Department of

Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

September 8, 2004

Mr. Gregg M. Worley, Chief
Air Permits Section
U.S. EPA, Region 4
61 Forsyth Street
Atlanta, Georgia 30303-8960

RE: Georgia-Pacific Corporation, Palatka Mill
Lime Kiln Shell Replacement
1070005-030-AC, PSD-FL-345

Dear Mr. Worley:

Enclosed for your review and comment is a PSD application submitted by Georgia-Pacific Corporation for the replacement/repair of the lime kiln shell at their existing mill in Palatka, Putnam County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Bruce Mitchell, review engineer, at 850/413-9198.

Sincerely,

Patty Adams

for James K. Pennington, P.E.
Administrator
North Permitting Section

JKP/pa

Enclosure

cc: B. Mitchell

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

September 3, 2004

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
12795 W. Alameda Parkway
Lakewood, Colorado 80228

RE: Georgia-Pacific Corporation, Palatka Mill
Lime Kiln Shell Replacement
1070005-030-AC, PSD-FL-345

Dear Mr. Bunyak:

Enclosed for your review and comment is a PSD application submitted by Georgia-Pacific Corporation for the replacement/repair of the lime kiln shell at their existing mill in Palatka, Putnam County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Bruce Mitchell, review engineer, at 850/413-9198.

Sincerely,

Patty Adams
for James K. Pennington, P.E.
Administrator
North Permitting Section

JKP/pa

Enclosure

cc: B. Mitchell

Georgia-Pacific

Palatka Pulp and Paper Operations
Consumer Products Division
P.O. Box 919
Palatka, FL 32178-0919
(386) 325-2001

September 1, 2004

Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road, MS# 3500
Tallahassee, FL 32399

Attention: PSD Permit Application

RE: PSD APPLICATION FOR REPLACEMENT / REPAIR OF LIME KILN SHELL

To whom it may concern:

Please find enclosed four (4) copies of the PSD Application for the replacement / repair of the Lime Kiln shell and also a check in the amount of $7,500.

Please contact me at 386-329-0918 if you have any questions.

Sincerely,

Myra J. Carpenter
Environmental Superintendent

cc: T. Wyles
E. Jamro
W. Jernigan
S. Matchett - GP

Georgia-Pacific

Palatka Pulp and Paper Operations
Consumer Products Division

P.O. Box 919
Palatka, FL 32178-0919
(386) 325-2001

April 14, 2005

Ms. Trina Vielhauer
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
Division of Air Resource Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Georgia-Pacific Palatka Mill
Request to Replace the Lime Kiln Shell and Associated Tube Coolers
Project No.: 1070005-030-AC/PSD-FL-345

Dear Ms. Vielhauer:

Per our response to the Agency's Request for Information (RAI) (letter from Georgia-Pacific to Ms. Vielhauer, dated December 7, 2004), this letter provides the updated information for the application referenced in our answer to Question 8. This letter also addresses the Agency's request, per Question 3 of the second RAI (letter (draft) from Georgia-Pacific to Ms Vielhauer, dated April 5, 2005), that contemporaneous changes be considered as part of the air quality analysis. Each of these updates is discussed briefly in the following sections:

Flow Rate Update

As summarized in our answer to Question 8 of the first RAI (December 7, 2004), recent testing has indicated a flow rate for the Lime Kiln as high as 54,200 dry standard cubic feet per minute (dscfm) at 10% (March 2004 testing). As you are aware, the emission calculations associated with the application at hand utilize a flow rate of 44,500 dscfm (also at 10% oxygen). While the flow rate from the March 2004 test is higher than what has been measured in the past, the student t-test indicates that there is not a statistically significant difference between the 1992-1998 flow rates compared to the 1999-2004 flow rates.

The increased flow rate impacts the future potential emission calculations for total reduced sulfur (TRS), particulate matter (PM), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOCs). The revised emission calculations are provided in Attachment 1 to this letter. Table 1 compares the future potential values reported in the original application (August 2004) to the revised values reflecting the higher flow rate (Attachment 1).

Table 1. Comparison of Revised Rates to August 2004 Rates

Pollutant	Future Potential August 2004 (tpy)	Future Potential Revised (tpy)
TRS	20.7	25.2
PM/PM_{10}	135.3	164.8
NO_x	383.7	467.2
CO	58.6	71.4
VOCs	89.8	109.5

The original PSD permit application addressed PM, PM_{10}, NO_x, ozone (based on a significant increase in VOCs) and TRS (including hydrogen sulfide (H_2S). There are no changes in the pollutants that trigger Prevention of Significant Deterioration (PSD) review as a result of this update.

Inclusion of Contemporaneous Emission Changes

In the August 2004 application, a netting analysis was not performed, as the inclusion of the creditable increases and decreases had no bearing on the pollutants that would be required to undergo PSD review. However, as requested in the Department's second RAI (letter from Ms. Vielhauer, dated January 7, 2005), the contemporaneous changes are now included, both in the applicability analysis and in the air quality analysis.

One other, albeit minor, update has been made for the estimate of past actual emissions for lead (Pb). The original, past actual calcium oxide (CaO) throughputs that were used in the calculations were 107,017 and 111,329 tons CaO per year for 2002 and 2003, respectively. In responding to the Department's second RAI, using a slightly different technique, the Mill updated these throughputs to 111,564 and 112,423 tons CaO for 2002 and 2003, respectively. This change increases the estimate of past actual emissions of Pb from 0.011 to 0.012 ton per year. This actually reduced the "project" increase for Pb from 0.007 to 0.006 ton per year. Lead was the only pollutant where the CaO throughput was utilized in calculating past actual emissions. As such, the past actual emissions for the other pollutants are not impacted by this minor update. With this update, the increased emissions are compared to the PSD significant increase thresholds in Table 2.

Table 2. Past Actual and Proposed Allowable Emissions Compared to PSD Significance Levels

	Emissions (tons per year)							
	NO_x	**CO**	**PM/PM_{10}**	**SO_2***	**VOCs**	**Pb**	**TRS**	**SAM***
Potential Emissions	467.2	71.4	164.8	40.0	109.5	0.018	25.2	2.0
Past Actual Emissions	100.6	5.6	42.5/36.6	10.5	2.4	0.012	2.3	0.51
Emissions Increase	366.6	65.8	122.3/128.2	29.5	107.1	0.006	22.9	1.5
PSD Significance Level	40	100	25/15	40	40	0.6	10	7
Netting Triggered?	Yes	No	Yes	No	Yes	No	Yes	No

* Emissions are not updated for this pollutant as part of this submittal.

Based on these increases, and following the direction of the Department in Question 3 of the second RAI, netting is now required for PM, PM_{10}, NO_x, VOCs and TRS (including H_2S). These are the same pollutants that were shown to trigger PSD review in the August 2004 application. The netting analysis is provided in Table 3.

Table 3. Netting Analysis (all emissions expressed in tons per year)

Project	NO_x	PM	PM_{10}	VOC	TRS
Increases from Lime Kiln Project (Table 2)	366.6	122.3	128.2	107.1	22.9
Creditable, Contemporaneous Projects[a]					
New Bleach Plant	---	---	---	-64.0	+7.8
Chlorine Dioxide Plant	---	---	---	+0.08	---
MACT I Compliance Project	+139.7[b]	+10.1	+10.1	+2.4	-3.1
No. 7 Package Boiler (w/shutdown of No. 6 Boiler)	+30.2	+1.4	+1.4	+0.58	---
Bark Hog Replacement	---	+8.2[c]	+3.3[c]	+300.4[b,c]	---
Total Contemporaneous Changes	+30.2	+19.7	+14.8	0.0	+4.7
Net Emissions Increase (after netting)	396.8	142.0	143.0	107.1	27.6
PSD Review Required (yes or no)?	Yes	Yes	Yes	Yes	Yes

[a] Permits for the various projects are as follows:
New Bleach Plant – Permit Nos. 1070005-006, 010, and 019-AC, start-up February 2001
Chlorine Dioxide Plant – Permit No. 1070005-005-AC, start-up February 2001
MACT I Compliance Project – Permit Nos. 1070005-007 and 017-AC, start-up 2002
New Package Boiler (EU-044) – Permit No. 1070005-018-AC, start-up October 2002
Bark Hog Replacement – Permit No. 1070005-028-AC and PSD-FL-341, start-up March 2005

[b] Project triggered PSD/PCP. As such, this and prior contemporaneous increases and decreases, cannot be considered in the emissions netting for this project.

[c] As estimated by FDEP (see Technical Evaluation and Preliminary Determination for Bark Hog Replacement Project)

Based on the results of the netting analysis, PSD review is still required for PM, PM_{10}, NO_x, VOCs and TRS (including H_2S). These are the same pollutants that were shown to trigger PSD review in the August 2004 application.

The implications of these changes are discussed in the following sections for each aspect of the PSD permit application.

Permit Application Forms

Updated forms are provided in Attachment 2 to this letter. The only forms that are included are those that are updated as part of this submittal.

Regulatory Applicability

As discussed above, while the increases, after the netting, are greater for NO_x, PM, PM_{10}, VOCs and TRS, no additional pollutants trigger PSD review as a result of this update.

With regard to New Source Performance Standards (NSPS) applicability, the facts and conclusions presented in Section 5.2 of the August 2004 application do not change with this update. The Lime Kiln will not become subject to NSPS Subpart BB as a result of the proposed maintenance work. As discussed in Section 5.3 of the August 2004 application, the Lime Kiln is subject to the National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources as an existing source. The specific updates that are addressed in this letter do not impact the applicability of that regulation in any way. Furthermore, no additional Florida Department of Environmental Protection (FDEP) regulations apply as a result of this update.

Air Quality Analysis

The air quality analysis has been updated based on the revised flow rate and resulting emission rates. The analysis has also been revised to include the contemporaneous changes listed in Table 3. The updated air quality analysis is provided in Attachment 3 to this letter.

This project at the Palatka Mill, including the contemporaneous emission changes, does not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS) or PSD Class II increments.

As discussed in great detail in Attachment 3, exceedances of the NAAQS, however, do occur as a result of PM emissions from a competing source. However, the Lime Kiln project at the Palatka Mill (including contemporaneous changes) is not significant at those receptors. For NO_x, there are no exceedances of either the NAAQS or PSD Class II increment.

Best Available Control Technology (BACT) Analysis

The only pollutants that would potentially be impacted in the BACT analysis would be those that had a cost effectiveness calculation presented in the August 2004 application. In the BACT analysis that was presented as Attachment D of that application, this only included PM. For PM, a cost effectiveness calculation was performed in assessing the impact of using a scrubber/electrostatic precipitator (ESP) combination. Since the cost effectiveness calculation relied on baseline emissions (per EPA guidance) and these costs were excessively high, the existing scrubber would still be considered BACT for PM. In fact, based on the higher flow rate, the estimated capital costs for the ESP would likely increase even further, resulting in an even higher cost effectiveness.

If you have any questions regarding this information, please contact Ms. Myra Carpenter at 386/329-0918.

Sincerely,

Theodore D. Kennedy

Theodore D. Kennedy
Vice President

cc: T.D. Kennedy
W.M. Jernigan
T.R. Wyles

GEORGIA-PACIFIC CORPORATION

PALATKA MILL

PSD PERMIT APPLICATION

Lime Kiln Shell Replacement

(Update to August 2004 Application)

PALATKA (PUTNAM COUNTY), FLORIDA

April 2005

Attachment 1
Emission Rate Calculations (Updated)

Attachment 1
Emission Rate Calculations (Updated April 2005)
Palatka Mill, Lime Kiln – Shell Replacement

Emission Rate Calculations for Lime Kiln

Recent Stack Test Results

Pollutant	Test Results (lbs/hour)	
	2002	**2003**
Total Reduced Sulfur (TRS)	0.606	0.556
Sulfur Dioxide (SO_2)	1.06	4.3
Particulate Matter (PM)	9.51	11.94
Fine Particulate Matter (PM_{10})	8.18[1]	10.27[1]
Nitrogen Oxides (NO_x)	18.88	32.0
Carbon Monoxide (CO)	1.04	1.8
Volatile Organic Compounds (VOCs)	0.58	0.609

[1] PM_{10} assumed to be 86% of PM (from annual emissions reports).

Operating Hours:	2002	8,145 hours/year
	2003	7,763 hours/year
CaO Throughput	2002	111,564 tons/year
	2003	112,423 tons/year
	Maximum	170,294 tons/year (19.44 tons/hour)

Baseline Emissions (average 2002/2003 and based on average of recent stack tests and emission factors)

Total Reduced Sulfur (based on stack tests)

2002	0.606 lb/hour x 8,145 hours/year x ton/2000 lbs = 2.5 tpy
2003	0.556 lb/hour x 7,763 hours/year x ton/2000 lbs = 2.2 tpy
Average	*2.3 tpy*

Sulfur Dioxide

2002	1.06 lbs/hour x 8,145 hours/year x ton/2000 lbs = 4.3 tpy
2003	4.3 lbs/hour x 7,763 hours/year x ton/2000 lbs = 16.7 tpy
Average	*10.5 tpy*

Particulate Matter (total)

2002	9.51 lbs/hour x 8,145 hours/year x ton/2000 lbs = 38.7 tpy
2003	11.94 lbs/hour x 7,763 hours/year x ton/2000 lbs = 46.3 tpy
Average	*42.5 tpy*

Particulate Matter (PM_{10})

2002	8.18 lbs/hour x 8,145 hours/year x ton/2000 lbs = 33.3 tpy
2003	10.27 lbs/hour x 7,763 hours/year x ton/2000 lbs = 39.9 tpy
Average	*36.6 tpy*

Nitrogen Oxides

2002	18.88 lbs/hour x 8,145 hours/year x ton/2000 lbs = 76.9 tpy
2003	32.0 lbs/hour x 7,763 hours/year x ton/2000 lbs = 124.2 tpy
Average	*100.6 tpy*

Carbon Monoxide

2002	1.04 lbs/hour x 8,145 hours/year x ton/2000 lbs = 4.2 tpy
2003	1.8 lbs/hour x 7,763 hours/year x ton/2000 lbs = 7.0 tpy
Average	*5.6 tpy*

Volatile Organic Compounds

2002	0.58 lb/hour x 8,145 hours/year x ton/2000 lbs = 2.4 tpy
2003	0.609 lb/hour x 7,763 hours/year x ton/2000 lbs = 2.4 tpy
Average	*2.4 tpy*

Sulfuric Acid Mist

Calculated based on basis of 4% of sulfur dioxide being sulfates and then correcting the molecular weight for sulfuric acid mist

10.5 tpy (average) x 0.04 (4%) x 98/80 (ratio of molecular weights for H_2SO_4 and SO_3) = 0.51 tpy

Average = 0.51 tpy

Lead

Calculated based on current NCASI factor from Technical Bulletin 701 – see attached HAP spreadsheet for detailed explanation of emission factor

2002	111,564 tons CaO/year x 2.1 x 10^{-4} lbs/ton CaO x ton/2000 lbs = 0.012 tpy
2003	112,423 tons CaO/year x 2.1 x 10^{-4} lbs/ton CaO x ton/2000 lbs = 0.012 tpy
Average	*0.012 tpy*

Future Potential Emissions

For conversions from parts per million (ppm) to mass emission rates (lbs/hour), the following formula and factors are used:

PV=nRT, where n=mass/molecular weight (MW)

Therefore, mass/volume (V) = P x MW/R x T

P = pressure = 1 atmosphere x 14.7 lb/in^2/atmosphere x 144 in^2/ft^2 x = 2116.8 lb/ft^2
T = temperature = 68 degrees Fahrenheit (°F) = 528 R
R = 1545.6 ft-lb$_f$/lb mole-R
Flow rate (from testing; see discussion in Section 4 of main text) = 44,500 dscfm (@ 10% oxygen)

Total Reduced Sulfur

Based on 20 ppmvd at 10% oxygen (existing limit)

Corresponding mass emission limits are calculated as follows:

(20 ft^3 TRS/10^6 ft^3 air x 2116.8 lb/ft^2 x 34.1 lb/lb-mole)/(1545.6 ft-lb$_f$/lb mole-R x 528 R)
= 1.77 x 10^{-6} lb/ft^3

Mass emission rate = 1.77 x 10^{-6} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 5.8 lbs/hour (25.2 tpy)

Sulfur Dioxide

Based on 0.47 lb/ton CaO (NCASI TB 646, February 1993 – from Table 13, average of all of the oil-fired values – 0.18, 0.02, 0.45, 0.07, and 1.63 – average = 0.47 lb/ton CaO)

19.44 ton CaO/hour x 0.47 lb/ton CaO = 9.1 lbs/hour (40.0 tpy)

Particulate Matter (total)

Based on 0.081 gr/dscf at 10% oxygen (existing limit)

Corresponding mass emission limits are calculated as follows:

0.081 gr/dscf x 54,200 dscf/min x 60 mins/hour x lb/7000 grains = 37.6 lbs/hour (164.8 tpy)

Particulate Matter (PM_{10})

Based on 0.081 gr/dscf at 10% oxygen (existing limit)

Corresponding mass emission limits are calculated as follows:

0.081 gr/dscf x 54,200 dscf/min x 60 mins/hour x lb/7000 grains = 37.6 lbs/hour (164.8 tpy)

Nitrogen Oxides

Based on 275 ppmvd at 10% oxygen (lowered from existing limit of 290 ppmvd)

Corresponding mass emission limits are calculated as follows:

(275 ft^3 NO_x/10^6 ft^3 air x 2116.8 lb/ft^2 x 46 lb/lb-mole)/(1545.6 ft-lb_f/lb mole-R x 528 R)
= 3.28 x 10^{-5} lb/ft^3

Mass emission rate = 3.28 x 10^{-5} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 106.7 lbs/hour (467.2 tpy)

Carbon Monoxide

Based on 69 ppmvd at 10% oxygen (existing limit)

(69 ft^3 CO/10^6 ft^3 air x 2116.8 lb/ft^2 x 28 lb/lb-mole)/(1545.6 ft-lb_f/lb mole-R x 528 R)
= 5.01 x 10^{-6} lb/ft^3

Mass emission rate = 5.01 x 10^{-6} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 16.3 lbs/hour (71.4 tpy)

Volatile Organic Compounds

Based on 185 ppmvd at 10% oxygen (existing limit); used molecular weight for methane (CH_4)

(185 ft^3 VOC/10^6 ft^3 air x 2116.8 lb/ft^2 x 16 lb/lb-mole)/(1545.6 ft-lb_f/lb mole-R x 528 R)
= 7.68 x 10^{-6} lb/ft^3

Mass emission rate = 7.68 x 10^{-6} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 25.0 lbs/hour (109.5 tpy)

Sulfuric Acid Mist

Assume 4% of sulfur dioxide is sulfates

9.1 lbs/hour x 0.04 = 0.36 lb/hour (as sulfates)

SAM rate = 0.36 lb/hour x 98 lbs SAM/lb-mole SAM x lb-mole SAM/lb-mole SO_3 x lb-mole SO_3/80 lbs SO_3 = 0.45 lb/hour (2.0 tpy) as SAM

Lead

Updated factors to match NCASI Technical Bulletin 701, Table 14A; details provided in attached HAP tables

19.44 tons CaO/hour x 2.1×10^{-4} lb Pb/ton CaO = 0.0041 lb/hour (0.018 tpy)

Summary – Emission Rate Calculations and Changes

Annual Emission Rates and Changes (tons per year)

	TRS	SO_2	PM/PM_{10}	NO_x	CO	SAM	VOCs	Pb
Potential	25.2	40.0	164.8	467.2	71.4	2.0	109.5	0.018
Baseline	2.3	10.5	42.5/36.6	100.6	5.6	0.51	2.4	0.012
Change	22.9	29.5	122.3/128.2	366.6	65.8	1.5	107.1	0.006
PSD Significance Level	10	40	25/15	40	100	7	40	0.6
PSD Triggered?	Yes	No	Yes	Yes	No	No	Yes	No

TRS – total reduced sulfur compounds
SO_2 – sulfur dioxide
PM – total particulate matter
PM_{10} – particulate matter less than 10 microns in aerodynamic diameter
CO – carbon monoxide
SAM – sulfuric acid mist
VOCs – volatile organic compounds
Pb – lead

Attachment 2
Permit Application Forms (Updated Forms)

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name :
   Theodore D. Kennedy, Vice President, Georgia-Pacific, Palatka Operations
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Georgia-Pacific Corporation**
   Street Address: **P.O. Box 919**
   City: **Palatka** State: **FL** Zip Code: **32178**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(386) 325-2001** ext. Fax: **(386) 328-0014**
4. Owner/Authorized Representative Email Address: **Ted.Kennedy@gapac.com**
5. Owner/Authorized Representative Statement:

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

   Theodore D. Kennedy — Signature   4/13/05 — Date

Professional Engineer Certification

1.	Professional Engineer Name: **Mark J. Aguilar** Registration Number: **52248**
2.	Professional Engineer Mailing Address: Organization/Firm: **Georgia-Pacific Corporation** Street Address: **133 Peachtree St** City: **Atlanta** State: **GA** Zip Code: **30303**
3.	Professional Engineer Telephone Numbers... Telephone: (404) **652-4293** ext. Fax: (404) **654-4706**
4.	Professional Engineer Email Address: **mjaguila@gapac.com**
5.	Professional Engineer Statement:

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

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

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

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

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

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

[signature] 4/8/05

Signature Date

(seal)

* Attach any exception to certification statement.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
No. 4 Lime Kiln

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **017**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **131** feet	7. Exit Diameter: **4.4** feet
8. Exit Temperature: **164** °F	9. Actual Volumetric Flow Rate: **65,238 acfm**	10. Water Vapor: **34** %
11. Maximum Dry Standard Flow Rate: **54,200 dscfm @ 10% oxygen (03/04 test)**	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Maximum Dry Standard Flow Rate is @ 10 percent oxygen. Actual volumetric flow rate and exit temperature reflect observations at highest tested production rate.**		

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **37.6** lb/hour **164.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.081 gr/dscf** Reference: **Existing limit**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.081 gr/dscf x 54,200 dscf/min x 60 min/hr ÷ 7,000 gr/lb = 37.6 lbs/hour** **Flow rate and emission factor conditions are set to 10% oxygen**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.081 gr/dscf @ 10 percent O_2**	4. Equivalent Allowable Emissions: **37.6** lb/hour **164.8** tons/year
5. Method of Compliance: **Annual stack test using EPA Method 5.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

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

Allowable Emissions Allowable Emissions ____ of ____

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

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **37.6** lb/hour **164.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.081 gr/dscf @ 10 percent O_2** Reference: **Existing limit**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.081 gr/dscf x 54,200 dscf/min x 60 min/hr ÷ 7,000 gr/lb = 37.6 lbs/hour**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **GP Proposes to retain the emission limit of 0.081 gr/dscf@10% oxygen. However, GP proposes to replace the 26.0 lbs/hour and 113.9 tpy emission limits with 37.6 lbs/hr and 164.8 tpy.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.081 gr/dscf @ 10 percent O_2**	4. Equivalent Allowable Emissions: **37.6** lb/hour **164.8** tons/year
5. Method of Compliance: **Annual stack test using EPA Method 5.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

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

Allowable Emissions Allowable Emissions _____ of _____

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

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **TRS**

2. Total Percent Efficiency of Control:

3. Potential Emissions: **5.8** lb/hour **25.2** tons/year

4. Synthetically Limited? ☐ Yes ☒ No

5. Range of Estimated Fugitive Emissions (as applicable): to tons/year

6. Emission Factor: **20 ppmvd**
   Reference: **BACT limit**

7. Emissions Method Code: **2**

8. Calculation of Emissions:

Based on 20 ppmvd at 10% oxygen (existing limit)
PV=nRT, where n=mass/molecular weight (MW)
Therefore, mass/volume (V) = P x MW/R x T
P = pressure = 1 atmosphere x 14.7 lb/in^2/atmosphere x 144 in^2/ft^2 x = 2116.8 lb/ft^2
T = temperature = 68 degrees Fahrenheit (°F) = 528 R; R = 1545.6 ft-lb$_f$/lb mole-R
Flow rate = 54,200 dscfm (@ 10% oxygen)
Corresponding mass emission limits are calculated as follows:

$$(20\ ft^3\ TRS/10^6\ ft^3\ air \times 2116.8\ lb/ft^2 \times 34.1\ lb/lb\text{-}mole)/(1545.6\ ft\text{-}lb_f/lb\ mole\text{-}R \times 528\ R) = 1.77 \times 10^{-6}\ lb/ft^3$$

Mass emission rate = 1.77 x 10^{-6} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 5.8 lbs/hour (25.2 tpy)

9. Pollutant Potential/Estimated Fugitive Emissions Comment:

GP proposes to retain the emission limit 20 ppmvd @10% oxygen. GP proposes to replace the current permit allowable of 4.0 lbs/hr and 17.5 tpy with 5.8 lbs/hr and 25.2 tpy.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **20 ppmvd**	4. Equivalent Allowable Emissions: **5.8** lb/hour **25.2** tons/year
5. Method of Compliance: **EPA Method 16 or 16A**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

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

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **106.7** lb/hour – **467.2** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **275 ppmvd** Reference: BACT	7. Emissions Method Code: **2**

8. Calculation of Emissions:

Based on 275 ppmvd at 10% oxygen (lowered from existing limit of 290 ppmvd)
PV=nRT, where n=mass/molecular weight (MW)
Therefore, mass/volume (V) = P x MW/R x T
P = pressure = 1 atmosphere x 14.7 lb/in^2/atmosphere x 144 in^2/ft^2 x = 2116.8 lb/ft^2
T = temperature = 68 degrees Fahrenheit (°F) = 528 R; R = 1545.6 ft-lb$_f$/lb mole-R
Flow rate = 54,200 dscfm (@ 10% oxygen)
Corresponding mass emission limits are calculated as follows:
(275 ft^3 NO_x/10^6 ft^3 air x 2116.8 lb/ft^2 x 46 lb/lb-mole)/(1545.6 ft-lb$_f$/lb mole-R x 528 R)
= 3.28 x 10^{-5} lb NOx /ft^3
Mass emission rate = 3.28 x 10^{-5} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 106.7 lbs/hour (467.2 tpy)

