur (TRS) is 8.0 ppmvd at 10 percent O_2. The current PM and TRS emission limits for the No. Lime Kiln are equal to the NSPS limit.

Current actual annual emissions of all PSD-regulated pollutants from the No. 4 Lime Kiln are presented in Table 2-1. The basis for the actual emissions is also presented in Table 2-1. References are presented in Attachment D. In general, the basis of the actual emissions is actual operation during the last 2 years (1994 through 1995). For 1995 operation, actual operation for the first 9 months of the year were prorated to 12 month operation. For pollutants where representative stack test data were available, the average source test results and actual hours of operation were used to estimate current emissions. For pollutants where representative source test data were not available, published emission factors were used in conjunction with actual production rates.

Table 2-1. Actual 1993-1994 Emissions from No. 4 Lime Kiln, Buckeye Florida, L.P.

Pollutant	Emission Factor	Reference	Activity Factor		Short-Term Hourly Emissions (lb/hr)	Annual Emissions (TPY)
			Short-term (a)	Annual (b)		
Particulate (PM)	0.92 lb/hr	1	-- --	7,981 hr/yr	0.92	3.7
Particulate (PM10)	0.92 lb/hr	1	-- --	7,981 hr/yr	0.92	3.7
Sulfur dioxide	1 lb/ton CaO	4	27.08 ton CaO/hr	196,029 ton CaO/yr	27.08	98.01
Nitrogen oxides	2.19 lb/ton CaO	4	27.08 ton CaO/hr	196,029 ton CaO/yr	59.31	214.7
Carbon monoxide	3 lb/ton CaO	2	27.08 ton CaO/hr	196,029 ton CaO/yr	81.25	294.0
VOC (c)	0.236 lb C/ton CaO	4	27.08 ton CaO/hr	196,029 ton CaO/yr	6.39	23.13
Lead	0.0038 lb/ton CaO	5	27.08 ton CaO/hr	196,029 ton CaO/yr	0.10	0.37
Sulfuric acid mist	4.45 % of SO2	3	-- --	-- --	1.20	4.81
Total reduced sulfur	0.64 lb/hr	6	-- --	7,981 hr/yr	0.64	2.55
Beryllium	1.7E-05 lb/ton CaO	5	27.08 ton CaO/hr	196,029 ton CaO/yr	4.6E-04	0.0017
Mercury	9.1E-06 lb/ton CaO	5	27.08 ton CaO/hr	196,029 ton CaO/yr	2.5E-04	8.9E-04

Footnotes
(a) Short-term activity factor based on current permit limit of 650 TPD CaO.
(b) Annual activity factor is an average of the production rate for the lime kiln in 1994 and 1993.
(c) VOC factors are representative of wet scrubbers and could be conservative.

References
1. Emission rates based on stack tests, 1993-1994.
2. NCASI Bulletin No. 416, for lime kilns Table 6, pg. 30.
3. AP-42 Table 1.3-2. SO3 is 3.6% of SO2. All of SO3 becomes sulfuric acid mist.
4. NCASI Bulletin No. 646, Tables 12-14, lime kilns, average factor used for NOx, SO2 and VOC.
5. NCASI Bulletin No. 650, for lime kilns with scrubbers; average factors used; ESP data not available.
6. Average value for TRS from continuous monitoring, in 1993-1994.

2.3 FUTURE MAXIMUM AIR EMISSIONS

Future maximum hourly and annual emissions for all PSD-regulated pollutants from the No. 4 Lime Kiln are presented in Table 2-2. Calculations are presented in Attachment B. The potential future emissions are based on the maximum production rate of 750 tons per day lime product and 365 day per year operation. Future PM/PM10 emissions are based on emission levels achievable by the existing ESP control. Future TRS emissions are based on a limit of 7.0 ppmvd at 10 percent O_2, which is less than the current limit of 8.0 ppmvd at 10 percent O_2 based on NSPS. Emissions of all other pollutants are based on the same emissions factors as the current actual emissions (see Table 2-1), and the maximum future operating rates.

Future maximum emissions of non-PSD pollutants regulated under the Clean Air Act (CAA) are presented in Table 2-3. Included are Hazardous Air Pollutants (HAPs) regulated under the CAA, pollutants regulated under the Accidental Release and Community Right-to-know regulations (Section 112 (r) of the CAA), and pollutants contained on Florida's Air Toxics Working List (Version 4.0).

2.4 FACILITY AND EMISSION UNIT LOCATIONS

A site location map of the BKI mill is shown in Figure 2-2. A plot plan showing the location of the No. 4 Lime Kiln is presented in Figure 2-3.

Table 2-2. Potential Future Emissions from No. 4 Lime Kiln at 750 TPD, Buckeye Florida, L.P.

Pollutant	Emission Factor	Reference	Activity Factor (b)	Hourly Emissions (lb/hr)	Annual Emissions (TPY) (d)
Particulate (PM)	20 lb/hr	1	8,760 hr/yr	20.00	87.6
Particulate (PM10)	20 lb/hr	1	8,760 hr/yr	20.00	87.6
Sulfur dioxide	1 lb/ton CaO	4	31.25 ton CaO/hr	31.25	136.9
Nitrogen oxides	2.19 lb/ton CaO	4	31.25 ton CaO/hr	68.44	299.8
Carbon monoxide	0.41 lb/ton CaO	2	31.25 ton CaO/hr	12.81	56.1
VOC (a)	0.236 lb C/ton CaO	4	31.25 ton CaO/hr	7.38	32.3
Lead	0.0038 lb/ton CaO	5	31.25 ton CaO/hr	0.12	0.5
Sulfuric acid mist	4.45 % of SO2	3	8,760 hr/yr	1.39	6.1
Total reduced sulfur - Gas	7.00 ppmvd (c)	1	71,300 dscfm (c)	2.64	11.58
Beryllium	1.7E-05 lb/ton CaO	5	31.25 ton CaO/hr	5.3E-04	0.0023
Mercury	9.1E-06 lb/ton CaO	5	31.25 ton CaO/hr	2.8E-04	0.0012

Footnotes

(a) VOC factors are representative of wet scrubbers and could be conservative.

(b) Activity factor is the proposed production rate for the lime kiln.

(c) Corrected to 10% O2; based on 46,150 dscfm @4% O2 actual stack conditions.

(d) Hours of operation limited to 8,760 hrs/yr.

References

1. Emission rates and activity factors are proposed rates.
2. NCASI Bulletin No. 416, for lime kilns Table 6, pg. 30; maximum of average for any single kiln used.
3. AP-42 Table 1.3-2. SO3 is 3.6% of SO2. All of SO3 becomes sulfuric acid mist.
4. NCASI Bulletin No. 646, Tables 12-14, lime kilns, average factor used for NOx, SO2 and VOC.
5. NCASI Bulletin No. 650, for lime kilns with scrubbers; average factors used; ESP data not available.

Table 2-3. Potential Emissions of Non-PSD Pollutants from No. 4 Lime Kiln, Buckeye Florida, L.P., Perry

Pollutant		Emission Factor (lb/ton CaO)	Ref.	Activity Factor (a) (ton CaO/hr)	Hourly Emission (b) (lb/hr)	Annual Emission (c) (TPY)
Hazardous Air Pollutants						
acetaldehyde		6.4E-03	1	31.25	0.20	0.87
acrolein		4.5E-04	1	31.25	0.014	0.06
benzene		1.1E-03	1	31.25	0.033	0.15
carbon disulfide		5.6E-03	2	31.25	0.18	0.77
carbon tetrachloride	<	6.9E-03	1	31.25	ND	ND
chlorobenzene		2.9E-04	1	31.25	0.0092	0.04
chloroform	<	3.8E-03	1	31.25	ND	ND
1,2-dichloroethane	<	1.5E-03	1	31.25	ND	ND
ethyl benzene		ND	2	31.25	ND	ND
formaldehyde		5.9E-03	1	31.25	0.18	0.80
methanol		1.2E-02	1	31.25	0.39	1.70
methyl ethyl ketone		6.3E-04	1	31.25	0.020	0.09
methyl isobutyl ketone		1.8E-04	1	31.25	0.0058	0.03
methylene chloride	<	2.3E-03	1	31.25	ND	ND
m,p-xylene		2.5E-04	1	31.25	0.0077	0.03
napthalene		3.6E-02	2	31.25	1.13	4.93
n-hexane		2.2E-04	1	31.25	0.0069	0.03
o-xylene	<	4.0E-04	1	31.25	ND	ND
PAH		4.8E-03	2	31.25	0.15	0.66
styrene		2.9E-04	1	31.25	0.0090	0.04
tetrachloroethylene	<	1.9E-03	1	31.25	ND	ND
toluene	<	3.4E-04	1	31.25	ND	ND
1,2,4-trichlorobenzene	<	6.8E-04	1	31.25	ND	ND
1,1,1-trichloroethane	<	1.5E-03	1	31.25	ND	ND
1,1,2-trichloroethane	<	1.5E-03	1	31.25	ND	ND
trichloroethylene	<	1.5E-03	1	31.25	ND	ND
As		1.4E-04	3	31.25	0.0044	0.019
Be		1.7E-05	3	31.25	5.3E-04	0.0023
Cd		3.0E-05	3	31.25	9.4E-04	0.0041
Cr		6.3E-04	3	31.25	0.020	0.086
Mn		4.6E-04	3	31.25	0.014	0.063
Ni		2.7E-04	3	31.25	0.0084	0.037
Pb		3.8E-03	3	31.25	0.12	0.52
Hg		9.1E-06	3	31.25	2.8E-04	0.0012
Se		1.6E-04	3	31.25	0.0050	0.022
Sb		1.7E-04	3	31.25	0.0053	0.023
Total HAPs		8.0E-02			2.50	10.97
Toxic Pollutants Regulated under CCA Section 112(r)						
methyl mercaptan	<	1.3E-02	1	31.25	ND	ND
Additional Pollutants under the Florida Air Toxics List Version 4.0						
1,2-dichloroethylene	<	1.6E-03	1	31.25	ND	ND
acetone		8.6E-03	1	31.25	0.27	1.18
bromomethane		2.8E-04	2	31.25	0.0088	0.038
chloromethane		3.1E-03	2	31.25	0.10	0.42
ethanol	<	3.0E-03	2	31.25	ND	ND
trichlorofluoromethane		8.3E-05	2	31.25	0.0026	0.011

References

1. NCASI MACT Sampling Program for lime kilns with ESP's SUMLKESP (pg. 17).
2. NCASI Bulletin No. 650 for lime kilns with ESP, Table 13A, average values used when ESP data not available.
3. NCASI Bulletin No. 650, for lime kilns with scrubbers Table 13C; ESP data not available.

(a) Activity factor is the maximum proposed permited rate.
(b) Emissions are not quantified for pollutants below detectable limits.
'(c) Based on 8760 hours of operation.

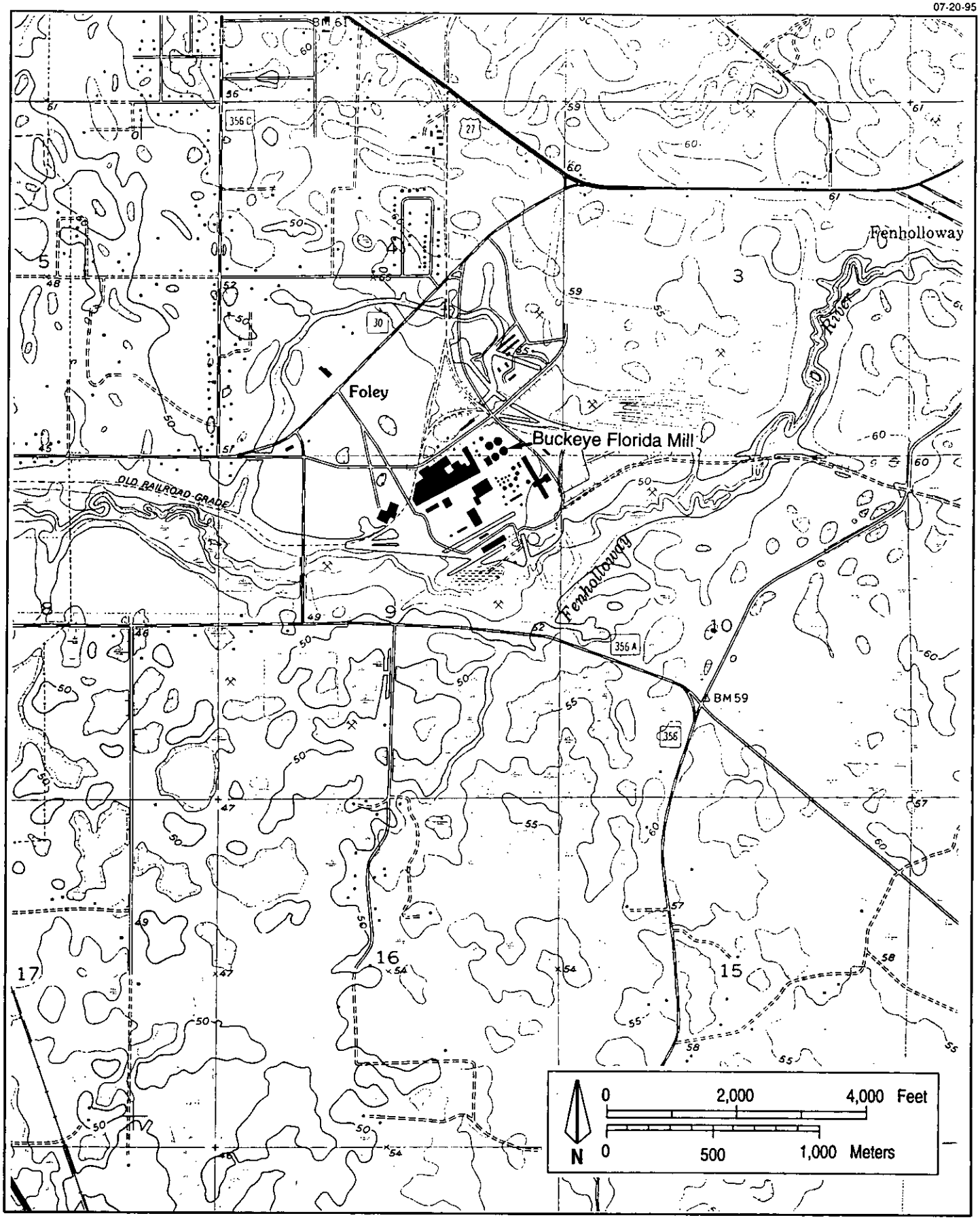


Figure 2-2
Buckeye Florida, Limited Partnership
Site Location

Sources: USGS, 1955, Perry Quadrangle, T.5.S., R.8.E.

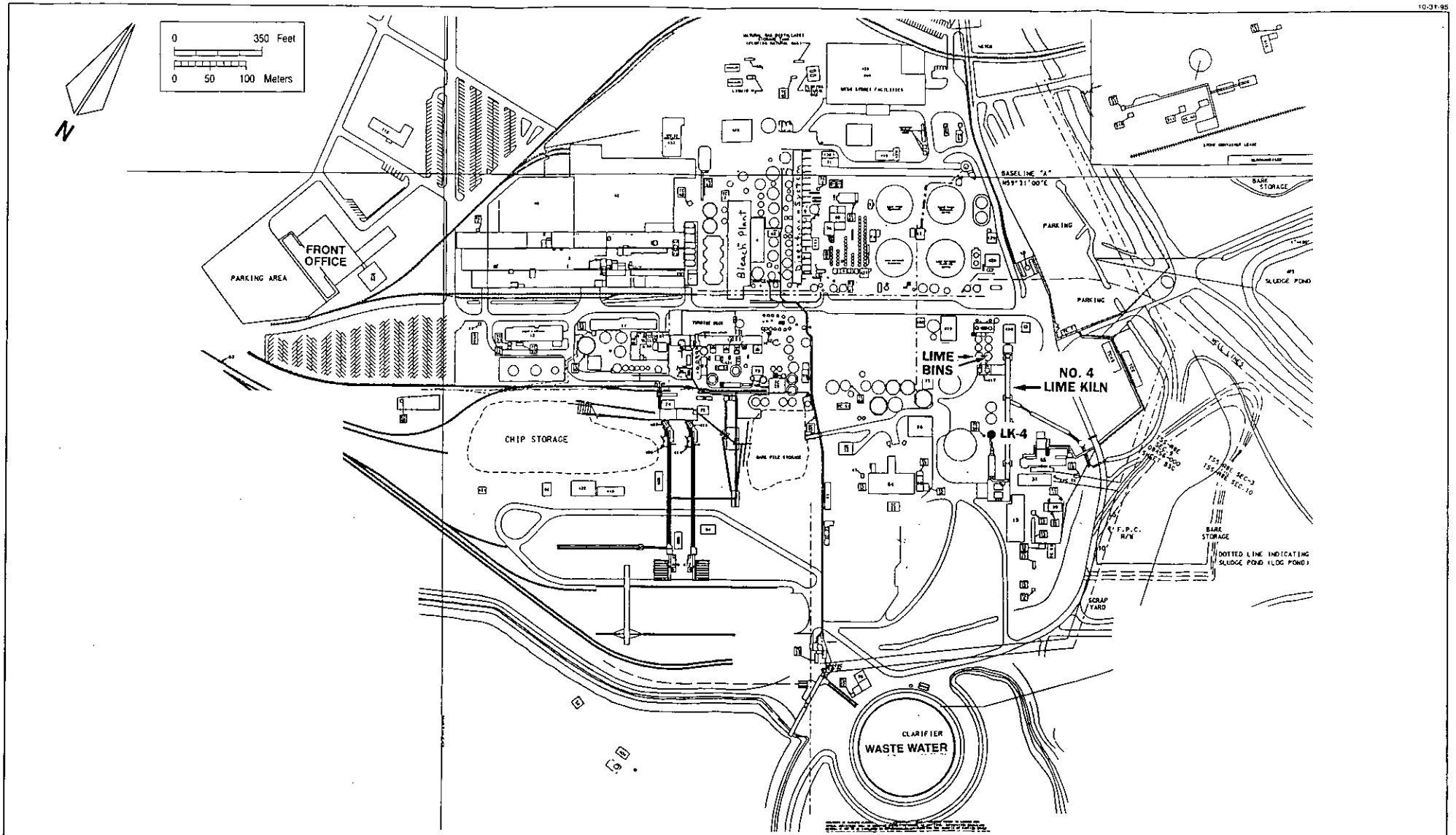


Figure 2-3
Buckeye Florida Limited Partnership Facility Plot Plan

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to federal and state new source review requirements and their applicability to Buckeye's proposed project. These requirements must be satisfied before construction can begin on the proposed project.

3.1 NATIONAL AND STATE AAQS

The existing applicable national and Florida ambient air quality standards (AAQS) are presented in Table 3-1. National primary AAQS were promulgated to protect the public health, and national secondary AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as non-attainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Federal PSD requirements are contained in the Code of Federal Regulations (CFR), Title 40, Part 52.21, prevention of significant deterioration of air quality. The State of Florida has adopted PSD regulations [Rule 62-212.400, Florida Administrative Code (F.A.C.)] that essentially are identical to the federal regulations. PSD regulations require that all new major stationary facilities or major modifications to existing major facilities which emit air pollutants regulated under CAA be reviewed and a construction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by the U.S. Environmental Protection Agency (EPA) and PSD approval authority in Florida has been granted to FDEP.

A "major facility" is defined under Florida PSD regulations as any one of 28 named source categories that has the potential to emit 100 tons per year (TPY) or more of any pollutant regulated under the CAA, or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. An "emission unit" is defined as any part or activity of a facility that has the potential to emit any air pollutant. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant, considering the application of control equipment and any other federally enforceable limitations on the emission units' capacity. A "major modification" is defined under PSD regulations as a change at an existing major stationary

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significance Levels

Pollutant	Averaging Time	AAQS ($\mu g/m^3$) National Primary Standard	AAQS ($\mu g/m^3$) National Secondary Standard	AAQS ($\mu g/m^3$) State of Florida	PSD Increments ($\mu g/m^3$) Class I	PSD Increments ($\mu g/m^3$) Class II	Significant Impact Levels ($\mu g/m^3$)
Particulate Matter (PM10)	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150[b]	150[b]	150[a]	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365[b]	NA	260[a]	5	91	5
	3-Hour Maximum	NA	1,300[b]	1,300[a]	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000[b]	10,000[b]	10,000[a]	NA	NA	500
	1-Hour Maximum	40,000[b]	40,000[b]	40,000[a]	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone	1-Hour Maximum[c]	235	235	235	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	15	NA	NA	NA

Note: AAQS = Ambient Air Quality Standards.
NA = Not applicable, i.e., no standard exists.
Particulate matter (PM10) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
PSD = prevention of significant deterioration.
$\mu g/m^3$ = micrograms per cubic meter.

[a]Maximum concentration not to be exceeded more than once per year.
[b]Achieved when the expected number of exceedances per year is less than 1.
[c]Achieved when the expected number of days per year with concentrations above the standard is less than 1.

Sources: 40 CFR 50.
40 CFR 52.21.
Rule 62-272, F.A.C.

facility that increases emissions by greater than significant amounts. PSD significant emission rates are shown in Table 3-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Major new facilities and major modifications are required to undergo the following analyses related to PSD for each pollutant emitted in significant amounts:

1. Source information,
2. Control technology review,
3. Source impact analysis,
4. Preconstruction air quality monitoring analysis, and
5. Additional impact analyses.

In addition to these analyses, a new source also must be reviewed with respect to good engineering practice (GEP) stack height regulations. If the proposed new source or modification is located in a non-attainment area for any pollutant, the source may be subject to non-attainment new source review requirements.

Discussions concerning each of these requirements are presented in the following sections.

3.2.2 INCREMENTS/CLASSIFICATIONS

The 1977 CAA amendments address the prevention of significant deterioration of air quality. The law specifies that certain increases in air quality concentrations above the baseline concentration level of SO_2 and total suspended particulate matter [PM(TSP)] would constitute significant deterioration. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or will have an impact. Congress also directed EPA to evaluate PSD increments for other criteria pollutants and, if appropriate, promulgate PSD increments for such pollutants.

Three classifications were designated, based on criteria established in the CAA amendments. Certain types of areas (international parks, national wilderness areas, memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) were designated as Class I areas. All other areas of the country were designated as Class II. PSD increments for Class III areas were defined, but no areas were designated as Class III. However, Congress made provisions in the

Table 3-2. PSD Significant Emission Rates and *De Minimis* Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	*De Minimis* Monitoring Concentration ($\mu g/m^3$)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter (TSP)	NSPS	25	10, 24-hour
Particulate Matter (PM10)	NAAQS	15	10, 24-hour
Nitrogen Oxides	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[a]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	—
Reduced Sulfur Compounds	NSPS	10	—
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Asbestos	NESHAP	0.007	NM
Beryllium	NESHAP	0.0004	0.001, 24-hour
Mercury	NESHAP	0.1	0.25, 24-hour
Vinyl Chloride	NESHAP	1	15, 24-hour

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below *de minimis* monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.
NM = No ambient measurement method.
NSPS = New Source Performance Standards.
PM10 = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
PSD = prevention of significant deterioration.
TPY = tons per year.
TSP = total suspended particulate matter.
$\mu g/m^3$ = micrograms per cubic meter.

[a] No *de minimis* concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

Source: Rule 62-212.400, F.A.C.

law to allow the redesignation of Class II areas to Class III areas. PSD increments for Class III areas are higher than those for Class II increments.

In 1978, EPA promulgated PSD regulations related to the requirements for classifications, increments, and area designations as set forth by Congress. PSD increments were initially set for only SO_2 and PM(TSP). However, in 1988, EPA promulgated final PSD regulations for NO_x and established PSD increments for nitrogen dioxide (NO_2). On June 3, 1993, EPA promulgated PSD increments for particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM10). The PM10 increments replaced the PM(TSP) increments.

The current federal PSD increments are shown in Table 3-1. As shown, Class I increments are the most stringent, allowing the smallest amount of air quality deterioration, while the Class III increments allow the greatest amount of deterioration. FDEP has adopted the EPA class designations and allowable PSD increments for PM10, SO_2, and NO_2.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a fictitious concentration level corresponding to a specified baseline date and certain additional baseline sources. In reference to the baseline concentration, the baseline date actually includes three different dates:

1. The major source baseline date, which is January 6, 1975, in the cases of SO_2 and PM10, and February 8, 1988, in the case of NO_2;
2. The minor source baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application; and
3. The trigger date, which is August 7, 1977, for SO_2 and PM10, and February 8, 1988, for NO_2.

By definition in the PSD regulations, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable minor source baseline date, and

2. The allowable emissions of major stationary facilities that began construction before January 6, 1975, for SO_2 and PM10 sources, or February 8, 1988, for NO_x sources, but which were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and, therefore, affect PSD increment consumption:

1. Actual emissions representative of a major stationary facility on which construction began after January 6, 1975, for SO_2 and PM10 sources, and after February 8, 1988, for NO_x sources; and
2. Actual emission increases and decreases at any stationary facility occurring after the major source baseline date that result from a physical change or change in the method of operation of the facility.

The minor source baseline date for SO_2 and PM10 has been set as December 27, 1977, for the entire State of Florida (Rule 62-212.400, F.A.C.). The minor source baseline date for NO_2 has been set as March 28, 1988, for all of Florida.

3.2.3 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the facility or modification [Rule 62-212.400(5)(c), F.A.C]. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in Rule 62-212.200, F.A.C. as:

> An emissions limitation, including a visible emission 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 such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall,

> to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation.

The requirements for BACT were promulgated within the framework of PSD in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT) (EPA, 1978) and in the PSD Workshop Manual (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980):

> BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis.

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed or modified facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected.

EPA issued a draft guidance document in 1990 on the top-down approach entitled Top-Down Best Available Control Technology Guidance Document (EPA, 1990a). The "draft" guidance requires starting with the most stringent (or top) technology and emissions limits that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibleness. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified.

It is noted that the American Paper Institute (API) initiated legal action in 1989 against the EPA over the implementation of the top-down approach. EPA and API reached a settlement agreement (July 9, 1991) which requires EPA to initiate formal rulemaking for BACT procedures. A proposed rule was required by January, 1992, but has not yet been published. However, until new rules are issued, EPA is requiring that the top-down approach still be used to determine BACT.

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C, any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987a).

Under the exemption rule, FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3-2 [Rule 62-212.400, F.A.C.].

3.2.5 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major facility or major modification subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rates shown in Table 3-2 [Rule 62-212.400(5)(d) F.A.C.]. The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval.

Guidance for the use and application of dispersion models is presented in the EPA publication Guideline on Air Quality Models (EPA, 1987b). The source impact analysis for criteria pollutants can be limited to the new or modified facility if the net increase in impacts as a result of the new or modified source is below modeling significance levels, as presented in Table 3-1.

Various lengths of record for meteorological data can be used for impact analyses. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor must normally be used for comparison to air quality standards.

3.2.6 ADDITIONAL IMPACT ANALYSES

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analysis of the impairment to visibility and the impacts on soils and vegetation that would occur as

a result of the proposed or modified facility [40 CFR 52.21; Rule 62-212.400(5)(e), F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts from general commercial, residential, industrial, and other growth associated with the facility or modification also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 GOOD ENGINEERING PRACTICE STACK HEIGHT

The 1977 CAA amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985). Identical regulations have been adopted by FDEP [Rule 62-210.550, F.A.C.]. GEP stack height is defined as the highest of:

1. 65 meters (m); or
2. A height established by applying the formula:

   $Hg = H + 1.5L$

   where: Hg = GEP stack height,
   H = Height of the structure or nearby structure, and
   L = Lesser dimension (height or projected width) of nearby structure(s); or
3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature but not greater than 0.8 kilometer (km). Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula. Because the terrain in the vicinity of the Georgia-Pacific facility is generally flat, plume impaction was not considered in determining the GEP stack height.

3.3 NON-ATTAINMENT RULES

Based on the current non-attainment provisions (Rule 62-212.500, F.A.C.), all major new facilities and modifications to existing major facilities located in a non-attainment area must undergo non-attainment review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the non-attainment pollutant, or if the modification results in a significant net emission increase of the non-attainment pollutant.

For major facilities or major modifications that locate in an attainment or unclassifiable area, the non-attainment review procedures apply if the source or modification is located within the area of influence of a non-attainment area. The area of influence is defined as an area that is outside the boundary of a non-attainment area but within the locus of all points that are 50 km outside the boundary of the non-attainment area. Based on Rule 62-212.500(2)(a), F.A.C., all VOC facilities or emission units that are located within an area of influence are exempt from the provisions of new source review for non-attainment areas. Facilities or emissions units that emit other non-attainment pollutants and are located within the area of influence are subject to non-attainment review unless the maximum allowable emissions do not have a significant impact within the non-attainment area.

3.4 SOURCE APPLICABILITY

3.4.1 PSD REVIEW

3.4.1.1 Pollutant Applicability

The BKI dissolving Kraft pulp mill is located in Taylor County, which has been designated by EPA and FDEP as an attainment area for all criteria pollutants. Taylor County and surrounding counties are designated as PSD Class II areas for SO_2, PM10, and NO_2.

The BKI facility is considered to be an existing major stationary facility because potential emissions of certain regulated pollutants exceed 100 TPY. As a result, PSD review is required for the proposed modification for each pollutant for which the net increase in emissions exceeds the PSD significant emission rates presented in Table 3-2 (i.e., a major modification).

Historically, FDEP and EPA have required that current actual emissions be compared with future maximum emissions (not future actual emissions) to determine PSD source applicability. This analysis is also to consider any contemporaneous emission changes at the facility that occurred

within the past 5 years or since the last PSD permit was issued for a particular pollutant. Current actual emissions are shown in Table 2-1. Future maximum emissions are shown in Table 2-2. There have been no contemporaneous emission changes at the facility within the past 5 years. As discussed in Section 2.0, the proposed increase in the lime kiln production rate will not affect other emission units at the facility. The increased production will offset purchased lime amounts. The PSD applicability analysis considering these factors is presented in Table 3-3.

As shown in Table 3-3, the increase in PM(TSP), PM10, NO_x, and beryllium emissions, based on comparing current actual emissions and future maximum emissions, will exceed the PSD significant emission rate. Therefore, the proposed project is subject to PSD review for these pollutants.

3.4.1.2 Ambient Monitoring

Based upon the increase in emissions from BKI's proposed project, a PSD preconstruction ambient monitoring analysis is required for PM(TSP), PM10, NO_x, and beryllium. However, if the increase in impacts of a pollutant is less than the *de minimis* monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement may be granted for that pollutant. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

The air quality impact analysis presented in Section 4.0 demonstrates that the maximum impacts resulting from the net increase in emissions will be below the *de minimis* monitoring concentrations for all pollutants. A comparison of the net increase in impacts due to the proposed project and the *de minimis* monitoring concentrations is presented in Table 3-4. This comparison is presented for those pollutants that are subject to PSD review for the proposed project.

3.4.1.3 GEP Stack Height Analysis

The GEP stack height regulations allow any stack to be at least 65 m [213 (ft)] high. The No. 4 Lime Kiln at BKI is an existing source, with an existing stack. The lime kiln stack height is 125 feet. This source does not exceed GEP stack height based on the significant structures at the facility.

Table 3-3. Net Emissions Increase from Lime Kiln Project, Buckeye Florida, L.P.

Pollutant	Emissions		Net Increase in Emissions (TPY)	PSD Significant Emission Rate (TPY)	PSD Review Applies?
	Current Actual (TPY)	Future Maximum (TPY)			
Particulate (PM)	12.1	87.6	75.5	25	YES
Particulate (PM10)	12.1	87.6	75.5	15	YES
Sulfur dioxide	103.8	136.9	33.1	40	NO
Nitrogen oxides	227.2	299.8	72.6	40	YES
Carbon monoxide	42.5	56.1	13.6	100	NO
VOC	24.5	32.3	7.8	40	NO
Lead	0.4	0.5	0.1	0.6	NO
Sulfuric acid mist	4.9	6.1	1.2	7	NO
Total reduced sulfur - Gas	2.10	11.58	9.5	10	NO
Beryllium	0.0018	0.0023	0.0005	0.0004	YES
Mercury	0.00094	0.0012	0.00031	0.1	NO

Table 3-4. Comparison of Net Increase in Impacts to the *De Minimis* Monitoring Concentrations

Pollutant	Net Increase in Impacts Due to Proposed Project ($\mu g/m^3$)	*De Minimis* Monitoring Concentration ($\mu g/m^3$)	Preconstruction Ambient Monitoring Analysis Required?
Particulate Matter (TSP)	2.07	10, 24-hour	No
Particulate Matter (PM10)	2.07	10, 24-hour	No
Nitrogen Oxides	0.22	14, annual	No
Beryllium	1.4E-5	0.001, 24-hour	No

Source: KBN, 1995.

3.4.1.4 Best Available Control Technology

The federal PSD regulations [40 CFR 52.21(j)(3)] state that BACT is required for each pollutant for which the modification results in a net emissions increase. BACT must be applied to each emissions unit in which a net emissions increase in a PSD pollutant would occur as a result of a physical change or a change in the method of operation in the unit. As discussed in Section 2.0, the only emissions unit at BKI which is being physically changed or for which there will be a change in the method of operation is the No. 4 Lime Kiln. The other emission units at the facility are not being modified or changed. As a result, BACT only applies to the No. 4 Lime Kiln.

The pollution control device for the No. 4 Lime Kiln at BKI is the lime kiln electrostatic precipitator. PSD pollutants emitted by the No. 4 Lime Kiln, which must undergo BACT review, are PM(TSP), PM10, NO_x, and beryllium.

3.4.2 NONATTAINMENT REVIEW

The BKI mill is located in Taylor County, which has been designated as an attainment area for all pollutants. As a result, nonattainment review does not apply to the proposed project.

3.4.3 NEW SOURCE PERFORMANCE STANDARDS

Federal New Source Performance Standards (NSPS) have been promulgated for digester systems, multiple effect evaporators, condensate strippers, brown stock wasters, recovery boilers, smelt tanks, and lime kilns in the pulp and paper industry (40 CFR 60, Subpart BB). The No.4 Lime Kiln is already subject to the NSPS, being constructed after the NSPS applicability date of September 24, 1976. The NSPS will continue to apply after the proposed modification. The NSPS emission limits for PM for lime kilns are 0.15 g/dscm (0.067 g/dscf) or 0.30 g/dscm (0.13 g/dscf), corrected to 10 percent oxygen, when gaseous fossil fuel or liquid fossil fuel is being burned, respectively. The NSPS emission limit for TRS is 8 ppm by volume on a dry basis, corrected to 10 percent oxygen. As described in Section 2.0, these limits will be met by the modified No. 4 Lime Kiln.

4.0 BEST AVAILABLE CONTROL TECHNOLOGY

4.1 REQUIREMENTS

The 1977 Clean Air Act Amendments established requirements for the approval of preconstruction permit applications under the PSD program. One of these requirements is that the best available control technology (BACT) be installed for applicable pollutants. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the so called "top-down" approach to BACT determinations. As mentioned previously, this approach currently is being challenged in court. Nonetheless, the "top-down" approach is followed in the BKI BACT analysis.

The first step in a top-down BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is infeasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

In the case of the proposed modification at BKI, PM(TSP)/PM10, NO_x, and Be require BACT analysis. The following sections present the BACT analysis for each applicable pollutant for the No. 4 Lime Kiln.

4.2 NO. 4 LIME KILN

4.2.1 BACT FOR PM AND BE

PM emissions from lime kilns in the pulp and paper industry historically have been controlled either by venturi scrubbers or ESPs. Previous BACT determinations issued during the last 5 years, shown in Table 4-1, indicate both technologies being employed. Both are capable of achieving low emission levels, although the venturi scrubber has higher energy requirements, consumes water, and produces a wastewater stream.

Table 4-1. Summary of BACT Determinations for PM/PM10 Emissions from Lime Kilns

Company Name	State	Permit Number	Permit Issued Date	Lime Kiln Throughput	PM/PM10 Emission Limit (gr/dscf) (a)	(lb/hr)	(lb/ton CaO)	Comments	Efficiency
Pulp and Paper Mills									
James River Corp.	WA	PSD-88-3	26-Sep-91	-- --	0.065	--	--	Venturi Scrubber	--
Georgia-Pacific Corporation	FL	PSD-FL-171	12-Jun-91	466.56 TPD CaO	0.081	26	1.34	Wet Scrubber	99.0%
Longview Fibre Co.	WA	X81-10A	27-Jul-90	325 TPD CaO	0.035	--	--	ESP	99.8%

(a) Grain loading @ 10% O2

The No. 4 Lime Kiln at BKI is an existing lime kiln with an existing ESP. Based on the existing nature of the ESP and the demonstrated ability of ESPs to achieve low PM emission levels, the existing ESP is considered to be BACT for PM(TSP)/PM10 emissions.

Historic PM test data for the No. 4 Lime Kiln at BKI are presented in Table 4-2. These data include tests performed firing natural gas or fuel oil. The test data reflect actual PM emissions of up to 19.1 lb/hr. Based on these data and the potential higher emissions at the higher process rate, BKI is proposing a PM/PM10 allowable emission rate of 20.0 lb/hr.

Previous BACT determinations for PM/PM10 emissions from lime kilns have ranged from 0.035 to 0.081 gr/dscf at 10 percent O_2, and from 0.13 to 1.34 lb/ton CaO produced. BKI's proposed emission rate for PM is 20.0 lb/hr, which is much lower than the current allowable for the lime kiln of up to 40 lb/hr. This equates to a grain loading of from 0.0327 to 0.0451 gr/dscf at 10 percent O_2, and 0.64 lb/ton CaO. This emission rate is lower than previous BACT determinations in the pulp and paper industry.

Since beryllium is a trace metal emitted as particulate matter, the BACT technology for PM also represents the BACT for Be emissions. The proposed BACT for Be is the existing ESP serving the No. 4 Lime Kiln.

4.2.2 BACT FOR NO_x

NO_x emissions from lime kilns are combustion-related pollutants. There is no feasible method of controlling these emissions from lime kilns except good combustion practices, as demonstrated by the previous BACT determinations summarized in Table 4-3. Control of NO_x emissions is generally counterproductive to control of CO and VOC emissions, i.e., better combustion results in higher combustion temperatures and higher NO_x, but in lower CO and VOC emissions.

The National Council for Air and Stream Improvement (NCASI) has compiled NO_x test data from operating lime kilns in the pulp and paper industry. The test data reflect a range of NO_x emissions from 0.08 to 9.0 lb/ton CaO, with an average of 2.19 lb/ton CaO (refer to Attachment D). Recent source test data on the No. 4 Lime Kiln at BKI reflected NO_x emissions of 30 lb/hr, with a range from 28 to 46 lb/hr. Based on the production rates during the testing, the equivalent emission factors would be 1.2 lb/ton CaO (average), with a range from 1.1 to

Table 4-2. Historic PM Test Data From No. 4 Lime Kiln, Buckeye Florida L. P.

Test Date	Run	Process Rate (Tons CaO/Hr)	Flue Gas Oxygen (% O2)	PM Emissions Allowable (lbs/hr)	Actual (lbs/hr)	Actual (gr/dscf)	Actual @ 10% O2 (gr/dscf)
05/03/88	1g	25.33	7.0	32.5	19.1	0.039	0.031
05/03/88	2g	25.12	7.0	32.3	6.1	0.012	0.009
05/03/88	3g	25.12	6.8	33.0	6.5	0.013	0.010
05/06/88	1o	25.01	7.1	36.7	1.3	0.003	0.002
05/06/88	2o	25.12	6.5	35.5	0.3	0.001	0.001
05/06/88	3o	25.22	7.2	33.5	0.3	0.001	0.001
04/28/89	1g	27.07	6.2	28.5	3.2	0.007	0.005
04/28/89	2g	27.72	6.4	27.4	1.8	0.004	0.003
04/28/89	3g	25.01	6.4	27.6	1.9	0.004	0.003
05/17/90	1g	24.96	5.9	33.2	2.1	0.006	0.004
05/17/90	2g	23.87	6.0	32.3	2.0	0.006	0.004
05/17/90	3g	23.77	6.2	33.5	2.2	0.006	0.004
05/08/91	1g	26.35	7.2	40.9	1.2	0.003	0.002
05/08/91	2g	25.56	8.7	35.8	7.5	0.021	0.019
05/08/91	3g	26.01	6.0	35.2	1.5	0.003	0.002
04/14/92	1g	26.36	3.4	33.1	3.1	0.010	0.006
04/14/92	2g	24.78	4.5	34.4	4.5	0.013	0.009
04/14/92	3g	25.12	4.4	34.1	3.6	0.011	0.007
04/16/92	1o	25.05	4.9	37.8	4.2	0.015	0.010
04/16/92	2o	24.94	4.0	42.5	3.5	0.012	0.008
04/16/92	3o	25.05	4.0	47.0	2.9	0.009	0.006
05/11/93	1o	27.54	6.0	35.8	0.5	0.002	0.001
05/11/93	2o	28.25	6.8	38.8	0.3	0.001	0.001
05/11/93	3o	24.76	6.0	34.8	0.2	0.0008	0.0006
05/12/93	1g	26.42	4.5	25.4	0.6	0.0023	0.0015
05/12/93	2g	26.47	4.3	21.7	0.2	0.0008	0.0005
05/12/93	3g	27.07	6.0	24.3	0.6	0.0021	0.0015
05/18/94	1g	26.6	5.6	29.2	3.2	0.0102	0.0073
05/18/94	2g	26.5	5.7	30.4	1.8	0.0056	0.0040
05/18/94	3g	26.5	5.3	29.6	1.3	0.0042	0.0029
05/19/94	1o	26.5	5.4	38.5	0.4	0.0014	0.0010
05/23/94	2o	25.6	5.5	31.6	2.4	0.0099	0.0070
05/23/94	3o	25.0	5.1	33.5	1.7	0.0068	0.0047
05/09/95	1g	26.9	4.7	31.0	4.0	0.013	0.009
05/09/95	2g	26.9	4.8	30.2	3.7	0.012	0.008
05/09/95	3g	26.8	4.7	31.7	3.9	0.012	0.008
05/10/95	1o	26.9	5.6	39.8	4.4	0.014	0.010
05/10/95	2o	26.9	5.0	43.2	4.1	0.013	0.009
05/10/95	3o	26.9	5.1	39.0	2.4	0.008	0.006

Notes: g = test run when burning natural gas.
o = test run when burning fuel oil.

Table 4-3 Summary of BACT Determinations for NOx Emissions from Lime Kilns

Company Name	State	Permit Number	Permit Issued Date	Lime Kiln Throughput	NOx Emission Limit (ppmv@10%O2)	NOx Emission Limit (lb/hr)	NOx Emission Limit (lb/ton CaO)	Comments
Lime Manufacturing								
Western Lime and Cement Co	WI	90-MWH-60	30-Apr-95	350 TPD CaO	--	40.8	2.80	Design < 1.1% O2 at kiln outlet
CLM Corp.	WI	93-DBY-74	01-Jun-94	864 TPD CaO	--	56.0	1.56	Combustion Control
Pulp and Paper Mills								
Champion International Corp.	FL	PSD-FL-200	25-Mar-94	-- --	200	--	--	Good Combustion
James River Corp.	WA	PSD-88-3	26-Sep-91	-- --	--	53.4 a)	--	--
Georgia-Pacific Corporation	FL	PSD-FL-171	12-Jun-91	466.56 TPD CaO	290	50.3	2.59	Combustion Control
Williamette Industries Inc.	LA	PSD-LA-562	04-Feb-91	430 TPD CaO	--	51.5	2.87	Design and Operation
James River Pennington	AL	101-0001 X024 and X026	16-Aug-90	500 TPD CaO	175	--	--	Combustion Control

(a) Based on 234 tons/year and assuming 8,760 hr/yr operation.

1.8 lb/ton CaO. The proposed NO_x emission rate of 2.19 lb/ton CaO is based on a safety factor above the actual NO_x data, and is equivalent to the average emission rate for operating kilns in the NCASI study.

Previous BACT determinations for NO_x emissions from lime kilns have ranged from 175 to 290 ppmv at 10 percent O_2. In terms of lime produced, determinations range from 2.59 to 2.87 lb/ton CaO. The proposed level for the No. 4 Lime Kiln is 68.4 lb/hr, equivalent to a concentration range from 134 to 185 ppmvd at 10 percent O_2 (as NO_2), and 2.19 lb/ton CaO. These NO_x levels compare favorably with the previous BACT determinations.

5.0 AIR QUALITY MODELING ANALYSIS

5.1 GENERAL MODELING APPROACH

The general modeling approach follows EPA and FDEP modeling guidelines for determining compliance with AAQS and PSD increments. In general, when model predictions are used to determine compliance with AAQS and PSD increments, current policies stipulate that the highest annual average and highest, second-highest short-term (i.e., 24 hours or less) concentrations be compared to the applicable standard when 5 years of meteorological data are used. The highest, second-highest concentration (HSH) is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum concentrations for the BKI facility, the general modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. The basic difference between the two phases was the receptor grid used in the analysis.

In general, concentrations for the screening phase were predicted using a coarse receptor grid and a 5-year meteorological record. After a final list of HSH short-term concentrations was developed, the refined phase of the analysis was conducted by predicting concentrations for a refined receptor grid centered on the receptor at which the HSH concentration was produced from the screening phase. The air dispersion model was executed for the meteorological periods during which both the highest and second-highest concentrations were predicted to occur at that receptor, based on the screening phase results. This approach was used to ensure that valid HSH concentrations were obtained. More detailed descriptions of the emission inventory and receptor grids used in the screening and refined phases of the analysis are presented in the following sections.