9. Pollutant Potential/Estimated Fugitive Emissions Comment:

GP proposes to replace the current emission limit of 290 ppmvd to 275 ppmvd. GP also proposes to replace the current limits of 50.3 lb/hr and 223.3 tpy with 106.7 lb/hr and 467.2 tpy.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **AMBIENT**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **275 ppmvd**	4. Equivalent Allowable Emissions: **106.7** lb/hour **467.2** tons/year
5. Method of Compliance: **EPA Method 7E**	
6. Allowable Emissions Comment (Description of Operating Method): **By restricting the NOx emissions below the current permit limit of 290 ppmvd to 275 ppmvd, the net emissions increase associated with the project will cause a predicted ambient impact below the modeling significant impact level.**	

Allowable Emissions Allowable Emissions _____ of _____

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

Allowable Emissions Allowable Emissions _____ of _____

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

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **16.3** lb/hour **71.4** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **69 ppmvd** Reference:	7. Emissions Method Code: **2**

8. Calculation of Emissions:

Based on 69 ppmvd at 10% oxygen (existing limit)
PV=nRT, where n=mass/molecular weight (MW)
Therefore, mass/volume (V) = P x MW/R x T
P = pressure = 1 atmosphere x 14.7 lb/in^2/atmosphere x 144 in^2/ft^2 x = 2116.8 lb/ft^2
T = temperature = 68 degrees Fahrenheit (°F) = 528 R; R = 1545.6 ft-lb$_f$/lb mole-R
Flow rate = 54,200 dscfm (@ 10% oxygen)
(69 ft^3 CO/10^6 ft^3 air x 2116.8 lb/ft^2 x 28 lb/lb-mole)/(1545.6 ft-lb$_f$/lb mole-R x 528 R)
= 5.01 x 10^{-6} lb/ft^3
Mass emission rate = 5.01 x 10^{-6} lb/ft^3 x 54,200 dscf/min x 60 mins/hour = 16.3 lbs/hour (71.4 tpy)

9. Pollutant Potential/Estimated Fugitive Emissions Comment:

GP proposes to retain the emission limit 69 ppmvd @10% oxygen. GP proposes to replace the current permit allowable of 7.3 lbs/hr and 32 tpy with 16.3 lbs/hr and 71.4 tpy.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **69 ppmvd**	4. Equivalent Allowable Emissions: **16.3** lb/hour **71.4** tons/year
5. Method of Compliance: **EPA Method 10**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

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

Allowable Emissions Allowable Emissions ____ of ____

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

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **25.0** lb/hour **109.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **185 ppmvd** Reference: BACT	7. Emissions Method Code: **2**

8. Calculation of Emissions:

Based on 185 ppmvd at 10% oxygen (existing limit)

PV=nRT, where n=mass/molecular weight (MW)
Therefore, mass/volume (V) = P x MW/R x T
P = pressure = 1 atmosphere x 14.7 lb/in^2/atmosphere x 144 in^2/ft^2 x = 2116.8 lb/ft^2
T = temperature = 68 degrees Fahrenheit (°F) = 528 R; R = 1545.6 ft-lb$_f$/lb mole-R
Flow rate = 54,200 dscfm (@ 10% oxygen)

(185 ft^3 VOC/10^6 ft^3 air x 2116.8 lb/ft^2 x 16 lb/lb-mole)/(1545.6 ft-lb$_f$/lb mole-R x 528 R)
= 7.68 x 10^{-6} lb/ft^3
Mass emission rate = 7.68 x 10^{-6} lb/ft^3 x 54,200 dscf /min x 60 mins/hour = 25.0 lbs/hour (109.5 tpy)

9. Pollutant Potential/Estimated Fugitive Emissions Comment:

GP proposes to retain the emission limit 185 ppmvd @10% oxygen. GP proposes to replace the current permit allowable of 17.2 lbs/hr and 75.3 tpy with 25.0 lbs/hr and 109.5 tpy.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **185 ppmvd**	4. Equivalent Allowable Emissions: **25.0** lb/hour **109.5** tons/year
5. Method of Compliance: **EPA Method 25A and 3A or 3B**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

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

Allowable Emissions Allowable Emissions ____ of ____

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

ATTACHMENT 3
AIR QUALITY ANALYSIS
PALATKA, FL OPERATIONS

3.1 INTRODUCTION

United States Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP) rules require major new facilities and major modifications of existing facilities to undergo several analyses for emission increases subject to Prevention of Significant Deterioration (PSD) review. These analyses determine whether significant air quality deterioration will result from the new or modified facility. As described elsewhere in the application, the modifications at the GP Palatka Mill will result in emissions increases above the significant emission rate for several pollutants. Taking into account all contemporaneous emission increases and decreases within the past 5-years (see Attachment 1) the following pollutants will have net emission increases above the significant emission rate:

- ozone (based on the increase in volatile organic compound (VOC) emissions),
- particulate matter less than 10 microns in diameter (PM_{10}),
- nitrogen oxides (NO_x), and
- total suspended particulate matter (TSP)

Therefore, the project is subject to PSD review for these pollutants. In addition to an analysis of control technology discussed in other attachments, PSD review requires GP to conduct the following analyses:

- Source impact analysis,
- Good engineering practice stack height (GEP),
- Air quality analysis (monitoring),
- Additional impact analyses.

EPA regulations (40 CFR 52.21(k)) require that an applicant perform a source impact analysis for each applicable pollutant. 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 National Ambient Air Quality Standards (NAAQS) and allowable PSD increments. Section 3.2 of this attachment presents the Source Impact Analysis.

In addition to the source impact analysis, PSD review requires that any emission limit must be applied in a source impact analysis with a stack height that does not exceed GEP (refer to 40 CFR 52.21(h)). To demonstrate this, GP performed an analysis of the physical arrangement of stacks and solid physical structures that may affect dispersion and computed GEP stack heights. The lime kiln stack is an existing and is not affected by building downwash (see results below). Section 3.3 of this attachment presents the GEP analysis.

The third analysis is specified by EPA regulation 40 CFR 52.21(m). In addition to predicting a source impact, a PSD permit application must contain an analysis of continuous ambient air quality data in the area affected by the project. The regulation presents the conditions that require pre-construction and post-construction monitoring of ambient air. Section 3.4 of this attachment presents the Ambient Air Quality Analysis.

Lastly, EPA regulations (40 CFR 52.21(o)) require an analysis of additional impacts. Section 3.5 presents an analysis of the impacts on soils and vegetation, growth, and impairment to visibility that would occur as a result of the project in the vicinity of the Mill. Section 3.6 presents an analysis of the project's impact on existing air quality, visibility, and deposition in the Class I areas.

3.2. SOURCE IMPACT ANALYSIS

GP conducted the Source Impact Analysis in two phases: 1) impact of the project, and 2) full impact analysis. The first phase determines the impact from the change in emissions associated with the project alone. GP compared these impacts to EPA thresholds for significance and ambient monitoring criteria. If the project impacts exceed the Significant Impact Levels (SILs), then GP conducts a full impact analysis. A full impact analysis predicts impacts from the sources across the entire Mill. GP compares these impacts to state and national ambient air quality standards. The following sections discuss the methodology, data inputs, and techniques for the Source Impact Analysis.

3.2.1 AIR MODELING METHODOLOGY

The general modeling approach follows EPA and FDEP modeling guidelines for determining compliance with the state AAQS and PSD Increments. In general, 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 short-term impacts for the GP Palatka Mill, the general modeling approach was to first perform a screening analysis with a coarse receptor grid spacing to determine the critical impact locations. First, GP predicted impacts for the screening analysis using a 5-year meteorological data record. Then, a refined analysis was performed if the receptor spacing at the location of maximum impact is greater than 100 meters (m) and the screening grid result exceeded 75% of the applicable criteria. The refined analyses used a denser receptor grid centered on the receptor at which the identified in the screening phase. GP then executed the air dispersion model for the entire year.

3.2.2 MODEL SELECTION

GP selected an air dispersion model based on the model's ability to simulate air quality impacts in areas surrounding the Palatka Mill. The area surrounding the Mill is mostly rural and flat. The Mill is located on the western side of the St. John's River. Figure 3-1 presents a topographic map of the GP Palatka Mill vicinity. Based on these features, GP has selected the Industrial Source Complex Short-Term (ISCST3) model (Version 02035) to predict maximum concentrations in all areas in the vicinity of the plant site.

In this analysis, the US EPA regulatory default options are utilized in the ISCST3 model to predict all maximum impacts. These options include:

- Final plume rise at all receptor locations
- Stack-tip downwash
- Buoyancy-induced dispersion
- Default wind speed profile coefficients

- Default vertical potential temperature gradients
- Calm wind processing

3.2.3 LAND USE CLASSIFICATION

Dispersion coefficients are set in the model by selecting the land-use mode as urban or rural. The land use in the vicinity of the source is the criteria used to determine the setting. Auer developed a land-use procedure in 1978 to determine the model setting. The procedure involves classifying land areas within a 3-kilometer (km) radius circle centered on the Mill. GP selected the land-use mode to reflect the majority of the classified area. The urban mode is selected if more than 50 percent of the land-use consists of one or more of the following land-use classifications:

- heavy industrial
- light-moderate industrial
- commercial, or
- compact residential

The USGS map indicates that there are no other significant commercial or industrial properties within 3 km. GP estimates that the urban classifications constitute less than 50% of the total area. Therefore, GP set the ISCST3 model in the rural mode is used for the ISCST3 modeling.

3.2.4 METEOROLOGICAL DATA

GP predicted impacts using hourly meteorological data for the five-year period 1984-1988. The nearest site for surface observations to the Palatka Mill is located approximately 57 km to the west in Gainesville. However, FDEP has routinely recommended analyses for Palatka apply surface observations from Jacksonville International Airport (JAX). While the distance between GP and JAX is approximately 92 km, GP and FDEP consider JAX to be more representative than Gainesville surface observations. While both JAX and GP are less than 40 km from the Atlantic coastline, Gainesville is over 95 km from the coastline. The analysis applied meteorological data was comprised of hourly surface data from JAX and upper air data collected in Waycross, Georgia.

The surface observations include wind direction, wind speed, temperature, cloud cover, and cloud ceiling. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST 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). USEPA provided the dataset in an ISCST-ready format. GP did not perform any additional processing of the meteorological files.

3.2.5 BACKGROUND CONCENTRATIONS

Background concentrations are necessary to determine total ambient air quality impacts to demonstrate compliance with the NAAQS. "Background concentrations" are defined as concentrations due to sources other than those specifically included in the modeling analysis. For example, background concentration would account for other small point sources not included in the modeling, fugitive emission sources, and natural background sources (*e.g.,* mobile sources).

To select a background concentration, GP has analyzed FDEP and EPA ambient air quality observations. GP collected information on monitor locations, their proximity to the Palatka Mill, data quality, and how recent the data was collected. Preliminary dispersion modeling concluded that no full analyses are required. Table 3-1 presents the values for background concentrations in micrograms per cubic meter ($\mu g/m^3$) which represent current ambient air quality. These values reflect the most current year of data by a representative monitor.

3.2.6 BUILDING DOWNWASH

In accordance with current EPA policy, GP evaluated the effect of building downwash on predicted air quality concentration levels in the modeling analysis. For this analysis, GP used the US EPA-developed Building Profile Input Program (BPIP, Version 95086) to determine the appropriate direction-specific building dimensions for all modeled sources at the Mill. The building height, length, and width for all significant building structures are input to the program. For short stacks (*i.e.,* physical stack height is less than $H_b + 0.5\ L_b$, where H_b is the building height and L_b is the lesser of the building height or projected width), BPIP applies the Schulman and Scire (1980) algorithm. For cases where the physical stack is greater than $H_b + 0.5\ L_b$, but less than GEP, BPIP applies the Huber-Snyder (1976) algorithm. For both downwash methods, the ISCST3 model uses direction-specific building dimensions for H_b and L_b for 36 radial directions, with each direction representing a 10-degree sector. Table 3-2 presents a summary of the horizontal and vertical structure dimensions at the paper Mill that are considered in the BPIP analysis. Inspection of the ISCST3 model output indicates that no cavity effects are occurring at the model receptors. Figure 3-2 shows the building layout at the Mill. .

3.2.7 SIGNIFICANT IMPACT ANALYSIS

Purpose and Methodology

The significant impact analysis is the first phase of the Source Impact Analysis and determines two results: 1) the maximum impacts from the project emissions and 2) the location of predicted impacts greater than significant impact levels (SILs). The area of these impacts defines the impact area of the project and the significant impact distance (SID). For the purposes of this report, the significant impact analysis will include both the No. 4 Lime Kiln project plus other contemporaneous project emission changes.

GP performed a significant impact analysis to determine whether the emissions increase result in maximum predicted impacts greater than the PSD modeling SILs or the EPA monitoring deminimis concentrations. Current EPA and FDEP policies stipulate that GP compare the highest predicted short-term impacts to these levels. Table 3-3 presents the SILs and deminimis concentrations.

Model Inventory

For the significant impact analysis, the model inventory includes all sources that will experience an increase or decrease in emissions due to the LK4 or contemporaneous project. The emission increase represents the difference between the potential emissions and the actual emissions during the baseline period. The baseline must reflect conditions prior to any modifications or physical changes. GP selected the average of 2002 and 2003 operations to represent the baseline. Table 3-4 summarizes the potential annual average and short-term maximum emission rates for the contemporaneous project. Supporting documentation from prior modeling reports is included in Appendix 3A.

Point Source Modeling Parameters

GP developed modeling parameters for the Lime Kiln No 4 and contemporaneous projects using physical data for stack height, stack diameter, and observation data for exit temperature and exit velocity. Table 3-5 presents these modeling parameters.

Receptor Locations

Modeling coordinates are UTM Zone 17, NAD 27. All analyses used refined Cartesian receptor grids in addition to discrete receptors along the Mill fenceline. The significant impact analysis used the following receptor spacing:

- 100-m intervals along the fenceline
- 100-m intervals within 8 km of the Mill

To determine the maximum impact from the project, GP reviewed the distribution of predicted impacts and the location of the maximum impact. Because the model settings include the FLAT option, the predicted impacts from the single model source will decrease with distance beyond the location of the maximum impact. Thus, if the predicted impacts decrease at the receptor edges, then no additional receptors at greater distances is necessary. If the predicting impacts indicate that the maximum impact may be further than 8 km from the source, then GP performed additional modeling using a 100m refined grid to identify the maximum impact out to further distances.

3.2.8 NAAQS MODELING ANALYSIS

Purpose and Methodology

As discussed in the result section (Section 3.2.10), preliminary modeling of the proposed project indicated a significant impact (*i.e.*, maximum impact at or above the PSD significance levels) for PM_{10} and NO_2. Therefore, PSD review requires GP to perform a full air quality analysis to demonstrate compliance with the NAAQS. The NAAQS impact analysis predicts the maximum ambient air concentration due to 1) all Mill sources emitting at maximum potential emission rates, 2) off-site sources at maximum permitted rates, and 3) natural and background sources. The total of these concentrations must be less than the NAAQS. Table 3-6 summarizes the NAAQS

Inventory - GP

For the NAAQS impact analysis, the model inventory includes all emission sources from the entire Mill at their potential emission rates. The inventory does not include any offset or negative emission sources. GP also analyzed PM_{10} emissions from Mill roads. The model inventory distributes emissions from individual routes into many model sources, each representing a square-based segment of a route. Therefore, the emission rate is constant among each model source along a particular route. The Mill roads are paved.

Tables 3-7 and 3-8 summarize the PM_{10} and NO_X emission rates for the NAAQS analysis, respectively. Table 3-9 summarizes the modeling parameters for the point sources and Figure 3-3 presents the arrangement of these sources.

Fugitive Source Modeling Parameters

GP also calculated modeling parameters for fugitive sources that are modeled as either an AREAPOLY or VOLUME sources. The parameters for the areapoly sources are release height, number of corners, and initial vertical source dimension. The parameters for the volume sources are release height and initial lateral and vertical source dimensions. GP calculated values for the parameters in accordance with the ISCST3 manual and general EPA guidance. For the area source, the release height is the height of the expected release. For a volume source, the release height is at the center of the physical source. Table 3-10 presents the modeling parameters for the fugitive sources, and Figure 3-4 presents the arrangement of the these sources.

Inventory - Competing Sources

A full analysis must include the emissions of competing sources. GP considered competing sources within the screening area. The screening area is unique for each pollutant, and is the area within a circle centered on the project with a radius equal to the significant impact distance plus 50 km, but not to exceed 100 km. The screening areas for PM_{10} and NO_2 are 53.6 and 52.6 km, respectively. In addition to the sources within the screening area, GP also considered larger sources that are beyond the screening area.

GP included all competing sources within the SID in the NAAQS modeling analysis and evaluated all facilities that are beyond the SID with the North Carolina Screening Technique. The technique compares the annual emissions (in tons per year (tpy)) to a specific threshold. If the emissions are less than the threshold, then GP expects that the emissions from the facility will not have significant interaction with the Palatka Mill. The threshold is equal to the quantity of 20 x (D-S) (Note D is the distance between the competing source and the Mill, S is the SID). GP included a facility from the NAAQS modeling analysis if the facility-wide permitted emission rate was above the threshold.

Table 3-11 presents the screening analysis for competing PM_{10} sources. Table 3-12 presents the individual stack parameters for sources at these facilities.

Among the competing sources to be modeled are Florida Rock and GP's Chip-n-saw Mill (Sawmill), both within 3 km of the paper mill. For Florida Rock, the potential emission rate in the FDEP's inventory database, 17 pounds per hour (lb/hr), was revised to 0.2 lb/hr, based on current information provided for the baghouse from Florida Rock. The original 17 lb/hr emission rate is the process weight table rule emission rate (i.e., allowable) and does not reflect a baghouse. The proposed 0.2 lbs/hr reflects the actual modeled flowrate and an emission factor of a typical baghouse of 0.01 grains/cubic ft. For GP's Sawmill, updated potential emission rates and source parameters were obtained from GP and this information has been included in Tables 3-11 and Table 3-12. GP also determined source-specific building information for each Sawmill stack. Plot plans showing the layout of sources and buildings at the Sawmill are presented in Figures App3B-1 and App3B-2, respectively, in Appendix 3B. A summary of the building dimensions at the Sawmill are provided in Table App3B-1.

To reduce the number of model sources, GP first combined sources with identical stack parameters. Second, GP combined stacks at an individual facility using US EPA's method for merging sources (US EPA, 1992). For each stack, the parameter M was computed as:

$$M = (h_s)(V)(T_s)/(Q)$$

where:

- M = merged stack parameter which accounts for the relative influence of stack height, plume rise, and emission rate on concentrations
- h_s = stack height (m)
- V = $(\pi/4)\, d_s^2 v_s$ = stack gas volumetric flow rate (m^3/s)
- d_s = inside stack diameter (m)
- v_s = stack gas exit velocity (m/s)
- T_s = stack gas exit temperature (K)
- Q = pollutant emission rate (g/s)

The stack with the lowest value of M is used as the representative stack. Then, the sum of the emissions from all applicable sources is modeled with the representative stack.

Table 3-13 presents the screening analysis for NOx competing sources. Table 3-14 presents the individual stack parameters for sources at these facilities.

Receptors

For the NAAQS analyses, GP used receptor spacing identical to the spacing for the significant impact analysis. For each pollutant, these receptors extended out to a distance just beyond the respective SID. For PM_{10} and NO_2, receptor distances of 4 and 3 km were used, respectively. All grid receptors have a receptor spacing of 100 m.

3.2.9 PSD CLASS II INCREMENT ANALYSIS

Purpose and Methodology

As discussed in the result section (Section 3.2.10), preliminary modeling of the proposed project indicated a significant impact (*i.e.*, maximum impact at or above the PSD significance levels) for PM_{10} and NO_2. Therefore, PSD review requires GP to perform a full air quality analysis to demonstrate compliance with the allowable PSD Class II Increments for these pollutants. The increment impact analysis predicts the maximum ambient air concentration due to all Mill sources and off-site sources within the screening areas that affect consume increment. The total of these concentrations must be less than the allowable PSD Class II increment, as listed in Table 3-15.

Inventory - GP

For this project, the Increment analysis included all the future paper mill sources that were used in the NAAQS analysis and also all source emissions that occurred at the time of the PSD baseline date. The PSD baseline emissions are set to negative in the model and are subtracted from the future emissions to determine the amount of PSD increment that is consumed.

Because the Mill is a major source, all emission increases after the major source baseline due to a change in the method of operation consume increment. Other types of emission increases, such as increase in utilization, only affect (*i.e.,* consume or expand) PSD increment after the minor source baseline date is set. Table 3-16 summarizes the baseline dates. Therefore, the calculations to determine which GP emissions consume increment will vary by pollutant.

Particulate Matter

The 1974 PSD baseline emissions for the GP Palatka Mill are presented in Table 3-17. The locations and stack parameters for the baseline sources are presented in Table 3-18.

Nitrogen Dioxide

The 1988 PSD baseline emissions for the GP Palatka Mill are presented in Table 3-19. The locations and stack parameters for the baseline sources are presented in Table 3-20.

Inventory – Competing Sources

A full analysis must include the emissions of competing sources. In contrast to the NAAQS analysis, the PSD Increment analysis only includes emissions from competing sources that affect increment. A listing of PSD increment affecting sources was obtained from prior modeling report and from discussions with the FDEP. Table 3-21 presents a summary of the competing facilities in the vicinity of the Palatka Mill that affect PSD increment. Table 3-22 presents the modeling parameters for the PSD-affecting sources that were included in the analysis.

Receptors

For the PM_{10} and NO_2 PSD Increment analyses, GP used the same receptor grids that were used for the PM_{10} and NO_2 NAAQS analyses, respectively.

3.2.10 SOURCE IMPACT ANALYSIS RESULTS

Significant Impact Analysis

Particulate Matter

By modeling the emissions that would result from the project, GP determined that the project will have a significant PM_{10} impact out to 3.6 km. Table 3-23 presents the maximum predicted impacts from the significant impact analysis and Figure 3-5 shows the areas where the project impacts exceed the SIL.

The maximum 24-hour PM_{10} impact due to the contemporaneous project is 10.7 $\mu g/m^3$, which is above the SIL and the monitoring deminimis concentrations of 5 and 10 $\mu g/m^3$, respectively. In addition, the maximum annual impact of 1.1 $\mu g/m^3$ slightly exceeds the annual SIL of 1 $\mu g/m^3$. Therefore, detailed NAAQS and PSD Class II increment analyses are required for PM_{10}.

Nitrogen Dioxide

By modeling the emissions that would result from the project, GP determined that the proposed project will have a significant NO_2 impact out to 2.6 km from the Mill. Table 3-24 presents the maximum predicted impacts from the significant impact analysis.

The maximum annual NO_2 impact due to the project is 1.9 μg/m^3, which is above the SIL of 1 μg/m^3 but below the deminimis monitoring concentration of 14 μg/m^3. Because the project's maximum concentration is above the SIL, detailed NAAQS and PSD Class II increment analyses are required for NO_2.

Summary

The significant impact analyses determined that the project's emission increase would result in maximum impacts that are above the PM_{10} and NO_2 SIL and the PM_{10} EPA deminimis monitoring concentration. Table 3-25 summarizes the significant impact distance for each pollutant.

NAAQS Analysis

Particulate Matter

By modeling the potential Mill and competing source emissions, GP determined that the maximum predicted PM_{10} impacts are 308 and 69 μg/m3, respectively, for the 24-hour and annual averaging times. The maximum impact locations were in an area that did not require additional refined receptor grids. Table 3-26 summarizes the PM_{10} NAAQS modeling results.

Background concentrations of 57 and 27 μg/m^3 were added to the modeling results for the 24-hour and annual averaging periods, respectively. As summarized in Table 3-27, the 24-hour and annual average total concentrations are 365 and 96.5 μg/m^3, respectively, which are above than the respective NAAQS of 150 and 50 μg/m^3. Figures 3-6 and 3-7 indicate that the receptor locations that exceed the annual and 24-hour NAAQS, respectively, are confined to localized areas both within and just outside GP's Sawmill Mill fence line. The maximum impacts presented in Table 3-27 actually occur on the Sawmill property, but the exceeded area extends beyond the fence line. As Figures 3-6 and 3-7 also demonstrate, the proposed contemporaneous project's significant impact area does not interact with any receptors that are predicted to exceed the NAAQS. The contemporaneous project's maximum annual and 24-hour impacts at the receptors that exceed the NAAQS are summarized in Table 3-28. As shown in Table 3-28, the maximum project impacts are below the SIL at these receptors.

Nitrogen Dioxide

By modeling the total potential Mill emissions and competing source emissions, GP determined that the maximum predicted annual NO_2 impact is 11.9 μg/m3. The maximum impact location is in an area that did not require additional refined receptor grids. Table 3-29 summarizes the NO_2 NAAQS modeling results.

GP added a background concentration of 27.5 $\mu g/m^3$ to the modeling result. As summarized in Table 3-30, when adding the background concentration, the annual concentration is 39.4 $\mu g/m^3$. This impact is less than the respective NAAQS of 100 $\mu g/m^3$. Therefore, GP has demonstrated that the Mill's emissions that reflect all project changes will not cause or contribute to a violation of the NAAQS.

PSD Class II Increment Analysis

Particulate Matter

By modeling the potential Mill and competing source emissions, GP determined that the maximum predicted PM_{10} PSD Class II increments are 35.1 and 2.2 μg/m3, respectively, for the 24-hour and annual averaging times. The maximum impact locations were in an area that did not require additional refined receptor grids. Table 3-31 summarizes the PM_{10} Increment modeling results. The maximum predicted 24-hour PSD is above the allowable PSD Class II increment of 30 μg/m^3, while the maximum predicted annual increment is below allowable PSD Class II increment of 17 μg/m^3. Figure 3- 8 indicates that the receptor locations that exceed the allowable 24-hour PSD Class II increment are located on the GP's Sawmill property. Figure 3-8 also demonstrates that the proposed contemporaneous project's significant impact area does not interact with any receptors that are predicted to exceed the allowable 24-hour PSD Class II increment. The contemporaneous project's maximum annual and 24-hour impacts at the receptors that exceed the allowable PSD Class II increment are summarized in Table 3-32. As shown in Table 3-32, the maximum project impacts are below the SIL.