5.2 MODEL SELECTION

The selection of an appropriate air dispersion model was based on the model's ability to simulate impacts in areas surrounding the BKI site. Within 50 km of the site, the terrain can be described as simple, i.e., flat to gently rolling. As defined in EPA modeling guidelines, simple terrain is considered to be an area where the terrain features are all lower in elevation than the top of the stack(s) under evaluation. Therefore, a simple terrain model was selected to predict maximum ground-level concentrations.

The Industrial Source Complex Short-term (ISCST3, Version 95250) dispersion model (EPA, 1995) was used to evaluate all pollutant emissions for this project. This model is available from the EPA's Technology Transfer Network (TTN) Bulletin Board System (BBS). The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The hourly concentrations are processed into non-overlapping, short-term and annual averaging periods. For example, a 24-hour average concentration is based on twenty-four 1-hour averages calculated from midnight to midnight of each day. For each short-term averaging period selected, the highest and second-highest average concentrations are calculated for each receptor. As an option, a table of the 50 highest concentrations over the entire field of receptors can be produced.

Major features of the ISCST3 model are presented in Table 5-1. The ISCST3 model has both rural and urban mode options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the source's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3-km radius circle centered on the site location, the urban option should be selected. Otherwise, the rural option is more appropriate.

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. The regulatory default options include:

Table 5-1. Major Features of the ISCST3 Model

ISCST3 Model Features
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
• Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulman and Scire (1980) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple emission sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume, area, and open pit sources
• Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
• Variation of wind speed with height (wind speed-profile exponent law)
• Concentration estimates for 1-hour to annual average times
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISCST3 = Industrial Source Complex Short-Term.

Source: EPA, 1995.

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural or urban option,
5. Default vertical potential temperature gradients,
6. Calm wind processing, and
7. Reducing calculated SO_2 concentrations in urban areas by using a decay half-life of 4 hours.

In this analysis, the EPA regulatory options were used to address maximum impacts. Based on a review of the land use around the BKI site, the rural mode was selected based on the degree of residential, industrial, and commercial development within 3 km of the site.

5.3 METEOROLOGICAL DATA

Meteorological data used in the ISCST3 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) station at Tallahassee Regional Airport and Waycross, Georgia, respectively. The 5-year period of meteorological data was from 1982 through 1986. The NWS station at Tallahassee, located approximately 85 km west-northwest of the BKI site, was selected for use in the study because it is the closest primary weather station to the study area which is representative of the plant site.

The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST3 meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at morning and afternoon, mixing heights were calculated with the radiosonde data using the Holzworth (1972) approach. Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by EPA (Holzworth, 1972).

The hourly surface data and mixing heights were used to develop a sequential series of hourly meteorological data (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions were classified into one of thirty-six 10-degree

sectors, the wind directions were randomized within each sector to account for the expected variability in air flow. These calculations were performed by using the EPA RAMMET meteorological preprocessor program.

5.4 BUILDING DOWNWASH CONSIDERATIONS

The No. 4 Lime Kiln's stack height of 125 ft is below the stack height recommended as Good Engineering Practice (GEP). Therefore, according to EPA modeling guidelines, the potential effects of building downwash must be addressed in the modeling analysis. The potential for building downwash was evaluated for all significant structures in the vicinity of No. 4 Lime Kiln. Those structures found to potentially cause downwash to occur are presented in Table 5-2. A plot plan showing building and stack locations is presented in Figure 2-3. The EPA's Building Profile Input Program (BPIP, version 95086) was used to determine direction-specific building heights and widths for the No. 4 Lime Kiln stack for the modeling analysis.

5.5 SIGNIFICANT IMPACT ANALYSIS

5.5.1 METHODOLOGY

The proposed No. 4 Lime Kiln (LK4) modification will result in an emissions increase above the EPA PSD significant emission levels for PM(TSP)/PM10, NO_x, and Be (refer to Table 3-3). Proposed increases in SO_2, CO, VOC, lead, sulfuric acid mist, TRS, and mercury emissions are below significant emission rates and are not required to be addressed in this analysis.

Modeling was performed for all PSD-applicable pollutants to determine if the proposed increase in emissions will result in impacts greater than the EPA significant impact levels (Table 3-1). For those pollutants that do not exceed significant impact levels, no further modeling is required. For those pollutants for which predicted concentrations exceed significant impact levels, further modeling is required to determine the significant impact area and compliance with AAQS and PSD increments.

5.5.2 SOURCE INVENTORY

The stack and operating parameters and emission rates used in the significant impact analysis are presented in Table 5-3. Emission rates are derived from Tables 2-1 and 2-2, and are shown in Table 5-3. Stack parameters are based on recent stack tests of LK4. The stack gas exit velocity for the proposed future operation of the LK4 stack will be about 15 percent higher than it is

Table 5-2. Structure Dimensions Used in the Buckeye Florida Modeling Analysis

	Actual Building Dimensions					
	Height		Length		Width	
Structure	ft	m	ft	m	ft	m
Building No. 417	87	26.5	36	11.0	18	5.5
Building No. 415	80	24.4	85	25.9	36	11.0
65' Building Structure	65	19.8	170	51.8	46	14.0
LK4 ESP	75	22.9	69	21.0	16	4.9

Table 5-3. Emissions and Stack Parameters for No. 4 Lime Kiln Used in Modeling Analysis

Condition	24-Hour Emission Rate (lb/hr)[a]			Stack Parameters				
	PM/ PM10	NO_x	Be	Stack Height (ft)	Stack Diameter (ft)	Flow Rate (acfm)	Stack Velocity (ft/s)	Stack Temp. (°F)
Current @ 650 TPD	3.0	51.9	0.00046	125	7.25	69,000[b]	27.9	420
Future @ 750 TPD	20.0	68.4	0.00053	125	7.25	69,000[c]	27.9	420
Net Increase	17.0	16.5	0.00007	—	—	—	—	—

[a] Modeling runs based on a generic emission rate of 10 g/s (79.365 lb/hr). Pollutant specific emission rates based on emission factors shown in Tables 2-1 and 2-2 and 650 TPD CaO (current) and 750 TPD CaO maximum 24-hour operation (future), except NO_x emissions based on annual TPY.

[b] Modeling for current conditions based on future flow rate to be conservative.

[c] Represents estimated minimum gas flow rate for future conditions (i.e., 750 TPD CaO).

currently. To simplify the modeling analysis, however, the future LK4 exit velocity was assumed for both current and future LK4 cases. This assumption results in a conservative estimate of the maximum pollutant increases due to the proposed project, because the maximum impacts for the current (i.e. baseline) case will be lower than actual, maximizing the net concentration increase due to the proposed project.

Initially, a generic emission rate of 10 g/s was input to the ISCST3 for the modeling analysis. Pollutant-specific impacts were then determined by multiplying the generic impacts by the ratio of the pollutant-specific emission rate increase and the generic emission rate.

5.5.3 RECEPTORS

BKI Plant Vicinity

The 222 receptors used in the significant impact analysis were placed along 36 polar radials spaced 10 degrees apart and centered on the No. 4 Lime Kiln stack location. The first receptor was located at the plant property boundary with subsequent receptors located at offsite distances of 600, 1,000, 1,500, 2,000, 2,500, 3,000, and 5,000 m. The plant property receptors used in the significant impact analysis located on the property boundaries are presented in Table 5-4. The plant property boundaries are shown in Figure 5-1.

Class I Areas

There are four PSD Class I areas within 165 km of the BKI site. The St. Marks and Bradwell Bay NWAs are 50 and 100 km from the BKI site, respectively. The Okefenokee and Chassahowitzka NWAs are 125 and 164 km from the BKI site, respectively. Maximum pollutant impacts were determined at all four Class I areas. However, for this analysis, impacts are presented for only the St. Marks and Bradwell Bay NWAs, since these are the closest NWAs to the BKI site and higher impacts are predicted for these areas.

Thirty-three (33) receptors were used to predict maximum impacts in the St. Marks (18) and Bradwell Bay (15) PSD Class I areas. A list of these receptors is presented in Table 5-5. For predicting impacts at the Okefenokee and Chassahowitzka NWAs, an additional 10 and 13 receptors were employed, respectively.

Table 5-4. Summary of Direction-Specific Distances from the LK4 Stack to the BKI Property Boundary

Direction (Degrees)	Distance (m)	Direction (Degrees)	Distance (m)
10	507	190	572
20	1,397	200	599
30	1,516	210	650
40	1,714	220	735
50	2,043	230	832
60	1,605	240	949
70	1,335	250	1,097
80	1,173	260	613
90	1,175	270	482
100	758	280	408
110	576	290	363
120	476	300	336
130	435	310	322
140	423	320	318
150	423	330	324
160	437	340	341
170	467	350	372
180	518	360	422

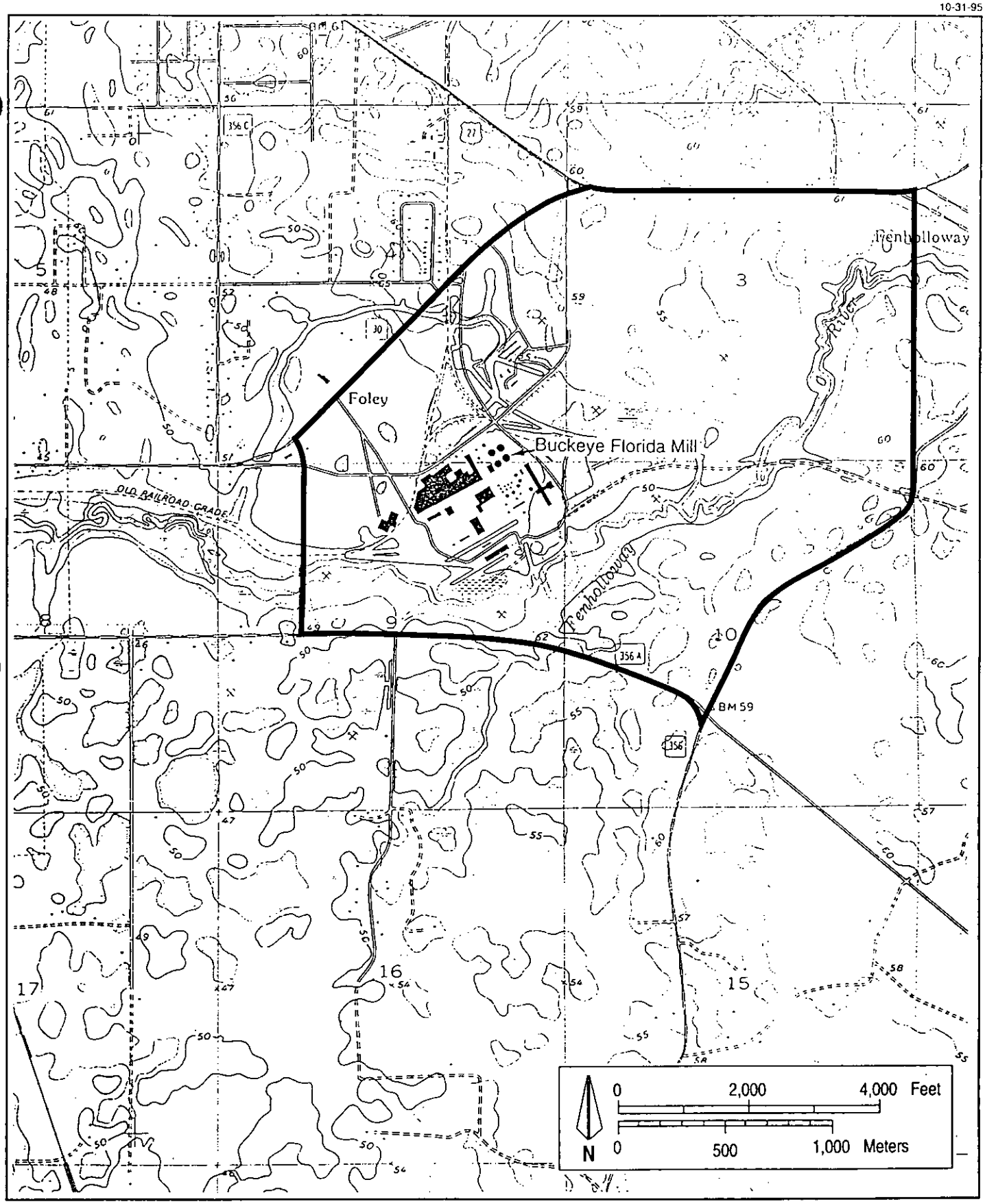


Figure 5-1
Property Boundaries of Buckeye Florida, Limited Partnership

Sources: USGS, 1955, Perry Quadrangle, T. 5 S., R. 8 E.

KBN

Table 5-5. St. Marks and Bradwell Bay NWA Receptors Used in the PSD Class I Modeling Analysis

PSD Class I Area	UTM Coordinates	
	East (km)	North (km)
Bradwell Bay NWA	728.0	3343.0
Bradwell Bay NWA	728.0	3341.0
Bradwell Bay NWA	731.0	3343.0
Bradwell Bay NWA	731.0	3341.0
Bradwell Bay NWA	731.0	3338.0
Bradwell Bay NWA	733.0	3343.0
Bradwell Bay NWA	733.0	3341.0
Bradwell Bay NWA	733.0	3338.0
Bradwell Bay NWA	733.0	3336.0
Bradwell Bay NWA	733.0	3333.0
Bradwell Bay NWA	736.0	3346.0
Bradwell Bay NWA	736.0	3343.0
Bradwell Bay NWA	736.0	3341.0
Bradwell Bay NWA	736.0	3338.0
Bradwell Bay NWA	736.0	3336.0
Bradwell Bay NWA	738.0	3343.0
Bradwell Bay NWA	738.0	3341.0
Bradwell Bay NWA	741.0	3341.0
St. Marks NWA	770.0	3338.0
St. Marks NWA	770.0	3336.0
St. Marks NWA	772.0	3336.0
St. Marks NWA	772.0	3333.0
St. Marks NWA	772.0	3331.0
St. Marks NWA	775.0	3333.0
St. Marks NWA	775.0	3331.0
St. Marks NWA	777.0	3333.0
St. Marks NWA	780.0	3333.0
St. Marks NWA	782.0	3336.0
St. Marks NWA	782.0	3333.0
St. Marks NWA	785.0	3336.0
St. Marks NWA	785.0	3333.0
St. Marks NWA	787.0	3336.0
St. Marks NWA	787.0	3333.0

5.5.4 RESULTS

Significant Impact Analysis

Results of the significant impact screening analyses for a 10 g/s generic emission rate are summarized in Table 5-6. Based on the generic screening analysis results, modeling refinements were performed and are presented in Table 5-7. The refined modeling analysis results are compared to EPA significant impact levels in Table 5-8. The maximum annual and 24-hour PM(TSP)/PM10 impacts are 0.23 and 2.07 $\mu g/m^3$, respectively, which are below the significant impact levels of 1 and 5 $\mu g/m^3$, respectively. The maximum annual NO_x impact of 0.22 $\mu g/m^3$ is below the significant impact level of 1 $\mu g/m^3$. Based on these analyses, the impacts for these pollutants do not exceed the significant impact levels, and, therefore, AAQS and PSD Class II increment consumption analyses are not required.

Class I Areas

The maximum generic impacts due to the proposed project only at the St. Marks and Bradwell Bay PSD Class I areas are presented in Table 5-9. The maximum pollutant impacts at the PSD Class I areas are compared to the National Park Service's (NPS's) recommended significant impact levels for PSD Class I areas in Table 5-10. The maximum annual and 24-hour PM(TSP)/PM10 impacts are 0.006 and 0.095 $\mu g/m^3$, respectively, which are below the proposed National Park Service (NPS) Class I significant impact levels of 0.1 and 0.33 $\mu g/m^3$, respectively, for those averaging times.

The maximum annual NO_x impact is 0.0056 $\mu g/m^3$, which is below the proposed NPS Class I significant impact level of 0.025. Because the PM(TSP)/PM10 and NO_x impacts due to the proposed project are below the NPS significant impact levels, a PSD Class I increment analysis is not required for these pollutants.

5.5.5 TOXIC POLLUTANT IMPACTS

Maximum toxic impacts were determined for comparison to the FDEP's Ambient Reference Concentrations (ARCs). For this analysis, the maximum impact of the LK4 after the proposed modification was analyzed, not just the net increase in impacts due to the modification.

Table 5-6. Maximum Predicted Generic Concentrations for the Proposed BKI LK4 Modification Only at the Plant Vicinity — Screening Analysis

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location[b] Direction (deg)	Receptor Location[b] Distance (m)	Period Ending (YYMMDDHH)
Annual	0.96	360.	1500.	82123124
	0.76	360.	1500.	83123124
	0.88	360.	1500.	84123124
	0.71	250.	1097.	85123124
	1.07	190.	1500.	86123124
HIGH 24-Hour	8.14	360.	2000.	82010324
	7.72	340.	1500.	83030524
	6.57	330.	1000.	84060624
	7.61	270.	600.	85043024
	9.36	190.	3000.	86110124
HIGH 8-Hour	15.55	360.	1000.	82051416
	17.09	220.	1000.	83061016
	13.89	270.	1000.	84100916
	17.20	190.	1000.	85100616
	19.03	320.	600.	86071716
HIGH 3-Hour	27.53	130.	600.	82070412
	22.82	260.	1000.	83062415
	27.58	150.	423.	84120618
	27.06	150.	1000.	85070312
	26.18	190.	600.	86081615
HIGH 1-Hour	42.29	140.	423.	82041802
	45.62	140.	423.	83031010
	36.18	150.	423.	84040517
	42.02	280.	408.	85090119
	42.70	140.	423.	86021504

Note: YY = Year.
MM = Month.
DD = Day.
HH = Hour.

[a] Based on generic emission rate of 79.365 lb/hr (10 g/s).
[b] All receptor coordinates are relative to the BKI LK4 Stack Location.

Table 5-7. Maximum Predicted Generic Concentrations for the Proposed BKI LK4 Modification Only at the Plant Vicinity — Refined Analysis

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location[b] Direction (deg)	Receptor Location[b] Distance (m)	Period Ending (YYMMDDHH)
Annual	1.07	190.	1300.	86123124
High 24-Hour	9.65	192.	2200.	86111324
High 8-Hour	20.78	320.	700.	86071716
High 3-Hour	27.88	128.	600.	82070412
	30.26	152.	425.	84120618
	27.48	150.	900.	85070312
High 1-Hour	45.62	140.	423.	83031010

Note: YY = Year.
MM = Month.
DD = Day.
HH = Hour.

[a] Based on generic emission rate of 79.365 lb/hr (10 g/s).
[b] All receptor coordinates are relative to the BKI LK4 Stack Location.

Table 5-8. Maximum Pollutant Impacts due to the Proposed Modification Only As Compared to Significant Impact Levels at the Site Vicinity, Refined Analysis

Pollutant	Maximum Emission Rate (lb/hr)	Averaging Time	Maximum Concentrations ($\mu g/m^3$)	Significant Impact Levels ($\mu g/m^3$)
Generic	79.365	Annual	1.07	
		24-Hour	9.65	
Particulate Matter/ PM10	17.0	Annual	0.23	1
		24-Hour	2.07	5
Nitrogen Oxides	16.5	Annual	0.22	1

Note: Maximum concentrations are highest predicted from 5-year meteorological data set.

Table 5-9. Maximum Predicted Generic Concentrations for the Proposed BKI Modification Only at the St. Marks and Bradwell Bay NWA Class I Areas

Averaging Time	Concentration[a] ($\mu g/m^3$)	Receptor Location[b] UTM-E	Receptor Location[b] UTM-N	Period Ending (YYMMDDHH)
Annual	0.0240	787000.	3336000.	82------
	0.0238	787000.	3336000.	83------
	0.0231	787000.	3333000.	84------
	0.0271	787000.	3333000.	85------
	0.0162	787000.	3336000.	86------
HIGH 24-Hour	0.33	785000.	3336000.	82081724
	0.36	787000.	3333000.	83081524
	0.40	787000.	3336000.	84092124
	0.44	787000.	3333000.	85111924
	0.34	787000.	3336000.	86062324
HIGH 3-Hour	1.56	787000.	3333000.	82012224
	1.72	775000.	3331000.	83070903
	2.11	787000.	3333000.	84072406
	2.32	775000.	3331000.	85092924
	1.96	787000.	3336000.	86062306
HIGH 1-Hour	4.29	787000.	3336000.	82103119
	4.89	787000.	3333000.	83091523
	4.89	787000.	3333000.	84061704
	4.90	787000.	3333000.	85072023
	4.02	782000.	3336000.	86050401

Note: YY = Year.
MM = Month.
DD = Day.
HH = Hour.

[a] Based on generic emission rate of 79.365 lb/hr (10 g/s).
[b] All receptor coordinates are reported in Universal Transverse Mercator (UTM) Coordinates.

Table 5-10. Maximum Pollutant Impacts due to the Proposed Modification Only As Compared to NPS Recommended Significant Impact Levels at PSD Class I Areas (a)

Pollutant	Maximum Emission Rate (lb/hr)	Averaging Time	Maximum Concentrations ($\mu g/m^3$)	NPS Recommended Significant Impact Levels ($\mu g/m^3$)
Generic	79.365	Annual	0.02706	
		24-Hour	0.44142	
		3-Hour	2.32058	
		1-Hour	4.89941	
Particulate Matter/ PM10	17.0	Annual	0.006	0.10
		24-Hour	0.095	0.33
Nitrogen Oxides	16.5	Annual	0.0056	0.025

Note: Maximum concentrations are highest predicted from 5-year meteorological data set.

(a) St. Marks and Bradwell Bay NWA Areas.

Maximum predicted toxic pollutant impacts due to LK4 after the proposed modification are summarized in Table 5-11. The FDEP has developed ARCs for each emitted compound. These impacts are below the respective ARCs for each emitted toxic substance.