Nitrogen Dioxide

By modeling the increment-affecting emissions from the Mill and competing sources, GP determined that the maximum annual mean NO_2 predicted PSD increment is 10.7 μg/m^3. The maximum impact location is in an area that did not require additional refined receptor grids. Table 3-33 summarizes the NO_2 model results. The maximum predicted impact is less than the allowable PSD Class II increment of 25 μg/m^3. Therefore, GP has demonstrated that the Mill emissions will not cause or contribute to a violation of the PSD Class II Increment.

3.3. GOOD ENGINEERING PRACTICE STACK HEIGHT ANALYSIS

PSD review rules require that controls required for emission sources using the Best Available Control Technology Analysis cannot be affected by a stack height that exceeds Good Engineering Practice (GEP) or any other dispersion technique. In other words, emissions rates specified in a source impact analysis must demonstrate compliance with stack heights at or below GEP, even if the physical height of the stack is greater. On July 8, 1985, EPA defined GEP stack height in the final stack height regulations (see 40 CFR 51.100(hh)). GEP stack height is defined as:

"The greater of:

(1) 65 meters, measured from the ground-level elevation at the base of the stack:

(2)

(i) For stacks in existence on January 12, 1979, and for which the owner or operator had obtained all applicable permits or approvals required under 40 CFR parts 51 and 52, Hg=2.5H, provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation.

Hg = good engineering practice stack height, measured from the ground-level elevation at the base of the stack

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack.

(ii) For all other stacks, Hg = H + 1.5L,

L = lesser dimension, height or projected width, of nearby structure(s) provided that the EPA, State or local control agency may require the use of a field study or fluid model to verify GEP stack height for the source

(3) The height demonstrated by a fluid model or a field study approved by the EPA, State or local control agency, which ensures that the emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures or nearby terrain features. "Nearby" is defined as a distance up to five times the lesser of the height or projected width dimensions of a structure or terrain feature but not greater than 0.8 kilometer (km).

Because the No. 4 Lime Kiln is the only source affected by the proposed project, and building downwash affects do not occur at that source, the project stacks are in accord with GEP regulations.

3. 4. AMBIENT AIR QUALITY ANALYSIS

Rule 40 CFR 52.21(m) describes the analyses of ambient air quality data required by PSD review. These requirements include pre-application and post-application analyses. Both of these requirements are exempted by Rule 40 CFR 52.21(i)(8) if the source impact analysis demonstrates that the emissions increase from the modification would cause air quality impacts less than the deminimis monitoring concentrations in all areas. The source impact analysis (Section 3.2) for GP Palatka concluded that the maximum impacts from the project for PM_{10} would exceed this concentration in a very small area on the paper mill property line. Therefore, the rule exemption is not applicable.

3.4.1 PRE-APPLICATION ANALYSIS

GP used the existing ambient air monitoring data and the results of the source impact analysis together to assess the total air quality in the area that the project emissions could affect. GP Palatka does not operate any ambient air quality monitors, but the FDEP has operated a PM_{10} monitoring station in Palatka (Site ID 12-107-1008) for many years. To determine if existing data is appropriate, EPA guidance recommends three criteria: monitor location, data quality, and currentness of the data. GP reviewed these factors and selected the highest mean annual concentration reported for the past three years as being representative of the maximum annual background air quality for the proposed project. Additionally, GP selected the 6th-highest 24-hour concentration measured in the last 5 complete years (which excluded 2002) as being representative of the maximum 24-hour background for the proposed project. Therefore, GP proposes to not conduct additional ambient monitoring to satisfy the pre-application analysis. Table 3-1 summarizes the background selections used for the air modeling analysis.

The post-application analysis determines post-construction ambient monitoring needs, such as quantifying the effect of the Mill-wide emissions on air quality. EPA guidance recommends that post-construction monitoring is appropriate when:

1) the NAAQS is threatened, or
2) the modeling databases contain significant uncertainties.

Because these conditions do not exist for this project, GP is proposing to use the existing air monitoring station data to satisfy any post-application requirement.

3.5 ADDITIONAL IMPACT ANALYSIS – CLASS II AREAS

3.5.1 IMPACTS UPON SOILS AND VEGETATION

Soils

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of PM or PM to which certain contaminants are absorbed. According to the Putnam County Soil Survey (1990), the soils in the vicinity of the GP Palatka Mill are dominated by Terra Ceia muck, with Cassia fine sand and Pamona fine sand also present.

The dominant soil in the vicinity of the GP facility, Terra Ceia muck, is a highly organic wetland soil and has an extremely high buffering capacity based on the cation exchange capacity, base saturation, and bulk density. Therefore, this soil would be relatively insensitive to atmospheric inputs. The maximum predicted NO_2, PM_{10}, and CO concentrations in the vicinity of the site as a result of the proposed project are below the significant impact levels. The maximum predicted SO_2 concentrations in the vicinity of the site are below the AAQS. Since the AAQS are designed to protect the public welfare, including effects on soils and vegetation, no detrimental effects on soils should occur in the vicinity of the GP Palatka Mill due to the proposed project.

Vegetation

In general, the effects of air pollutants on vegetation occur from NO_2, O_3, and PM. 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 that is considered to be the major pathway of exposure. For purposes of this analysis, it was assumed that 100 percent of each air contaminant of concern is accessible to the plants.

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. The following paragraphs address the NO_2, PM, and ozone effects.

A review of the literature indicates great variability in NO_2 dose-response relationship 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 annual average NO_2 concentrations predicted to occur in the vicinity of the plant during the operation of the proposed project well below reported effects levels.

Although information pertaining to the effects of particulate matter on plants is scarce, some threshold concentrations are available. Mandoli and Dubey (1998) exposed ten species of native Indian plants to levels of particulate matter ranging from 210 to 366 $\mu g/m^3$ for an 8-hour averaging period. Damage in the form of a higher leaf area/dry weight ratio was observed at varying degrees for most plants tested. Concentrations of particulate matter lower than 163 $\mu g/m^3$ did not appear to be injurious to the tested plants. The maximum predicted 24-hour and annual average PM_{10} concentrations due to the proposed project are well below the injury thresholds reported in the literature.

It is difficult to predict what effect the proposed project's emissions of VOC will have on ambient O_3 concentrations from either a local or regional scale. VOC and NO_x emissions are precursors to the formation of O_3. O_3 is formed down-wind from emission sources when VOC, and NO_x emissions from the facility react in the presence of sunlight.

O_3 can cause various damage to broad-leaved plants including: tissue collapse, interveinal necrosis and markings on the upper surface of leaves known as stippling (pigmented yellow, light tan, red brown, dark brown, red, or purple), flecking (silver or bleached straw white), mottling, chlorosis or bronzing, and bleaching. O_3 can also stunt plant growth and bud formation. On certain plants such as citrus, grape, and tobacco, it is common for leaves to wither and drop early. A literature review suggests that exposure for 4 hours at levels of 0.04 to 11.0 ppm of O_3 will result in plant injury for sensitive plants. The extent of the injury depends on the plant species and environmental conditions prior to and during exposure.

Given that the O_3 measurements in the region comply with the NAAQS and the increase in VOC emissions for the project represents less than a 1-percent change in regional VOC emissions, no adverse effects on vegetation due to the project's VOC emissions are expected.

In summary, GP expects that the project increase in emissions will not adversely impact the soils or vegetation in areas adjacent to the Palatka Mill.

3.5.2 IMPACTS DUE TO ADDITIONAL GROWTH

The proposed project is to repair components of the existing lime kiln. Upon completion of the project, the lime kiln will continue to operate in the same way it currently operates. While the repair is to maintain the integrity and safety of the kiln, the kiln uptime is very high, and will not be significantly changed by the proposed project. Thus, because the project will not increase actual operations or increase personnel, GP expects no air quality impacts due to associated commercial and industrial growth from the proposed project.

3.5.3 IMPACTS ON VISIBILITY

The proposed project only affects and modifies the existing No. 4 Lime Kiln. The Lime Kiln is in compliance with opacity regulations and should remain in compliance after the modification. As a result of the visibility-affecting emission rates being lowered, and no change in opacity, GP does not expect any adverse impacts upon visibility.

3.6 ADDITIONAL IMPACT ANALYSIS – CLASS I AREAS

3.6.1. INTRODUCTION

Generally, if the facility undergoing the modification is within 200 kilometers of a PSD Class I area, then a significant impact analysis is also performed to evaluate the impact due to the project alone at the PSD Class I areas. The three PSD Class I areas located within 200 km of the Mill are:

- Okefenokee National Wilderness Area (NWA), 108 km north of the Mill;
- Wolf Island NWA, 186 km north of the Mill; and
- Chassahowitzka NWA, 137 km southwest of the Mill.

The maximum predicted impacts due to the No. 4 LK and contemporaneous projects at the Okefenokee, Wolf Island and Chassahowitzka NWAs are compared to EPA's proposed significant impact levels for PSD Class I areas. These recommended significant impact levels have never been promulgated as rules, but are the currently accepted criteria for determining whether a proposed project will incur a significant impact on a PSD Class I area.

If the project-only impacts at the PSD Class I area are above the proposed EPA PSD Class I significant impact levels, then an analysis is performed to demonstrate compliance with allowable PSD Class I impacts at the PSD Class I area. The proposed project's maximum emission increases are also evaluated at the PSD Class I area to support the air quality related values (AQRV) analysis, which includes an evaluation of regional haze degradation.

For predicting maximum impacts at the Okefenokee and Chassahowitzka NWA PSD Class I areas, the California Puff (CALPUFF) modeling system was used. CALPUFF, Version 5.711a (EPA, 2004), is a Lagrangian puff model that is recommended by the FDEP, in coordination with the Federal Land Manager (FLM) for the NWA, for predicting pollutant impacts at PSD Class I areas that are beyond 50 km from a project site. The following sections present a description of the CALPUFF model methodology.

3.6.2 GENERAL AIR MODELING APPROACH

The general modeling approach was based on using the long-range transport model, California Puff model (CALPUFF, Version 5.711a). The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the IWAQM Phase 2 Summary Report and the FLAG document.

The following sections present the methods and assumptions used to assess the impacts of the proposed project. The analysis is consistent with a "refined analysis" since it was performed using the detailed weather data from multiple surface and upper air stations as well as the MM4/MM5 prognostic with fields.

Model Selection And Settings

The California Puff (CALPUFF, version 5.711a) air modeling system was used to model to assess the proposed project's impacts at the PSD Class I area for comparison to the PSD Class I significant impact levels. CALPUFF is a non-steady state Lagrangian Gaussian puff long-range transport model that includes algorithms for building downwash effects as well as chemical transformations (important for visibility controlling pollutants), and wet/dry deposition. The CALPUFF meteorological and geophysical data preprocessor (CALMET, Version 5.53a), a preprocessor to CALPUFF, is a diagnostic meteorological model that produces a three-dimensional field of wind and temperature and a two-dimensional field of other meteorological parameters. CALMET was designed to process raw meteorological, terrain and land-use databases to be used in the air modeling analysis. The CALPUFF modeling system uses a number of FORTRAN preprocessor programs that extract data from large databases and converts the data into formats suitable for input to CALMET. The processed data produced from CALMET was input to CALPUFF to assess the pollutant specific impact. Both CALMET and CALPUFF were used in a manner that is recommended by the IWAQM Phase 2 and FLAG reports.

CALPUFF Model Approaches And Settings

The IWAQM has recommended approaches for performing a Phase 2 refined modeling analyses that are presented in Table 3-34. These approaches involve use of meteorological data, selection of receptors and dispersion conditions, and processing of model output. The specific settings used in the CALPUFF model are presented in Table 3-35.

Emission Inventory and Building Wake Effects

The CALPUFF model included the facility's emission, stack, and operating data as well as building dimensions to account for the effects of building-induced downwash on the emission sources. Dimensions for all significant building structures were processed with the Building Profile Input Program modified to process additional direction-specific building information, and were included in the CALPUFF model input. The modeling presents a listing of the facility's emissions and structures included in the analysis.

Receptor Locations

All Class I receptor grids were obtained from the National Park Service. The grid for the Okefenokee NWA was reduced to 180 receptors, including all boundary receptors and interior receptors with less resolution than the original set. The Chassahowitzka grid was reduced to 58 receptors located on the boundary of the area. Therefore, pollutant concentrations were predicted with an array of 180 discrete receptors located at the Okefenokee NWA, 30 discrete receptors located at the Wolf Island NWA and 58 discrete receptors located at Chassahowitzka NWA.

Meteorological Data

A wind field domain was developed that including all PSD Class I areas that were evaluated in this analysis. A detailed description of the domain is provided in the following sections. Figure 3-9 extents of the wind field domain and the location of the GP Palatka Mill and PSD Class I areas.

Modeling Domain

A rectangular modeling domain extending 448 km in the east-west (x) direction and 684 km in the north-south (y) direction was used for the refined modeling analysis. The southwest corner of the domain is the origin and is located at 26.25 degrees north latitude and 85.0 degrees west longitude (east and north UTM coordinates of 77 and 2966.0 km, respectively, zone 17 equivalent). This location is in the Gulf of Mexico approximately 250 km west of Naples, Florida. For the processing of meteorological and geophysical data, the domain contains 112 grid cells in the x-direction and 171 grid cells in the y-direction. The domain grid resolution is 4 km. The air modeling analysis was developed in the UTM coordinate system, Zone 17.

Mesoscale Model – Generations 4 and 5 (MM4 and MM5) Data

Pennsylvania State University in conjunction with the NCAR Assessment Laboratory developed the MM4 and MM5 data set, a prognostic wind field or "guess" field, for the United States. The hourly meteorological variables used to create this data set (wind, temperature, dew point depression, and geopotential height for eight standard levels and up to 15 significant levels) are extensive and are available for 1990, 1992, and 1996. The analysis used the MM4 and MM5 data to initialize the CALMET wind field. The MM4 and MM5 data available for 1990 and 1992, respectively, have a horizontal spacing of 80 km and are used to simulate atmospheric variables within the modeling domain. The MM5 data are also available for 1996 and have a horizontal spacing of 36 km.

The MM4 and MM5 data used in the CALMET, although advanced, lacks the fine detail of specific temporal and spatial meteorological variables and geophysical data. These variables were processed into the appropriate format and introduced into the CALMET model through the additional data files obtained from the following sources.

Surface Data Stations and processing

The surface station data processed for the CALPUFF analyses consisted of data from up to sixteen NWS stations or Federal Aviation Administration (FAA) Flight Service stations for Charleston in South Carolina; Columbus, Macon, Savannah, Augusta, Athens, and Atlanta in Georgia; and Tampa, Jacksonville, Daytona Beach, Tallahassee, Vero Beach, Fort Myers, Orlando, Pensacola and Gainesville in Florida. A summary of the surface station information and locations are presented in Table 3-36. The surface station parameters include wind speed, wind direction, cloud ceiling height, opaque cloud cover, dry bulb temperature, relative humidity, station pressure, and a precipitation code that is based on current weather conditions. The surface station data were processed into a SURF.DAT file format for CALMET input.

Because the modeling domain extends over water, up to 10 sea surface stations were incorporated in the analysis. Data were obtained from C-Man stations and NOAA buoys. These data were processed into an over-water surface station format (i.e., SEA*.DAT) for input to CALMET. The over-water station data include wind direction, wind speed and air temperature.

Upper Air Data Stations and Processing

Upper air data from the following NWS stations, based on the availability of the upper air data, were used in the modeling analysis:

- Waycross, Georgia (1990, 1992);
- Athens, Georgia (1990, 1992);
- Charleston, South Carolina (1990, 1992, 1996);
- Cape Canaveral (1996)
- Miami (1996)
- Apalachicola, Florida (1990);
- Ruskin, Florida (1990, 1992, 1996);
- Tallahassee, Florida (1992, 1996);
- West Palm Beach (1990, 1992)
- Jacksonville, Florida (1996); and
- Peachtree City, Georgia (1996).

Table 3-36 presents the data and locations for the upper air stations.

Precipitation Data Stations and Processing

Precipitation data were processed from a network of hourly precipitation data files collected from primary and secondary NWS precipitation-recording stations located within the latitude and longitudinal limits of the modeling domain. Data for 82 stations in Alabama, Georgia and Florida were obtained in NCDC TD-3240 variable format and converted into a fixed-length format. The utility programs PXTRACT and PMERGE were then used to process the data into the format for the PRECIP.DAT file that is used by CALMET

Geophysical Data Processing

Terrain elevations for each grid cell of the modeling domain were obtained from 1-degree Digital Elevation Model (DEM) files obtained from the U.S. Geographical Survey (USGS) Internet website. The DEM data was extracted for the modeling domain grid using the utility program TERREL. Land-use data were also extracted from 1-degree USGS files and processed using utility programs CTGCOMP and CTGPROC. Both the terrain and land use files were combined into a GEO.DAT file for input to CALMET with the MAKEGEO utility program.

3.6.3 METHODOLOGY AND MODEL RESULTS

The following paragraphs summarize the processing methods for deposition, visibility.

Deposition

As part of the AQRV analyses, total nitrogen (N) rates were predicted for the proposed project at each PSD Class I area evaluated. The deposition analysis criterion is based on the annual averaging period. The total N deposition is estimated in units of kilogram per hectare per year (kg/ha/yr). The CALPUFF model is used to predict wet and dry deposition fluxes of various oxides of these elements.

For N deposition, the species include:

- Particulate ammonium nitrate (from species NO_3), wet and dry deposition;
- Nitric acid (species HNO_3), wet and dry deposition;
- NO_x dry deposition; and
- Ammonium sulfate (species SO_4), wet and dry deposition.

The CALPUFF model produces results in units of micrograms per square meter per second ($\mu g/m^2/s$). The modeled deposition rates are then converted to N deposition in kilograms per hectare, respectively, by using a multiplier equal to the ratio of the molecular weights of the substances (refer to the IWAQM Phase 2 report, Section 3.3).

The deposition analysis threshold (DAT) for N of 0.01 kg/ha/yr was provided by the USFWS (January 2002). A DAT is the additional amount of N deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant. The maximum N deposition predicted for the proposed GP project is, therefore, compared to the DAT or significant impact level.

Visibility

Based on the FLAG document, current regional haze guidelines characterize a change in visibility by the change in the light-extinction coefficient (b_{ext}). The b_{ext} is the attenuation of light per unit distance due to the scattering and absorption by gases and particles in the atmosphere. A change in the extinction coefficient produces a perceived visual change. An index that simply quantifies the percent change in visibility due to the operation of a source is calculated as:

$$\Delta\% = (b_{exts} / b_{extb}) \times 100$$

where: b_{exts} is the extinction coefficient calculated for the source, and
b_{extb} is the background extinction coefficient.

The purpose of the visibility analysis is to calculate the extinction at each receptor for each day (24-hour period) of the year due to the proposed project. The criteria to determine if the project's impacts are potentially significant are based on a change in extinction of 5 percent or greater for any day of the year.

The analysis processing of visibility impairment for this study was performed with the CALPUFF model and the CALPUFF post-processing program CALPOST. The analysis was conducted in accordance with the most recent guidance from the FLAG report (December 2000). The CALPUFF postprocessor model CALPOST is used to calculate the combined visibility effects from the different pollutants that are emitted from the proposed project. Daily background extinction coefficients are calculated on an hour-by-hour basis using hourly relative humidity data from CALMET and hygroscopic and non-hygroscopic extinction components specified in the FLAG document. For the Okefenokee NWA, the hygroscopic and non-hygroscopic components are 0.9 and 8.5 inverse megameter (Mm^{-1}). CALPOST then calculates the percent extinction change for each day of the year. Impacts for the proposed project only were compared to both the proposed EPA PSD Class I significance levels for SO_2 and NO_2, the regional haze degradation criteria of 5 percent, and the N deposition criteria of 0.01 kilograms per hectare per year (kg/ha/yr).

Table 3-37 compares the maximum PM_{10} and NO_2 concentrations predicted for the proposed LK4 and contemporaneous projects at each evaluated PSD Class I area as compared with the EPA's proposed PSD Class I significance levels. The maximum PM_{10} and NO_2 concentrations were predicted to be below the significant impact levels at each PSD Class I areas. Therefore, a full PSD Class I increment analysis was not required for these pollutants.

Table 3-38 compares the maximum visibility impairment predicted for the proposed project at each evaluated PSD Class I area. The predicted impacts are all below the criteria of 5 percent..

Table 3-39 compares the maximum nitrogen deposition predicted for the proposed project only at each evaluated PSD Class I area. The predicted impacts are less than the criteria of 0.01 kg/ha/yr.

3.6.4. ADDITIONAL IMPACTS ANALYSIS FOR NATIONAL WILDLIFE AREAS

The analysis addresses the potential impacts on vegetation, soils, and wildlife of the Okefenokee and Chassahowitzka NWAs Class I area due to the proposed project. In addition, potential impacts upon visibility resulting from the proposed project are assessed. The Okefenokee NWA Class I area is located approximately 108 km north of the GP Palatka Mill. Although the Wolf Island NWA Class I area is located approximately 186 km north of the GP Palatka Mill, only the Okefenokee NWA Class I area was evaluated for this analysis, since it is much closer to the Mill than Wolf Island, and both have similar AQRVs.

Ambient Impact

The maximum pollutant concentrations predicted for the project in the NWAs are presented above. These results were compared with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens, and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. Threshold information is not available for all species found in the Class I area, although studies have been performed on a few of the common species and on other similar species that can be used as indicators of effects. All predicted impacts were far below thresholds.

Impacts to soils

For soils, the potential and hypothesized effects of atmospheric deposition include:

- Increased soil acidification,
- Alteration in cation exchange,
- Loss of base cations, and
- Mobilization of trace metals.

The potential sensitivity of specific soils to atmospheric inputs is related to two factors. First, the physical ability of a soil to conduct water vertically through the soil profile is important in influencing the interaction with deposition. Second, the ability of the soil to resist chemical changes, as measured in terms of pH and soil cation exchange capacity (CEC), is important in determining how a soil responds to atmospheric inputs.

The soils of the Okefenokee NWA are generally classified as histosols. Histosols (peat soils) are organic and have extremely high buffering capacities based on their CEC, base saturation, and bulk density. Therefore, they would be relatively insensitive to atmospheric inputs.

The soils of the Chassahowitzka NWA are also generally classified as histosols. According to the U.S. Department of Agriculture (USDA) Soil Surveys of Citrus and Hernando Counties, nine soil complexes are found in the Chassahowitzka NWA. These include Aripeka fine sand, Aripeka-Okeelanta-Lauderhill, Hallendale-Rock outcrop, Homosassa mucky fine sandy loam, Lacooche, Okeelanta mucks, Okeelanta-Lauderdale-Terra Ceia mucks, Rock outcrop-Homosassa-Lacoochee, and Weekiwachee-Durbin mucks (Porter, 1996). The majority of the soil complexes found in the Chassahowitzka NWA is inundated by tidal waters, contain a relatively high organic matter content, and have high buffering capacities based on their CEC, base saturation, and bulk density. The regular flooding of these soils by the Gulf of Mexico regulates the pH and any change in acidity in the soil would be buffered by this activity. Therefore, they would be relatively insensitive to atmospheric inputs. However, Terra Ceia, Okeelanta, and Lauderdale freshwater mucks are present along the eastern border of the Chassahowitzka NWA, and may be more sensitive to atmospheric sulfur deposition (Porter, 1996). Although not tidally influenced, these freshwater mucks are highly organic and, therefore, have a relatively high intrinsic buffering capacity.

The relatively low sensitivity of the soils to atmospheric inputs coupled with the extremely low ground-level pollutant concentrations due to the project for the Okefenokee and Chassahowitzka NWAs precludes any significant impact on soils.

Impacts to Vegetation

In summary, the phytotoxic effects from the project's emissions are minimal. It is important to note that the elements were conservatively modeled with the assumption that 100 percent was available for plant uptake. This is rarely the case in a natural ecosystem.

Impacts To Wildlife

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the National AAQS. This occurs in non-attainment areas (*e.g.*, Atlanta). Risks to wildlife also may occur for wildlife living in the vicinity of an emission source that experiences frequent upsets or episodic conditions resulting from malfunctioning equipment, unique meteorological conditions, or startup operations (Newman and Schreiber, 1988). Under these conditions, chronic effects (*e.g.*, particulate contamination) and acute effects (*e.g.*, injury to health) have been observed (Newman, 1981).

A wide range of physiological and ecological effects to fauna has been reported for gaseous and particulate pollutants (Newman, 1981; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the secondary AAQS. Physiological and behavioral effects have been observed in experimental animals at or below these standards.

Based on the very low level of impacts, GP does not expect any effects on wildlife AQRVs from SO_2, NO_2, and particulates. The proposed project's contribution to cumulative impacts is expected to be negligible.

Research with primates shows that O_3 penetrates deeper into non-ciliated peripheral pathways and can cause lesions in the respiratory bronchioles and alveolar ducts as concentrations increase from 0.2 to 0.8 ppm (Paterson, 1997). These bronchioles are the most common site for severe damage. In rats, the Type I cells in the proximal alveoli (where gas exchange occurs) were the primary site of action at concentrations between 0.5 and 0.9 ppm (Paterson, 1997). Work with rats and rabbits suggest that the mucus layer that lines the large airways does not protect completely against the effects of O_3, and desquamated cells were found from acute exposures at 0.25, 0.5, and 1.0 ppm. In animal research, O_3 has been found to increase the susceptibility to bacterial pneumonia (Paterson, 1997). During the last decade, there has also been growing concern with the possibility that repeated or long-term exposure to elevated O_3 concentrations may be causing or contributing to irreversible chronic lung injury.

The project's contribution to ground level O_3 is expected to be very low and dispersed over a large area. Coupled with the historical ambient data, mobility of wildlife, the potential for exposure of wildlife to the facility's impacts that lead to high concentration is extremely unlikely.

3.6.5 SUMMARY

The analysis demonstrates that the increase in impacts due to the proposed project is extremely low. Regardless of the existing conditions in the vicinity of the Class I areas, the proposed LK4 and contemporaneous projects will not cause any significant adverse effects due to the predicted low impacts upon that area.

SELECTED REFERENCES

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Newman, J.R. 1981. Effects of Air Pollution on Animals at Concentrations at or Below Ambient Air Standards. Performed for Denver Air Quality Office, National Park Service, U.S. Department of the Interior. Denver, Colorado.

Newman, J.R. and R.K. Schreiber. 1988. Air Pollution and Wildlife Toxicology. Environmental Toxicology and Chemistry. 7:381-390.

Table 3-1. Summary of Background Concentrations for NO_x, PM_{10}, and Ozone

Pollutant	Monitor Description	Averaging Period	Background Concentration ($\mu g/m^3$)
Ozone	12-001-3011 Alachua County, 200 Savannah – 2003	1-hour	175 [a]
		8-hour	145 [b]
NOx	12-031-0032 Duval County, 2900 Bennett St – (2002 to 2004)	Annual	27.5
PM10	12-107-1008 Putnam County, Palatka – (1999-2001, 2003-2004)	24-hour	57[c]
		Annual	27[d]

Notes

[a] High-Second-Highest

[b] 3-year average

[c] high, 6th-highest in 5 years

[d] highest, 2002-2004

Source: Florida Department of Environmental Protection. Quick Look Reports. 1999-2004.

Table 3-2. Structure Dimensions Used in the Modeling Analysis, GP Palatka Paper Mill						
Structure	Height		Length		Width	
	(ft)	(m)	(ft)	(m)	(ft)	(m)
RB4 Precipitator	85	25.9	123	37.5	58	17.6
RB4 Boiler Building	193.7	59.0	104	31.7	90	27.4
Power Plant Building	107.6	32.8	101	30.8	92	28.0
Pulp Dryer No. 3	84.5	25.8	275	83.7	157	47.9
Pulp Dryer No. 5	70.5	21.5	328	99.9	99	30.3
Pulp Dryer No. 4	73	22.3	265	80.7	125	38.2
Roll Storage Building	52	15.8	464	141.4	346	105.5
Tissue Converting & Finishing (White)	84	25.6	298	90.8	207	63.1
Towel & Napkin Warehouse (Green)	33.5	10.2	434	132.3	424	129.2
Towel & Napkin Converting & Finishing (Yellow)	48	14.6	377	114.9	422	128.6
Towel & Napkin Warehouse (Blue)	40	12.2	464	141.4	641	195.4
Towel & Napkin Warehouse (Gray)	28	8.5	434	132.3	481	146.6
Converting Operations	48	14.6	47	14.3	65	19.8
Building 63	40	12.2	134	40.8	148	45.1
Warehouse Complex 1	62.67	19.1	1,394	424.9	377	114.8
Warehouse Complex 2	46.8	14.3	924	281.5	425	129.5
Nos. 1 and 2 Machines Storage	71.16	21.7	225	68.6	407	124.2
Kraft Converting and Storage	60.75	18.5	310	94.4	524	159.9
Kraft Warehouse and Multi-Wall	56.7	17.3	290	88.4	521	158.7
Digester	62.2	19.0	264	80.4	33	10.1
No. 3 RB Building [a]	100	30.5	61	18.6	34	10.4
No. 2 RB Building [a]	100	30.5	58	17.7	73	22.3

[a] 1974 Baseline Only

Table 3-3. Significant Impact Levels and De Minimis Concentrations for Modeled Pollutants

Pollutant	Averaging Time	Significant Impact Levels ($\mu g/m^3$)	De Minimis Concentration ($\mu g/m^3$)
PM_{10}	24-hour	5	10
	Annual	1	--
NO_x	Annual	1	14

Table 3-4. Summary of Emissions Increases/Decreases Due to LK4 and Contemporaneous Projects, GP Palatka Power Mill

			Emission Rates											
			Baseline				Potential				Project			
			Annual		Maximum		Annual		Maximum		Annual		Maximum	
Pollutant/Project	Model ID	Source Description	(tons/yr)	(g/s)	(lb/hr)	(g/s)	(tons/yr)	(g/s)	(lb/hr)	(g/s)	(TPY)	(g/s)	(lb/hr)	(g/s)
PM10														
No. 4 Lime Kiln	LK4	No. 4 Lime Kiln (EU17)	36.60	1.05	8.36	1.05	164.80	4.74	37.6	4.74	128.20	3.69	29.27	3.69
MACT I Compliance	TOX	New Thermal Oxidizer		--		--	30.7	--	7.00	--	30.7	0.882	7.00	0.882
	TRSB	Old TRS Incinerator	20.6	-	4.7	-		--		--	-20.6	-0.592	-4.7	-0.592
New Package Boiler	PB7	No. 7 Power Boiler		--		--	1.5	--	1.9	--	1.5	0.043	1.90	0.239
	PB6B	No. 6 Power Boiler	0.15	--	0.18	--		--		--	-0.15	-0.0043	-0.18	-0.023
Bark Hog Replacement	FUG	Fugitives		--		--	3.26	--	0.74	--	3.26	0.094	0.74	0.094
NOx														
No. 4 Lime Kiln	LK4	No. 4 Lime Kiln (EU17)	100.60	2.89	32.0	4.03	467.20	13.44	106.7	13.44	366.60	10.55	74.67	--
MACT I Compliance	TOX	New Thermal Oxidizer		--	--	--	39.4	--	--	--	39.4	1.133	--	--
	TRSB	Old TRS Incinerator	9.2	--	--	--		--	--	--	-9.2	-0.265	--	--
SO_2 (For AQRV Visibility Analysis Only)														
No. 4 Lime Kiln	LK4	No. 4 Lime Kiln (EU17)	--	--	4.30	--	--	--	9.1	--	--	--	4.80	0.60
SAM (For AQRV Visibility Analysis Only)														
No. 4 Lime Kiln	LK4	No. 4 Lime Kiln (EU17)	--	--	0.21	--	--	--	0.45	--	--	--	0.24	0.03

Note: Maximum potential and current emission rates for NOX, SO_2 and SAM were used for AQRV Visibility Analysis

Table 3-5. Source Locations and Source Parameter Data Used for the Significant Impact Analysis, GP Palatka LK4 and Contemporaneous Projects

				Stack Parameters							
		UTM NAD27		Physical				Operating			
Source	Model	East	North	Height		Diameter		Temperature		Velocity	
Description	ID	(m)	(m)	(ft)	(m)	(ft)	(m)	(oF)	(K)	(fps)	(m/s)
No. 4 Lime Kiln	LK4	434106.73	3283246.93	131	39.9	4.4	1.35	164	346.5	70.6	21.51
New Themal Oxidizer	TOX	433981.56	3283380.12	250	76.2	3.6	1.10	160	344.3	13.4	4.09
Old TRS Incinerator	TRSB	434083.59	3283347.55	250	76.2	3.1	0.94	533	551.5	105.1	32.03
No. 7 Power Boiler	PB7	433986.18	3283465.92	60	18.3	7.0	2.13	750	672.0	43.5	13.25
No. 6 Power Boiler	PB6B	433992.76	3283466.42	60	18.3	6.0	1.83	660	622.0	57.2	17.43
		UTM NAD27		Area Source Parameters							
Source	Model	East	North	Release Height		Initial Sigma-z					
Description	ID	(m)	(m)	(ft)	(m)	(ft)	(m)				
Bark Pile Fugitives	BARKF	433967.81	3283305.26	30	9.1	14.0	4.25				

Table 3-6. State and National Ambient Air Quality Standards for Modeled Pollutants, GP Palatka

Pollutant	Averaging Time	NAAQS/AAQS ($\mu g/m^3$)	Form of Standard
PM_{10}	24-hour	150	High-sixth-highest for 5 years
	Annual	50	Annual Mean
NO_2	Annual	100	Annual Mean

Table 3-7. Summary of Maximum Potential Emissions for PM_{10}, GP Palatka Paper Mill

Emission Pt ID	Model ID	Source Description	Emission Rates (lb/hr)	Emission Rates (g/s)
014	PB4	# 4 Power Boiler	34.57	4.36
015	PB5	# 5 Power Boiler	56.89	7.17
016	CB4	# 4 Combination Boiler	38.00	4.79
018	RB4	# 4 Recovery Boiler	75.6	9.53
019	SDT4	# 4 Smelt Dissolving Tanks	10.8	1.36
044	PB7	# 7 Package Boiler	1.90	0.24
017	LK4	# 4 Lime Kiln	37.60	4.74
039	BCYCL	Bark Handling Cyclone	2.0	0.252
039	BARKF	Chip Mill Fugitives	1.2	0.15
No. 5 Tissue Machine Sources				
043	TM5_3	[3] Stock Prep Area Exhaust Fan (FM1)	0.30	0.037
043	TM5_4	[4] Roof Exhaust Fan 776	0.30	0.037
043	TM5_9	[9] Former Area Exhaust Fan 2042	0.30	0.037
043	TM5_5	[5] AirCap Roof Exhaust Fan 2041(FM2)	0.08	0.010
043	TM5_10	[10] Roof Exhaust Fan 902	0.24	0.030
043	TM5_11	[11] Fan 778	0.35	0.045
043	TM5_12	[12] Roof Exhaust Fan 905	0.24	0.030
043	TM5_16	[16] Burner Area Exhaust Fan	0.35	0.045
043	TM5_7	[7] Winder Area Roof Exhaust Fan 2039	0.88	0.111
043	TM5_6	[6] Reel Roof Exhaust Fan 2040 (WND)	0.88	0.111
043	TM5_15	[15] Existing Wet & Dry Yankee Hood (YKD)-burner	1.20	0.151
043	TM5_14	[14] Afterdryer Hood Exhaust (MND)	0.33	0.042
045	CONV1	Converting Operations	0.5667	0.0714
045	CONV2	Converting Operations	0.5667	0.0714
045	CONV3	Converting Operations	0.5667	0.0714
045	TRIM1	Converting Operations	3.6	0.4536
045	TRIM2	Converting Operations	3.6	0.4536
045	TRIM3	Converting Operations	3.8	0.4788
	TM4	No. 4 Tissue Machine Combined Source	0.55	0.0693
	TM3	No. 3 Tissue Machine Combined Source	0.55	0.0693
Roads				
	GATE1***	Traffic Through Gate 1 (1.31 lb/day - 64 sources)	0.05458	0.00688
	GATE2***	Traffic Through Gate 2 (2.83 lb/day - 29 sources)	0.11792	0.01486
	GATE3***	Traffic Through Gate 3 (0.55 lb/day - 41 sources)	0.02292	0.00289
	GATE4***	Traffic Through Gate 4 (23.56 lb/day - 102 sources)	0.98167	0.12369
	GATE5***	Traffic Through Gate 5 (0.55 lb/day - 51 sources)	0.02292	0.00289
Total All Sources:			279.01	35.16

Table 3-8. Summary of Maximum Potential Emissions for NOx, GP Palatka Paper Mill

Emission Pt ID	Model ID	Source Description	Emission Rates	
			(TPY)	(g/s)
014	PB4	# 4 Power Boiler	184.00	5.29
015	PB5	# 5 Power Boiler	781.00	22.47
016	CB4	# 4 Combination Boiler	522.90	15.04
018	RB4	# 4 Recovery Boiler	738.1	21.23
019	SDT4	# 4 Smelt Dissolving Tanks	69.6	2.00
044	PB7	# 7 Package Boiler	39.40	1.13
017	LK4	# 4 Lime Kiln	467.90	13.46
043	TM5_15	[15] Existing Wet & Dry Yankee Hood (YKD)-burner	23.65	0.68
	TM4	No. 4 Tissue Machine Combined Source	10.80	0.31
	TM3	No. 3 Tissue Machine Combined Source	10.80	0.31
	TOX	Thermal Oxidizer	151.36	4.35
Total All Sources:			2999.51	81.93

Table 3-9. Locations and Stack Parameters for Point Sources at GP Palatka Paper Mill for Future NAAQS Impact Analysis

		Stack Parameters									
		Source Location UTM		Stack Height		Stack Exit Temp		Stack Velocity		Stack Diameter	
Model ID	Description	East (m)	North (m)	(ft)	(m)	F	K	(fps)	(m/s)	(ft)	(m)
PB4	# 4 Power Boiler	433998.01	3283481.49	200	61.0	395	475	71.6	21.83	4	1.22
PB5	# 5 Power Boiler	433977.26	3283447.19	237	72.2	413	485	85.9	26.19	8	2.44
CB4	# 4 Combination Boiler	433982.43	3283450.46	237	72.2	466	514	92.3	28.14	8	2.44
RB4	# 4 Recovery Boiler	433882.28	3283437.93	230	70.1	425	491	65.9	20.08	12	3.66
SDT4	# 4 Smelt Dissolving Tanks	433934.67	3283477.55	206	62.8	180	355	34.0	10.35	5	1.52
PB7	# 7 Package Boiler	433986.18	3283465.92	60	18.3	750	672	43.5	13.25	7	2.13
LK4	# 4 Lime Kiln	434106.73	3283246.93	131	39.9	170	350	70.6	21.51	4.42	1.35
TOX	Thermal Oxidizer	433981.56	3283380.12	250	76.2	160	344	18.0	5.49	3.6	1.10
BCYCL	Bark Handling Cyclone	433966.62	3283485.19	117.6	35.85	77	298	23.6	7.20	3	0.91
TM5_3	TM-5 Stock Prep Area Exhaust Fan (FM1)	434234.62	3283507.73	94	28.65	115	319	39.2	11.94	5.7	1.74
TM5_4	TM-5 Roof Exhaust Fan 776	434245.04	3283495.24	94	28.65	115	319	39.2	11.94	5.7	1.74
TM5_9	TM-5 Former Area Exhaust Fan 2042	434245.04	3283486.71	94	28.65	120	322	39.2	11.94	5.7	1.74
TM5_5	TM-5 AirCap Roof Exhaust Fan 2041(FM2)	434256.99	3283477.82	94	28.65	115	319	39.2	11.94	5.7	1.74
TM5_10	TM-5 Roof Exhaust Fan 902	434255.09	3283473.87	94	28.65	115	319	38.4	11.71	4.7	1.43
TM5_11	TM-5 Fan 778	434258.43	3283468.66	94	28.65	115	319	39.2	11.94	5.7	1.74
TM5_12	TM-5 Roof Exhaust Fan 905	434261.04	3283465.13	94	28.65	115	319	38.4	11.71	4.7	1.43
TM5_16	TM-5 Burner Area Exhaust Fan	434251.74	3283469.22	84	25.60	115	319	39.2	11.94	5.7	1.74
TM5_7	TM-5 Winder Area Roof Exhaust Fan 2039	434280.95	3283445.22	94	28.65	115	319	38.4	11.71	4.7	1.43
TM5_6	TM-5 Reel Roof Exhaust Fan 2040 (WND)	434270.53	3283459.73	94	28.65	115	319	47.1	14.35	5.2	1.58
TM5_15	TM-5 Existing Wet & Dry Yankee Hood (YKD)-burner	434264.95	3283462.34	94	28.65	450	505	64.5	19.66	5	1.52
TM5_14	TM-5 Afterdryer Hood Exhaust (MND)	434266.06	3283458.25	94	28.65	180	355	56.7	17.29	3.8	1.16
CONV1	Converting Operations	434383.27	3283544.38	55.3	16.86	90	305	147.2	44.87	3.1	0.94
CONV2	Converting Operations	434389.22	3283548.48	55.3	16.86	90	305	147.2	44.87	3.1	0.94
CONV3	Converting Operations	434395.36	3283552.94	55.3	16.86	90	305	147.2	44.87	3.1	0.94
TRIM1	Converting Operations	434286.17	3283423.52	67	20.42	90	305	81.2	24.75	2.8	0.85
TRIM2	Converting Operations	434288.13	3283427.44	67	20.42	90	305	81.2	24.75	2.8	0.85
TRIM3	Converting Operations	434282.89	3283423.52	70.3	21.43	90	305	85.72	26.13	2.8	0.85
TM4	No. 4 Tissue Machine Combined Source	434302.09	3283502.61	94	28.65	450	505	64.5	19.66	5	1.52
TM3	No. 3 Tissue Machine Combined Source	434220.66	3283432.68	94	28.65	450	505	64.5	19.66	5	1.52

Table 3-10. Summary of Model Parameters for Fugitive Sources, GP Palatka Paper Mill						
		Source Location UTM (m)		Release Ht	Computed Initial Dispersion Coefficients (a)	
Model ID	Source Description	East	North	(m)	Horizontal	Vertical
BARKF(a)	Chip Mill Fugitives	433967.81	3283305.26	9.14	NA	4.25
GATE....	All Paved Roads	Varies	Varies	4.572	6.57	2.13

(a) Areapoly Source

Table 3-11. North Carolina Technique Screening Analysis for Competing Sources of Particulate.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in PM_{10} NAAQS? Emissions (tpy)	Emission > Threshold?
1070022	Florida Rock Industries, Inc. Putnam	Florida Rock -Comfort Rd	2.3	SIA	0.88	YES
1070030	Georgia-Pacific Corporation	Georgia-Pacific Corp. Palatka Chipnsaw	2.7	SIA	90.47	YES
1070031	Cdr Systems Corporation	Cdr Systems Corporation	2.9	SIA	0.00	NO
1070028	Tarmac Florida, Inc. Palatka	Tarmac Florida, Inc. Palatka	3.0	SIA	0.00	NO
1070043	Price Brothers Company	Palatka Plant	4.0	8.0	39.90	NO
1070025	Seminole Electric Cooperative, Inc.	Seminole Power Plant	7.5	78.6	1884.80	YES
1070039	Lafarge North America, Inc.	Lafarge North America, Inc.	7.7	82.4	221.65	YES
1070014	Florida Power & Light (Ppn)	Putnam Power Plant	10.9	145.1	40.56	NO
1070029	Southern Crematory, Inc.	Watts Funeral Home	12.9	186.8	0.70	NO
0190007	Iluka Resources Inc.	Green Cove Springs	20.9	345.2	209.24	NO
1070038	Johnson-Overturf Funeral Home, Inc.	Johnson-Overturf Funeral Homes Inc	21.6	359.3	1.30	NO
1070041	Masters Funeral Home, P.A.	Palatka Facility	21.7	361.9	1.43	NO
1070007	Florida Rock Industries, Inc. Keuka Plt	Florida Rock Industries, Inc. Keuka Plt	24.5	417.9	21.46	NO
1070001	Feldspar Corp/Edgar Plastic Kaolin Div	Feldspar Corp/Edgar Plastic Kaolin Div	27.7	482.9	38.96	NO
0190027	Florida Rock Industries, Inc. Clay	Florida Rock Industries, Inc. Clay	31.7	562.2	0.00	NO
7775007	Hanson Pipe & Products, Inc.	Hanson Pipe & Products, Inc.	32.2	572.1	0.00	NO
0190031	Vac-Con	Vac-Con	32.7	582.3	0.01	NO
1070040	Delray Stake And Shavings, Inc.	Crescent City Mill	32.8	583.2	53.29	NO
0190068	Mobro Marine, Inc	Green Cove Springs	33.3	594.5	49.90	NO
0190019	Tamko Roofing Products, Inc.	Tamko Roofing Products, Inc.	33.4	596.4	63.06	NO
0190069	Redd Team Manufacturing, Inc.	Keystone Heights	33.4	596.9	24.00	NO
0190056	New Ngc, Inc.	Unifix Usa - National Gypsum Co. - Clay	33.5	598.1	0.02	NO
1090450	Tarmac America, Llc	St. Augustine Ii	33.6	599.1	0.00	NO
0190021	Pyramid Mouldings	Pyramid Mouldings	34.3	614.1	8.92	NO
0190070	Coastal Marine, Inc.	Coastal Marine Inc	34.4	616.2	7.80	NO
1090446	Hicks Trucking & Land Clearing	Hicks Trucking & Land Clearing	34.5	618.5	16.38	NO
7770007	Anderson Columbia, Inc. #9	#9 Ashpalt Plant	34.6	620.3	10.11	NO
1070015	Georgia-Pacific Corp. Plywood Plant	Georgia-Pacific Corp. Plywood Plant	35.7	642.3	232.45	NO
7775083	Pave-Tec, Inc.	Pave-Tec, Inc.	36.7	662.3	7.50	NO
1090037	V.J. Usina Contracting, Inc.	V.J.Usina Contracting, Inc.	37.8	683.6	41.60	NO
1090036	Lakeview Dirt Company, Inc.	Lakeview Dirt Company, Inc.	38.9	705.7	0.00	NO
1090019	Tarmac America, Inc. St. Augustine	Tarmac America, Inc. St. Augustine	38.9	706.4	0.00	NO
1090035	Masters Land Clearing, Inc.	Masters Land Clearing, Inc.	39.0	708.0	0.00	NO
1090444	St. Augustine Memorial Park & Crematory	St. Augustine Memorial Park & Crematory	39.2	711.3	0.75	NO
1090447	Halna, Inc.	Hydro Aluminum Of North America - St. Au	39.4	715.0	19.11	NO
1090018	Florida Rock Industries, Inc. St. Johns	Florida Rock Industries, Inc. St. Johns	39.9	726.0	29.65	NO
7775056	Apac-Southeast, Inc. - First Coast Div.	Apac-Southeast, Inc. -Plant No. 4	40.2	732.9	48.97	NO
0190032	Florida Army National Guard - Camp Blndg	Florida Army National Guard - Camp Blndg	40.7	742.5	7.49	NO
1090011	W.J. Development Corporation	St. Augustine Marine	41.8	763.6	0.00	NO
0190011	E.I. Dupont De Nemours & Co - Trailridge	E.I. Dupont De Nemours & Co - Trailridge	42.1	770.5	153.52	NO
1090015	Florida School For The Deaf & The Blind	Florida School For The Deaf & The Blind	43.7	802.9	3.17	NO
7775261	Florida Rock Industries, Inc.	Portable Redi-Mix	43.8	803.1	0.00	NO
0350002	Tarmac America, Inc. Bunnell	Tarmac America, Inc. Bunnell	44.4	815.0	0.00	NO
0830070	Florida Gas Transmission Company	Fgtc Station 17, Marion County	45.1	830.7	5.62	NO
7770037	Apac-Southeast, Inc. - First Coast Div.	Apac-Southeast Inc., First Coast Div.	45.3	833.3	24.25	NO
0190059	W.W.Carter Contracting	W.W.Carter Contractmasters Road Property	45.7	842.4	4.80	NO
0350004	Rinker Materials Corporation - Bunnell	Rinker Materials Corporation - Bunnell	45.8	844.1	0.00	NO
1090040	Rinker Materials Corporation	Rinker Materials #1 Plant	46.1	850.2	0.00	NO
7775001	American Concrete Products L.C.	American Concrete Products L.C.	47.1	870.1	2.12	NO
0070016	Owen Joist Corporation	Smi Joist Of Florida	49.8	923.0	1.46	NO
0070011	Florida Rock Industries, Inc. Bradford	Florida Rock Industries, Inc. Bradford	50.5	938.9	109.85	NO
0070004	Griffin Industries Of Florida	Griffin Industries Of Florida	50.7	942.8	116.43	NO
0190026	Tarmac Florida, Inc. Orange Park	Tarmac Florida, Inc. Orange Park	50.9	946.2	0.00	NO
0830094	Bedrock Resources	Bedrock Resources/Citra Mine	51.3	953.3	2.50	NO
0310225	Southern Culvert Division/Wheeler Cnsl.	Southern Culvert Division/Wheeler Cnsl.	53.0	987.6	0.01	NO