Table 5-11. Maximum Toxic Pollutant Impact Due to BKI LK4 After the Proposed Modification

Pollutant	Maximum Emission Rate (lb/hr)	Maximum Impact for Averaging Time: 8-Hour Impact ($\mu g/m^3$)	8-Hour FARC ($\mu g/m^3$)	24-Hour Impact ($\mu g/m^3$)	24-Hour FARC ($\mu g/m^3$)	Annual Average Impact ($\mu g/m^3$)	Annual Average FARC ($\mu g/m^3$)	Complies With FARC?
acetaldehyde	0.2	0.0524	450	0.0243	107	0.0027	0.5	YES
acrolein	0.014	0.0037	2.3	0.0017	0.5	0.0002	0.02	YES
benzene	0.033	0.0086	30	0.0040	7	0.0004	0.12	YES
carbon disulfide	0.18	0.0471	310	0.0219	74	0.0024	200	YES
carbon tetrachloride	ND	0.0000	310	0.0000	74	0.0000	0.067	YES
chlorobenzene	0.0092	0.0024	460	0.0011	110	-	-	YES
chloroform	ND	0.0000	490	0.0000	117	0.0000	0.043	YES
1,2-dichloroethane	ND	0.0000	400	0.0000	95	0.0000	0.038	YES
ethyl benzene	ND	0.0000	4340	0.0000	1033	0.0000	1000	YES
formaldehyde	0.18	0.0471	3.7	0.0219	0.9	0.0024	0.077	YES
methanol	0.39	0.1021	2600	0.0474	619	-	-	YES
methyl ethyl ketone	0.02	0.0052	5900	0.0024	1405	0.0003	1000	YES
methyl isobutyl ketone	0.0058	0.0015	2050	0.0007	488	-	-	YES
methylene chloride	ND	0.0000	1740	0.0000	414	0.0000	2	YES
m,p-xylene	0.0077	0.0020	4340	0.0009	1033	0.0001	80	YES
napthalene	1.13	0.2959	500	0.1374	119	-	-	YES
n-hexane	0.0069	0.0018	1760	0.0008	419	0.0001	200	YES
o-xylene	ND	0.0000	4340	0.0000	1033	0.0000	80	YES
PAH (particulate)	0.15	0.0393	2	0.0182	0.5	-	-	YES
styrene (monomer)	0.009	0.0024	2130	0.0011	507	0.0001	1000	YES
tetrachloroethylene	ND	0.0000	1700	0.0000	405	0.0000	2.1	YES
toluene	ND	0.0000	1800	0.0000	448	0.0000	400	YES
1,2,4-trichlorobenzene	ND	0.0000	370	0.0000	88	0.0000	20	YES
1,1,1-trichloroethane	ND	0.0000	19000	0.0000	4524	-	-	YES
1,1,2-trichloroethane	ND	0.0000	550	0.0000	131	0.0000	0.063	YES
trichloroethylene	ND	0.0000	2690	0.0000	640	0.0000	0.77	YES
arsenic (As)	0.0044	0.0012	0.1	0.0005	0.02	0.0001	2.3E-04	YES
beryllium (Be)	0.00053	0.0001	0.00042	0.0001	0.005	0.0000	0.02	YES
cadmium (Cd)	0.00094	0.0002	0.02	0.0001	0.005	0.0000	5.6E-04	YES
chromium (Cr) (III)	0.02	0.0052	5	0.0024	1.2	0.0003	1.0E+03	YES
manganese (Mn)	0.014	0.0037	50	0.0017	12	0.0002	0.05	YES
nickel (Ni)	0.0084	0.0022	10	0.0010	2.4	0.0001	0.0042	YES
lead (Pb)	0.12	0.0314	0.5	0.0146	0.1	0.0016	0.09	YES
mercury (Hg)	0.00028	0.0001	0.5	0.0000	0.1	0.0000	0.3	YES
selenium (Se)	0.005	0.0013	2	0.0006	0.5	-	-	YES
antimony (Sb)	0.0053	0.0014	5	0.0006	1.2	0.0001	0.3	YES

Note: Maximum centrations are highest predicted from 5-year meteorological data set.

ND = Not detectable.
FARC = Florida Ambient Reference Concentration.

6.0 ADDITIONAL IMPACT ANALYSIS

6.1 INTRODUCTION

BKI is proposing to modify its existing facility in Perry, Florida. The facility is subject to the PSD new source review requirements for PM(TSP)/PM10, NO_x, and Be. The additional impact analysis and the Class I area analysis address these pollutants.

The analysis addresses the potential impacts on vegetation, soils, and wildlife of the surrounding area and the nearby Class I area due to BKI's proposed modification. There are four Class I areas potentially effected by the proposed expansion: St. Marks National Wilderness Areas (NWA), Bradwell Bay NWA, Okefenokee NWA, and Chassahowitzka NWA. St. Marks NWA is the closest Class I area and therefore is potentially the most effected by emissions from the facility. In addition, the air quality related values (AQRVs) for the St. Marks Class I area provide conservative indicators of AQRVs within the other Class I areas. As a consequence, the AQRV analysis is conducted for St. Marks NWA only.

The analysis will demonstrate that the increase in impacts due to the proposed increase in emissions is extremely low. These impacts were presented for the St. Marks Class I area in Table 5-10. Regardless of the existing conditions in the vicinity of the site or in the Class I areas, the proposed project will not cause any adverse impacts due to the predicted low impacts upon these areas.

6.2 SOIL, VEGETATION, AND AQRV ANALYSIS METHODOLOGY

In the foregoing analysis, the maximum air quality impacts predicted to occur in the vicinity of the BKI plant and in the St. Marks Class I area due to the increase in emissions are used. The Industrial Source Complex Short-Term (ISCST3) model (Version 95250) was used to compute maximum concentrations. Maximum impacts in the vicinity of the BKI plant and in the Class I areas were predicted at the same receptor grids as discussed in Section 5.0. Meteorological data used in the ISCST3 consisted of the same 5-year record used for the AAQS and PSD impact assessment, which consists of surface observations from Tallahassee and upper-air data from Waycross for the years 1982 to 1986. Emissions from the BKI plant and stack and operating data are provided in Section 5.0.

The analysis involved predicting worst-case maximum short- and long-term concentrations of pollutants in the vicinity of the BKI facility and in the Class I areas and comparing the maximum predicted concentrations to lowest observed effect levels for AQRVs or analogous organisms. In conducting the assessment, several assumptions were made as to how pollutants interact with the different matrices, i.e., vegetation, soils, wildlife, and aquatic environment.

A screening approach was used to evaluate potential effects which compared the maximum predicted ambient concentrations of air pollutants of concern with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the vicinity of the plant and the St. Marks Class I area. It was recognized that effects threshold information is not available for all species found in the St. Marks NWA, although studies have been performed on a few of the common species and on other similar species which can be used as models. In conducting the assessment, both direct (fumigation) and indirect (soil accumulation/ uptake) exposures were considered for flora, and direct exposure (inhalation) was considered for wildlife.

The St. Marks Class I area was assessed for impacts for the following reasons:

1. Maximum predicted impacts occur in St. Marks due to its distance from the BKI site.
2. Soils, vegetation, and wildlife located in the other three Class I areas are not expected to be more sensitive than those in the St. Marks Class I area.

As a result, assessing air impacts and AQRVs for St. Marks provides a conservative assessment of these parameters for the Bradwell Bay, Chassahowitzka, and Okefenokee Class I areas.

6.3 IMPACTS TO SOILS, VEGETATION, AND VISIBILITY IN VICINITY OF BKI PLANT

6.3.1 PREDICTED AIR QUALITY IMPACTS

The results of the ambient air quality modeling for the proposed BKI modification, in the vicinity of the plant, are presented in Table 6-1. Maximum predicted concentrations are presented for the annual, 24-hour, 8-hour, 3-hour, and 1-hour averaging times.

6.3.2 IMPACTS TO SOILS

Air emissions can cause soil contamination through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are absorbed. Of the pollutants subject to PSD for the proposed modification, only beryllium has the potential to effect soils. Beryllium toxicity in plants in the form of reduced growth has been reported in nutrient cultures of >2 ppm Be content. Beryllium concentrations in soils are reported to range from <1 to 7 ppm. However, only a small amount is actually available for absorption by plants (Gough *et al.*, 1979). The predicted Be concentrations (Table 6-1) are below levels reported to cause effects.

6.3.3 IMPACTS TO VEGETATION

Vegetation Analysis

In general, the effects of air pollutants on vegetation occur primarily from SO_2, NO_2, O_3, and PM. Effects from minor air contaminants such as fluoride, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, CO, and pesticides have also been reported in the literature. The effects of air pollutants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage which is considered to be the major pathway of exposure.

Injury to vegetation from exposure to various levels or air contaminants can be termed acute, physiological, or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms. Chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant. In this assessment, 100 percent of the particular air pollutant in the ambient air was assumed to interact with the vegetation. This is a conservative approach.

Table 6-1 . Maximum Pollutant Impacts Due to the Proposed Modification Only at the Site Vicinity, Refined Analysis

Pollutant	Maximum Emission Rate (lb/hr)	Averaging Time	Maximum Concentrations ($\mu g/m^3$)
Generic	79.365	Annual	1.07
		24-Hour	9.65
		8-Hour	20.78
		3-Hour	30.26
		1-Hour	45.62
Particulate Matter/ PM10	17.0	Annual	0.23
		24-Hour	2.07
		3-Hour	6.48
		1-Hour	9.77
Nitrogen Oxides	16.5	Annual	0.22
		24-Hour	2.01
		8-Hour	4.32
		3-Hour	6.29
		1-Hour	9.48
Beryllium	0.000114	Annual	1.5E-06
		24-Hour	1.4E-05
		8-Hour	3.0E-05
		3-Hour	4.3E-05
		1-Hour	6.6E-05

Note: Maximum concentrations are the highest predicted with a 5-year meteorological data set.

Nitrogen Dioxide

A review of the literature indicates great variability in NO_2 dose-response relationships in vegetation. Acute NO_2 injury symptoms are manifested as water-soaked lesions, which first appear on the upper surface, followed by rapid tissue collapse. Low-concentration, long-term exposures as frequently encountered in polluted atmospheres often do not induce the lesions associated with acute exposures but may still result in some growth suppression. Citrus trees exposed to 470 $\mu g/m^3$ of NO_2 for 290 days showed injury (Thompson *et al.*, 1970). Sphagnum exposed for 18 months at an average concentration of 11.7 $\mu g/m^3$ showed reduced growth (Press *et al.*, 1986)

The maximum increase in ground-level NO_2 concentrations (1-hour and annual average) predicted to occur in the vicinity of the plant due to the proposed project are 9.48 $\mu g/m^3$ and 0.22 $\mu g/m^3$, respectively (Table 6-1). These maximum predicted concentrations are well below reported effects levels.

Particulates

The maximum increase in predicted concentrations of PM (in the form of TSP) due to the proposed project are 2.07 $\mu g/m^3$ for a 24-hour average and 0.23 $\mu g/m^3$ for an annual average (see Table 6-1). By comparing predicted concentrations with the few injury threshold values reported in the literature (Darley, 1966; Krause and Kaiser, 1977), no potential effects on vegetation are predicted, because these concentrations are below the values reported to adversely affect plants.

6.3.4 IMPACTS UPON VISIBILITY

All air emission sources affected by the proposed modification are existing sources. No increase in permitted emissions is requested, although actual emissions are predicted to increase slightly. All these sources are in compliance with opacity regulations and should remain in compliance after the modification. As a result, no adverse impacts upon visibility are expected.

6.3.5 IMPACTS DUE TO ASSOCIATED POPULATION GROWTH

There will be no increase in permanent employment at BKI as a result of the proposed project. Therefore, there will be no anticipated permanent impacts on air quality caused by associated population growth.

6.4 CLASS I AREA IMPACT ANALYSIS

6.4.1 DEFINITION OF AQRVS AND CRITERIA APPLIED TO ST. MARKS NWA

The St. Marks NWA is classified as a Class I area by the U.S. Fish and Wildlife Service (USFWS) for purposes of PSD new source review. The U.S. Department of the Interior (National Park Service) in 1978 administratively defined air quality related values (AQRVs) for such areas as being:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a natural monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside. (Federal Register, 1978)

6.4.2 AQRVS OF ST. MARKS NWA

The designated wilderness areas of St. Marks National Wildlife Refuge are Thoms Island and the eastern coastal portion of the refuge. To date, specific AQRVs other than visibility have not been defined by USFWS for the St. Marks NWA (Ellen Porter, USFWS, Denver, CO, pers. comm., 1994). For this analysis, therefore, the AQRVs of this Class I area are defined as those important attributes of the St. Marks NWA which are dependent upon the air environment, including water, soil, vegetation resources, and wildlife resources. Important aquatic, vegetation, and wildlife attributes of these areas which make the St. Marks NWA significant are presented in Table 6-2. All terrestrial vegetation, including threatened and endangered plant species of the St. Marks NWA, are dependent upon the air environment and are considered AQRVs. Some terrestrial wildlife and endangered and threatened wildlife are also considered AQRVs for St. Marks NWA. Threatened and endangered species associated with terrestrial habitats of the St. Marks NWA are listed in Table 6-3.

The AQRVs of Chassahowitzka are generally similar to the AQRVs of St. Marks. Although the AQRVs of the other two Class I areas (Bradwell Bay and Okefenokee) may be somewhat different (i.e., inland ecosystem versus coastal ecosystem) than those of St. Marks, it is not believed that these areas contain AQRVs that are more sensitive to air quality than the St. Marks area. Therefore, only the St. Marks AQRVs were evaluated further.

Table 6-2. Important Aquatic, Vegetational, and Wildlife Resource Attributes or AQRVs of St. Marks NWA Potentially Dependent Upon the Air Environment

Aquatic
Och Lockonee, St. Marks and East Rivers
Brackish and freshwater ponds, and sloughs
Vegetation
Ecological communities including:
Cypress wetlands
Slash and longleaf pine flatwoods
Salt marshes
Mixed hardwood swamp
Unique plants
Threatened and endangered species
Ephiphytic plants including orchids and bromeliads
Air quality bioindicators - lichens
Wildlife
Birds, mammals, reptiles and amphibians
Threatened and endangered species (see Table 6-3)
Wildlife habitat for endangered and threatened species
Wildlife habitat for water fowl

Note: NWA = National Wilderness Area.

Source: KBN, 1995.

Table 6-3. Federal and State Listed Endangered and Threatened Animals in the St. Marks NWA Dependent Upon the Air Environment (Page 1 of 2)

Species - Common Name	Designated Status	
	State[a]	USFWS[b]
Amphibian		
Ambystoma cingulatum - flatwoods salamander		C2
Bird		
Aimophila aestivalis - Bachman's Sparrow		C2
Charadrius melodus - piping plover	T	T
Egretta rufescens - reddish egret	SSC	C2
Falco sparverius paulus - southeastern American kestrel	T	C2*
Haliaeetus leucocephalus - bald eagle	T	T*
Picoides borealis - red-cockaded woodpecker	T	E
Mycteria americana - wood stork	E	E
*Ammodramus maritimus juncicolus** - Wakulla seaside sparrow	SSC	C2
Lanius ludivicianus migrans - migrant loggerhead shrike		C2
Ammodramus henslowii - Henslow's sparrow		C2
Fish		
Acipenser oxyrhynchus destoi - Gulf sturgeon	SSC	T*
Mammal		
Plecotus rafinesquii - southeastern big-eared bat		C2
Ursus americanus floridanus - Florida black bear	T*	C2
Myotis austroriparius - southeastern bat		C2
Neofiber alleni - round-tailed muskrat		C2
Reptile		
Dermochelys coriacea - leatherback turtle	E	E
Drymarchon corais couperi - eastern indigo snake	T	T

Table 6-3. Federal and State Listed Endangered and Threatened Animals in the St. Marks NWA Dependent Upon the Air Environment (Page 2 of 2)

Species - Common Name	Designated Status	
	State[a]	USFWS[b]
Reptile (continued)		
Gopherus polyphemus - gopher tortoise	SSC	C2
Lepidochelys kempii - Atlantic ridley turtle	E	E
Macroclemys temminckii - alligator snapping turtle	SSC	C2
Alligator mississippiensis - American alligator	SSC	T(S/A)
Caretta caretta - Atlantic loggerhead turtle	T	T
Chelonia mydas - Atlantic green turtle	E	E
Ophisaurus compressus - island glass lizard		C2
Heterodon simus - southern hognose snake		C2

[a] State (Florida) Status:
E = endangered.
SSC = Species of Special Concern
T = threatened.

[b] USFWS Status:
C2 = candidate for listing, with some evidence of vulnerability, but for which not enough data exist to support listing.
E = endangered.
T = threatened.
T(S/A) = threatened due to similarity of appearance.

Sources: U.S. Fish and Wildlife Service.
Freshwater Wetlands and Heritage Inventory Program.

6.4.3 REPORTED AIR QUALITY EFFECTS ON ST. MARKS NWA

No ecological effects to the attributes of the St. Marks NWA have been reported to date (Ellen Porter, USFWS, Denver, CO, pers. comm., 1994). The reported general effects on aquatic, vegetation, and wildlife resources from significant degradation in air quality are described in Table 6-4.

6.4.4 PREDICTED AIR QUALITY IMPACTS IN THE ST. MARKS CLASS I AREA

The results of the air quality modeling for the increase in emissions due to the BKI modification are presented in Table 6-5. Predicted air quality concentrations are presented for St. Marks NWA for the annual, 24-hour, 8-hour, 3-hour, and 1-hour averaging times. These concentrations reflect only the increase in emissions due to the proposed project.

6.4.5 VEGETATION AQRVS ANALYSIS

The general effects of air pollutants on vegetation due to SO_2, NO_2, O_3, and PM were described in Section 6.3.3. The remainder of Section 6.4.5 presents the predicted impacts upon vegetation in the St. Marks Class I area.

Nitrogen Dioxide

A review of the literature indicates great variability in NO_x dose-response relationships in vegetation. Acute NO_2 injury symptoms are manifested as water-soaked lesions, which first appear on the upper surface, followed by rapid tissue collapse. Low-concentration, long-term exposures as frequently encountered in polluted atmospheres often do not induce the lesions associated with acute exposures but may still result in some growth suppression. Citrus trees exposed to 470 $\mu g/m^3$ for 290 days showed injury (Thompson *et al.*, 1970). Sphagnum moss exposed for 18 months at an average concentration of 11.7 $\mu g/m^3$ showed reduced growth (Press *et al.*, 1986).

The maximum ground-level NO_2 concentrations (1-hour and annual average) predicted to occur at the Class I area boundary due to the increase in emissions are 1.02 and 0.006 $\mu g/m^3$ respectively. These values are well below reported effect concentrations and no effects are predicted to occur.

Table 6-4. Reported General Effects on Aquatic, Vegetation, and Wildlife Resources From Significant Degradation in Air Quality

Attribute	Potential Effects and Associated Air Quality Change
Aquatic Resources	Acidification of waters and subsequent changes (loss and replacement) of ecological components; sensitive systems have low buffering capacity
Vegetation Resources	Most common effects include reduced growth, injury, and species replacement; species show specific sensitivity
Wildlife Resources	Potential effects include avoidance and increased body burdens of contaminants

Source: KBN, 1995.

Table 6-5 . Maximum Pollutant Impacts due to the Proposed Modification Only at the St. Marks NWA

Pollutant	Maximum Emission Rate (lb/hr)	Averaging Time	Maximum Concentrations ($\mu g/m^3$)	NPS Significant Impact Levels ($\mu g/m^3$)
Generic	79.365	Annual	0.02706	
		24-Hour	0.44142	
		3-Hour	2.32058	
		1-Hour	4.89941	
Particulate Matter/ PM10	17.0	Annual	0.01	0.1
		24-Hour	0.09	0.33
		3-Hour	0.50	
		1-Hour	1.05	
Nitrogen Oxides	16.5	Annual	0.006	0.025
		24-Hour	0.092	
		3-Hour	0.482	
		1-Hour	1.019	
Beryllium	0.000114	Annual	3.9E-08	
		24-Hour	6.3E-07	
		3-Hour	3.3E-06	
		1-Hour	7.0E-06	

Note: Maximum concentrations are the highest predicted with a 5-year meteorological data set.

Particulates

The maximum predicted increase in annual concentrations of PM (in the form of TSP) from the proposed project is 0.01 $\mu g/m^3$ for St. Marks NWA. No potential effects on vegetation are predicted, because these concentration are well below the values reported to adversely affect plants (Darley, 1966; Krause and Kaiser, 1977).

6.4.6 SOILS AQRV ANALYSIS

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are absorbed. Gaseous fumigation of soils does not directly affect the soil but rather the organisms found in the soil. Concentrations several orders of magnitude higher than the predicted value are required before any adverse effects from fumigation are observed. It is more likely that effects on soils and the organisms (plants and animals) found in the soils could occur from the deposition of trace elements over the life of the project. Thus, this analysis of effects on soils specifically addresses the deposition of trace elements and potential pathways for movements into the vegetation.

Beryllium toxicity in plants in the form of reduced growth has been reported in nutrient cultures of >2 ppm Be content. Beryllium concentrations in soils are reported to range from <1 to 7 ppm. However, only a small amount is actually available for absorption by plants (Gough *et al.*, 1979). The predicted Be concentrations (Table 6-5) are below levels reported to cause effects.

6.4.7 WILDLIFE AQRV ANALYSIS

Nitrogen Dioxide and Particulate Matter

The predicted NO_2 and particulate concentrations are also well below the lowest observed effects levels in animals (Table 6-6) poses no risk to wildlife AQRVs in the Class I area. Because predicted levels are below those known to cause effects to vegetation, there is also no risk to their habitat.

6.4.8 VISIBILITY IMPACTS

The visibility impacts of the proposed project's emission increase only are provided in Table 6-7. All four Class I areas were evaluated because of the variability in the background visual range for

Table 6-6. Lowest Observed Effect Levels of NO_2 and Particulates in Animals

Pollutant	Reported Effect	Concentration ($\mu g/m^3$)	Exposure
Nitrogen Dioxide	Respiratory stress in mice	1,917	3 hours
	Respiratory stress in guinea pigs	95 to 950	8 hr/day for 122 days[a]
Particulates	Respiratory stress in rats	120 (PbO_3)	Continually for 2 months
	Reduced defenses against respiratory disease in rats	100 ($NiCl_2$)	2 hours

[a] Used to compare as a range between 3-hour and 24-hour averaging times.
[b] Used to compare with annual averaging times.

Source: Adapted from Newman (1980) and Newman and Schreiber (1988).

Table 6-7. Visual Effects Screening Analysis for BKI LK4 Modification Only
(Page 1 of 2)

*** Level-1 Screening ***

Input Emissions for

Particulates	75.5	TON/YR
NOx (as NO2)	72.6	TON/YR
Primary NO2	.00	TON/YR
Soot	.00	TON/YR
Primary SO4	34.3	TON/YR

Class I Area: OKEFENOKEE NWR

Background Ozone:	.04 ppm
Background Visual Range:	77.00 km
Source-Observer Distance:	125.00 km
Min. Source-Class I Distance:	125.00 km
Max. Source-Class I Distance:	161.00 km
Plume-Source-Observer Angle:	11.25 degrees
Stability:	6
Wind Speed:	1.00 m/s

					Delta E		Contrast		
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume	
SKY	10.	84.	125.0	84.	2.00	.099	.05	.002	INSIDE
SKY	140.	84.	125.0	84.	2.00	.039	.05	-.002	
SKY	10.	25.	89.3	144.	2.00	.124	.05	.002	OUTSIDE
SKY	140.	25.	89.3	144.	2.00	.047	.05	-.002	

Class I Area: CHASSAHOWITZKA NWR

Background Ozone:	.04 ppm
Background Visual Range:	65.00 km
Source-Observer Distance:	163.00 km
Min. Source-Class I Distance:	163.00 km
Max. Source-Class I Distance:	183.00 km
Plume-Source-Observer Angle:	11.25 degrees
Stability:	6
Wind Speed:	1.00 m/s

					Delta E		Contrast		
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume	
SKY	10.	84.	163.0	84.	2.00	.038	.05	.001	INSIDE
SKY	140.	84.	163.0	84.	2.00	.014	.05	-.001	
SKY	10.	55.	145.9	114.	2.00	.041	.05	.001	OUTSIDE
SKY	140.	55.	145.9	114.	2.00	.015	.05	-.001	

Table 6-7. Visual Effects Screening Analysis for BKI LK4 Modification Only (Page 2 of 2)

Class I Area: ST. MARKS NWR

Background Ozone: .04 ppm
Background Visual Range: 65.00 km
Source-Observer Distance: 50.00 km
Min. Source-Class I Distance: 50.00 km
Max. Source-Class I Distance: 67.00 km
Plume-Source-Observer Angle: 11.25 degrees
Stability: 6
Wind Speed: 1.00 m/s

					Delta E		Contrast		
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume	
SKY	10.	84.	50.0	84.	2.00	.521	.05	.008	INSIDE
SKY	140.	84.	50.0	84.	2.00	.239	.05	-.009	
SKY	10.	0.	1.0	169.	2.57	1.481	.05	.018	OUTSIDE
SKY	140.	0.	1.0	169.	2.00	.536	.05	-.018	

Class I Area: BRADWELL BAY

Background Ozone: .04 ppm
Background Visual Range: 65.00 km
Source-Observer Distance: 99.00 km
Min. Source-Class I Distance: 99.00 km
Max. Source-Class I Distance: 110.00 km
Plume-Source-Observer Angle: 11.25 degrees
Stability: 6
Wind Speed: 1.00 m/s

					Delta E		Contrast		
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume	
SKY	10.	84.	99.0	84.	2.00	.127	.05	.002	INSIDE
SKY	140.	84.	99.0	84.	2.00	.050	.05	-.002	
SKY	10.	20.	65.3	149.	2.00	.164	.05	.002	OUTSIDE
SKY	140.	20.	65.3	149.	2.00	.059	.05	-.002	

each area. The modeling results indicate that the maximum visibility impacts caused by the proposed modification only, do not exceed the screening criteria inside or outside the four Class I areas within 200 km from the BKI site. As a result, the proposed project is predicted to have no adverse effects to visibility in these Class I areas.

6.4.9 SUMMARY

In summary, it is apparent that very large margins of safety exist for all matrices examined with respect to the effects of the predicted increase in emissions on the Class I areas. The predicted increase in ambient concentrations in these areas due to the proposed project are extremely small. No significant adverse effects will occur to the AQRVs in the Okefenokee, St. Marks, Chassahowitzka, and Bradwell Bay NWAs due to the modification of the BKI LK4.

6.5 REGIONAL HAZE ANALYSIS

A regional haze analysis was conducted to determine if the proposed BKI LK4 modification would cause a perceptible degradation in visibility at the St. Marks National Wilderness Area (NWA). The St. Marks NWA was the only NWA considered for the analysis as it is the closest PSD Class I area to the BKI site. The St. Marks NWA is located approximately 50 km west of the plant. The visibility of an area is generally characterized by either its visual range, V_r (i.e., the greatest distance that a dark object can be seen) or its extinction coefficient, b_{ext} (i.e., the attenuation of light over a distance due to particle scattering and/or gaseous absorption). The visual range and extinction coefficient are related to one another by the following equation:

$$b_{ext} = 3.912 / V_r \ (km^{-1}) \qquad (1)$$

The National Park Service (NPS) in coordination with the U.S. Fish and Wildlife Service (USFWS) uses the Deciview index, d_v, to describe an area's change in extinction coefficient. The Deciview is defined as:

$$d_v = 10 \ln (b_{ext}/0.01) \qquad (2)$$

where ln represents the natural logarithm of the quantity in parentheses. A change in an area's Deciview, Δd_v, of 1 corresponds to an approximate 10 percent changed in extinction, which is

considered as a noticeable change in regional haze. The Deciview change is defined by:

$$\Delta d_v = 10 \ln (1 + b_{exts}/b_{extb}) \quad (3)$$

where b_{exts} and b_{extb} represent the extinction coefficients due to the source (i.e., the proposed expansion) and for the St. Marks NWA background visual range, respectively. Based on recent communications with the NPS, the background visual range for the St. Marks NWR is 65 km based on recent air monitoring data (Bud Rolofson, NPS, Lakewood, CO, 1995).

Calculation of Source Extinction

The source extinction due to the proposed project is calculated according to interim recommendations that are provided in the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase I Report, Appendix B. The report states that the primary sources of regional visibility degradation are mostly fine particles with diameters ≤ 2.5 μm, ammonium bi-sulfate $[(NH_4)_2SO_4]$ and ammonium nitrate (NH_4NO_3). The procedures for determining the ambient concentration levels of these compounds due to the proposed project are:

1. Obtain the maximum hourly sulfur dioxide (SO_2), nitrogen oxides (NO_x), particulates (PM), and sulfuric acid (H_2SO_4) mist impacts due to the proposed expansion from air quality dispersion models such as the Industrial Source Complex Short Term (ISCST3) or the MESOPUFF II model. For the present analysis, the maximum impacts were provided from the ISCST3 model, a steady state model that was used for the modeling analysis for the PSD application. Based on verbal communications with Bud Rolofson of the NPS, the NPS had changed it's policy of using the hourly maximum impacts to using the highest 24-hour impacts for these pollutants. The maximum 24-hour impacts are based on the highest predicted concentrations from the ISCST3 model for the 5-year period, 1982 to 1986. The maximum 24-hour impacts at the St. Marks NWA due to the proposed project only are 0.0423, .0918, .0946, and 0.0015 $\mu g/m^3$ for SO_2, NO_x, PM, and H_2SO_4 mist, respectively.
2. Assume a 100 percent conversion of SO_2 to SO_4^{2-} and NO_x to NO_3. Multiplicative factors for this conversion are presented in IWAQM Inset 1, as 1.5 and 1.35, respectively, which are based on the ratios of the molecular weights of the compounds. The 24-hour SO_4^{2-} and NO_3 concentrations were calculated to be 0.0635

and 0.1239 $\mu g/m^3$, respectively. Concentrations of PM and H_2SO_4 mist were assumed to exist as primary fine particulates.

3. Calculate maximum concentrations of ammonium sulfate and ammonium nitrate from multiplicative factors 1.375 and 1.29, respectively, from IWAQM, Appendix B.
4. Obtain hourly values of relative humidity (RH). The maximum predicted 24-hour impacts from the ISCST3 model occurred on September 30, 1985. The Tallahassee National Weather Services' hourly surface observations for this day indicate an average RH of approximately 86 percent.
5. Calculate the extinction coefficients of ammonium sulfate, ammonium nitrate, and primary fine particulate. The extinction coefficients for each compound are defined by:

$$b_{exts} = 0.003 \text{ (comp) } f(RH)$$

where (comp) represents the ambient concentration of the compound in question, and f(RH) is the relative humidity factor. From Figure B-1 in Appendix B, an RH of 86 percent corresponds to an RH factor of 5.0. For PM and H_2SO_4 mist (as fine particulate matter), an RH factor of unity was used per IWAQM recommendations. The total source extinction coefficient value is equal to the sum of the calculated extinction coefficients for each compound.

A summary of the calculations are provided in Table 6-8. The total source extinction coefficient due to the proposed project was determined to be 0.0040. From Equation 3 above, the total Deciview change due to the proposed project is 0.6427.

Based on this analysis, the proposed project will result in less that a 10 percent decrease in visibility to the clearest days observed at the St. Marks NWA. Therefore, no adverse impacts upon regional haze is predicted due to the proposed project at any of the four PSD Class I areas.

Table 6-8. Calculation of Change in Deciview Due to the Proposed BKI LK4 Modification

Pollutant	Value	Reference
Maximum Emission Rates (lb/hr)		
SO2	7.6	
NOx	16.5	
H2SO4 (as PM)	0.27	
PM	17.0	
Highest 24-Hour St. Marks NWR Impacts ($\mu g/m^3$)		
SO2	0.0423	(a)
NOx	0.0918	(b)
H2SO4 (as PM)	0.0015	(b)
PM	0.0946	(b)
SO4	0.0635	(c)
NO3	0.1239	(d)
(NH4)2SO4	0.0872	(e)
NH4NO3	0.1599	(f)
Average RH (percent)	86	(g)
RH factor, f(RH)	5.0	(h)
Extinction Coefficients (km^{-1})		
Background: (bextb)	0.0602	(i)
(NH4)2SO4	0.0013	(j)
NH4NO3	0.0024	(j)
Fine PM	0.0003	(k)
Total (bexts)	0.0040	
Deciview Change		
total delta dv =	0.6427	(l)

References:

a. Highest predicted concentration from ISCST3 model using a 5-year meteorological data record from 1982-86
b. Concentration calculated from ratio of emissions to SO2 emissions times the maximum SO2 concentration
c. SO4 concentrations based on 3 percent per hour conversion rate from SO2
d. NO3 = NOx * 1.35 from IWAQM Inset No. 1
e. = SO4 times 1.375 from IWAQM Appendix B
f. = NO3 times 1.29 from IWAQM Appendix B
g. Based on average RH for highest impact day.
h. From IWAQM Figure B-1.
i. = 3.912 / 65 where 65 is background visual range.
j. = .003 * compound * f(RH) from IWAQM Appendix B
k. = .003 * compound. f(RH) set = 1 for fine PM
l. Delta DV = 10 * ln (1 + bexts/bextb)

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ATTACHMENT A

DERIVATION OF PROCESS RATES

ATTACHMENT A

DERIVATION OF PROCESS RATES

A. DERIVATION OF PROCESS RATE

Basis: Product rate = 750 TPD lime product (dry)
= 31.25 TPH = 62,500 lb/hr

To be conservative, assume the product is 100 percent CaO, dust loss is based upon highest expected grain loading, and all dust lost is recycled back into the kiln.

Calculate lb lime mud feed/ton product:

2,000 lb lime/ton product x (100 lb $CaCO_3$/56 lb CaO)
= 3,571.4 lb lime mud feed/ton product

Therefore, lime mud from causticising = 31.25 TPH product x 3,571.4 lb feed/ton product
= 111,606 lb/hr lime mud feed (dry)

Maximum dust loss:

From Attachment B, maximum gas flow = 40,000 dscfm
Maximum inlet loading to ESP = 20 gr/dscf at actual stack O_2
40,000 dscf x 20 gr/dscf / 7,000 gr/lb x 60 min/hr = 6,857 lb/hr

Assuming all dust is recycled back into the kiln, the total input rate to the kiln is as follows: 111,606 + 6,857 = 118,463 lb/hr

B. DERIVATION OF NO. 4 LIME KILN GAS FLOW RATES

1. Current flow rates @ 650 TPD Lime product based on historical test data. Range of gas flow rates is calculated as follows:

   The stack gas flow rate varies between 29,000 dscfm and 40,000 dscfm.
   The stack temperature varies between 420 and 550°F.
   The moisture content of the stack gases vary between 30% and 35%.

   Therefore the range of actual flue gas flow is as follows:

   Minimum: 29,000 dscfm x [(420 + 460)°R/528°R]
   x 1/(1-0.30) = 69,000 acfm
   Maximum: 40,000 dscfm x [(550 +460)°R/528°R]
   x 1/(1-0.35) = 117,700 acfm

2. Maximum flow rates based on 750 TPD: Ratio the flow rates based on the current and future lime production.

   Minimum: 29,000 dscfm x 750/650 = 33,460 dscfm
   69,000 acfm x 750/650 = 79,600 acfm
   Maximum: 40,000 dscfm x 750/650 = 46,150 dscfm
   117,700 acfm x 750/650 = 135,800 acfm

3. Dry gas flow corrected to 10% O_2.
   Minimum actual O_2 results in maximum flue gas flow @ 10% O_2.
   Minimum O_2 in kiln is 4.0%

   A. Current conditions @ 650 TPD
      Minimum: 29,000 dscfm x [(21-4)/(21-10)] = 44,800 dscfm @ 10% O_2
      Maximum: 40,000 dscfm x [(21-4)/(21-10)] = 61,800 dscfm @ 10% O_2
   B. Future conditions @ 750 TPD
      Minimum: 44,800 x 750/650 = 51,700 dscfm @ 10% O_2
      Maximum: 61,800 x 750/650 = 71,300 dscfm @ 10% O_2

C. DERIVATION OF FUEL USAGE FOR NO. 4 LIME KILN

Maximum heat input rate: 210 MMBtu/hr
Heating values: Natural gas: 1,040 Btu/scf
No. 6 Fuel Oil: 150,000 Btu/gal
Maximum hourly rate (natural gas):
210 MMBtu x [1,040 Btu/scf] = 0.202 MMscf/hr
Maximum hourly rate (No. 6 fuel oil):
210 MMBtu ÷ [150,000 Btu/gal] = 1,400 gal/hr

D. DERIVATION OF MAXIMUM PRODUCTION RATE OF BATCH DIGESTER SYSTEM

Total of 19 individual digesters.
Maximum production on pulp grade NMC, @ cycle time 147 minutes

Total Digesting System Maximum Production Rate
(1,440 minutes/day) (19 digesters) (13.61 ADT/blow) / (147 minutes/cycle)
= 2,533 tons/day ADUP or 105.5 TPH ADUP

where: ton = 2,000 pounds
ADUP = air dried unbleached pulp

ATTACHMENT B

FUTURE MAXIMUM EMISSIONS

ATTACHMENT B

FUTURE MAXIMUM EMISSIONS

No. 4 Lime Kiln

A. PM(TSP)

Maximum emissions will not exceed allowable— 20 lb/hr; 87.6 TPY

Calculation of grain loading @ 10% O_2 is as follows:

Maximum gas flow rate = 71,300 dscfm @ 10% O_2

Minimum gas flow rate = 51,700 dscfm @ 10% O_2

Minimum gr/dscf = 20.0 lb/hr x 7,000 gr/lb ÷ (71,300 dscfm x 60 min/hr)
= 0.0327 gr/dscf @ 10% O_2

Maximum gr/dscf = 20.0 lb/hr x 7,000 gr/lb ÷ (51,700 dscfm x 60 min/hr)
= 0.0451 gr/dscf @ 10% O_2

B. PM10

PM10 is 100% of PM emissions— 20 lb/hr; 87.6 TPY

C. SO_2

Based on NCASI Bulletin No. 646 factor of 1 lb/ton CaO.

Equivalent pulp production:

Maximum = 31.25 tons CaO/hr x 1 lb/ton CaO = 31.25 lb/hr

31.25 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 136.9 TPY

D. NO_x

Based on NCASI Bulletin No. 646 factor of 2.19 lb/ton CaO.

Maximum = 31.25 ton CaO/hr x 2.19 lb/ton CaO = 68.44 lb/hr

68.44 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 299.8 TPY

Minimum NO_x (ppm)

= 68.44 lb/hr ÷ (71,300 ft^3/min x 2,116.8 lb_f /ft^2) x 1,545/46 ft-lb_f/lb_m -°R
x 528°R ÷ 60 min/hr x 10^6 = 134.0 ppmvd @ 10% O_2

Maximum NO_x (ppm)

= 68.44 lb/hr ÷ (51,700 dscfm x 2,116.8 lb_f /ft^2) x 1,545/46 ft-lb_f/lb_m -°R

x 528 ÷60 min/hr x 10^6 = 184.8 ppmvd @ 10% O_2

E. CO

Based on NCASI Bulletin No. 646 factor of 0.41 lb/ton CaO.

Maximum = 31.25 ton CaO/hr x 0.41 lb/ton CaO = 12.81lb/hr

12.81 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 56.1 TPY

F. VOC

Based on NCASI Bulletin No. 646 factor of 0.236 lb C/ton CaO.

Maximum = 31.25 ton CaO/hr x 0.236 lb C/ton CaO = 7.38 lb/hr

7.38 lb/hr x 8,760 hr/yr x 2,000 lb/ton = 32.3 TPY

G. TRS

Maximum emissions will be 7 ppmv (dry) @ 10% O_2

Maximum gas flow rate from lime kiln = 71,300 dscfm @ 10% O_2

$$TRS = \frac{2{,}116.8\ lb_f}{ft^2} \times \frac{71{,}300\ ft^3}{\text{min}} \times \frac{7}{10^6} \times \frac{34\ lb_m\text{-}°R}{1{,}545\ ft\text{-}lb_f} \times \frac{1}{528°R} \times \frac{60\ \text{min}}{hr}$$

= 2.64 lb/hr

2.64 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 11.58 TPY

ATTACHMENT C

CAUSTICIZING SYSTEM
LIME HANDLING SYSTEM

OPERATING AND CONSTRUCTION PERMIT

Florida Department of Environmental Regulation

Northeast District • Suite B200, 7825 Baymeadows Way • Jacksonville, Florida 32256-7577

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:

The Procter & Gamble Cellulose Company
Route 3, Box 260
Perry, Florida 32347

I.D. Number:	31JAX62000124
Permit/Cert Number:	A062-219150
Date of Issue:	12-3-92
Expiration Date:	January 29, 1998
County:	Taylor
Latitude/Longitude:	30°03'59"N; 83°33'12"W
Project:	No. 4 Lime Kiln
UTM:	E-(17)256.7; N-3328.7

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-210, 17-212, 17-272, 17-296, 17-297 and 17-4. The above named permittee is hereby authorized perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of No. 4 Lime Kiln with an electrostatic precipitator (ESP) to control particulate matter emissions.

Located east of U.S. 19, south of U.S. 27, on S.R. 30, southeast of Perry, Taylor County, Florida.

In accordance with:

Construction permit application dated 08-02-85
Additional information dated 09-09-85
Comments by John H. Millican dated 11-21-85
Certification of completion of construction dated 07-24-87
Letter from Ray Andreu dated 08-21-87
Additional information received 09-14-87
Comments by J.E. Farmer dated 01-04-88
Amendments to construction permit AC62-107858 received 02-04-88
Renewal application received 09-16-92

Administration 448-4300
Air 448-4310
Waste Management 448-4320

Recycled Paper

Water Facilities 448-4330
Water Management 448-4340
FAX 448-4366

PERMITTEE:
The Procter & Gamble Cellulose Company
Route 3, Box 260
Perry, Florida 32347

I.D. Number: 31JAX62000124
Permit/Cert: A062-219150
Date of Issue:
Expiration Date: January 29, 1998

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants, or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

GENERAL CONDITIONS

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with, or will be unable to comply with, any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

   a. A description of and cause of non-compliance; and

   b. the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

GENERAL CONDITIONS

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Certification of Compliance with State Water Quality Standards
( ) (Section 401, PL 92-500)
(X) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall, within a reasonable period of time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. The maximum operation rates are SEE BELOW and shall not be exceeded without prior approval.

Rate	Material
96,726 lbs/hr[1]	lime mud
7,152 lbs/hr[1]	ESP recycle lime dust
54,167 lbs/hr[1]	lime Product
0.170 MMCF/hr	natural gas
1214 gals/hr	#6 fuel oil[2,3]

[1]dry basis
[2]Sulfur content (see SC #4, note marked by *)
[3]Includes small quantity of used oil generated at the facility and this used oil shall not contain PCB's.

2. Testing of emissions must be performed at an operating rate of at least 90% of the rate in Specific Condition (SC) No. 1, or SC No. 3 will become effective.

3. The operating rate shall not exceed 110% of the operating rate during the most recent test except for testing purposes, but shall not exceed that rate in SC No. 1. After testing at an operating rate greater than 110% of the last test operating rate, the operating rate shall not exceed 110% of the last (submitted) test operating rate until the test report at the higher rate has been reviewed and accepted by the Department.

4. The permitted maximum allowable emission rate for each pollutant is as follows:

Pollutant	FAC Rule	lbs/hr	TPY
PM[1]	17-296.800 and 40 CFR 60.282(a)(3)(ii)	56.20[2]	246.16[3]
PM	17-296.800 and 40 CFR 60.282(a)(3)(i)	44.7 [4]	195.79[3]
SO_2[5]	---	20.1 [6]	85.4 [6]
TRS[7]	17-296.800 and 40 CFR 60.283(a)(5)	3.04[8]	13.32[3]
TRS	same as TRS above	3.28[9]	14.37[3]
VE[10]	17-296.310(2)	<20% opacity	

SPECIFIC CONDITIONS:

SC #4 Cont'd.

[1]PM: Particulate Matter
[2]Basis: When liquid fossil fuel* is burned; 0.091 gr/dscf;
41685 DSCFM: Corr. to 10% O_2; 2% O_2 (actual)
[3]Basis: Hours of operation are limited to 8760 H/Y and shall be recorded.
[4]Basis: When gaseous fossil fuel is burned; 0.067 gr/dscf;
45020 DSCFM; corr. to 10% O_2; 2% O_2 (actual)
[5]SO_2 - Sulfur dioxide
[6]Basis: From permit AC62-107858
[7]TRS - Total reduced sulfur
[8]Basis: 8 ppm by vol. (dry basis); corr. to 10% O_2; 2% O_2 (actual);
41685 DSCFM when burning fuel oil
[9]Basis: 8 ppm by vol. (dry basis); corr. to 10% O_2; 2% O_2 (actual);
45020 DSCFM when burning gas
[10]VE - Visible emissions
*The liquid fossil fuel is No. 6 fuel oil with a sulfur content that shall not exceed 2.50% by wt.

5. Unconfined emissions of particulate matter during operation of the Causticizing System and Lime Handling System shall comply with the provisions of FAC Rule 17-296.310(3). Reasonable precautions that might be taken shall include, but are not limited to:

a) Reduced speeds for vehicular traffic.

b) Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.

c) Use of paving or other asphaltic materials.

d) Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.

e) Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.

f) Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.

g) Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.

h) Enclosure or covering of conveyor systems.

SPECIFIC CONDITIONS:

6. Test the emission for the following pollutant(s) at the interval(s) indicated, notify the Department 14 days prior to testing, and submit the test report documentation to the Department within 45 days after completion of the testing:

Pollutant	Interval	Test Method[1]
PM [1,2]	12 months from 05-21-92	EPA 5
TRS	continuously[3]	---
VE [4]	12 months from 05-21-92	EPA 9
SO_2 [4]	12 months from 05-21-92	---

[1]Test while burning gas.
[2]Test while burning #6 fuel oil if oil is fired >400 hours per calendar year (based on FAC Rule 17-297.340(1)(c)2.).
[3]See SC #8
[4]Each PM test shall include a concurrent VE test. The observation (VE) shall be recorded during one of the PM test runs. In the event that weather (humidity, wind etc.) prevents a VE test as described above, all operation parameters shall be recorded that are necessary to duplicate a similar stack gas plume during the earliest good (clear, etc.) weather after the PM test so that a VE test can be performed. The VE test shall be reported with the PM test or give an explanation why it is not included.
[5]In lieu of an SO_2 test, report % sulfur as determined by EPA Method 19, 40 CFR 60, Appendix A.