Table 3-11. North Carolina Technique Screening Analysis for Competing Sources of Particulate.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in PM_{10} NAAQS? Emissions (tpy)	Emission > Threshold?
7775240	Apac-Southeast, Inc. First Coast Divisi	Gainesville Asphalt Plant	53.5	997.6	3.94	NO
0070001	E.I. Dupont De Nemours & Co Inc Highland	E.I. Dupont De Nemours & Co Inc Highland	54.6	1019.2	145.42	NO
0310462	First Coast Technology & Repair	First Coast Technology & Repair	54.6	1020.0	0.00	NO
7775041	Apac- Southeast, Inc.	Apac-Southeast, Inc.	55.0	1028.5	60.80	NO
1270096	Falcon Industries, Inc.	Falcon Industries, Inc.	55.0	1028.8	0.41	NO
0310208	Standard Precast, Inc.	Standard Precast, Inc.	55.4	1036.7	0.07	NO
0310250	Tarmac America, Inc.	Tarmac America, Inc.	55.5	1037.4	0.37	NO
0830045	Standard Sand & Silica Co	Standard Sand & Silica Co	56.3	1053.7	47.70	NO
0830062	Tru Balance Wheel Weights, Inc.	Tru Balance Wheel Weights, Inc.	56.3	1053.9	0.00	NO
0310277	Rinker Materials Corp.	Rinker Materials Corp.	57.1	1069.0	20.10	NO
0310043	Duval Asphalt Products	Phillips Highway Plant	57.1	1070.6	8.12	NO
0310223	Cemex, Inc.	Cemex, Inc.(Florida Mining Blvd.)	57.6	1079.6	0.91	NO
0310293	Jaxson Brown, Inc.	Sunbeam Road Landfill	58.3	1094.7	0.00	NO
0310026	Atlantic Coast Asphalt, Inc.	Shad Asphalt Plant	58.4	1095.4	23.84	NO
0310171	Florida Rock Industries, Inc.	Capitol Concrete Plant # 3	58.7	1101.5	2.33	NO
0830051	Seilers Concrete	Seilers Concrete	59.0	1107.7	0.05	NO
0310341	Chancey Metal Products, Inc.	Chancey Metal Products, Inc.	59.0	1108.8	0.93	NO
0310215	United States Navy	Nas-Jacksonville	59.4	1116.0	104.01	NO
0010117	Garden Of Love Pet Memorial Park	Micanopy Facility	59.5	1118.8	1.14	NO
7775181	Anderson Materials Company Inc.	Concrete Plant No. 7	60.2	1132.0	15.00	NO
0190005	Gilman Building Products Co.	Gilman Building Products Co.	62.3	1174.3	13.72	NO
0830017	Mfm Industries Inc	Lowell Processing Plant	62.5	1177.3	87.60	NO
0830016	Franklin Industrial Minerals	Franklin Industrial/Lowell	63.0	1187.7	323.40	NO
1250007	Pride Enterprises	Pride - Union Metal	65.4	1236.0	0.00	NO
0830091	Dixie Lime & Stone	Cummer Limestone Mine	65.6	1239.3	10.50	NO
0830145	United States Plastic Lumber	Uspl	65.9	1246.2	0.00	NO
0830069	Delta Laboratories	Delta Laboratories/Ocala	66.8	1264.0	5.70	NO
0830059	Steven Counts, Inc. Fka Harlis Ellington	Steven Counts, Inc. Plant #1	67.0	1267.9	6.05	NO
0830064	Gmp Industries Inc	Aaa Ready Mix	67.0	1268.7	0.14	NO
0310503	Trend Offset Printing Services, Inc.	Trend Offset Printing Services, Inc.	67.5	1278.2	0.18	NO
0830093	Southeastern Mfg	Semco	67.7	1283.0	0.00	NO
0830134	Mickey Body Company	Mickey Body Company/Ocala	68.0	1288.7	0.42	NO
0830039	The Brewer Company	The Brewer Company	68.1	1289.3	147.70	NO
1270161	Prestige Gunite Inc	Prestige Gunite Of Ormond Beach	68.4	1295.2	0.00	NO
1270165	Set Materials Inc	Set Materials Inc	68.4	1295.6	0.88	NO
7770088	Steven Counts, Inc.	Clifton Mine	68.4	1296.2	12.80	NO
0830135	Anderson Columbia Company	Anderson Columbia Co Plant # 8	68.5	1297.8	8.09	NO
1270031	Halifax Paving, Inc.	Halifax Paving/Ormond Beach	68.5	1299.0	74.24	NO
1250008	New River Solid Waste Association	New River Regional Landfill	68.6	1300.1	4.60	NO
0830140	Ocala Lumber Sales Company	Ocala Lumber Sales	69.0	1308.9	0.00	NO
1270102	Florida Production Engineering, Inc.	Florida Production Engineering, Inc.	69.3	1314.2	2.60	NO
0830056	Hiers Funeral Home	Hiers Funeral Home/Ocala	69.7	1322.6	0.00	NO
0830131	Branch Properties Inc	Seminole Stores	69.8	1324.9	19.50	NO
1270090	Imperial Foam & Insulation Mfg. Co.	Imperial Foam & Insulation Mfg	69.9	1326.0	0.00	NO
0830010	Royal Oak Enterprises	Royal Oak Enterprises	70.0	1327.6	101.88	NO
0830007	Dayco Products Inc	Mark Iv Dayco	70.2	1332.0	105.06	NO
0830155	Florida Cremation Society	Florida Cremation Society	70.2	1332.2	2.00	NO
0830001	Counts Construction Company, Inc.	Counts Construction Company, Inc.	70.8	1344.7	0.36	NO
0830026	Cemex, Inc. Fka Southdown	Southdown/Ocala Plant	70.9	1346.2	4.47	NO
0830101	Skyline Corportation	Skyline/Homette # 535	71.0	1348.9	0.34	NO
0830004	Stewart Enterprises Inc	Roberts Funeral Home	71.1	1349.8	2.00	NO
0830103	Lippert Components Inc	Lippert Components	71.5	1358.9	0.00	NO
0830128	Damar Manufacturing Inc	Damar Manufacturing	71.8	1363.2	1.00	NO
0830102	Skyline Corporation	Skyline/Cameron Homes # 538	71.9	1365.3	13.60	NO
0830100	Skyline Corporation	Skyline/Oak Springs # 531	71.9	1366.4	18.90	NO
0830027	Rinker Materials Corp	Rinker/Ocala	72.1	1370.1	2.29	NO
0830052	Closetmaid Fka Clairson Intl	Closetmaid	72.5	1377.8	21.15	NO
0830043	Golden Flake Snack Foods	Golden Flake Snack Foods	72.7	1381.8	25.72	NO
0830137	Merillat Corp	Merillat/Ocala	73.7	1401.8	1.20	NO
0830132	Florida Rock Industries	Florida Rock/Ocala	74.1	1410.7	0.00	NO
1270016	Rinker Materials Corp	Rinker/Ormond Beach	74.5	1417.2	88.08	NO

Table 3-11. North Carolina Technique Screening Analysis for Competing Sources of Particulate.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in PM_{10} NAAQS? Emissions (tpy)	Emission > Threshold?
0830066	Emergency One, Inc.	Emergency One, Inc. - Body Plant	74.6	1420.5	0.00	NO
0830084	Flair Manufacturing	Flair Manufacturing	76.5	1458.2	0.10	NO
1270074	Crane Cams Inc	Crane Cams	77.7	1481.8	0.00	NO
0830082	Emergency One, Inc.	Emergency One, Inc. - Svo Facility	78.1	1489.1	0.00	NO
0830068	Evans Septic Tank & Ready Mix, Inc.	Evans Septic Tank & Ready Mix	79.0	1508.6	0.00	NO

Notes:

GP Palatka Paper Mill is located at UTM zone 17 coordinates (km): East 434.0, North 3283.4

Significant Impact Distance = 3.6 km

Table 3-12. PM_{10} NAAQS Analysis Modeling Parameters for Competing Sources

Facility Description	Model ID	PM_{10} Emission	Release Height		Stack Diameter		Exit Temperature		Exit Velocity		Volume Source Dimensions (m)	
Stack Description	ID Name	Rate (g/s)	(ft)	(m)	(ft)	(m)	(F)	(K)	(fps)	(m/s)	Sig y	Sig z
1070022 Florida Rock -Comfort Rd												
Concrete Batch Plant (Ready Mix) W/Baghouse	FLROCK	0.025[a]	13	3.96	2	0.55	77	298.2	63	19.20	--	--
1070030 Georgia-Pacific Corp. Palatka Chipnsaw												
Planer Mill Cyclone	CNS04	0.751	80	24.38	7	2.04	68	293.2	18	5.49	--	--
Planer Mill Trim Hog Cyclone	CNS05	0.112	30	9.14	3	0.82	68	293.2	43	13.11	--	--
Chip Bin Cyclone	CNS08	0.066	63	19.2	1	0.40	68	293.2	101	30.66	--	--
Fuel Silo Cyclone	CNS03	0.517	80	24.38	2	0.67	80	299.8	12	3.66	--	--
Kiln 2 Source Vent 1	KILN2_1	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 2 Source Vent 2	KILN2_2	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 2 Source Vent 3	KILN2_3	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 2 Source Vent 4	KILN2_4	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 2 Source Vent 5	KILN2_5	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 2 Source Vent 6	KILN2_6	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 1	KILN1_1	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 2	KILN1_2	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 3	KILN1_3	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 4	KILN1_4	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 5	KILN1_5	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Kiln 1 Source Vent 6	KILN1_6	0.0231	33	10.14	3	0.80	240	388.7	38.9	11.84	--	--
Sawmill Fugitives	SAWFUG	0.7156	15	4.57	--	--	--	--	--	--	24.19	4.25
Planer Mill Fugitives	PLANRFUG	0.1638	15	4.57	--	--	--	--	--	--	11.163	4.25
1070025 Seminole Electic - Seminole Power Plant												
Steam Electric Generators No. 1 and 2	SEMELECT	54.220	675	205.74	36	10.97	128	326.5	26	7.92	--	--
1070039 Lafarge North America, Inc.												
FGD Surge Bin (55-ton Bin)		0.007	50	15.24	1	0.15	68	293.2	42	12.92	--	--
Imp Mill Feed Silo A		0.007	60	18.29	1	0.15	130	327.6	42	12.92	--	--
Stucco Silo A		0.010	--	--		--	--	--	--	--	--	--
STARCH SILO		0.020	52	15.85	1	0.15	68	293.2	53	16.03	--	--
Norba Grinder and Hammermill System		0.065	50	15.24	1	0.30	68	293.2	64	19.42	--	--
Wallboard Dryer (4 Natural Gas Burners)		0.001	46	14.02	7	2.19	165	347.0	71	21.49	--	--
Ball Mills		0.024	--	--	--	--	--	--	--	--	--	--
Landplaster Bin		0.518	--	--	--	--	--	--	--	--	--	--
Additives System and Pin Mixer		0.259	--	--	--	--	--	--	--	--	--	--
IMP Mill Feed Silo B		0.007	--	--	--	--	--	--	--	--	--	--
Stucco Silo B		0.007	--	--	--	--	120	322.0	--	--	--	--
Cage Mill Flash Dryer System		1.404	--	--	--	--	--	--	--	--	--	--
Composite Stack 1	LNA1	2.327	50	15.24	1	0.15	68	293.2	42	12.92	--	--
Cage mill dryer system		1.404	130	39.62	5	1.55	190	360.9	54	16.43	--	--
Imp Mill Flash Calciner System A		0.281	130	39.62	4	1.22	325	435.9	23	7.10	--	--
Air Cooling System A		1.037	130	39.62	4	1.22	150	338.7	42	12.92	--	--
Imp Mill Flash Calciner System B		0.281	130	39.62	4	1.10	320	433.2	--	--	--	--
Air Cooling System B		1.037	130	39.62	4	1.22	155	341.5	--	--	--	--
Composite Stack 2	LNA2	4.039	130	39.62	4	1.22	325	435.9	23	7.10	--	--

[a] Maximum Potential Emissions

Table 3-13. North Carolina Technique Screening Analysis for Competing Sources of NO_x.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in NO_x NAAQS? Emissions (tpy)	Emission > Threshold?
1070022	Florida Rock Industries, Inc. Putnam	Florida Rock -Comfort Rd	2.3	SIA	0	NO
1070030	Georgia-Pacific Corporation	Georgia-Pacific Corp. Palatka Chipnsaw	2.6	SIA	17	YES
1070031	Cdr Systems Corporation	Cdr Systems Corporation	2.9	7	0	NO
1070028	Tarmac Florida, Inc. Palatka	Tarmac Florida, Inc. Palatka	3.0	7	0	NO
1070043	Price Brothers Company	Palatka Plant	4.0	28	0	NO
1070025	Seminole Electric Cooperative, Inc.	Seminole Power Plant	7.5	99	37696	YES
1070039	Lafarge North America, Inc.	Lafarge North America, Inc.	7.7	102	163	YES
1070014	Florida Power & Light (Ppn)	Putnam Power Plant	10.9	165	876	YES
1070029	Southern Crematory, Inc.	Watts Funeral Home	12.9	207	0	NO
0190007	Iluka Resources Inc.	Green Cove Springs	20.9	365	67	NO
1070038	Johnson-Overturf Funeral Home, Inc.	Johnson-Overturf Funeral Homes Inc	21.6	379	3	NO
1070041	Masters Funeral Home, P.A.	Palatka Facility	21.7	382	0	NO
1070007	Florida Rock Industries, Inc. Keuka Plt	Florida Rock Industries, Inc. Keuka Plt	24.5	438	0	NO
1070001	Feldspar Corp/Edgar Plastic Kaolin Div	Feldspar Corp/Edgar Plastic Kaolin Div	27.7	503	0	NO
0190027	Florida Rock Industries, Inc. Clay	Florida Rock Industries, Inc. Clay	31.7	582	0	NO
7775007	Hanson Pipe & Products, Inc.	Hanson Pipe & Products, Inc.	32.2	592	0	NO
0190031	Vac-Con	Vac-Con	32.7	602	0	NO
1070040	Delray Stake And Shavings, Inc.	Crescent City Mill	32.8	603	0	NO
0190068	Mobro Marine, Inc	Green Cove Springs	33.3	614	0	NO
0190019	Tamko Roofing Products, Inc.	Tamko Roofing Products, Inc.	33.4	616	0	NO
0190069	Redd Team Manufacturing, Inc.	Keystone Heights	33.4	617	0	NO
0190056	New Ngc, Inc.	Unifix Usa - National Gypsum Co. - Clay	33.5	618	0	NO
1090450	Tarmac America, Llc	St. Augustine Ii	33.6	619	0	NO
0190021	Pyramid Mouldings	Pyramid Mouldings	34.3	634	0	NO
0190070	Coastal Marine, Inc.	Coastal Marine Inc	34.4	636	0	NO
1090446	Hicks Trucking & Land Clearing	Hicks Trucking & Land Clearing	34.5	639	0	NO
7770007	Anderson Columbia, Inc. #9	#9 Ashpalt Plant	34.6	640	0	NO
1070015	Georgia-Pacific Corp. Plywood Plant	Georgia-Pacific Corp. Plywood Plant	35.7	662	0	NO
7775083	Pave-Tec, Inc.	Pave-Tec, Inc.	36.7	682	0	NO
1090037	V.J. Usina Contracting, Inc.	V.J.Usina Contracting, Inc.	37.8	704	0	NO
1090036	Lakeview Dirt Company, Inc.	Lakeview Dirt Company, Inc.	38.9	726	0	NO
1090019	Tarmac America, Inc. St. Augustine	Tarmac America, Inc. St. Augustine	38.9	726	0	NO
1090035	Masters Land Clearing, Inc.	Masters Land Clearing, Inc.	39.0	728	0	NO
1090444	St. Augustine Memorial Park & Crematory	St. Augustine Memorial Park & Crematory	39.2	731	0	NO
1090447	Halna, Inc.	Hydro Aluminum Of North America - St. Au	39.4	735	0	NO
1090018	Florida Rock Industries, Inc. St. Johns	Florida Rock Industries, Inc. St. Johns	39.9	746	0	NO
7775056	Apac-Southeast, Inc. - First Coast Div.	Apac-Southeast, Inc. -Plant No. 4	40.2	753	61	NO
0190032	Florida Army National Guard - Camp Blndg	Florida Army National Guard - Camp Blndg	40.7	762	0	NO
1090011	W.J. Development Corporation	St. Augustine Marine	41.8	784	0	NO
0190011	E.I. Dupont De Nemours & Co - Trailridge	E.I. Dupont De Nemours & Co - Trailridge	42.1	790	34	NO
1090015	Florida School For The Deaf & The Blind	Florida School For The Deaf & The Blind	43.7	823	0	NO
7775261	Florida Rock Industries, Inc.	Portable Redi-Mix	43.8	823	0	NO
0350002	Tarmac America, Inc. Bunnell	Tarmac America, Inc. Bunnell	44.4	835	0	NO
0830070	Florida Gas Transmission Company	Fgtc Station 17, Marion County	45.1	851	900	YES
7770037	Apac-Southeast, Inc. - First Coast Div.	Apac-Southeast Inc., First Coast Div.	45.3	853	14	NO
0190059	W.W.Carter Contracting	W.W.Carter Contractmasters Road Property	45.7	862	0	NO
0350004	Rinker Materials Corporation - Bunnell	Rinker Materials Corporation - Bunnell	45.8	864	0	NO
1090040	Rinker Materials Corporation	Rinker Materials #1 Plant	46.1	870	0	NO
7775001	American Concrete Products L.C.	American Concrete Products L.C.	47.1	890	0	NO
0070016	Owen Joist Corporation	Smi Joist Of Florida	49.8	943	0	NO
0070011	Florida Rock Industries, Inc. Bradford	Florida Rock Industries, Inc. Bradford	50.5	959	0	NO
0070004	Griffin Industries Of Florida	Griffin Industries Of Florida	50.7	963	48	NO
0190026	Tarmac Florida, Inc. Orange Park	Tarmac Florida, Inc. Orange Park	50.9	966	0	NO
0830094	Bedrock Resources	Bedrock Resources/Citra Mine	51.3	973	23	NO
0310225	Southern Culvert Division/Wheeler Cnsl.	Southern Culvert Division/Wheeler Cnsl.	53.0	1008	0	NO
7775240	Apac-Southeast, Inc. First Coast Divisi	Gainesville Asphalt Plant	53.5	1018	9	NO

Table 3-13. North Carolina Technique Screening Analysis for Competing Sources of NO_x.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in NO_x NAAQS? Emissions (tpy)	Emission > Threshold?
0070001	E.I. Dupont De Nemours & Co Inc Highland	E.I. Dupont De Nemours & Co Inc Highland	54.6	1039	0	NO
0310462	First Coast Technology & Repair	First Coast Technology & Repair	54.6	1040	0	NO
7775041	Apac- Southeast, Inc.	Apac-Southeast, Inc.	55.0	1049	48	NO
1270096	Falcon Industries, Inc.	Falcon Industries, Inc.	55.0	1049	0	NO
0310208	Standard Precast, Inc.	Standard Precast, Inc.	55.4	1057	0	NO
0310250	Tarmac America, Inc.	Tarmac America, Inc.	55.5	1057	0	NO
0830045	Standard Sand & Silica Co	Standard Sand & Silica Co	56.3	1074	87	NO
0830062	Tru Balance Wheel Weights, Inc.	Tru Balance Wheel Weights, Inc.	56.3	1074	0	NO
0310277	Rinker Materials Corp.	Rinker Materials Corp.	57.1	1089	0	NO
0310043	Duval Asphalt Products	Phillips Highway Plant	57.1	1091	18	NO
0310223	Cemex, Inc.	Cemex, Inc.(Florida Mining Blvd.)	57.6	1100	0	NO
0310293	Jaxson Brown, Inc.	Sunbeam Road Landfill	58.3	1115	4	NO
0310026	Atlantic Coast Asphalt, Inc.	Shad Asphalt Plant	58.4	1115	45	NO
0310171	Florida Rock Industries, Inc.	Capitol Concrete Plant # 3	58.7	1122	0	NO
0830051	Seilers Concrete	Seilers Concrete	59.0	1128	0	NO
0310341	Chancey Metal Products, Inc.	Chancey Metal Products, Inc.	59.0	1129	0	NO
0310215	United States Navy	Nas-Jacksonville	59.4	1136	120	NO
0010117	Garden Of Love Pet Memorial Park	Micanopy Facility	59.5	1139	0	NO
7775181	Anderson Materials Company Inc.	Concrete Plant No. 7	60.2	1152	0	NO
0190005	Gilman Building Products Co.	Gilman Building Products Co.	62.3	1194	6	NO
0830017	Mfm Industries Inc	Lowell Processing Plant	62.5	1197	36	NO
0830016	Franklin Industrial Minerals	Franklin Industrial/Lowell	63.0	1208	110	NO
1250007	Pride Enterprises	Pride - Union Metal	65.4	1256	0	NO
0830091	Dixie Lime & Stone	Cummer Limestone Mine	65.6	1259	0	NO
0830145	United States Plastic Lumber	Uspl	65.9	1266	0	NO
0830069	Delta Laboratories	Delta Laboratories/Ocala	66.8	1284	0	NO
0830059	Steven Counts, Inc. Fka Harlis Ellington	Steven Counts, Inc. Plant #1	67.0	1288	4	NO
0830064	Gmp Industries Inc	Aaa Ready Mix	67.0	1289	0	NO
0310503	Trend Offset Printing Services, Inc.	Trend Offset Printing Services, Inc.	67.5	1298	6	NO
0830093	Southeastern Mfg	Semco	67.7	1303	4	NO
0830134	Mickey Body Company	Mickey Body Company/Ocala	68.0	1309	4	NO
0830039	The Brewer Company	The Brewer Company	68.1	1309	0	NO
1270161	Prestige Gunite Inc	Prestige Gunite Of Ormond Beach	68.4	1315	0	NO
1270165	Set Materials Inc	Set Materials Inc	68.4	1316	0	NO
7770088	Steven Counts, Inc.	Clifton Mine	68.4	1316	17	NO
0830135	Anderson Columbia Company	Anderson Columbia Co Plant # 8	68.5	1318	0	NO
1270031	Halifax Paving, Inc.	Halifax Paving/Ormond Beach	68.5	1319	78	NO
1250008	New River Solid Waste Association	New River Regional Landfill	68.6	1320	11	NO
0830140	Ocala Lumber Sales Company	Ocala Lumber Sales	69.0	1329	0	NO
1270102	Florida Production Engineering, Inc.	Florida Production Engineering, Inc.	69.3	1334	0	NO
0830056	Hiers Funeral Home	Hiers Funeral Home/Ocala	69.7	1343	0	NO
0830131	Branch Properties Inc	Seminole Stores	69.8	1345	0	NO
1270090	Imperial Foam & Insulation Mfg. Co.	Imperial Foam & Insulation Mfg	69.9	1346	1	NO
0830010	Royal Oak Enterprises	Royal Oak Enterprises	70.0	1348	90	NO
0830007	Dayco Products Inc	Mark Iv Dayco	70.2	1352	18	NO
0830155	Florida Cremation Society	Florida Cremation Society	70.2	1352	3	NO
0830001	Counts Construction Company, Inc.	Counts Construction Company, Inc.	70.8	1365	8	NO
0830026	Cemex, Inc. Fka Southdown	Southdown/Ocala Plant	70.9	1366	0	NO
0830101	Skyline Corportation	Skyline/Hornette # 535	71.0	1369	0	NO
0830004	Stewart Enterprises Inc	Roberts Funeral Home	71.1	1370	3	NO
0830103	Lippert Components Inc	Lippert Components	71.5	1379	0	NO
0830128	Damar Manufacturing Inc	Damar Manufacturing	71.8	1383	0	NO
0830102	Skyline Corporation	Skyline/Cameron Homes # 538	71.9	1385	0	NO
0830100	Skyline Corporation	Skyline/Oak Springs # 531	71.9	1386	0	NO
0830027	Rinker Materials Corp	Rinker/Ocala	72.1	1390	0	NO
0830052	Closetmaid Fka Clairson Intl	Closetmaid	72.5	1398	17	NO

Table 3-13. North Carolina Technique Screening Analysis for Competing Sources of NO_x.

AIRS Number	Owner	Facility	Distance to GP (km)	Threshold (tpy)	Include in NO_x NAAQS? Emissions (tpy)	Emission > Threshold?
0830043	Golden Flake Snack Foods	Golden Flake Snack Foods	72.7	1402	5	NO
0830137	Merillat Corp	Merillat/Ocala	73.7	1422	0	NO
0830132	Florida Rock Industries	Florida Rock/Ocala	74.1	1431	0	NO
1270016	Rinker Materials Corp	Rinker/Ormond Beach	74.5	1437	0	NO
0830066	Emergency One, Inc.	Emergency One, Inc. - Body Plant	74.6	1441	15	NO
0830084	Flair Manufacturing	Flair Manufacturing	76.5	1478	0	NO
1270074	Crane Cams Inc	Crane Cams	77.7	1502	0	NO
0830082	Emergency One, Inc.	Emergency One, Inc. - Svo Facility	78.1	1509	0	NO
0830068	Evans Septic Tank & Ready Mix, Inc.	Evans Septic Tank & Ready Mix	79.0	1529	0	NO

Notes:

GP Palatka Paper Mill is located at UTM zone 17 coordinates (km): East 434.0, North 3283.4

Significant Impact Distance = 2.6 km

Table 3-14. NO_x NAAQS Analysis Modeling Parameters for Competing Sources

Facility Description		Model ID	NO_x Emission	Release Height		Stack Diameter		Exit Temperature		Exit Velocity	
Stack Description		ID Name	Rate (g/s)	(ft)	(m)	(ft)	(m)	(F)	(K)	(fps)	(m/s)
1070030 Georgia-Pacific Corp. Palatka Chipnsaw											
	Kiln 2 Source Vent 1	KILN2_1	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 2 Source Vent 2	KILN2_2	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 2 Source Vent 3	KILN2_3	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 2 Source Vent 4	KILN2_4	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 2 Source Vent 5	KILN2_5	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 2 Source Vent 6	KILN2_6	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 1	KILN1_1	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 2	KILN1_2	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 3	KILN1_3	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 4	KILN1_4	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 5	KILN1_5	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
	Kiln 1 Source Vent 6	KILN1_6	0.0412	33	10.14	3	0.80	240	388.7	38.9	11.84
1070025 Seminole Power Plant											
	Steam Electric Generator No. 1	SEMELECT	1084.40	675	205.74	36	10.97	128	326.5	26	7.92
1070039 Lafarge North America, Inc.											
	Burners)		2.34	46	14.02	7	2.19	165	347.0	71	21.49
	Cage Mill Flash Dryer System		0.83	46	14.02	7	2.19	165	347.0	71	21.49
	Combined Stack 1	LNA1	3.17	46	14.02	7	2.19	165	347.0	71	21.49
	Cage mill dryer system		0.76	130	39.62	5	1.55	190	360.9	54	16.43
	Imp Mill Flash Calciner System A		0.38	130	39.62	4	1.22	325	435.9	23	7.10
	Imp Mill Flash Calciner System B		0.38	130	39.62	4	1.10	320	433.2	23	7.10
	Combined Stack 2	LNA2	1.51	130	39.62	4	1.10	325	435.9	23	7.10
1070014 FPL Putnam Power Plant											
	II Acid Rain Unit		6.30	73	22.25	10	3.15	328	437.6	192	58.61
	II Acid Rain Unit		6.30	73	22.25	10	3.15	328	437.6	200	61.08
	II Acid Rain Unit		6.30	73	22.25	10	3.15	328	437.6	192	58.61
	II Acid Rain Unit		6.30	73	22.25	10	3.15	328	437.6	200	61.08
	Combined Stack	FPLPUT	25.20	73	22.25	10	3.15	328	437.6	192	58.61
0830070 FGTC Station 17, Marion County											
	RICE compressor engine		6.11	28	8.53	1	0.40	875	741.5	147	44.81
	RICE compressor engine		6.11	28	8.53	1	0.40	875	741.5	147	44.81
	RICE compressor engine		6.11	28	8.53	1	0.40	875	741.5	147	44.81
	RICE compressor engine		4.45	28	8.53	1	0.40	875	741.5	147	44.81
	Combined Stack	FGTC1_4	22.78	28	8.53	1	0.40	875	741.5	147	44.81
	RICE compressor engine	FGTC5	1.33	40	12.19	1	0.40	695	641.5	180	54.86
	turbine compressor engine	FGTC8	1.78	61	18.59	8	2.32	910	760.9	79	24.11

Table 3-15. PSD Class II Increments for Modeled Pollutants, GP Palatka			
Pollutant	Averaging Time	Allowable PSD Increment ($\mu g/m^3$)	Form of Standard
PM_{10}	24-hour	30	High-second-highest for each year
	Annual	17	Annual Mean
NO_2	Annual	25	Annual Mean

Table 3-16. Summary of PSD Class II Increment Baseline Dates

Pollutant	Major Source Baseline Date	Minor Source Baseline Date
PM_{10}	January 6, 1975	December 27, 1977
NO_2	February 8, 1988	March 28, 1988