Tests and test reports shall comple with the requirements of Florida Administrative Code Rule 17-297.330 and 17-297.570, respectively.

7. In each test report, submit the maximum input/production rate at which this source was operated since the most recent test.

8. TRS continuous monitoring system (CMS) report shall be postmarked by the 30th day following the end of each calendar quarter and shall include the information required by 40 CFR 60.7(c)(1), (2), (3) and (4) and 40 CFR 60.284 and FAC Rules 17-296.800 and 17-297.500.

Excess emissions of TRS shall be determined quarterly pursuant to FAC Rule 17-297.500 and 40 CFR 60.284(d)(2).

9. Submit an annual operation report for this source on the form supplied by the Department for each calendar year on or before March 1.

PERMITTEE:	I.D. Number:	31JAX62000124
The Procter & Gamble Cellulose Co.	Permit/Certification Number:	A062-219150
Route 3, Box 260	Date of Issue:	
Perry, Florida 32347	Expiration Date:	January 29, 1998

SPECIFIC CONDITIONS:

10. Any revision(s) to a permit (and application) must be submitted and approved prior to implementing.

11. The ID Name and ID No. for this source is to be used on all correspondence.

11. Forms for the renewal will be sent 5 months prior to 01-29-98 and the completed forms with test results are due 90 days prior to 01-29-98.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Ernest E. Frey, P.E.
Director of District Management

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 12/3/92
Date

Florida Department of
Environmental Protection

Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7577

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

CERTIFIED - RETURN RECEIPT

September 22, 1993

Mr. Charles S. Aiken, Plant Manager
Buckeye Florida, Limited Partnership
Rt. 3, Box 260
Perry, Florida 32347

Dear Mr. Aiken:

Taylor County - AP
Buckeye Florida, Limited Partnership
No. 4 Lime Kiln
ID#31JAX62000124
AO62-219150
Minor Modification

The Minor Modification request received June 10, 1993, is approved to address the use of natural gas and No. 2 fuel oil as fuel igniters.

Specific Condition No. 1 is hereby modified as per attachment.

This letter and the request shall become a part of the referenced permit.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by filing 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, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; 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 filed within 30 days from the date this Notice is filed with the Clerk of the Department.

If you have any questions concerning this matter, please contact Rita Felton at (904) 448-4310, Extension 370.

Sincerely,

Ernest E. Frey, P.E.
Director of District Management

EEF:RF

Attachment

Administration 448-4300
Air 448-4310
Waste Management 448-4320

Water Facilities 448-4330
Water Management 448-4340
FAX 448-4366

PERMITTEE:
Buckeye Florida, Ltd. Partnership
Rt. 3, Box 260
Perry, Florida 32347

I.D. Number 31JAX62000124
Permit/Cert: AO62-219150
Date of Issue:
REVISED: September 22, 1993
Expiration Date: January 29, 1998

1. The maximum input rate (operating rate) is SEE BELOW and shall not be exceeded without prior approval:

RATE	MATERIAL
96,726 lbs/hr[1]	Lime mud
7,152 lbs/hr[1]	ESP recycle lime dust
54,167 lbs/hr[1]	Lime product
0.170 MMCF/hr	Natural gas[2]
1214 gals/hr	#6 fuel oil[3,4]
---	#2 fuel oil[2,5,6]

[1]dry basis
[2]Natural gas may also be used and No. 2 fuel oil used as a pilot fuel during startups, shutdowns, malfunctions and for dry out fires after a water wash
[3]Sulfur content (See SC #4, note marked by *)
[4]Includes small quantity of used oil generated at the facility and this used oil shall not contain PCB's
[5]Include an estimate of the quantity fired in the AOR
[6]Usage shall be less than 50,000 gallons per year unless otherwise requested

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
The Buckeye Cellulose Corp.
Rt. 3, Box 260
Perry, Florida 32347

Permit Number: AC 62-107858
Expiration Date: October 31, 1987
County: Taylor
Latitude/Longitude: 30° 03' 59" N/
83° 33' 12" W
Project: No. 4 Lime Kiln with an associated electrostatic precipitator

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of the No. 4 Lime Kiln with an associated electrostatic precipitator (ESP) at the applicant's existing facility located in Perry, Taylor County, Florida. The lime kiln and associated ESP will be an interdependent part of the newly proposed causticizing system. The lime kiln will have a lime product capacity of 650 TPD. Also, three existing lime kilns (Nos. 1, 2, and 3) and a calciner will be retired and their operating permits will be surrendered. The lime kiln will be heated using natural gas and No. 6 fuel oil. Fuel oil maximum sulfur content shall not exceed 2.50% by weight. The UTM coordinates are zone 17, 256.74 km East and 3328.70 km North.

The Source Classification Codes are 3-07-001-06, 3-90-004-99, and 3-90-006-90.

Construction shall be in accordance with the permit application and plans, documents, amendments, and drawings except as otherwise noted pages 5-10 of the Specific Conditions.

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.202 with attachments and Mr. John H. Millican's cover letter dated August 1, 1985.
2. Mr. C. H. Fancy's letter dated August 27, 1985.
3. Mr. John H. Millican's letter with attachment dated September 9, 1985.
4. Mr. John H. Millican's comments dated November 21, 1985.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD).
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. The test facilities for the lime kiln shall comply with all applicable provisions of FAC Rule 17-2.700(4)(c). Sampling ports shall be located pursuant to FAC Rule 17-2.700(4)(c)1.c.i.

3. Visible emissions from the lime kiln shall be less than Number 1 on the Ringlemann Chart (20 percent opacity) pursuant to FAC Rule 17-2.610(2). Compliance tests shall be measured by DER Method 9 pursuant to FAC rule 17-2.700.

SPECIFIC CONDITIONS:

4. Particulate matter emissions from the lime kiln shall not exceed 0.21 g/dscm (0.091 gr/dscf) corrected to 10 percent oxygen, when liquid fossil fuel is burned (applicant's request) and 0.15 g/dscm (0.067 gr/dscf) corrected to 10 percent oxygen, when gaseous fossil is burned (FAC Rule 17-2.660(2)(a) and 40 CFR 60.282(a)(3)(i)). Compliance tests for particulate matter emissions shall be measured using EPA Methods 1, 2, 3, and 5, pursuant to 40 CFR 60, Appendix A, FAC Rule 17-2.700, 40 CFR 60.285(a)(1) through (4), and 40 CFR 60.285(b).

5. Particulate matter emissions from the lime kiln shall not exceed 56.2 lb/hr and 246.2 TPY when liquid fossil fuel is burned and 44.7 lb/hr and 195.8 TPY when gaseous fossil fuel is burned as determined by periodic compliance tests.

6. Total reduced sulfur emissions from the lime kiln shall not exceed 8 ppm by volume on a dry basis, corrected to 10 percent oxygen. Compliance tests for total reduced sulfur emissions shall be measured using EPA Method 16 and EPA Method 3 pursuant to 40 CFR 60, Appendix A, and FAC Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a), 17-2.700 Table I; and 40 CFR 60.285(d).

7. Total reduced sulfur emissions from the lime kiln shall not exceed 3.04 lb/hr and 13.31 TPY when liquid fossil fuel is burned and 3.28 lb/hr and 14.37 TPY when gaseous fossil fuel is burned as determined by continuous emissions monitoring and verified by periodic compliance testing.

8. The sulfur content of liquid fossil fuel burned in the lime kiln shall not exceed 2.50 percent, by weight, as determined by EPA Method 19 pursuant to 40 CFR 60, Appendix A.

9. Sulfur dioxide emissions from the lime kiln shall not exceed 20.1 lb/hr and 85.4 TPY. Compliance test method shall be EPA Method 6 pursuant to Rule 17-2.700(6)(a)6. For PSD validation purposes, the requirement to test for SO_2 emissions shall be a one-time test requirement only, it must be a valid test, and shall not be an operation permit requirement.

10. A total reduced sulfur continuous emissions monitoring system shall be installed, certified, operated and maintained pursuant to the provisions of 40 CFR 60.28(a)(2)(i) and (ii), 40 CFR 60.284(c)(1),(2) and (3), FAC Rules 17-2.660(3)(e), 17-2.660(4)(b), 17-2.710(3)(b), and 40 CFR 60.13, 40 CFR 60 Appendix A, and 40 CFR 60 Appendix B.

SPECIFIC CONDITIONS:

11. A total reduced sulfur emissions report shall be provided to the Northeast District office on a quarterly basis pursuant to the provisions of FAC Rules 17-2.660(3)(a) and 17-2.710(4) and 40 CFR 60.7 and 40 CFR 60.284.
*Note 40 CFR 60.7 and 40 CFR 60.284 as adopted by the department require quarterly reporting.

Excess emissions of total reduced sulfur shall be determined quarterly pursuant to FAC rule 17-2.710(4)(c); and 40 CFR 60.284(d)(2).

12. Lime production by the lime kiln shall not exceed 27.08 tons per hour, 650 tons per day, and 237,250 tons per year. On an annual basis, lime production shall be included in the AOR to be submitted to the Northeast District office.

13. The lime kiln shall demonstrate compliance with the permitted emissions limits pursuant to the provisions of FAC Rule 17-2.660(3)(b) and 40 CFR 60.8 while:

a. Operating at a production rate of 27.08 tons per hour calcium oxide, not to exceed a maximum of 1214 gallons per hour of liquid fossil fuel.

b. Operating at a production rate of 27.08 tons per hour calcium oxide, not to exceed a maximum of 170,000 cubic feet per hour @68°F of gaseous fossil fuel.

14. The owner or operator of a source that has both a visible emissions and a particulate emissions limiting standard shall run their compliance tests concurrently.

15. A fuel flow guage shall be installed on each of the fuel lines (i.e., fuel oil, natural gas, etc.) to the lime kiln.

16. Failure of a control system(s) to meet the applicable and maximum allowable particulate matter, TRS or visible emissions limiting standard and/or limit shall not be grounds for requesting a variance or relaxation of that standard and/or limit.

SPECIFIC CONDITIONS:

17. The fuel input to the lime kiln shall not exceed 1214 gallons per hour and 10.6346 million gallons per year when liquid fossil fuel is burned; and, 170,000 cubic feet per hour and 1489.2 million cubic feet per year when gaseous fossil fuel is burned. On an annual basis, fuel consumption by type shall be included in the AOR to be submitted to the Northeast District office.

18. The lime kiln shall not be operated on a continuous basis or as an integral part of the process except as necessary to balance variables which directly relate to compliance with the permitted emission limits and to perform testing to demonstrate compliance with the permitted emission limits prior to receipt of an operation permit from the department or its designee the Northeast District office.

19. Unconfined emissions of particulate matter during construction and operation of the lime kiln shall comply with the provisions of FAC Rule 17-2.610(3). Reasonable precautions that might be taken shall include, but are not limited to:

a) Reduced speeds for vehicular traffic.

b) Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.

c) Use of paving or other asphaltic materials.

d) Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.

e) Covering of trucks, trailers, front end loaders, and other vehicules or containers to prevent spillage of particulate matter during transport.

f) Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.

g) Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.

h) Enclosure or covering of conveyor systems.

SPECIFIC CONDITIONS:

20. The introduction of TRS gases from any source shall require an amendment to this permit prior to the actual introduction of the TRS gases.

21. Objectionable odors shall not be allowed off plant property in accordance with FAC Rule 17-2.620(2).

22. In accordance with FAC Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions of air pollutants without the applicable pollution control device operating properly.

23. In accordance with FAC Rule 17-2.610(3), Unconfined Emissions of Particulate Matter, pollutant abatement equipment must be operating properly during operational production.

24. Upon receipt of an operation permit for the No. 4 Lime Kiln, the following permits shall be immediately surrendered to the department: 1) AO62-46527 - No. 1 Lime Kiln; 2) AO62-38423 - No. 2 Lime Kiln; 3) AO62-46530 - No. 3 Lime Kiln; 4) AO62-39144 - Calciner.

25. The construction shall reasonably conform to the plans and schedule submitted in the application. If the applicant is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit. (FAC Rule 17-4.09)

To obtain a permit to operate, the applicant must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's Northeast District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (FAC Rules 17-4.22 and 17-4.23)

If the construction permit expires prior to the the applicant requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the applicant must apply for a new permit to construct which may take up to 90 days to process a complete application. (FAC Rule 17-4.10)

PERMITTEE:
The Buckeye Cellulose Corp.

Permit Number: AC 62 107858
Expiration Date: October 31, 1987

SPECIFIC CONDITIONS:

26. The contingency plan to deal with startup, shutdown, and malfunctions offered in the September 9, 1985, response shall become a part of this permit.

Issued this 27th day of Nov, 1985.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

VICTORIA J. TSCHINKEL, Secretary

_____pages attached.

Florida Department of Environmental Regulation

Northeast District • Suite B200, 7825 Baymeadows Way • Jacksonville, Florida 32256-7577

Lawton Chiles, Governor Carol M. Browner, Secretary

PERMITTEE:

The Procter & Gamble Cellulose Company
Route 3, Box 260
Perry, Florida 32347

I.D. Number:	31JAX62000125,26,32,33
Permit/Cert Number:	A062-219151
Date of Issue:	11-16-92
Expiration Date:	January 28, 1998
County:	Taylor
Latitude/Longitude:	30°03'59"N; 83°33'12"W
Project:	Causticizing System Lime Handling System
UTM:	E-(17)256.7; N-3328.7

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-210, 17-212, 17-272, 17-296, 17-297 and 17-4. The above named permittee is hereby authorized perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of Causticizing System and Lime Handling System consisting of the following emissions sources:

Pt. #

25 Two lime slakers with a condensing scrubber (SL-1)
26 Two causticizing lime storage bins with baghouse (BH-1)
32 White liquor pressure filter (PF-2)
33 Lime mud pressure filter (PF-1)

Located east of U.S. 19, south of U.S. 27, on S.R. 30, southeast of Perry, Taylor County, Florida.

In accordance with:

Construction permit application dated 08-02-85
Additional information dated 09-09-85
Comments by John H. Millican dated 11-21-85
Request to modify AC62-107857 dated 07-21-87
Certification of completion of construction dated 07-24-87
Additional information (ACP) dated 09-11-87
Additional information received 09-15-87
Additional information received 12-09-87
Additional information received 12-15-87
Construction permit AC62-140034 received 03-01-88
Construction permit AC62-143536 received 03-01-88
Letter from James E. Farmer received 03-28-88
Renewal application received 09-16-92

Administration 448-4300
Air 448-4310
Waste Management 448-4320

Water Facilities 448-4330
Water Management 448-4340
FAX 448-4366

PERMITTEE:
The Procter & Gamble Cellulose Company
Route 3, Box 260
Perry, Florida 32347

I.D. Number: 31JAX62000125,26,32,33
Permit/Cert: AO62-219151
Date of Issue:
Expiration Date: January 28, 1998

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants, or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

GENERAL CONDITIONS

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with, or will be unable to comply with, any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. A description of and cause of non-compliance; and

b. the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

PERMITTEE:
The Procter & Gamble Cellulose Company
Route 3, Box 260
Perry, Florida 32347

I.D. Number: 31JAX62000125,26,32,33
Permit/Cert: A062-219151
Date of Issue:
Expiration Date: January 28, 1998

GENERAL CONDITIONS

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Certification of Compliance with State Water Quality Standards
( ) (Section 401, PL 92-500)
( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall, within a reasonable period of time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

PERMITTEE:
The Procter & Gamble Cellulose Co.
Route 3, Box 260
Perry, Florida 32347

I.D. Number: 31JAX62000125,26,32,33
Permit/Certification Number: AO62-219151
Date of Issue:
Expiration Date: January 28, 1998

SPECIFIC CONDITIONS:

1. The maximum input (operating rate) is SEE BELOW and shall not be exceeded without prior approval.

Rate		Material	To
177,000[1]	775,260 TPY	Green Liquor Solids	Slakers
59,249[1]	259,510	Lime Product	Slakers
54,167[1]	237,251	Kiln Lime Product	Lime Bins
88,000[1]		Purchased Lime Product	Lime Bins

[1]lbs/hr (dry wt.)

2. Testing of emissions must be performed at an operating rate of at least 90% of the rate in Specific Condition (SC) No. 1, or SC No. 3 will become effective.

3. The operating rate shall not exceed 110% of the operating rate during the most recent test except for testing purposes, but shall not exceed that rate in SC No. 1. After testing at an operating rate greater than 110% of the last test operating rate, the operating rate shall not exceed 110% of the last (submitted) test operating rate until the test report at the higher rate has been reviewed and accepted by the Department.

4. The permitted maximum allowable emission rate for each pollutant is as follows:

EP ID[1]	Pollutant	FAC Rule	lbs/hr	TPY
25	PM[2]	---	2.08[3]	9.13[3]
	VE[4]	17-296.310(2)(a)	<20% opacity	
26	PM	---	0.34[5]	1.50[5]
	VE	17-297.620(4)	5% opacity	
32	TRS[6]	---	2.27[7]	0.08[7]
33	TRS	---	2.27[7]	0.07[7]
	Odor	17-296.320(2)	none objectionable off plant property	

[1]EP ID: emission point ID
[2]PM: Particulate Matter
[3]From CP# AC62-143536
[4]VE - Visible Emissions
[5]Basis: From CP #AC62-107857
[6]TRS - Total reduced sulfur
[7]From AOP received 09-16-92

SPECIFIC CONDITIONS:

5. Unconfined emissions of particulate matter during operation of the Causticizing System and Lime Handling System shall comply with the provisions of FAC Rule 17-296.310(3). Reasonable precautions that might be taken shall include, but are not limited to:

   a) Reduced speeds for vehicular traffic.

   b) Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.

   c) Use of paving or other asphaltic materials.

   d) Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.

   e) Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.

   f) Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.

   g) Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.

   h) Enclosure or covering of conveyor systems.

6. Test the emission for the following pollutant(s) at the interval(s) indicated, notify the Department 14 days prior to testing, and submit the test report documentation to the Department within 45 days after completion of the testing:

ID No.	Pollutant	Interval	Test Method[1]
25	PM[2]	---	---
25	VE[2]	12 months from 05-19-92	EPA 9
26	VE	12 months from 05-19-92	EPA 9

[1]From FAC Rule 17-297.330 , in Table 297.330-1.
[2]In lieu of a PM test, maintain lime slakers scrubber water pressure at 20 psi or higher; report pressure at start and end of VE test.

Tests and test reports shall comple with the requirements of Florida Administrative Code Rule 17-297.330 and 17-297.570, respectively.

PERMITTEE:	I.D. Number:	31JAX62000125,26,32,33
The Procter & Gamble Cellulose Co.	Permit/Certification Number:	A062-219151
Route 3, Box 260	Date of Issue:	
Perry, Florida 32347	Expiration Date:	January 28, 1998

SPECIFIC CONDITIONS:

7. In each test report, submit the maximum input/production rate at which this source was operated since the most recent test.

8. Submit an annual operation report for this source on the form supplied by the Department for each calendar year on or before March 1.

9. Any revision(s) to a permit (and application) must be submitted and approved prior to implementing.

10. The ID Name and ID No. for this source is to be used on all correspondence.

11. Forms for the renewal will be sent 5 months prior to 01-28-98 and the completed forms with test results are due 90 days prior to 01-28-98.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Ernest E. Frey, P.E.
Director of District Management

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52 , Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged. 11/16/92

Clerk Date

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
The Buckeye Cellulose Corp.
Rt. 3, Box 260
Perry, Florida 32347

Permit Number: AC 62-107857
Expiration Date: October 31, 1987
County: Taylor
Latitude/Longitude: 30° 03' 59" N/
83° 33' 12" W
Project: New Causticizing System and Lime Handling System

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a new causticizing system and lime handling system, which are further described: 3 existing smelt tanks (Nos. 2, 3 and 4), a smelt surge tank, 2 green liquor clarifiers, 2 dregs filters (1 existing), 2 lime slakers equipped with a condensing scrubber, a white liquor pressure filter, a lime mud surge tank, 2 causticizing lime storage bins with an associated baghouse system (will receive lime from the No. 4 lime kiln and purchased lime from rail or truck), and 2 existing water treatment lime storage bins with an associated baghouse system (will receive lime from the causticizing lime storage bins and purchased lime from rail or truck). The proposed project will be constructed at the applicant's existing mill located approximately 5 miles southeast of Perry, Florida, off Foley Road. The UTM coordinates are zone 17, 256.74 km East and 3328.70 km North.

The Source Classification Codes are 3-07-001-99 and 3-07-001-02.

Construction shall be in accordance with the permit application and plans, documents, and drawings except as otherwise noted on pages 5-9 of the Specific Conditions.

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.202, with attachments and Mr. John H. Millican's cover letter dated August 1, 1985.
2. Mr. John H. Millican's comments dated November 21, 1985.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD).
( ) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. Each baghouse system associated with and controlling the two causticizing lime storage bins and the two water treatment lime storage bins shall not exhibit any visible emissions (5% opacity) pursuant to FAC Rule 17-2.610(3). Compliance test method shall be DER Method 9 pursuant to FAC Rule 17-2.700.

SPECIFIC CONDITIONS:

3. All vehicular and railway deliveries of purchased lime to the causticizing and water treatment lime storage bins shall be accounted for on an annual basis and submitted as part of the annual operating report (AOR) to the DER's Northeast District office.

4. Failure to comply with specific condition No. 2 will necessitate the requirement to perform a mass emissions test for particulate matter (PM) using EPA Methods 1, 2, 3, and 5, pursuant to 40 CFR 60, Appendix A, and FAC Rule 17-2.700. PM emissions from the causticizing and water treatment lime storage bins shall not exceed 0.02 gr/dscf (causticizing: 0.34 lb/hr, 1.50 TPY; water treatment: 0.10 lb/hr, 0.45 TPY).

5. In accordance with FAC Rule 17-2.610(3), Unconfined Emissions of PM, reasonable precautions to control emissions of unconfined PM shall include, but not be limited to the following:

a) Reduced speeds for vehicular traffic.

b) Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.

c) Use of paving or other asphaltic materials.

d) Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.

e) Covering of trucks, trailers, front end loaders, and other vehicules or containers to prevent spillage of particulate matter during transport.

f) Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.

g) Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.

h) Enclosure or covering of conveyor systems.

SPECIFIC CONDITIONS:

6. Input to the causticizing lime storage bins shall not exceed 27.08 tons per hour, 650 tons per day, and 237,250 tons per year from the lime kiln; and, shall not exceed 44.0 tons per hour from the loading of purchased lime.

7. Input to the water treatment lime storage bins shall not exceed 22.0 tons per hour total from either causticizing lime storage bins or the loading of purchased lime, or both.

8. Compliance with the permitted emissions limit (no visible emissions) shall be demonstrated for the causticizing lime storage bins within 30 days after a valid compliance test has been demonstrated for the lime kiln. Initial compliance shall be demonstrated while the lime storage bins are simultaneously receiving 27.08 tons per hour lime from the lime kiln and 44.0 tons per hour of purchased lime from the resupply system (rail and/or truck). Future compliance tests shall be demonstrated while operating at 90-100% of the maximum permitted rate.

9. Compliance with the permitted emissions limit (no visible emissions) shall be demonstrated for the water treatment lime storage bins. Initial compliance shall be demonstrated while the lime storage bins are receiving 22.0 tons per hour lime from the causticizing lime storage bins. Compliance shall also be demonstrated while receiving 22.0 tons per hour of purchased lime from the resupply system (rail and/or truck) and shall only be a one-time requirement if compliance is demonstrated. Future compliance tests shall be demonstrated while receiving lime from the causticizing lime storage bins and at 90-100% of the maximum permitted rate.

10. In accordance with FAC Rule 17-2.620(2), objectionable odors shall not be allowed off plant property.

11. In accordance with FAC Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions or air pollutants without the applicable pollution control device operating properly.

12. The causticizing system is subject to the provisions of FAC Rule 17-2.250, Excess Emissions.

SPECIFIC CONDITIONS:

13. A scrubber system will be installed to control pollutant emissions from the lime slakers. PM emissions shall not exceed 2.08 lb/hr and 9.13 TPY. Visible emissions shall be limited to less than 20% opacity. Compliance tests for PM shall be demonstrated using EPA Methods 1, 2, 3, and 5, in accordance with 40 CFR 60, Appendix A, and FAC Rule 17-2.700. Both initial compliance tests shall be conducted concurrently and while the causticizing system is operating at an equivalent rate of 27.08 tons per hour not to exceed lime product feed from the causticizing lime bin(s) and green liquor. The test facilities for the lime slakers shall comply with all applicable provisions of FAC Rule 17-2.700(4)(c). Sampling ports shall be located pursuant to FAC Rule 17-2.700(4)(c)1.c.i. Future compliance tests shall be demonstrated while operating at 90-100% of the maximum permitted rate.

14. Failure of a control system(s) to meet the applicable and maximum allowable particulate matter or visible emissions limiting standard and/or limit shall not be grounds for requesting a variance or relaxation of that standard and/or limit.

15. The lime handling system (i.e., conveyors, shutes, elevators, storage bins, etc.) shall be enclosed to minimize PM emissions.

16. A pressure gauge meter shall be installed on the scrubber system for the lime slakers to measure the scrubbing liquid supply pressure and the pressure sensor or tap is to be located close to the scrubber liquid discharge point. The monitoring device is to be certified by the manufacturer to be accurate within $\pm$ 15 percent of design scrubbing liquid supply pressure.

17. The construction shall reasonably conform to the plans and schedule submitted in the application. If the applicant is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit. (FAC Rule 17-4.09)

PERMITTEE:
The Buckeye Cellulose Corp.

Permit Number: AC 62-107857
Expiration Date: October 31, 1987

SPECIFIC CONDITIONS:

To obtain a permit to operate, the applicant must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with test results and Certificate of Completion, to the Department's Northeast District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (FAC Rules 17-4.22 and 17-4.23)

If the construction permit expires prior to the applicant requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the applicant must apply for a new permit to construct which can take up to 90 days to process a complete application. (FAC Rule 17-4.10)

Issued this 27th day of Nov, 1985.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

VICTORIA J. TSCHINKEL, Secretary

____ pages attached.

ATTACHMENT D

REFERENCES

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

AP-42
Fifth Edition
January 1995

Air

EPA

COMPILATION OF AIR POLLUTANT EMISSION FACTORS

VOLUME I: STATIONARY POINT AND AREA SOURCES

FIFTH EDITION

Table 1.3-2 (English Units). CRITERIA POLLUTANT EMISSION FACTORS FOR UNCONTROLLED FUEL OIL COMBUSTION

Firing Configuration (SCC)[a]	SO_2[b]		SO_3[c]		NO_x[d]		CO[e,f]		Filterable PM[g]	
	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING
Utility boilers										
No. 6 oil fired, normal firing (1-01-004-01)	157S	A	5.7S	C	67	A	5	A	_[h]	A
No. 6 oil fired, tangential firing (1-01-004-04)	157S	A	5.7S	C	42	A	5	A	_[h]	A
No. 5 oil fired, normal firing (1-01-004-05)	157S	A	5.7S	C	67	A	5	A	_[h]	B
No. 5 oil fired, tangential firing (1-01-004-06)	157S	A	5.7S	C	42	A	5	A	_[h]	B
No. 4 oil fired, normal firing (1-01-005-04)	150S	A	5.7S	C	67	A	5	A	_[h]	B
No. 4 oil fired, tangential firing (1-01-005-05)	150S	A	5.7S	C	42	A	5	A	_[h]	B
Industrial boilers										
No. 6 oil fired (1-02-004-01/02/03)	157S	A	2S	A	55	A	5	A	_[h]	A
No. 5 oil fired (1-02-004-04)	157S	A	2S	A	55	A	5	A	_[h]	B
Distillate oil fired (1-02-005-01/02/03)	142S	A	2S	A	20	A	5	A	_[h]	A
No. 4 oil fired (1-02-005-04)	150S	A	2S	A	20	A	5	A	_[h]	B
Commercial/institutional/residential combustors										
No. 6 oil fired (1-03-004-01/02/03)	157S	A	2S	A	55	A	5	A	_[h]	A
No. 5 oil fired (1-03-004-04)	157S	A	2S	A	55	A	5	A	_[h]	B
Distillate oil fired (1-03-005-01/02/03)	142S	A	2S	A	20	A	5	A	_[h]	A
No. 4 oil fired (1-03-005-04)	150S	A	2S	A	20	A	5	A	_[h]	B
Residential furnace (No SCC)	142S	A	2S	A	18	A	5	A	3	A

T/S

ncasi technical bulletin

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC., 260 MADISON AVENUE, NEW YORK, N Y 10016

CARBON MONOXIDE EMISSIONS FROM SELECTED COMBUSTION SOURCES BASED ON SHORT-TERM MONITORING RECORDS

TECHNICAL BULLETIN NO. 416

JANUARY 1984

carbon monoxide emissions from kilns A and B are shown in Figures 24 and 25. Average 1 hr carbon monoxide emissions from kilns A and B were less than 0.03 lb/10^6 Btu heat input greater than 70 percent of the time. Occasional process upsets, such as too little excess combustion air or unstable flame conditions resulted in occasional short-term, high concentrations of carbon monoxide. Carbon monoxide emissions during these momentary aberrations increased average emissions from baseline levels. Median 1 hr average carbon monoxide emissions were at 0.008 and 0.023 lb/10^6 Btu for kilns A and B respectively. Lime kiln C was an older unit and did not have an operating oxygen monitor when sampled. This may have been in part responsible for the higher carbon monoxide emission rates measured.

TABLE 6 AVERAGE LIME KILN CARBON MONOXIDE EMISSIONS

Kiln	Hours of Data	lb CO/10^6 Btu	lb CO/ton Lime	lb CO/ADT Pulp
A	60	0.038	0.17	0.051
B	200	0.041	0.19	0.058
C	14	0.080	0.41	0.120
D	8	0.020	0.12	0.035

F. Carbon Monoxide Emissions at Optimum Energy Recovery Efficiency

Recovery furnaces and wood-residue fired boilers can be optimized for energy recovery by balancing reduced stack heat losses from low excess combustion air use against energy losses from uncombusted carbon monoxide in the flue gases. Figure 26 shows stack energy losses from three kraft recovery furnaces as a function of the stack gas oxygen concentration and CO concentrations typical of the flue gas oxygen concentration shown for the indicated furnace. Each recovery furnace is indicated to have an optimum operating range. The carbon monoxide emission concentrations in the exit gas at maximum energy recovery were between 300 to 1000 ppm, which corresponded to between 1.1 to 3.8 lb CO/10^3 lb bls. These values will vary somewhat with stack gas temperature. A higher stack gas temperature should result in a narrower range in carbon monoxide emission rates at maximum energy recovery. If recovery furnaces are optimized for energy recovery, it would be expected that carbon monoxide emission rate will be within the range mentioned above. A carbon monoxide concentration of 300 ppm or about 1 lb CO/10^3 lb bls was

TABLE 12 NO_x EMISSION FACTORS FOR LIME KILNS

KILN CODE	FUEL TYPE	YEAR OF TEST	NO_x, lb/10^6 Btu		NO_x, lb/ton CaO[1]	
			Average	Range	Average	Range
A	oil	1979	0.85	0.75 to 0.99	6.80	6.0 to 7.9
B	oil	1979	0.16	0.07 to 0.28	1.28	0.6 to 2.2
C	oil	1979	0.16	0.08 to 0.21	1.28	0.6 to 1.7
D	oil	1979	0.31	0.23 to 0.54	2.48	1.8 to 4.3
E	gas	1979	0.29	0.19 to 0.39	2.32	1.5 to 3.1
F	gas	1979	0.78	0.34 to 1.12	6.24	2.7 to 9.0
LO1	gas	1991	0.01	0.01 to 0.02	0.10	0.08 to 0.12
LO2	gas	1991	0.09	0.08 to 0.15	0.69	0.6 to 0.8
LP	gas/oil	1990	0.40	0.38 to 0.42	3.21	3.0 to 3.4
LQ	oil	1990	0.37	0.32 to 0.41	2.92	2.6 to 3.3
LR	oil	1990	0.09	0.09 to 0.10	0.76	0.7 to 0.8
LS	oil	1985	0.06	-	0.48	-
LT	gas	1991	0.11	0.07 to 0.14	0.88	0.6 to 1.1
LU	gas	1992	0.16	0.16	1.28	1.3
	Average of 14 Kilns		0.27	0.01 to 1.12	2.19	0.08 to 9.0

Notes

(a) Lime kilns A through F were tested and reported in NCASI AQI Technical Bulletin No. 107.

[1] In most instances the tons CaO production and/or heat input was unknown; hence an average conversion factor of 8.0×10^6 Btu/ton CaO was used.

TABLE 13 LIME KILN SULFUR DIOXIDE EMISSIONS

MILL CODE	TEST DATE	CONTROL DEVICE	PULP ADTPD	LIME TPD	FUEL & PERCENT S	BURN NCG Y/N	INPUT		OUTPUT			ESTIMATE OF % SULFUR CAPTURED
							NCG S[1] lb/ton CaO	tot S[2] lb/ton CaO	SO_2, ppm @ 10% O_2	lb SO_2/ ton CaO	lb/SO_2, 10^6 Btu	
LIME KILNS WITH SCRUBBERS												
LA	1986-87	VEN SCBR	1375	344	NATURAL GAS	Y	4.4 to 14.0	4.4 to 14.0	13 to 15	0.33	0.037	96.3 to 98.8
LB	1988	VEN SCBR	800	220	OIL, 2.5% S	Y	5.8 to 20.0	16.4 to 30.5	10.0	0.18[6]	0.023	98.9 to 99.7
LC	1986	VEN SCBR	1090	300	OIL, 1.0% S	N	0.0	1.17[3]	1.3	0.02	0.003	99.8
LE	1979	SCRUBBER[4]	495	136	OIL, 1.3% S	Y	18.5	28.7[5]	-	0.45	0.057	99.2
LF	1984	VEN SCBR	290	80	NATURAL GAS	NA	NA	NA	3.9[6]	0.07	0.009	-
LG	1984	VEN SCBR	240	60	NATURAL GAS	Y	NA	NA	<2.0[6]	<0.04	<0.005	-
LH1	1987	VEN SCBR	717	180	NATURAL GAS	N	0.0	small	0.4[6]	0.01	0.001	-
LH2	1987	VEN SCBR	717	180	COKE/GAS	N	0.0	18.8	4.8[6]	0.10	0.011	99.7
LJ	1977	SCRUBBER[4]	267	73	OIL, 2.8% S	NA	NA	12.0	1 to 7	0.07[6]	0.009	99.7
LK	-	SCRUBBER	400	110	NATURAL GAS	N	0.0	small	0 to 6	0.09	0.011	-
LL	1984	VEN SCBR	740	221	NATURAL GAS	N	0.0	small	26.0[6]	0.47	0.059	-
LO1	1991	VEN SCBR	422	155	NATURAL GAS	N	0.0	small	<1.0	<0.02	<0.003	-
LO2	1991	VEN SCBR	1056	260	NATURAL GAS	N	0.0	small	<1.0	<0.02	<0.002	-
LP1	1990	VEN SCBR	820	225	OIL, 1.8% S	Y	NA	7.73	37 to 61	1.63	0.204	87.3 to 92.1
LT	1991	VEN SCBR	830	311	NATURAL GAS	N	0.0	small	0.5 to 1	0.01	0.002	-
LU	1992	VEN SCBR	890	306	NATURAL GAS	Y	NA	NA	4 to 16	0.13	0.020	-
								Average of 16 Kilns		0.23	0.028	
								Range - 0.01 to 1.63 lb/ton CaO or <0.002 to 0.204 lb/10^6 Btu				
LIME KILNS WITH ESPs												
LD	1988	ESP	1700	468	OIL, 2.5% S	N	0.0	8.15[7]	1.03	0.02[6]	0.002	>99.9
LM	1989	ESP	840	230	NATURAL GAS	N	0.0	small	1.80	0.03[6]	0.004	-
LN	1990	ESP	1375	330	OIL/COKE/NG	Y	2.2	14.04[8]	10 to 100	1.00[6]	0.125	88.8 to 98.9
LP2	1991	ESP	2050	565	OIL, 1.8% S	NA	NA	7.69	72 to 237	2.98	0.373	93.0
								Average of 4 Kilns		1.00	0.126	
								range - 0.02 to 2.98 lb/ton CaO or 0.002 to 0.373 lb/10^6 Btu				

Notes
NA - not available or not known; [1] estimated from NCASI Technical Bulletin No. 469; [2] sulfur input from oil firing estimated assuming 8.0 x 10^6 Btu/ton CaO and 18,750 Btu/lb oil; [3] lb/ton CaO converted to lb/10^6 Btu using conversion factor of 8.0 x 10^6 Btu/ton CaO; [4] dust chamber followed by Peabody scrubber; [5] sulfur input from oil, lime mud and NCG were 31.8, 26.7 and 104.3 lb/hr, respectively; [6] assumed 5.5 ppm SO_2 in vent equals 0.1 lb SO_2/ton CaO; [7] sulfur input from oil firing for this kiln estimated using 6.2 x 10^6 Btu/ton CaO and 18,750 Btu/lb oil; [8] 2 lime kilns firing gas/coke with NCG and fuel oil/coke with NCG; NCGs are first scrubbed with white liquor or NaOH.

TABLE 14 LIME KILN VOC EMISSIONS

MILL CODE	NCG Burned	REFERENCE	TEST DATE	VOC as lb C/ton CaO Average	VOC as lb C/ton CaO Range	VOC as lb C/10^6 Btu[1] Average	VOC as lb C/10^6 Btu[1] Range
A	No	TB 358	1981	0.31	0.01 to 0.72	0.05	0.001 to 0.068
B	Yes	TB 358	1981	1.20	0.60 to 1.88	0.23	0.11 to 0.36
C	Yes	TB 358	1981	0.18	0.11 to 0.26	0.03	0.024 to 0.036
LP1		11	1990	0.006	0.001 to 0.010	8E-04	1.3E-04 to 1.3E-03
LO1		11	1991	0.041	0.021 to 0.041	0.005	0.003 to 0.005
LO2		11	1991	<0.008	<0.008	<0.001	<0.001
LU		11	1992	0.011	0.010 to 0.012	0.006	0.005 to 0.006
LV		10	1992	0.196	0.111 to 0.298	0.025	0.014 to 0.037
LW		10	1992	0.147	0.105 to 0.189	0.018	0.013 to 0.024
		For all nine kilns		0.236	0.001 to 1.88	0.041	1.3E-04 to 0.36

Notes

[1] a conversion factor of 8.0 x 10^6 Btu/ton Cao was assumed except in the case of kilns A, B & C

by itself has no discernible influence on the resulting VOC emissions.

TABLE 15 LIME KILN VOC EMISSIONS WITH AND WITHOUT NCGs (10)

MILL CODE	TEST DATE	NCG BURNING	VOC as lb/C ton CaO	
			Average	Range
LV	1992	Yes	0.13	0.11 to 0.14
LV	1992	No	0.20	0.11 to 0.30
LW	1992	Yes	0.14	0.12 to 0.16
LW	1992	No	0.15	0.11 to 0.19

V SMELT DISSOLVING TANKS

NO_x, SO_2 and VOC emission data for smelt dissolving tanks are presented in this section. These emissions are expressed in units of lb/ton BLS. If the factors are desired in units of lb/ADTP or lb/10^6 Btu, then appropriate conversions of lb BLS/ADTP and Btu/lb BLS should be used.

A. Nitrogen Oxides

Emissions of NO_x from smelt dissolving tanks (SDT) are not expected to be significant. This expectation is based upon the lack of combustion taking place in a smelt tank (where only an explosion from the contact of inorganic smelt with water takes place) and thus lower peak temperatures than devices in which combustion takes place. Permits for smelt dissolving tanks generally do not require testing for NO_x emissions. However, recent tests on ten SDT vents included those for NO_x emissions. These results were available in NCASI files and are shown in Table 16. The NO_x concentrations measured in mill SDTA2 and mill SDTB vents appear to be higher than expected. These could possibly have resulted from either (a) an in-leakage of combustion gases from the lower portions of the kraft recovery furnace, or (b) thermal NO_x formation from air oxidation in the smelt tank. From the data on ten SDTs an average NO_x emission factor of 0.033 lb/ton BLS is suggested (range 8E-04 to 0.15). If an assumption of 12 x 10^6 Btu per ton BLS is made, then average emissions in units of lb/10^6 Btu are 0.003 (range 7E-05 to 0.013).

TABLE 13A SUMMARY OF 'AIR TOXIC' EMISSIONS FROM LIME KILNS*

MILL CODE	PRIMARY FUEL	CONTROL DEVICE	YEAR INSTALLED	YEAR REBUILT	LIME TPD	KILN TYPE	TEST DATE	SCRUBBING FLUID	REFERENCE
LKA	GAS/COKE	SCRUBBER	1981	NONE	60	TRAYLOR	1990	CLEAN COND.	10
LKB2	GAS	SCRUBBER	1981	1991	144	FULLER	1992	FRESH WATER	8
LKC2	GAS	SCRUBBER	1967	1991	334	TRAYLOR	1992	FRESH WATER	8
LKD	GAS	ESP	1960	NA	217	NA	1992	NA	8
LKE2	GAS	SCRUBBER	1967	1985	400	TRAYLOR	1992	CLEAN COND.	14

Notes

* lime kilns using clean condensates or fresh water in their scrubbers and no NCGs

References

8. Texas Emissions Speciation Study -- Emission Test Results, Roy F. Weston, January 1993.
10. California Air Resources Board, "Pooled Air Toxics Source Test Program for Kraft Pulp Mills," Report No. 2, Ecoserve, Inc., Nov. 27, 1990.
14. Individual Mill Test Results for 'Air Toxics' -- NCASI Mill File Information.

TABLE 13A SUMMARY OF 'AIR TOXIC' EMISSIONS FROM LIME KILNS, CONTD.

	ACETALDEHYDE		ACETONE		ACETOPHENONE		ACROLEIN		ALPHA-PINENE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA	4.9E-4 to 5.4E-4	5.2E-04								
	CARB 430									
LKB2	3.8E-3 to 6.9E-3	5.3E-03	27 ppb	5.2E-04	ND[0.1 lb/hr]		ND[0.1 lb/hr]		5 ppb	2.3E-04
	RTI DRAFT		VOST		RTI DRAFT		RTI DRAFT		VOST	
LKC2			ND [0.1 lb/hr]						ND[0.3 lb/hr]	
			M18						M18	
LKD	ND[0.1 lb/hr]		ND [0.1 lb/hr]		ND[0.1 lb/hr]		ND[0.1 lb/hr]		ND[0.2 lb/hr]	
	RTI DRAFT		M18		RTI DRAFT		RTI DRAFT		M18	
LKE2									0.1 to 0.2 lb/hr	9.6E-03
									M18	
AVG		2.9E-03		5.2E-04		ND[5.6E-3]		ND[5.6E-3]		4.9E-03
MAX		5.3E-03		5.2E-04						9.6E-03
MIN		ND		ND						ND
SOURCES		3		3		2		2		4

	A-TERPINEOL		BENZALDEHYDE		BENZENE		BETA-PINENE		BROMODICHLOROMETHANE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA					ND[85 ug/dscm]	7.6E-04				
					CARB 410A					
LKB2			ND[0.1 lb/hr]		28 ppb	7.3E-04	2 ppb	9.0E-05	1 ppb	5.4E-05
			RTI DRAFT		VOST		VOST		VOST	
LKC2					ND[0.2 lb/hr]		ND[0.3 lb/hr]		ND[0.8 lb/hr]	
					M18		M18		M18	
LKD			ND[0.1 lb/hr]		ND[0.1 lb/hr]		ND[0.2 lb/hr]		ND[0.6 lb/hr]	
			RTI DRAFT		M18		M18		M18	
LKE2	ND [0.1 lb/hr]				ND to 0.11 lb/hr	2.5E-03	ND [0.1 lb/hr]			
	M18				M18		M18			
AVG		ND[6.0E-3]		ND[1.1E-3]		1.3E-03		9.0E-05		5.4E-05
MAX						2.5E-03		9.0E-05		5.4E-05
MIN						ND		ND		ND
SOURCES		1		2		5		4		3

TABLE 13A SUMMARY OF 'AIR TOXIC' EMISSIONS FROM LIME KILNS, CONTD.