Table 3-17. Summary of 1974 PM_{10} Baseline Emissions, GP Palatka Paper Mill

Model ID	Source Description	Emission Rates (lb/hr)	Emission Rates (g/s)
RB1B	# 1 Recovery Boiler	67.80	8.54
RB2B	# 2 Recovery Boiler	86.60	10.91
RB3B	# 3 Recovery Boiler	93.70	11.81
RB4B	# 4 Recovery Boiler	143.20	18.04
SDT1B	# 1 Smelt Dissolving Tanks	2.10	0.26
SDT2B	# 2 Smelt Dissolving Tanks	3.10	0.39
SDT3B	# 3 Smelt Dissolving Tanks	2.80	0.35
SDT4B	# 4 Smelt Dissolving Tanks	35.10	4.42
LK1B	# 1 Lime Kiln	154.80	19.50
LK2B	# 2 Lime Kiln	81.70	10.29
LK3B	# 3 Lime Kiln	80.00	10.08
LK4B	# 4 Lime Kiln	27.20	3.43
PB4B	# 4 Power Boiler	100.60	12.68
PB5B	# 5 Power Boiler	43.90	5.53
CB4B	# 4 Combination Boiler	612.10	77.12
TM3B	# 3 Tissue Machine Combined Source	1.74	0.219
TM5B	# 5 Tissue Machine Combined Source	1.69	0.213
Roads			
GATE1***	Traffic Through Gate 1 (1.86 lb/day - 64 sources)	0.07750	0.00977
GATE2***	Traffic Through Gate 2 (4.0 lb/day - 29 sources)	0.16667	0.02100
GATE3***	Traffic Through Gate 3 (0.78 lb/day - 41 sources)	0.03250	0.00410
GATE4***	Traffic Through Gate 4 (33.38 lb/day - 102 sources)	1.39083	0.17525
GATE5***	Traffic Through Gate 5 (0.78 lb/day - 51 sources)	0.03250	0.00410
Total Emissions		1539.83	194.02

Note: PM10 assumed 86 percent of total particulates for point source 1974 PSD Baseline emissions
PSD Baseline road emissions are 40.8 lb/day

Table 3-18. Locations and Stack Parameters for 1974 PM_{10} PSD Baseline Point Sources, GP Palatka Paper Mill

Model ID	Description	Source Location UTM		Stack Height		Stack Exit Temp		Stack Velocity		Stack Diameter	
		East (m)	North (m)	(ft)	(m)	F	K	(fps)	(m/s)	(ft)	(m)
RB1B	# 1 Recovery Boiler	434053.59	3283407.35	250	76.2	188	360	28.9	8.80	12.0	3.66
RB2B	# 2 Recovery Boiler	434053.59	3283407.35	250	76.2	210	372	28.9	8.80	12.0	3.66
RB3B	# 3 Recovery Boiler	434019.49	3283384.85	133	40.5	210	372	23.9	7.28	11.2	3.41
RB4B	# 4 Recovery Boiler	433882.28	3283437.93	230	70.1	394	474	55.3	16.86	12.0	3.66
SDT1B	# 1 Smelt Dissolving Tanks	434059.29	3283411.15	100	30.5	199	366	24.7	7.53	2.5	0.76
SDT2B	# 2 Smelt Dissolving Tanks	434059.29	3283411.15	100	30.5	215	375	31.2	9.51	3.0	0.91
SDT3B	# 3 Smelt Dissolving Tanks	434025.29	3283388.55	109	33.2	205	369	11.7	3.57	2.5	0.76
SDT4B	# 4 Smelt Dissolving Tanks	433934.67	3283477.55	206	62.8	163	346	27.1	8.26	5.0	1.52
LK1B	# 1 Lime Kiln	434121.89	3283301.05	50	15.2	262	401	17.2	5.24	4.2	1.28
LK2B	# 2 Lime Kiln	434117.39	3283298.85	52	15.8	154	341	35	10.67	5.6	1.71
LK3B	# 3 Lime Kiln	434119.29	3283270.45	52	15.8	156	342	27.8	8.47	5.6	1.71
LK4B	# 4 Lime Kiln	434106.73	3283246.93	149	45.4	172	351	54.0	16.46	4.3	1.31
PB4B	# 4 Power Boiler	433998.01	3283481.49	122	37.2	399	477	47.7	14.54	4.0	1.22
PB5B	# 5 Power Boiler	433977.26	3283447.19	232	70.7	476	520	52.4	15.97	9.0	2.74
CB4B	# 4 Combination Boiler	433982.43	3283450.46	237	72.2	399	477	34.5	10.52	10.0	3.05
TM3B	# 3 Tissue Machine Combined Source	434220.66	3283432.68	94	28.65	450	505	64.5	19.66	5.0	1.52
TM5B	# 5 Tissue Machine Combined Source	434264.95	3283462.34	94	28.65	450	505	64.5	19.66	5.0	1.52

Table 3-19. Summary of 1988 PSD Baseline NO_x Emissions, GP Palatka Paper Mill

		Emission Rates	
Model ID	Source Description	(lb/hr)	(g/s)
RB4B	# 4 Recovery Boiler	117.40	14.80
SDT4B	# 4 Smelt Dissolving Tanks	2.66	0.34
LK4B	# 4 Lime Kiln	47.44	5.98
PB4B	# 4 Power Boiler	21.77	2.74
PB5B	# 5 Power Boiler	108.02	13.62
CB4B	# 4 Combination Boiler	56.40	7.11
TM3B	# 3 Tissue Machine Combined Source	10.77	1.36
TM4B	# 4 Tissue Machine Combined Source	10.77	1.36
TM5B	# 5 Tissue Machine Combined Source	7.57	0.95
Total Emissions		382.80	48.27

Table 3-20. Locations and Stack Parameters for 1988 NO_x PSD Baseline Sources, GP Palatka Paper Mill

Model ID	Description	Stack Parameters									
		Source Location UTM		Stack Height		Stack Exit Temp		Stack Velocity		Stack Diameter	
		East (m)	North (m)	(ft)	(m)	F	K	(fps)	(m/s)	(ft)	(m)
RB4B	# 4 Recovery Boiler	433882.28	3283437.93	230	70.1	400	478	63.7	19.42	12.0	3.66
SDT4B	# 4 Smelt Dissolving Tanks	433934.67	3283477.55	206	62.8	160	344	21.2	6.46	5.0	1.52
LK4B	# 4 Lime Kiln	434106.73	3283246.93	131	39.9	150	339	60.8	18.53	4.3	1.31
PB4B	# 4 Power Boiler	433998.01	3283481.49	122	37.2	395	475	71.6	21.82	4.0	1.22
PB5B	# 5 Power Boiler	433977.26	3283447.19	232	70.7	445	503	60.6	18.47	9.0	2.74
CB4B	# 4 Combination Boiler	433982.43	3283450.46	237	72.2	440	500	71.8	21.88	10.0	3.05
TM3B	# 3 Tissue Machine Combined Source	434220.66	3283432.68	94	28.65	450	505	64.5	19.66	5.0	1.52
TM5B	# 5 Tissue Machine Combined Source	434264.95	3283462.34	94	28.65	450	505	64.5	19.66	5.0	1.52
TM4B	No. 4 Tissue Machine Combined Source	434302.09	3283502.61	94	28.65	450	505	64.5	19.66	5.0	1.52

Table 3-21. Summary of PSD-Consuming Emissions from Competing Sources

AIRS Number	Owner	Facility	Emissions Affecting Increment (tpy)	
			PM_{10}	NO_x
1070022	Florida Rock Industries, Inc. Putnam	Florida Rock -Comfort Rd	0.9	-
1070030	Georgia-Pacific Corporation	Georgia-Pacific Corp. Palatka Chipnsaw	62.3	17.2
1070025	Seminole Electric Cooperative, Inc.	Seminole Power Plant	1884.8	37695.8
1070039	Lafarge North America, Inc.	Lafarge North America, Inc.	221.4	162.7

Table 3-22. PSD Increment Analyses Modeling Parameters for Competing Sources

Facility Description		Model ID	Emission Rate (g/s)		Release Height		Stack Diameter		Exit Temperature		Exit Velocity		Volume Source Dimensions (m)	
Stack Description		ID Name	PM_{10}	NO_x	(ft)	(m)	(ft)	(m)	(F)	(K)	(fps)	(m/s)	Sig y	Sig Z
1070022 Florida Rock -Comfort Rd														
	Concrete Batch Plant (Ready Mix) W/Baghouse	FLROCK	0.025	--	13	3.96	2	0.55	77	298.2	63	19.20	--	--
1070030 Georgia-Pacific Corp. Palatka Chipnsaw														
	Planer Mill Cyclone	CNS04	0.751	--	80	24.38	7	2.04	68	293.15	18	5.49	--	--
	Planer Mill Trim Hog Cyclone	CNS05	0.112	--	30	9.14	3	0.82	68	293.15	43	13.11	--	--
	Chip Bin Cyclone	CNS08	0.066	--	63	19.2	1	0.4	68	293.15	101	30.66	--	--
	Fuel Silo Cyclone	CNS03	0.517	--	80	24.38	2	0.67	80	299.82	12	3.66	--	--
	Kiln 2 Source Vent 1	KILN2_1	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 2 Source Vent 2	KILN2_2	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 2 Source Vent 3	KILN2_3	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 2 Source Vent 4	KILN2_4	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 2 Source Vent 5	KILN2_5	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 2 Source Vent 6	KILN2_6	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 1	KILN1_1	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 2	KILN1_2	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 3	KILN1_3	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 4	KILN1_4	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 5	KILN1_5	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Kiln 1 Source Vent 6	KILN1_6	0.0231	0.0412	33	10.14	3	0.8	240	388.7	38.9	11.84	--	--
	Sawmill Fugitives	SAWFUG	0.069	--	15	4.57	--	--	--	--	--	--	24.19	4.25
	Planer Mill Fugitives	PLANRFUG	0	--	15	4.57	--	--	--	--	--	--	11.163	4.25
1070025 Seminole Electic - Seminole Power Plant														
	Steam Electric Generators No. 1 and 2	SEMELECT	54.220	1084.400	675	205.74	36	10.97	128	326.5	26	7.92	--	--
1070039 Lafarge North America, Inc.														
	Composite Stack 1	LNA1	2.330	3.170	50	15.24	1	0.15	68	293.2	42	12.92	--	--
	Composite Stack 2	LNA2	4.040	1.510	130	39.62	4	1.22	325	435.9	23	7.10	--	--

Table 3-23. Significant Impact Analysis Results, PM10 GP Palatka Paper Mill							
Averaging Period	Year	Maximum Predicted Impact ($\mu g/m^3$)	Receptor Location (a)		Period Ending (YYMMDDHH)	Significant Impact Level ($\mu g/m^3$)	Monitoring De minimis Concentration ($\mu g/m^3$)
			East (m)	North (m)			
24-hour High 1st High	1984	9.6	434300.2	3282948.8	84111324	5	10
	1985	10.7	434583.6	3283047.5	85070824		
	1986	7.9	434583.6	3282947.5	86082424		
	1987	8.8	434380.3	3283008.5	87040124		
	1988	8.6	434183.6	3282547.5	88011124		
Annual	1984	0.9	434380.3	3283008.5	--	1	--
	1985	0.7	434380.3	3283008.5	--		
	1986	0.8	434380.3	3283008.5	--		
	1987	1.1	434380.3	3283008.5	--		
	1988	1.0	434380.3	3283008.5	--		

Note:
(a) UTM coordinates in Zone 17
YY =Year, MM=Month, DD=Day, HH=Hour

Table 3-24. Significant Impact Analysis Results, NO_2 GP Palatka Paper Mill						
Averaging Period	Year	Maximum Predicted Impact (μg/m³)	Receptor Location (a)		Significant Impact Level (μg/m³)	Monitoring De minimis Concentration (μg/m³)
			East (m)	North (m)		
Annual	1984	1.46	434883.6	3282747.5	1	14
	1985	1.35	434780.5	3283308.3		
	1986	1.43	434683.6	3283147.5		
	1987	1.89	434883.6	3282747.5		
	1988	1.46	434783.6	3282847.5		

Note:
(a) UTM coordinates in Zone 17

Table 3-25. Summary Significant Impact Distance Results, GP Palatka Paper Mill	
Pollutant	**Significant Impact Distance(km)**
NO_2	2.6
PM_{10}	3.6

Table 3-26 PM_{10} NAAQS Screening Analysis Results, GP Palatka Paper Mill

Averaging Period	Year	Maximum Predicted Impact ($\mu g/m^3$)	Receptor Location (a) East (m)	Receptor Location (a) North (m)	Period Ending (YYMMDDHH)
Annual	1984	61.29	436383.59	3284247.5	--
	1985	62.53	436383.59	3284247.5	--
	1986	60.45	436383.59	3284247.5	--
	1987	68.95	436383.59	3284247.5	--
	1988	63.80	436383.59	3284247.5	--
24-Hour High 6th High	1988	308.18	436383.59	3284247.5	88110224

Note:
(a) UTM coordinates in Zone 17
YY =Year, MM=Month, DD=Day, HH=Hour

Table 3-27 PM_{10} NAAQS Total Results, GP Palatka Paper Mill				
Averaging Period	**Maximum Predicted Impact (μg/m³)**	**Background Concentration (μg/m³)**	**Total Concentration (μg/m³)**	**NAAQS (μg/m³)**
Annual	69	27	96.5	50
24-Hour High 6th High	308	57	365	150

Table 3-28. Maximum Predicted PM_{10} Concentrations Due to the Proposed LK4 Project at Receptors Predicted to Exceed the NAAQS, GP Palatka Paper Mill

Averaging Period	Year	Maximum Predicted Impact ($\mu g/m^3$)	Receptor Location (a)		Period Ending (YYMMDDHH)	Significant Impact Level ($\mu g/m^3$)
			East (m)	North (m)		
24-hour High 1st High	1984	3.3	436283.6	3284047.5	84082324	5
	1985	2.7	436383.6	3284047.5	85010724	
	1986	3.6	436183.6	3284447.5	86022624	
	1987	3.2	436183.6	3284147.5	87030924	
	1988	3.0	436183.6	3284547.5	88022724	
Annual	1984	0.3	436183.6	3284447.5	--	1
	1985	0.3	436183.6	3284247.5	--	
	1986	0.3	436183.6	3284247.5	--	
	1987	0.3	436183.6	3284247.5	--	
	1988	0.2	436183.6	3284447.5	--	

Note:
(a) UTM coordinates in Zone 17
YY =Year, MM=Month, DD=Day, HH=Hour

Table 3-29. NO_2 NAAQS Analysis Results, GP Palatka Paper Mill				
Averaging Period	Year	Maximum Predicted Impact (μg/m^3)	Receptor Location (a)	
			East (m)	North (m)
Annual	1984	11.1	436383.6	3284347.5
	1985	11.5	436383.6	3284347.5
	1986	10.2	436383.6	3284347.5
	1987	12.0	436383.6	3284347.5
	1988	11.8	436383.6	3284347.5

Note:
(a) UTM coordinates in Zone 17

Table 3-30. NO_2 NAAQS Total Results GP Palatka Paper Mill				
Averaging Period	Maximum Predicted Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Annual	12	27.5	39.5	100

Table 3-31 PM_{10} PSD Class II Increment Analysis Results, GP Palatka Paper Mill						
Averaging Period	**Year**	**Maximum Predicted Impact (μg/m³)**	**Receptor Location (a)**		**Period Ending (YYMMDDHH)**	**Allowable Increment (μg/m³)**
			East (m)	**North (m)**		
Annual	1984	1.3	436383.6	3284347.5	--	17
	1985	0.60	436383.6	3284347.5	--	
	1986	<0	0	0	--	
	1987	1.40	436383.6	3284347.5	--	
	1988	2.20	436383.6	3284347.5	--	
24-Hour High 2nd High	1984	33.50	436483.6	3284347.5	84040524	30
	1985	35.10	436483.6	3284347.5	85110424	
	1986	28.60	436383.6	3284347.5	86050424	
	1987	30.20	436483.6	3284347.5	87010224	
	1988	29.30	436383.6	3284347.5	88122724	

Note:

(a) UTM coordinates in Zone 17

YY =Year, MM=Month, DD=Day, HH=Hour

Table 3-32. Maximum Predicted PM_{10} Project Impacts at Receptors Exceeding the Allowable PSD Class II Increment, GP Palatka Paper Mill						
Averaging Period	**Year**	**Maximum Predicted Impact ($\mu g/m^3$)**	**Receptor Location (a)**		**Period Ending (YYMMDDHH)**	**Significant Impact Level ($\mu g/m^3$)**
			East (m)	**North (m)**		
24-hour High 1st High	1984	2.3	436483.6	3284347.5	84011824	5
	1985	2.4	436383.6	3284347.5	85061724	
	1986	2.7	436383.6	3284347.5	86022224	
	1987	2.8	436383.6	3284347.5	87061424	
	1988	2.1	436383.6	3284347.5	88063024	
Annual	1984	0.3	436383.6	3284347.5	--	1
	1985	0.3	436383.6	3284347.5	--	
	1986	0.3	436383.6	3284347.5	--	
	1987	0.3	436383.6	3284347.5	--	
	1988	0.2	436383.6	3284347.5	--	

Note:
(a) UTM coordinates in Zone 17
YY =Year, MM=Month, DD=Day, HH=Hour

Table 3-33 NO_2 PSD Class II Increment Analysis Results, GP Palatka Paper Mill					
Averaging Period	Year	Maximum Predicted Impact (µg/m³)	Receptor Location (a)		Allowable Increment (µg/m³)
			East (m)	North (m)	
Annual	1984	9.8	436383.6	3284347.5	25
	1985	10.2	436383.6	3284347.5	
	1986	8.7	436383.6	3284347.5	
	1987	10.7	436383.6	3284347.5	
	1988	10.7	436383.6	3284347.5	

Note:
(a) UTM coordinates in Zone 17

Table 3-34. Refined Modeling Analyses Recommendations [a]

Model Input/Output	Description
Meteorology	Use CALMET (minimum 6 to 10 layers in the vertical; top layer must extend above the maximum mixing depth expected); horizontal domain extends 50 to 80 km beyond outer receptors and sources being modeled; terrain elevation and land-use data is resolved for the situation.
Receptors	Within Class I area(s) of concern; obtain regulatory concurrence on coverage.
Dispersion	1. CALPUFF with default dispersion settings.
	2. Use MESOPUFF II chemistry with wet and dry deposition.
	3. Define background values for ozone and ammonia for area.
Processing	1. For PSD increments: use highest, second highest 3-hour and 24-hour average SO_2 concentrations; highest, second highest 24-hour average PM_{10} concentrations; and highest annual average SO_2, PM_{10}, and NO_x concentrations.
	2. For haze: process, on a 24-hour basis, compute the source extinction from the maximum increase in emissions of SO_2, NO_x, and PM_{10}; compute the daily relative humidity factor [f(RH)], provided from an external disk file; and compute the maximum percent change in extinction using the FLM supplied background extinction data in the FLAG document.
	3. For significant impact analysis: use highest annual and highest short-term averaging time concentrations for SO_2, PM_{10}, and NOx.

[a] IWAQM Phase II report (December, 1998) and FLAG document (December, 2000)

Table 3-35. CALPUFF Model Settings

Parameter	Setting
Pollutant Species	SO_2, SO_4, NO_x, HNO_3, NO_3, PM_{10}
Chemical Transformation	MESOPUFF II scheme including hourly ozone data
Deposition	Include both dry and wet deposition, plume depletion
Meteorological/Land Use Input	CALMET
Plume Rise	Transitional, Stack-tip downwash, Partial plume penetration
Dispersion	Puff plume element, PG /MP coefficients, rural mode, ISC building downwash scheme
Terrain Effects	Partial plume path adjustment
Output	Create binary concentration file including output species for SO_4, NO_3, PM_{10}, SO_2, and NO_x; process for visibility change using Method 2 and FLAG background extinctions
Model Processing	For haze: highest predicted 24-hour extinction change (%) for the year
	For significant impact analysis: highest predicted annual and highest short-term averaging time concentrations for SO_2, NO_x, and PM_{10}.
Background Values	Ozone: 50 ppb; Ammonia: 1 ppb

Table 3-36. Surface and Upper Air Stations Used in the North Central Florida – South Georgia Domain

			UTM Coordinates			
Station Name	Station Symbol	WBAN Number	Easting (km)	Northing (km)	UTM Zone	Anemometer Height (m)
Surface Stations						
Tampa, FL	TPA	12842	349.195	3094.289	17	10
Jacksonville, FL	JAX	13889	432.809	3374.192	17	10
Daytona Beach, FL	DAB	12834	495.118	3228.056	17	10
Tallahassee, FL	TLH	93805	176.408[a]	3365.835	16	10
Fort Myers. F L	FMY	12835	413.644	2940.405	17	10
Orlando, FL	MCO	12815	468.942	3146.889	17	10
Pensacola, FL	PNS	13899	-95.74	3386.714	16	10
Vero Beach, FL	VRB	12843	557.487	3058.363	17	10
Columbus, GA	CSG	93842	128.871[a]	3604.422	16	10
Charleston, SC	CHS	13880	590.422	3640.405	17	10
Macon, GA	MCN	3813	251.562	3620.929	17	10
Savannah, GA	SAV	3822	481.12	3554.985	17	10
Gainesville, FL	GNV	12816	377.39	3284.126	17	10
Augusta, GA	AGS	3820	410.024	3692.184	17	10
Athens, GA	AHN	13873	285.867	3758.824	17	10
Atlanta, GA	ATL	13874	181.588[a]	3728.434	16	10
Sea Surface Stations						
Venice, FL	VENF1	-	356.24	2995.05	17	--
Cape Canaveral, FL	41009	-	380.25	3152.87	17	--
Tampa West, FL	42036	-	156.41	3158.73	16	--
Cedar Key, FL	CDRF1	-	302.52	3225.2	17	--
Cape San Blas, FL	CSBF1	-	77.89	3290.18	16	--
Folly Island, SC	FBIS1	-	604.09	3616.38	17	--
Keaton Beach, FL	KTNF1	-	249.71	3301.66	17	--
Lake Worth, FL	LKWF1	-	596.57	2943.61	17	--
Savannah, GA	SVLS1	-	530.24	3534.94	17	--
St. Augustine, FL	SAUF1	-	474.89	3303.3	17	--
Upper Air Stations						
Ruskin, FL	TPA	12842	361.961	3064.616	17	NA
Waycross, GA	AYS	13861	366.674	3457.945	17	NA
Athens, GA	AHN	13873	285.866	3758.824	17	NA
Charleston, SC	CHS	13880	590.421	3640.405	17	NA
Cape Canaveral	XMR	12868	544.048	3150.459	17	NA
Miami -FIU	MFL	92803	562.181	2847.983	17	NA
Apalachicola, FL	AQQ	12832	109.807[a]	3295.816	16	NA
Tallahassee, FL	TLH	93805	176.4072	3365.835	16	NA
Jacksonville, FL	JAX	13889	432.808	3374.192	17	NA
Peachtree, GA	FFC	53819	155.6372	3696.207	16	NA

[a] Equivalent coordinate for Zone 17.

Table 3-37. Summary of Maximum Pollutant Concentrations Predicted for the LK4 and Contemporaneous Projects at the Okefenokee, Wolf Island, and Chassahowitzka NWA PSD Class I Areas

Pollutant	Averaging Time	Concentrations [a] (µg/m³)									EPA Class I Significant Impact Levels (µg/m3)
		Okefenokee NWA			Wolf Island NWA			Chassahowitzka NWA			
		1990	1992	1996	1990	1992	1996	1990	1992	1996	
PM_{10}	Annual	0.0021	0.0014	0.0021	0.0007	0.0008	0.0007	0.0014	0.0013	0.0012	0.2
	24-Hour	0.077	0.030	0.045	0.015	0.029	0.016	0.012	0.032	0.030	0.3
	8-Hour	0.128	0.084	0.125	0.031	0.054	0.018	0.051	0.072	0.066	
	3-Hour	0.189	0.156	0.208	0.047	0.059	0.035	0.068	0.123	0.106	
	1-Hour	0.200	0.246	0.254	0.069	0.066	0.068	0.076	0.130	0.128	
NO_2	Annual	0.0020	0.0014	0.0027	0.0004	0.0005	0.0005	0.0011	0.0013	0.0012	0.1
	24-Hour	0.1082	0.0672	0.079	0.0122	0.0178	0.019	0.0415	0.0582	0.0739	
	8-Hour	0.2169	0.1915	0.230	0.0263	0.0508	0.046	0.1119	0.1745	0.1818	
	3-Hour	0.3017	0.2918	0.397	0.0755	0.0807	0.072	0.1540	0.2764	0.2854	
	1-Hour	0.3491	0.3859	0.542	0.1155	0.0972	0.113	0.1725	0.3005	0.3211	

NWA= National Wilderness Area

[a] Concentrations are the highest impacts predicted with the CALPUFF model and 1990, 1992, and 1996 CALMET Wind Fields.

Table 3-38. Maximum 24-hour Average Visibility Impairment Predicted for the LK4 and Contemporaneous Project Emissions at the Okefenokee, Wolf Island and Chassahowitzka NWA PSD Class I Areas

Area	Visibility Impairment (%) [a]			Visibility Impairment Criteria (%)
	1990	1992	1996	
Okefenokee NWA	3.41	1.64	2.79	5.0
Wolf Island NWA	0.86	1.00	0.75	5.0
Chassahowitzka NWA	0.87	0.97	2.83	5.0

[a] Concentrations are highest predicted using CALPUFF model and CALMET wind fields for N. FL-S. GA, 1990, 1992 and 1996. Background extinctions calculated using FLAG Document (December 2000) values and hourly relative humidity data.

NWA = National Wilderness Area

Table 3-39. Annual Nitrogen Deposition Rates Predicted at the Okefenokee, Wolf Island, and Chassahowitzka NWA PSD Class I Areas - GP Palatka LK4 and Contemporaneous Projects

	Total Deposition (Wet & Dry)						Deposition Analysis Threshold[b]
	1990		1992		1996		
PSD Class I Area	($g/m^2/s$)	(kg/ha/yr)	($g/m^2/s$)	(kg/ha/yr)	($g/m^2/s$)	(kg/ha/yr)	(kg/ha/yr)
Okefenokee NWA	3.988E-12	0.0013	4.611E-12	0.0015	4.131E-12	0.0013	0.01
Wolf Island NWA	1.336E-12	0.0004	1.865E-12	0.0006	1.928E-12	0.0006	0.01
Chassahowitzka NWA	1.505E-12	0.0005	1.627E-12	0.0005	1.321E-12	0.0004	0.01

[a] Conversion factor is used to convert $g/m^2/s$ to kg/hectare (ha)/yr using following units:

$g/m^2/s$ x 0.001 kg/g
x 10000 m^2/hectare
x 3600 sec/hr
x 8760 hr/yr =kg/ha/yr
or
$g/m^2/s$ x 3.1536E+08 = kg/ha/yr

[b] Deposition analysis thresholds (DAT) for nitrogen and sulfur deposition provided by the U.S. Fish and Wildlife Service, January 2002. A DAT is the additional amount of N or S deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant.

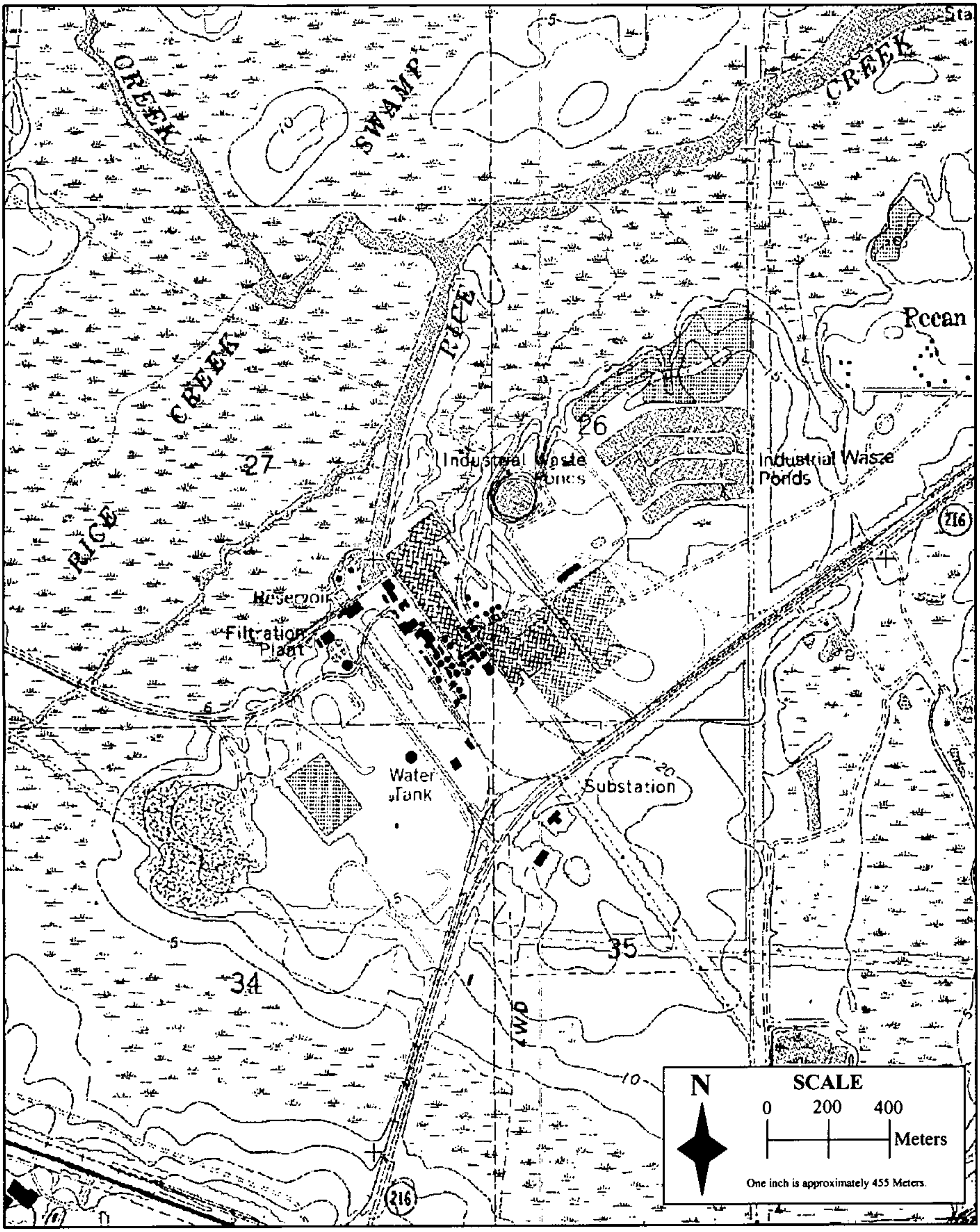
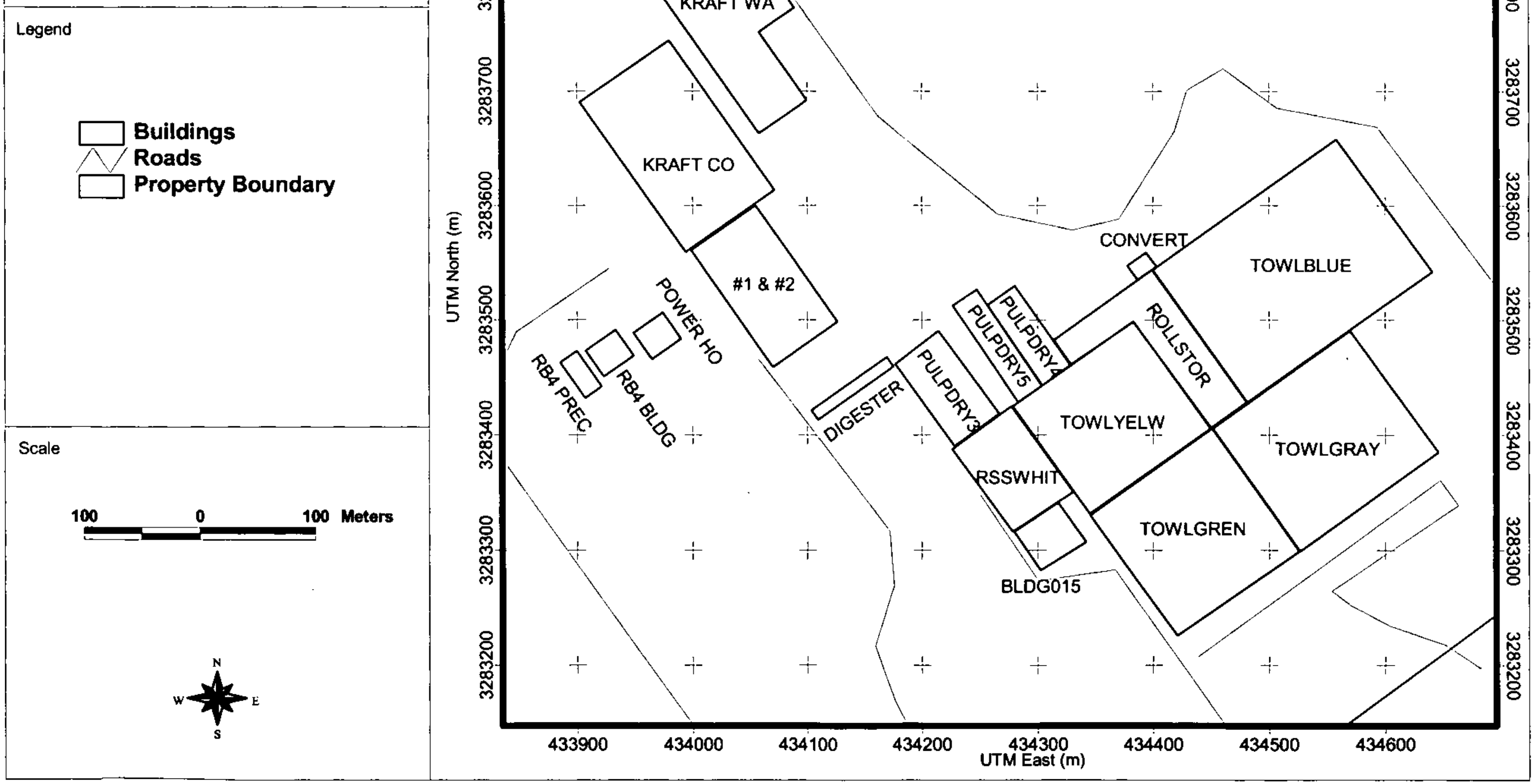


Figure 3-1
Area Map
Georgia-Pacific Corporation, Palatka Paper Mill

Title

Figure 3-2.
Buildings Considered in Downwash Analysis for the GP Palatka Paper Mill



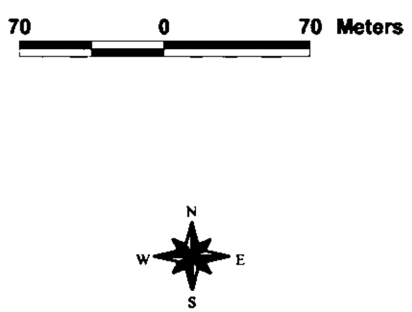
Title

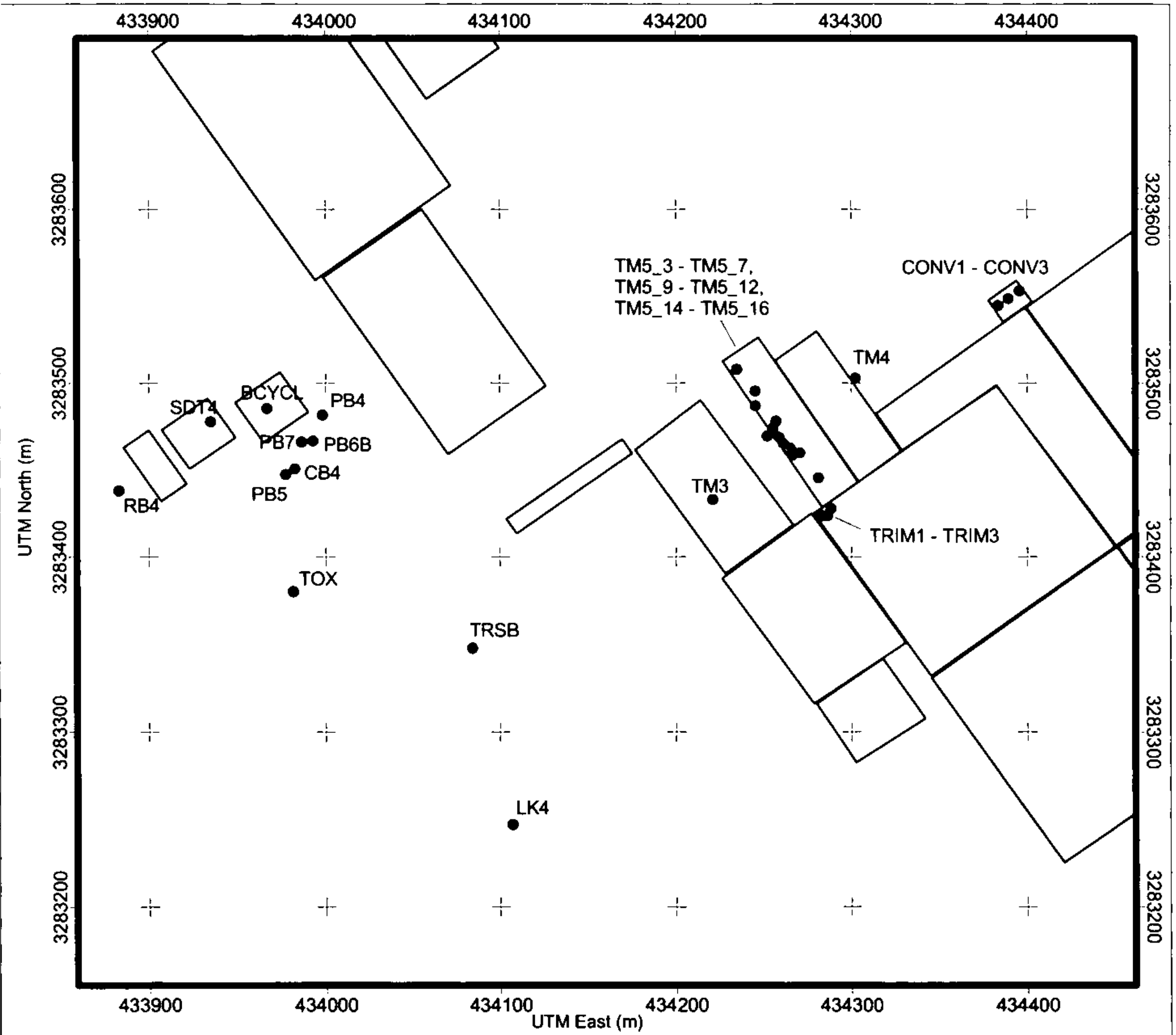
**Figure 3-3.
Point Source Arrangement
at the GP Palatka Paper Mill**

Legend

- Project Point Sources
- Non-Project Point Sources
- Buildings
- Property Boundary

Scale





Title

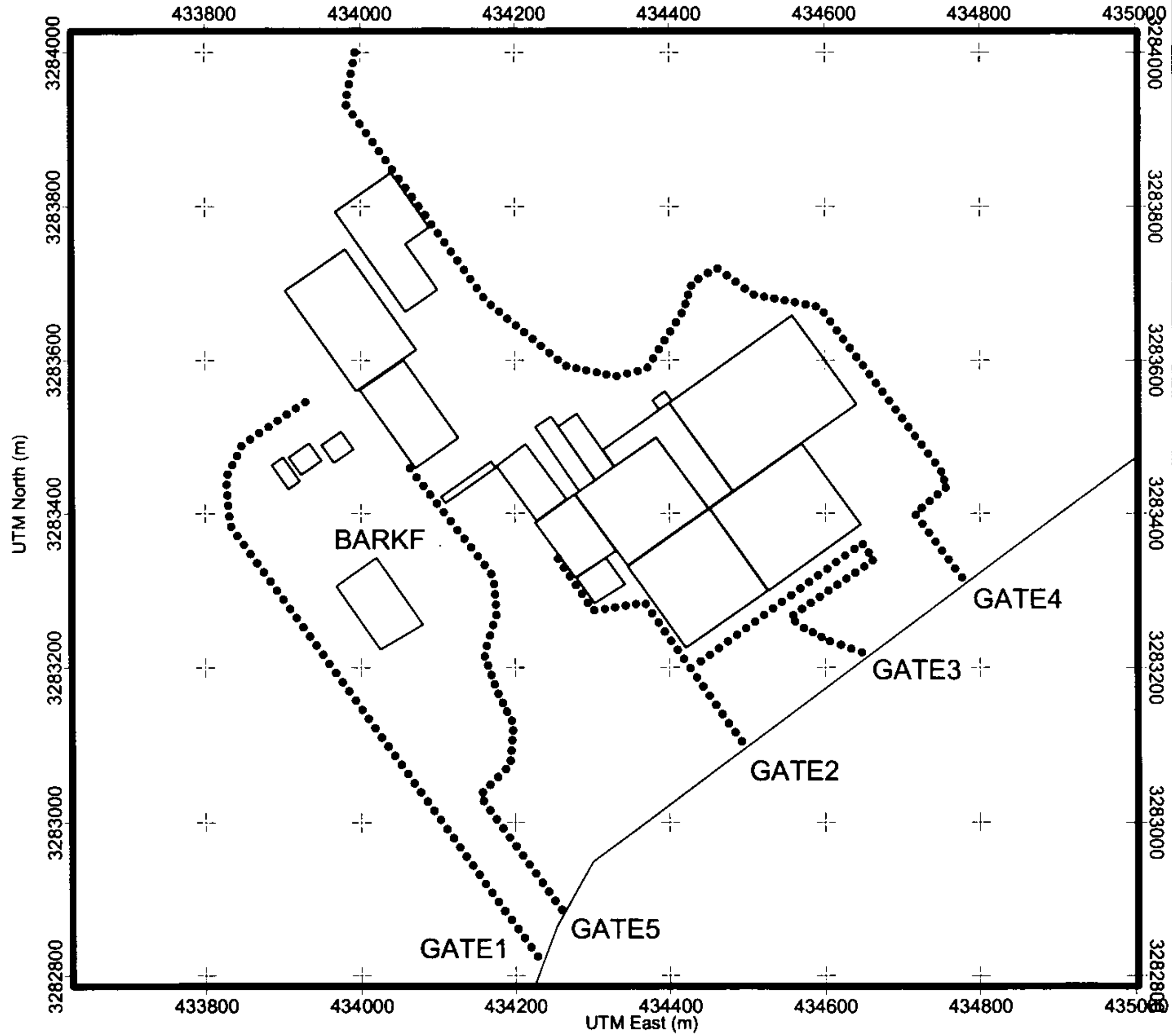
Figure 3-4.
Location of Road Sources and Area Sources at the GP Palatka Paper Mill

Legend

- Road Volume Sources
- Area Sources
- Buildings
- Property Boundary

Scale

200 0 200 Meters



Title

**Figure 3-5.
Predicted PM10
Significant Impact Receptors
GP Palatka No. 4 Lime Kiln Project**

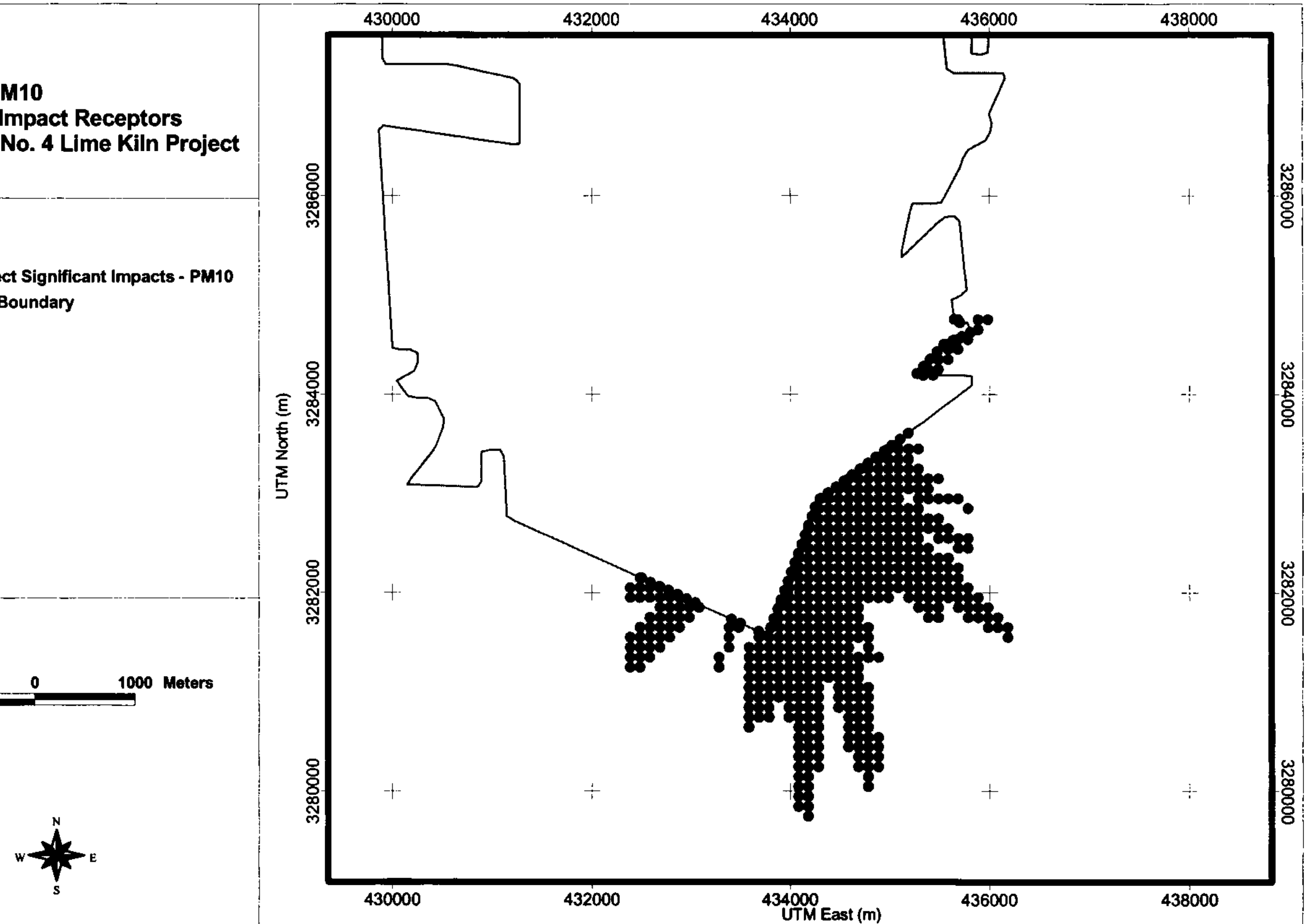
Legend

● LK4 Project Significant Impacts - PM10

☐ Property Boundary

Scale

1000 0 1000 Meters



Title

Figure 3-6.
Areas of Predicted 24-Hour PM10 NAAQS Exceedances

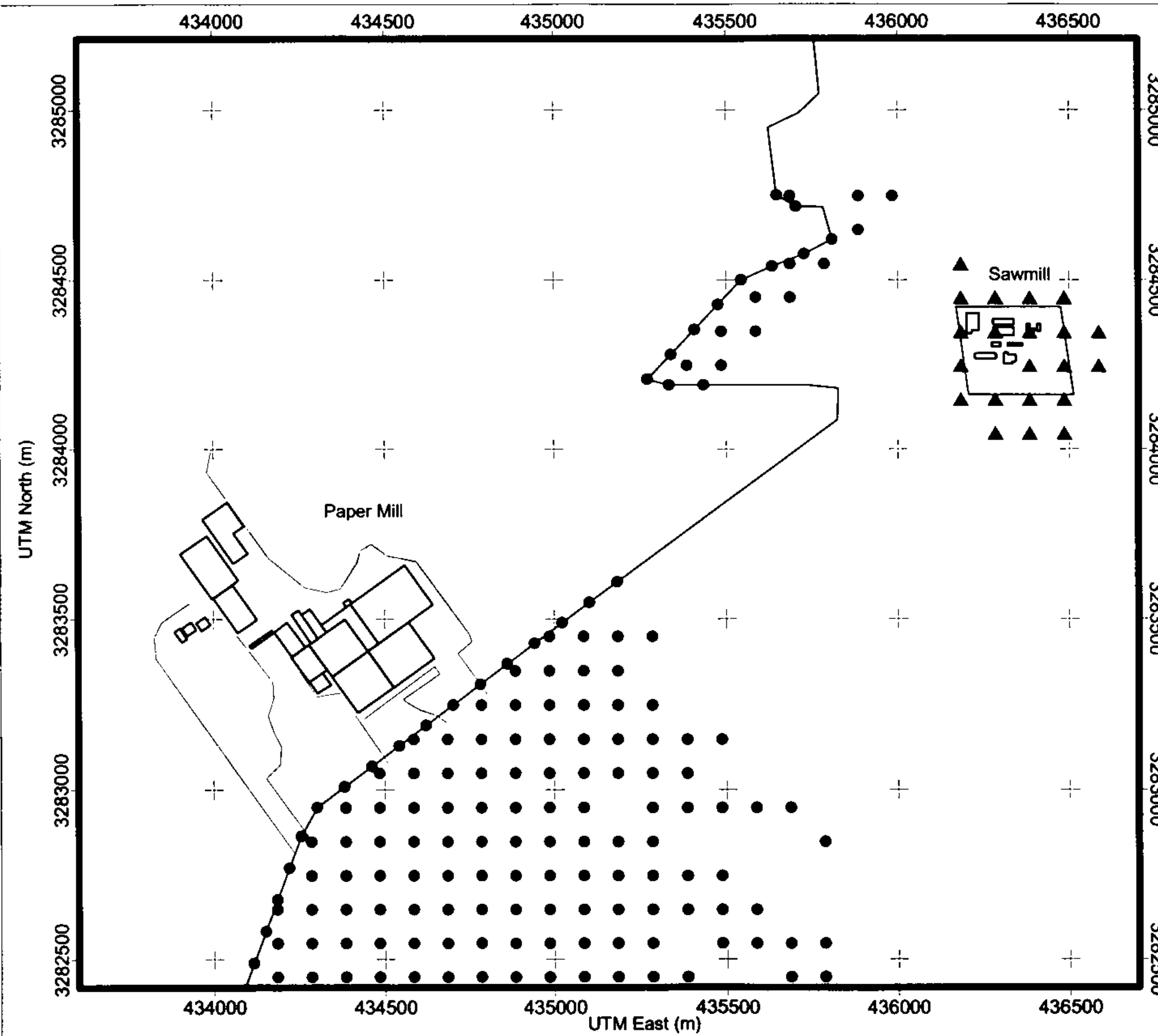
Legend

- ▲ Predicted NAAQS 24-Hr PM10 Exceedances
- ● LK4 Project Significant Impacts - PM10
- Roads
- Buildings
- Property Boundary