	BROMOMETHANE		CARBON DISULFIDE		CARBON TETRACHLORIDE		3-CARENE		CHLOROFORM	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA					ND[167 ug/dscm] CARB 422				ND[130 ug/dscm] CARB 422	
LKB2	9 ppb VOST	2.8E-04	207 ppb VOST	5.2E-03			ND[0.2 lb/hr] M18		6 ppb VOST	2.4E-04
LKC2			ND[0.1 lb/hr] M16	3.6E-03			ND[0.3 lb/hr] M18		ND[0.6 lb/hr] M18	
LKD			ND[0.1 lb/hr] M16	5.6E-03			ND[0.2 lb/hr] M18		ND[0.4 lb/hr] M18	
AVG		2.8E-04		4.8E-03		ND[3.0E-3]		ND[2.2E-2]		2.4E-04
MAX		2.8E-04		5.6E-03						2.4E-04
MIN		2.8E-04		ND						ND
SOURCES		1		3		1		3		4

	CHLOROMETHANE		CUMENE		p-CYMENE		DIMETHYL DISULFIDE		DIMETHYL SULFIDE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA										
LKB2	187 ppb VOST	3.1E-03	ND[0.1 lb/hr] M18		2 ppb VOST	9.6E-05	0.1 lb/hr M16	1.7E-02	2 ppb VOST	4.1E-05
LKC2			ND[0.3 lb/hr] M18		ND[0.3 lb/hr] M18		ND[0.1 lb/hr] M16	3.6E-03	ND[0.1 lb/hr] M16	3.6E-03
LKD			ND[0.2 lb/hr] M18		ND[0.2 lb/hr] M18		ND[0.1 lb/hr] M16	5.6E-03	ND[0.1 lb/hr] M16	5.6E-03
LKE							ND[0.1 lb/hr] M16	3.0E-03	0.2 to 0.6 lb/hr M16	2.4E-02
AVG		3.1E-03		ND[1.6E-2]		9.6E-05		7.2E-03		8.3E-03
MAX		3.1E-03				9.6E-05		1.7E-02		2.4E-02
MIN		3.1E-03				ND		ND		ND
SOURCES		1		3		3		4		4

TABLE 13A SUMMARY OF 'AIR TOXIC' EMISSIONS FROM LIME KILNS, CONTD.

	ETHANOL		ETHYL BENZENE		FORMALDEHYDE		n-HEXANE		METHANOL	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA					1.3E-3 to 0.002	1.8E-03			ND[6.4 ug/dscm]	4.7E-05
					CARB 430				MOD NIOSH S59	
LKB2	ND[0.1 lb/hr]		0 ppb	0.0E+00	ND[0.1 lb/hr]		31 ppb	9.1E-04	ND[0.2 lb/hr]	1.7E-02
	M18		VOST		RTI DRAFT		VOST		M18	
LKC2	ND[0.1 lb/hr]		ND[0.3 lb/hr]						1.2 to 1.7 lb/hr	1.1E-01
	M18		M18						M18	
LKD	ND[0.1 lb/hr]		ND[0.2 lb/hr]		ND to 0.7 ppm	6.2E-03			ND[0.2 lb/hr]	1.1E-02
	M18		M18		RTI DRAFT				M18	
LKE2	ND [0.1 lb/hr]		ND [0.1 lb/hr]						0.5 to 4.2 lb/hr	8.6E-02
	M18		M18						M18	
AVG		ND[3.0E-3]		0.0E+00		4.0E-03		9.1E-04		4.5E-02
MAX				0.0E+00		6.2E-03		9.1E-04		1.1E-01
MIN				ND		ND		9.1E-04		ND
SOURCES		4		4		3		1		5

	METHYL ETHYL KETONE		METHYL ISOBUTYL KETONE		METHYL MERCAPTAN		METHYLENE CHLORIDE		NAPTHALENE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA										
							ND[92.4 ug/dscm]		4.3E-3 to 4.8E-3	4.6E-03
LKB2	5 ppb	1.2E-04	ND [0.1 lb/hr]		ND[0.1 lb/hr]	8.3E-03	CARB 422		CARB 429	
	VOST		RTI DRAFT		M16		6 ppb	1.7E-04		
LKC2	ND [0.2 lb/hr]				ND to 0.1 lb/hr	7.2E-03	VOST			
	M18				M16					
LKD	ND [0.2 lb/hr]		ND [0.1 lb/hr]		ND to 0.2 lb/hr	1.1E-02				
	M18		RTI DRAFT		M16					
LKE2	ND [0.1 lb/hr]		ND [0.1 lb/hr]		ND to 0.2 lb/hr	6.0E-03			0.1 to 1.8 lb/hr	3.6E-02
	M18		RTI DRAFT		M16				M18	
AVG		1.2E-04		ND[6.0E-3]		8.1E-03		1.7E-04		2.0E-02
MAX		1.2E-04				1.1E-02		1.7E-04		3.6E-02
MIN		ND				ND		ND		4.6E-03
SOURCES		4		3		4		2		2

TABLE 13A SUMMARY OF 'AIR TOXIC' EMISSIONS FROM LIME KILNS, CONTD.

	PAH		2-PROPANOL		STYRENE		TOLUENE		TRICHLOROETHYLENE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA	4.6E-3 to 4.8E-3	4.8E-03							ND[143 ug/dscm]	
	CARB 429								CARB 422	
LKB2			ND[0.1 lb/hr]		ND[0.001 lb/hr]		3 ppb	9.2E-05	0 ppb	0.0E+00
			M18		VOST		VOST		VOST	
LKC2			ND[0.1 lb/hr]				ND[0.2 lb/hr]			
			M18				M18			
LKD			ND[0.1 lb/hr]				ND[0.2 lb/hr]			
			M18				M18			
LKE							ND [0.1 lb/hr]			
							M18			
AVG		4.8E-03		ND[8.6E-3]		ND[1.6E-4]		9.2E-05		0.0E+00
MAX		4.8E-03						9.2E-05		0.0E+00
MIN		4.8E-03						ND		ND
SOURCES		1		3		1		4		2

	TRICHLOROFLUOROMETHANE		m-,p-XYLENE		o-XYLENE	
MILL	RANGE	AVG	RANGE	AVG	RANGE	AVG
CODE	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO	lb/ton CaO
LKA						
LKB2	1 ppb	8.3E-05	ND[0.1 lb/hr]		ND[0.001 lb/hr]	8.3E-05
	VOST		VOST		VOST	
LKC2			ND[0.3 lb/hr]		ND[0.3 lb/hr]	1.1E-02
			M18		M18	
LKD			ND[0.2 lb/hr]		ND to 1.2 lb/hr	3.3E-02
			M18		M18	
LKE			ND [0.1 lb/hr]		ND [0.1 lb/hr]	3.0E-03
			M18		M18	
AVG		8.3E-05		ND[1.6E-4]		1.2E-02
MAX		8.3E-05				3.3E-02
MIN		8.3E-05				ND
SOURCES		1		4		4

TABLE 13C SUMMARY OF 'AIR TOXIC' METAL EMISSIONS FROM LIME KILNS

MILL CODE	TEST DATE	YEAR INSTALL	YEAR REBUILD	KILN DESCRIPTION	AUXILIARY FUEL & NCG	CONTROL DEVICE	REFERENCE
LA	1991	–	–	–	GAS W/NCG	SCRUBBER	14
LB	1991	1960	1985	250 TPD LIME, A.C.	OIL W/O NCG	SCRUBBER	14
LC	1990	1981	NONE	60 TPD LIME, TRAYLOR	COKE & NAT GAS	SCRUBBER	10
LD	1992	1981	1991	125 TPD LIME, FULLER	GAS W/NCG	SCRUBBER	8
LE	1992	1966	NONE	147 TPD LIME, TRAYLOR	GAS W/NCG	SCRUBBER	14

References

8. Texas Emissions Speciation Study – Emission Test Results, Roy F. Weston, January 1993.
10. California Air Resources Board, "Pooled Air Toxics Source Test Program for Kraft Pulp Mills," Report No. 2, Ecoserve, Inc., Nov. 27, 1990.
14. Individual Mill Test Results for 'Air Toxics' – NCASI Mill File Information.

Take Avg all months

TABLE 13C SUMMARY OF 'AIR TOXIC' METAL EMISSIONS FROM LIME KILNS

	As		Be		Ba		Cd		Cr		Cr+6	
MILL	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12
CODE	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu
LA					7.6E+01	9.5E+00			2.0E+01	2.5E+00		
LB	5.0E+02	6.3E+01	1.0E+01	1.3E+00			6.5E+01	8.1E+00	6.3E+02	7.9E+01		
LC	1.6E+00	2.0E−01	3.4E+01	4.3E+00			9.7E+00	1.2E+00	2.4E+03	3.0E+02	7.6E+01	9.5E+00
LD	3.9E+01	4.9E+00	2.3E+01	ND[5.8]	ND[4E+4]	ND[5E+3]	ND[46]	ND[5.8]	ND[94]	ND[11.8]		
LE	ND[24]	ND[3.0]	ND[0.78]	ND[0.098]			2.2E+01	2.7E+00	6.3E+01	7.9E+00	ND[200]	ND[26]
AVG	1.4E+02	1.7E+01	1.7E+01	2.1E+00	7.6E+01	9.5E+00	3.0E+01	3.7E+00	6.3E+02	7.9E+01	7.6E+01	9.5E+00
MAX	5.0E+02	6.3E+01	3.4E+01	4.3E+00	7.6E+01	9.5E+00	6.5E+01	8.1E+00	2.4E+03	3.0E+02	7.6E+01	9.5E+00
MIN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NO.	4	4	4	4	2	2	4	4	5	5	2	2

	Cu		Ag		Mn		Ni		Pb		Zn	
MILL	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12
CODE	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu
LA	9.0E+00	1.1E+00	1.2E+00	1.5E−01	7.4E+01	9.3E+00	1.6E+01	1.9E+00			1.1E+02	1.4E+01
LB					3.5E+02	4.4E+01	5.1E+02	6.4E+01	5.3E+02	6.6E+01		
LC	1.7E+02	2.1E+01			2.3E+02	2.9E+01	6.5E+02	8.1E+01	6.3E+02	7.9E+01	5.0E+02	6.2E+01
LD	7.3E+01	9.1E+00	ND[46]	ND[5.8]	3.8E+02	4.8E+01	6.9E+01	8.7E+00	1.4E+04	1.7E+03		
LE	1.4E+02	1.7E+01			1.3E+03	1.6E+02	1.2E+02	1.5E+01	3.3E+02	4.1E+01	7.5E+02	9.3E+01
AVG	9.8E+01	1.2E+01	1.2E+00	1.5E−01	4.6E+02	5.8E+01	2.7E+02	3.4E+01	3.8E+03	4.8E+02	4.5E+02	5.6E+01
MAX	1.7E+02	2.1E+01	1.2E+00	1.5E−01	1.3E+03	1.6E+02	6.5E+02	8.1E+01	1.4E+04	1.7E+03	7.5E+02	9.3E+01
MIN	9.0E+00	1.1E+00	ND	ND	7.4E+01	9.3E+00	1.6E+01	1.9E+00	3.3E+02	4.1E+01	1.1E+02	1.4E+01
NO.	4	4	2	2	5	5	5	5	4	4	3	3

TEST METHODS – LA & LB – NA; LD – EPA DRAFT MM; LC & LE – CARB 436 (CARB 425 for Cr+6 & CARB 101A for Hg)

w/o #6

TABLE 13C SUMMARY OF 'AIR TOXIC' METAL EMISSIONS FROM LIME KILNS

	Hg		Se		Sb		P		Tl			
MILL	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12	lb/1E+6	lb/1E+12		
CODE	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu	ton CaO	Btu		
LA	1.4E+00	1.8E−01										
LB	5.0E−01	6.3E−02	5.0E+02	6.3E+01	3.2E+02	4.0E+01						
LC	2.9E+01	3.6E+00	1.2E+00	1.5E−01								
LD	ND[46]	ND[5.8]	ND[46]	ND[5.8]	ND[46]	ND[5.8]	ND[940]	ND[108]	ND[46]	ND[5.8]		
LE	5.8E+00	7.2E−01	ND[160]	ND[32]								
AVG	9.1E+00	1.1E+00	1.6E+02	2.0E+01	1.7E+02	2.1E+01	ND[940]	ND[108]	ND[46]	ND[5.8]		
MAX	2.9E+01	3.6E+00	5.0E+02	6.3E+01	3.2E+02	4.0E+01						
MIN	ND	ND	ND	ND	ND	ND						
NO.	5	5	4	4	2	2	1	1	1	1		

COMPILATION OF NCASI GENERATED

MACT I AND II EMISSION DATA

CAUSTICIZING AREA SOURCES

SOURCE CODE	SOURCE DESCRIPTION	EMISSION RATE UNITS	PRODUCTION UNITS	FUEL	CONTROL DEVICE	NCGs ADDED	COMMENTS
			LIME KILNS				
FV31	MILL F NO. 3 GAS FIRED LIME KILN ESP STACK (FV31)	lb/TCaO	TCaO/D	GAS	ESP	NO	1) Although lime kilns with ESPs had lower average emissions than those with wet scrubbers, this may be due to one or more of the following factors. a) organic compounds contained in the scrubber fluid may be stripped off into the gas stream b) kilns equipped with ESPs are generally newer and have more efficient combustion 2) The type of fuel burned did not affect HAP of VOC emissions. 3) No consistent effect was seen from incineration of NCGs but the emissions from kilns with less efficient combustion may be increased.
FV32	MILL F NO. 2 GAS FIRED LIME KILN SCRUBBER STACK (FV32)	lb/TCaO	TCaO/D	GAS	SCRUBBER	YES	
J1LK	MILL J NO. 1 GAS FIRED LIME KILN SCRUBBER STACK (J1LK)	lb/TCaO	TCaO/D	GAS	SCRUBBER	YES	
KLK	MILL K GAS FIRED LIME KILN SCRUBBER STACK (KLK)	lb/TCaO	TCaO/D	GAS	SCRUBBER	YES	
LV18	MILL L NO. 3 GAS FIRED LIME KILN SCRUBBER STACK (LV18)	lb/TCaO	TCaO/D	GAS	SCRUBBER	YES	
MC1	MILL M OIL FIRED LIME KILN ESP OUTLET (INLET TO SCRUBBER) (MC1)	lb/TCaO	TCaO/D	OIL	ESP	YES	
MC2	MILL M OIL FIRED LIME KILN SCRUBBER STACK (MC2)	lb/TCaO	TCaO/D	OIL	SCRUBBER	YES	
NLK	MILL N GAS FIRED LIME KILN ESP STACK (NLK)	lb/TCaO	TCaO/D	GAS	ESP	NO	
SUMLK	**AVERAGE FOR ALL LIME KILNS (FV31, FV32, J1LK, KLK, LV18, MC1, NLK)**	lb/TCaO	TCaO/D				
SUMLKESP	**AVERAGE OF LIME KILNS WITH ESPs (FV31, MC1, NLK)**	lb/TCaO	TCaO/D		ESP		
SUMLKWS	**AVERAGE LIME KILN SCRUBBER EMISSIONS (FV32, J1LK, KLK, LV18, MC2)**	lb/TCaO	TCaO/D		SCRUBBER		

CAUSTICIZING AREA SOURCES

	FV31	FV32	J1LK	KLK	LV18	MC1	MC2	NLK	SUMLK	SUMLKESP	SUMLKWS
ANALYTE	MILL F NO. 3 LIME KILN ESP STACK (FV31)	MILL F NO. 2 LIME KILN SCRUBBER STACK (FV32)	MILL J NO. 1 LIME KILN SCRUBBER STACK (J1LK)	MILL K LIME KILN SCRUBBER STACK (KLK)	MILL L NO. 3 LIME KILN SCRUBBER STACK (LV18)	MILL M LIME KILN ESP OUTLET (INLET TO SCRUBBER) (MC1)	MILL M LIME KILN SCRUBBER STACK (MC2)	MILL N LIME KILN ESP STACK (NLK)	AVERAGE FOR ALL LIME KILNS (FV31, FV32, JILK, KLK, LV18, MC1, NLK)	AVERAGE OF LIME KILNS WITH ESPs (FV31, MC1, NLK)	AVERAGE LIME KILN SCRUBBER EMISSIONS (FV32, J1LK, KLK, LV18, MC2)
HEATED CANISTER	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO	lb/TCaO
acetaldehyde (H)	< 9.6E-4	< 1.2E-3	4.7E-2	1.2E-2	8.0E-3	5.6E-4	5.4E-3	1.2E-2	1.3E-2	6.4E-3	1.4E-2
methanol (H)	1.2E-2	1.4E-1	3.0E-1	2.1E-2	< 8.7E-4	2.0E-2	8.5E-3	5.1E-3	7.1E-2	1.2E-2	9.3E-2
methyl mercaptan		< 1.7E-2	< 1.4E-2	< 2.5E-2	< 5.4E-3	< 4.9E-3	< 4.5E-3	< 8.9E-3	< 1.3E-2	< 6.9E-3	< 1.3E-2
acetone	4.3E-3	2.1E-2	1.1E-2	6.6E-3	2.2E-3	4.8E-3	2.7E-3	4.9E-3	7.8E-3	4.7E-3	8.6E-3
dimethyl sulfide		< 2.2E-2	< 1.8E-2	< 3.2E-2	< 7.0E-3	< 6.4E-3	< 5.8E-3	< 1.2E-2	< 1.8E-2	< 8.9E-3	< 1.7E-2
methylene chloride (H)	< 3.4E-3	< 4.4E-3	< 3.7E-3	< 6.4E-3	< 1.4E-3	< 1.3E-3	< 1.2E-3	< 2.3E-3	< 3.2E-3	< 2.3E-3	< 3.4E-3
1,2-dichloroethylene	U 3.8E-4	< 2.0E-3	< 1.7E-3	< 3.0E-3	< 6.8E-4	U 1.8E-3	< 5.5E-4	< 1.1E-3	U 9.2E-4	U 8.5E-4	< 1.6E-3
methyl ethyl ketone (H)	< 1.6E-3	3.8E-3	3.8E-3	< 3.0E-3	< 6.5E-4	< 5.9E-4	7.1E-4	8.2E-4	1.8E-3	6.3E-4	2.0E-3
n-hexane (H)				< 8.8E-4	< 1.9E-4	< 1.8E-4	< 1.6E-4	3.5E-4	2.4E-4	2.2E-4	< 4.1E-4
chloroform (H)	< 5.6E-3	< 7.3E-3	< 6.1E-3	< 1.1E-2	< 2.3E-3	< 2.1E-3	< 1.9E-3	< 3.8E-3	< 6.4E-3	< 3.8E-3	< 5.6E-3
1,2-dichloroethane (H)	< 2.1E-3	< 2.8E-3	< 2.3E-3	< 4.1E-3	< 8.9E-4	< 8.1E-4	< 7.4E-4	< 1.5E-3	< 2.1E-3	< 1.6E-3	< 2.2E-3
1,1,1-trichloroethane (H)	< 2.2E-3	< 2.8E-3	< 2.4E-3	< 4.1E-3	< 9.0E-4	< 8.2E-4	< 7.5E-4	< 1.5E-3	< 2.1E-3	< 1.6E-3	< 2.2E-3
benzene (H)	2.2E-3	9.2E-4	3.2E-3	< 8.0E-4	< 1.8E-4	< 1.6E-4	< 1.5E-4	9.2E-4	1.1E-3	1.1E-3	9.4E-4
carbon tetrachloride (H)	< 1.0E-2	< 1.3E-2	< 1.1E-2	< 1.9E-2	< 4.2E-3	< 3.8E-3	< 3.5E-3	< 6.8E-3	< 9.7E-3	< 6.9E-3	< 1.0E-2
trichloroethylene (H)	< 2.1E-3	< 2.8E-3	< 2.3E-3	< 4.0E-3	< 8.9E-4	< 8.1E-4	< 7.4E-4	< 1.5E-3	< 2.1E-3	< 1.6E-3	< 2.2E-3
methyl isobutyl ketone (H)	< 4.3E-4	1.3E-3	1.0E-3	< 8.1E-4	< 1.8E-4	< 1.6E-4	< 1.5E-4	2.6E-4	4.9E-4	1.8E-4	5.9E-4
dimethyl disulfide		< 3.3E-2	< 2.8E-2	< 4.8E-2	< 1.1E-2	< 9.7E-3	< 8.8E-3	< 1.7E-2	< 2.4E-2	< 1.4E-2	< 2.6E-2
1,1,2-trichloroethane (H)	< 2.2E-3	< 2.8E-3	< 2.4E-3	< 4.1E-3	< 9.0E-4	< 8.2E-4	< 7.5E-4	< 1.5E-3	< 2.1E-3	< 1.6E-3	< 2.2E-3
toluene (H)	< 5.0E-4	7.1E-4	1.1E-2	< 9.5E-4	< 2.1E-4	< 1.9E-4	1.6E-4	< 3.4E-4	1.8E-3	< 3.4E-4	2.4E-3
tetrachloroethylene (H)	< 2.7E-3	U 5.3E-3	< 2.9E-3	< 5.1E-3	< 1.1E-3	< 1.0E-3	< 9.3E-4	< 1.8E-3	U 1.8E-3	< 1.9E-3	U 2.1E-3
chlorobenzene (H)	< 6.1E-4	< 7.9E-4	< 6.6E-4	< 1.2E-3	< 2.5E-4	< 2.3E-4	< 2.1E-4	U 4.6E-4	U 3.3E-4	U 2.9E-4	< 6.1E-4
m,p-xylene (H)	< 5.8E-4	8.2E-4	5.7E-3	< 1.1E-3	3.3E-4	< 2.2E-4	< 2.0E-4	3.4E-4	1.2E-3	2.6E-4	1.6E-3
o-xylene (H)	< 5.8E-4	1.8E-3	2.1E-3	< 1.1E-3	< 2.4E-4	< 2.2E-4	< 2.0E-4	< 3.9E-4	7.3E-4	< 4.0E-4	9.3E-4
xylenes (H)											
styrene (H)	< 5.7E-4	< 7.3E-4	1.6E-3	< 1.1E-3	< 2.4E-4	2.5E-4	< 2.0E-4	3.4E-4	6.0E-4	2.9E-4	6.5E-4
alpha-pinene											
beta-pinene											
terpenes	2.7E-2	1.0E-1	1.9E-2	3.1E-2	6.7E-3	5.0E-3	9.4E-3	8.0E-2	3.9E-2	3.7E-2	3.3E-2
1,2,4-trichlorobenzene (H)	< 9.9E-4	U 4.7E-2	< 1.1E-3	< 1.9E-3	< 4.1E-4	< 3.7E-4	U 7.6E-4	< 6.7E-4	U 7.1E-3	< 6.8E-4	U 9.9E-3
acrolein (H)	< 9.1E-4	< 1.2E-3	2.1E-3	< 1.7E-3	< 3.8E-4	3.5E-4	2.8E-4	U 5.5E-4	U 7.3E-4	U 4.8E-4	8.1E-4
IMPINGER											
methanol (H)											
acetone											
methyl ethyl ketone (H)											
acetaldehyde (H)											
acrolein (H)											
formaldehyde (H)	8.3E-3	9.3E-3	< 5.3E-3	9.2E-3	1.5E-3	< 1.2E-2	< 1.1E-2	< 6.5E-3	6.7E-3	5.9E-3	6.6E-3
Total HAPs	4.1E-2	2.3E-1	3.9E-1	7.8E-2	1.8E-2	3.4E-2	2.7E-2	3.6E-2	1.3E-1	3.7E-2	1.6E-1
THC (Method 25A)		9.0E-2	9.2E-2			1.2E-2	8.3E-3	2.3E-2	5.4E-2	1.7E-2	6.4E-2
Flow (DSCFM)	21167	36884	27200	23367	16060	30600	26749	29233	26359	27000	26052
PROD RATE, TCaO/D	280	330	324	170	277	553	553	301	319	378	331
PRODUCTION UNITS	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D	TCaO/D