Scale

400 0 400 Meters

N E S W



Title

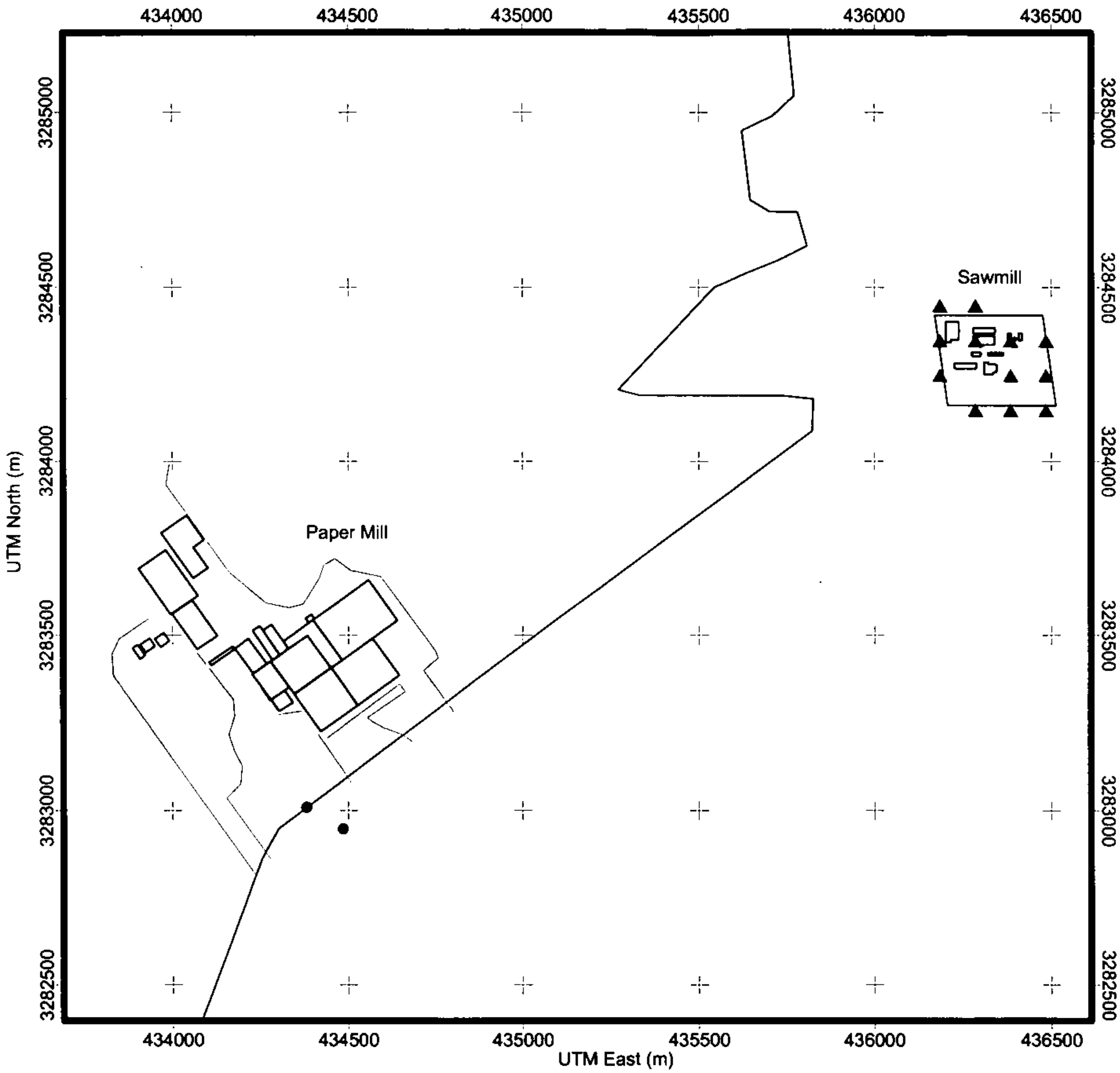
Figure 3-7.
Areas of Predicted Annual PM10 NAAQS Exceedances

Legend

- ▲ Predicted NAAQS Annual PM10 Exceedances
- ● LK4 Project Annual Significant Impacts-PM10
- Roads
- Buildings
- Property Boundary

Scale

400 0 400 Meters



Title

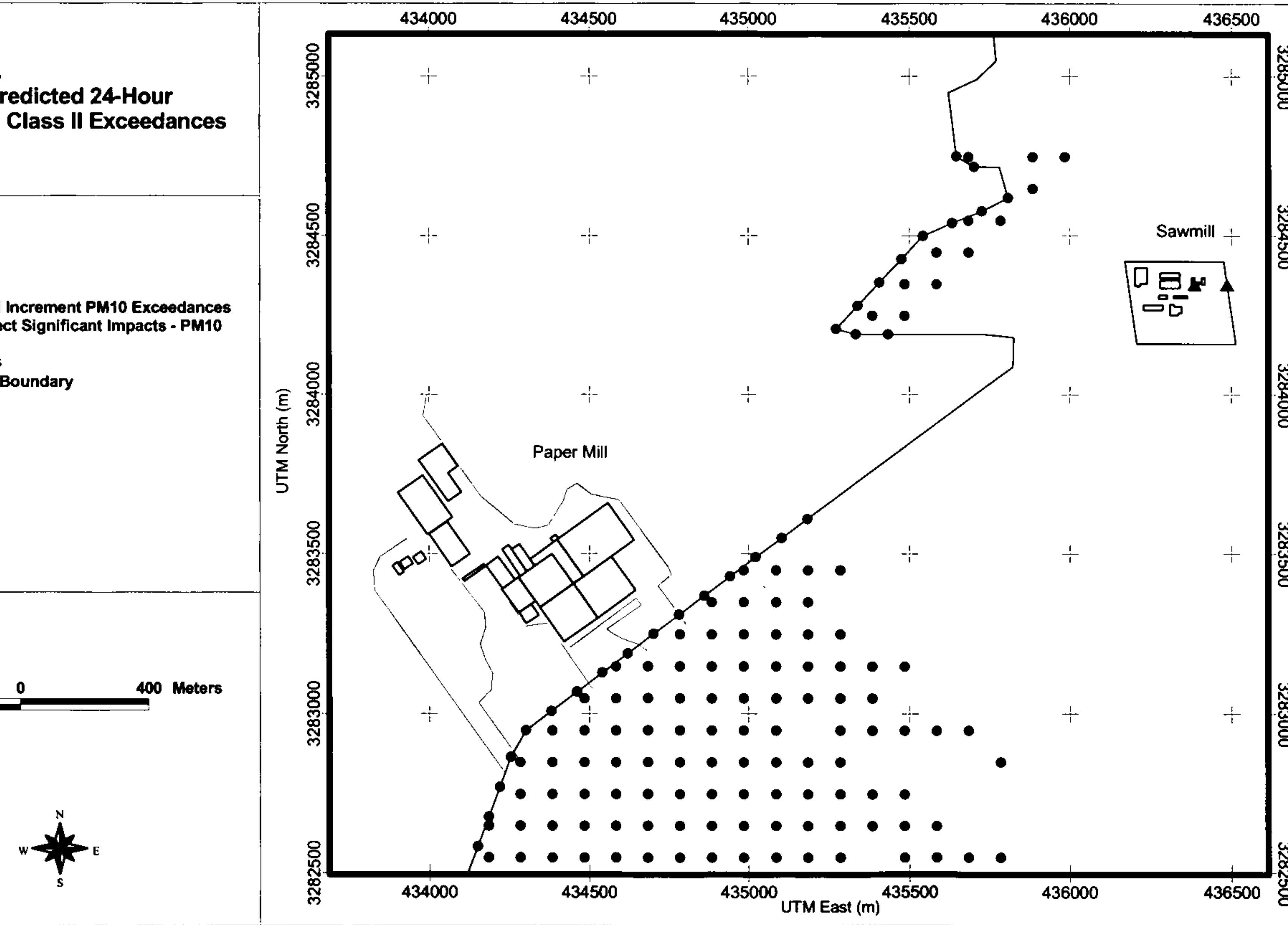
Figure 3-8.
Areas of Predicted 24-Hour PM10 PSD Class II Exceedances

Legend

- ▲ Predicted Increment PM10 Exceedances
- ● LK4 Project Significant Impacts - PM10
- Roads
- Buildings
- Property Boundary

Scale

400 0 400 Meters



Title

Figure 3-9.
CALMET Modeling Domain
Used in the Class I Analysis

Legend

★ GP Palatka Paper Mill

Class I Areas

Scale

100 0 100 Kilometers

N W E S

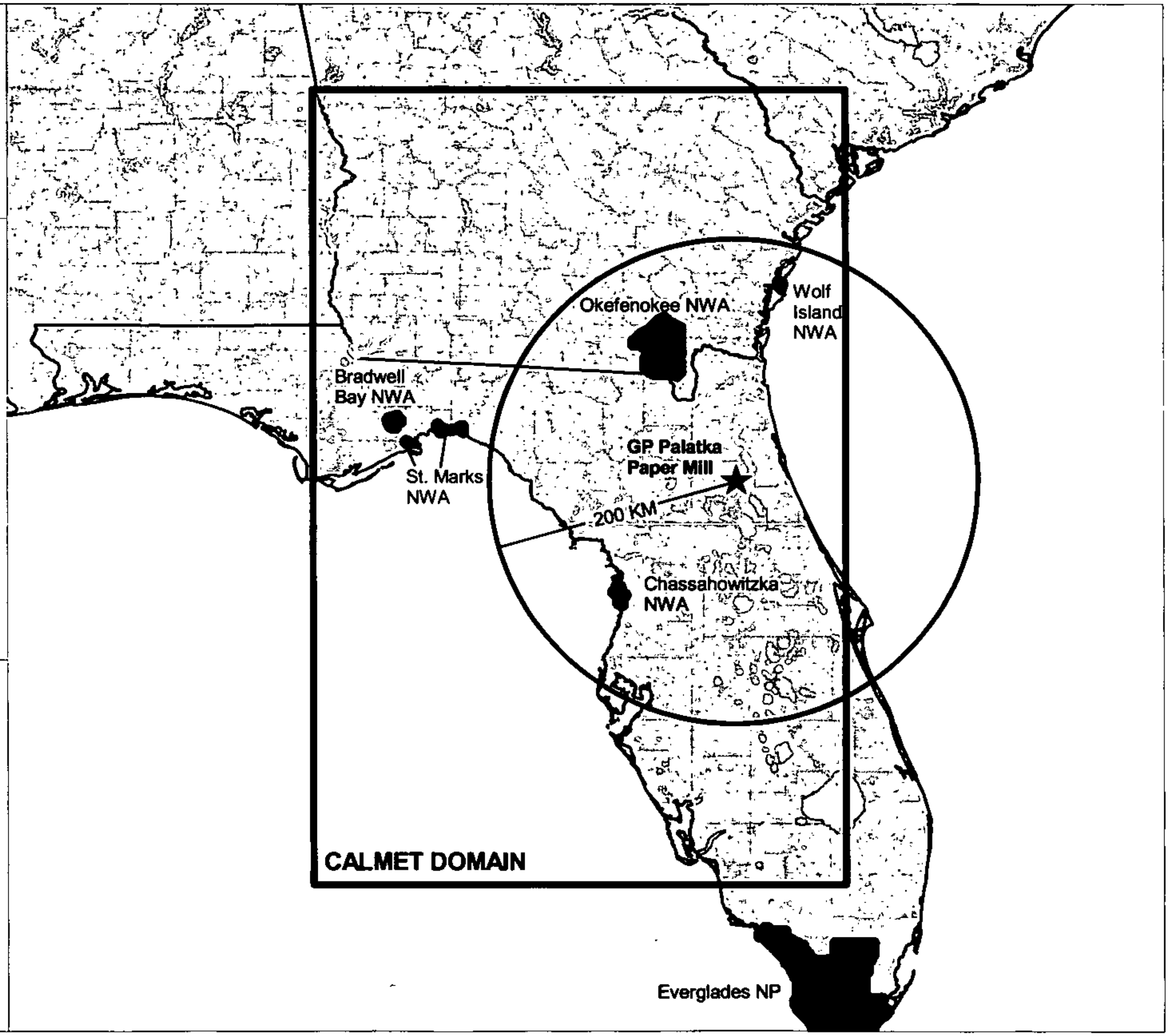


Table APP-1. Structure Dimensions for the Chip-N-Saw Mill Used in the Modeling Analysis

Structure	Height		Length		Width	
	(ft)	(m)	(ft)	(m)	(ft)	(m)
Chip-N-Saw Building	25	7.6	116	35.4	112	34.1
Dry Finish Lumber Shed	20	6.1	200	61.0	50	15.2
Dry Rough Lumber Shed 1	20	6.1	200	61.0	50	15.2
Dry Rough Lumber Shed 2	20	6.1	200	61.0	80	24.4
Kiln 1	30	9.1	68	20.7	33	10.1
Kiln 2	30	9.1	68	20.7	33	10.1
Kiln Fuel Silo	72	21.9	28	8.5	28	8.5
Sorter	21.5	6.6	140	42.7	29	8.8
Stacker	21	6.4	84	25.6	37	11.3
Planer Mill	22	6.7	195	59.4	120	36.6

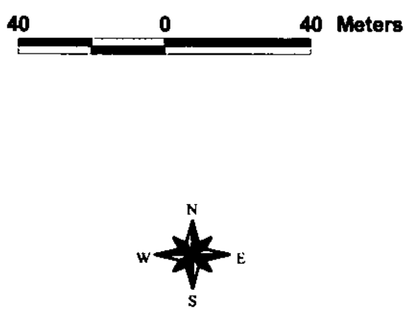
Title

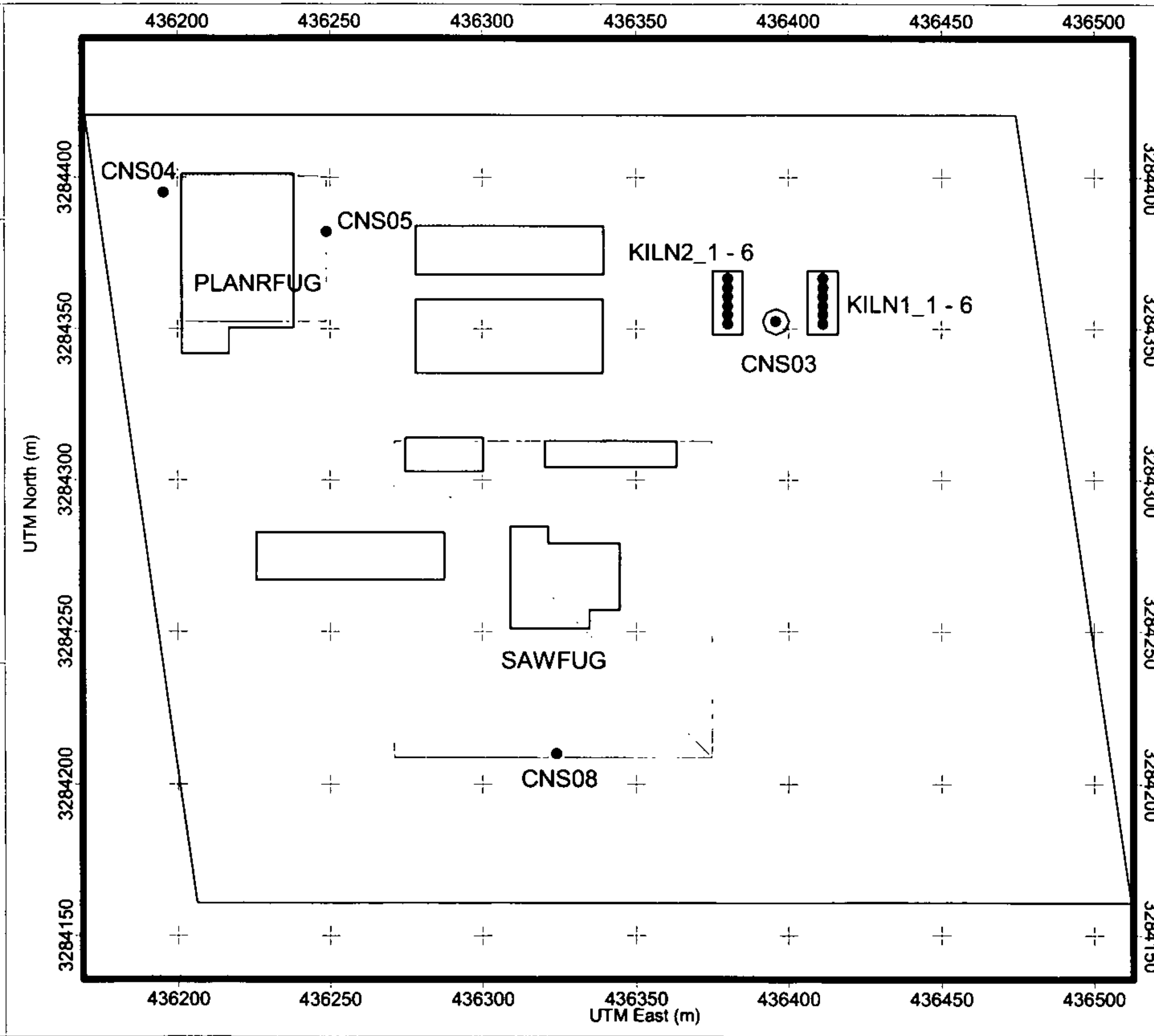
Figure APP3B-1.
Locations of Point and Area Sources at the GP Palatka Sawmill

Legend

- Sawmill Point Sources
- Sawmill Volume Sources
- Sawmill Buildings
- Sawmill Property Boundary

Scale





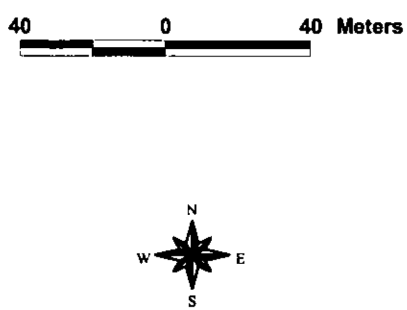
Title

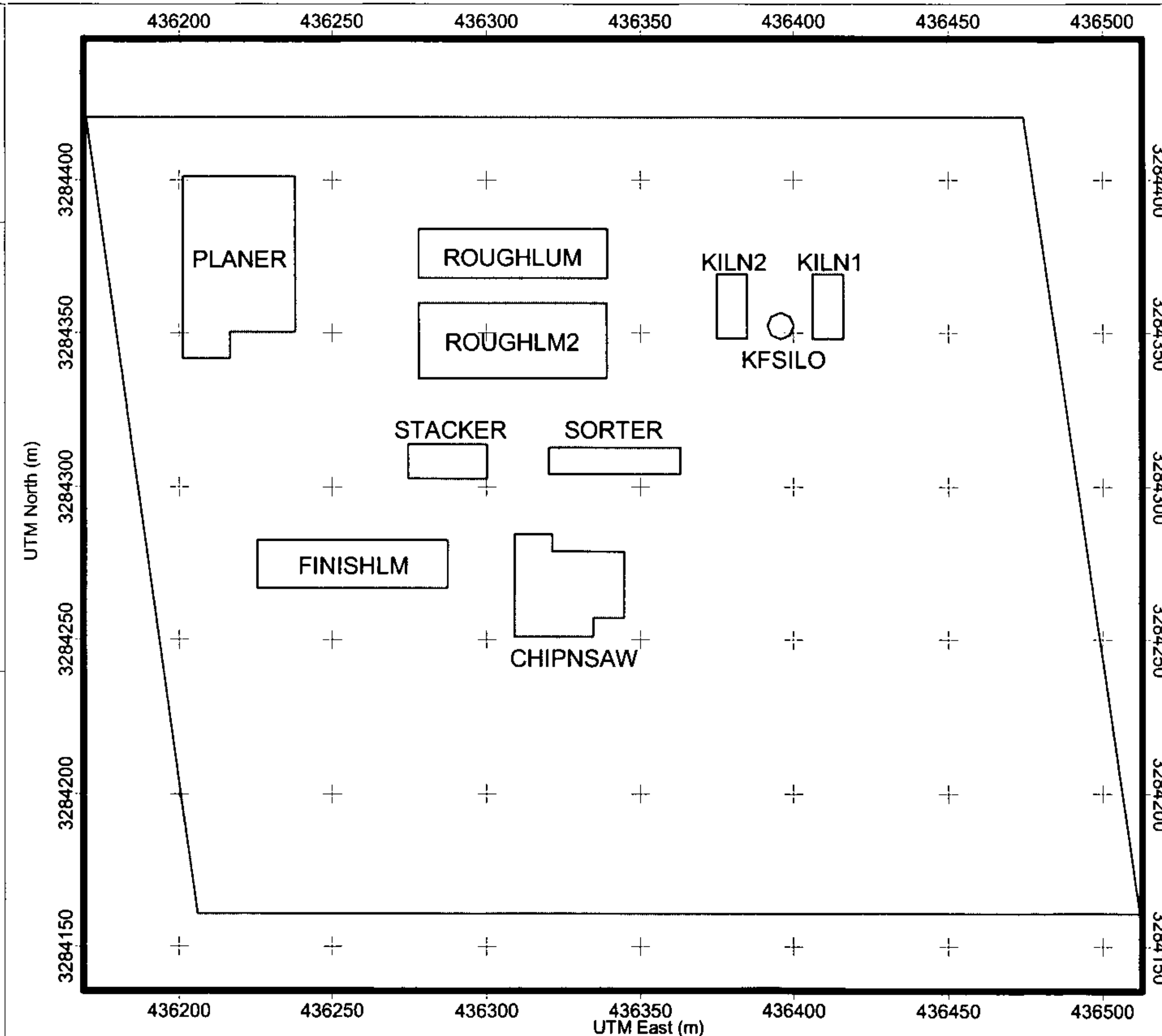
Figure APP3B-2.
Buildings Considered in the Downwash Analysis for the GP Palatka Sawmill

Legend

Sawmill Buildings
Sawmill Property Boundary

Scale





```
GP Palatka LK4 and Contemporaneous Projects - Modeling Files
April, 2005
Golder Associates Inc
Steve Marks smarks@golder.com (352) 336-5600 Ext 539

******************************************************************
Use WinZip to return ZIP files to original directory structure
******************************************************************

CALPUFF Files are contained in folders for each year: \1990, \1992 and \1996
NOTE: CALPUFF SYSTEM FILENAMES ARE THE SAME FOR EACH YEAR
-----------------------------------------------------------------------
UNDER EACH YEAR ARE THE FOLLOWING FOLDERS:
-----------------------------------------
calpuff and calsum
postutil for deposition
calpost for deposition
calpost for concentrations
calpost for visibility
-----------------------

File Name                   Description
---------------   -----------------------------------------------------

Under \Calpuff and calsum
---------------------------------------------------------
PUFFAVEC.INP/LST - CALPUFF CONTROL/LIST - CONTEMP. PROJECT ANNUAL EMISS. CURRENT
PUFFAVEF.INP/LST - CALPUFF CONTROL/LIST - CONTEMP. PROJECT ANNUAL EMISS. FUTURE
PUFFMAXC.INP/LST - CALPUFF CONTROL/LIST - CONTEMP. PROJECT MAX EMISS. CURRENT
PUFFMAXF.INP/LST - CALPUFF CONTROL/LIST - CONTEMP. PROJECT MAX EMISS. FUTURE
SUMAVE.INP/LST   - CALSUM INPUT/LIST FILES - ANNUAL EMISSIONS CONCENTRATIONS
SUMAVED.INP/LST  - CALSUM INPUT/LIST FILES - ANNUAL EMISSIONS DRY FLUX
SUMAVEW.INP/LST  - CALSUM INPUT/LIST FILES - ANNUAL EMISSIONS WET FLUX
SUMMAX.INP/LST   - CALSUM INPUT/LIST FILES - MAXIMUM EMISSIONS CONCENTRATIONS

Under \Postutil for deposition
------------------------------
PUTDEP.INP/LST     Postutil input and list - annual deposition

Under \Calpost for deposition
-----------------------------
PSTNDPOK.INP/LST - Calpost input/list - N Deposition for Okefenokee
PSTNDPWI.INP/LST - Calpost input/list - N Deposition for Wolf Island
PSTSDPCH.INP/LST - Calpost input/list - N Deposition for Chassahowitzka

Under \Calpost for visibility
------------------------------
PSTVISOK.INP/LST - Calpost input/list - Regional Haze for Okefenokee
PSTVISWI.INP/LST - Calpost input/list - Regional Haze for Wolf Island
PSTVISCH.INP/LST - Calpost input/list - Regional Haze for Chassahowitzka

Under \Calpost for concentrations
---------------------------------
PSTNOXOK.INP/LST - Calpost input/list - NOX concentrations for Okefenokee
PSTNOXWI.INP/LST - Calpost input/list - NOX concentrations for Wolf Island
PSTNOXCH.INP/LST - Calpost input/list - NOX concentrations for Chassahowitzka
PSTPMOK.INP/LST  - Calpost input/list - PM10 concentrations for Okefenokee
PSTPMWI.INP/LST  - Calpost input/list - PM10 concentrations for Wolf Island
PSTPMCH.INP/LST  - Calpost input/list - PM10 concentrations for Chassahowitzka


Under \Executables
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EXE Files for CALPUFF, CALSUM, POSTUTIL, and CALPOST

Under \Ozone
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Hourly ozone files from FDEP for 1990, 1992, and 1996
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The following folders are under \ISCST Files:
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\Metdata - 5 years of Jacksonville/Waycross, 1984-1988
\NAAQS Analyses        - contains NAAQS folders for PM10 and NOX
\PSD CLASS II Analyses - contains PSD Class II folders for PM10 and NOX
\Sig Analyses          - contains Sig Analysis folders for PM10 and NOX

Under \Sig Analyses\PM10
----------------------
Pmsig24.zip  - ISCST3 INPUT/LIST/SUM AND PLOT FILES FOR 24-HOUR AVERAGE
PMSIGAN.zip  - ISCST3 INPUT/LIST/SUM AND PLOT FILES FOR ANNUAL AVERAGE

Under \Sig Analyses\NOX
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noxsig.zip   - ISCST3 INPUT/LIST/SUM AND PLOT FILES FOR NOX

Under \NAAQS Analyses\PM10
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Pmaqs.zip    -  INPUT/LIST/EVENT/SUM AND PLOT FILES FOR PM10 NAAQS ANALYSIS
PMAQS24X.ZIP -  INPUT/LIST/SUM FOR PROJECT IMPACT AT RECEPTORS OVER 24-HOUR NAAQS
PMAQSANX.ZIP -  INPUT/LIST/SUM FOR PROJECT IMPACT AT RECEPTORS OVER ANNUAL NAAQS

Under \NAAQS Analyses\NOX
------------------------
noxaqs.zip   - ISCST3 INPUT/LIST/SUM FILES FOR NOX NAAQS ANALYSIS

Under \PSD Class II Analyses\PM10
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Pmcl2.zip   - ISCST3 INPUT/LIST AND PLOT FILES FOR PM10 PSD INCREMENT ANALYSIS
Pmcl2X.zip  - INPUT/LIST/SUM FOR PROJECT IMPACT AT RECEPTORS OVER 24-HOUR INCREMENT

Under \PSD Class II Analyses\NOX
-----------------------
noxcl2.zip  - ISCST3 INPUT/LIST FILES FOR NOX PSD INCREMENT ANALYSIS


Under \BPIP
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GPPALUTM.BPI      BPIP Input File for Paper Mill
GPPALUTM.BPO      BPIP Output File for Paper Mill
GPPALUTM.SUM      BPIP Summary File for Paper Mill
GPSAWMIL.BPI      BPIP Input File for GP Chip-N-Saw Mill
GPSAWMIL.BPO      BPIP Output File for GP Chip-N-Saw Mill
GPSAWMIL.SUM      BPIP Summary File for GP Chip-N-Saw Mill
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