REVISED

AIR PERMIT APPLICATION TO REVISE PSD PERMIT FOR THE NO. 3 BLEACH PLANT

GEORGIA-PACIFIC CORPORATION PALATKA MILL

Prepared For:

Georgia-Pacific
North of CR-216; West of US 17
Palatka, Florida 32177

Prepared By:

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

November 2002
0237561

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Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **Georgia-Pacific Corporation**	
2. Site Name: **Palatka Mill**	
3. Facility Identification Number: **1070005** [ ] Unknown	
4. Facility Location: Street Address or Other Locator: **North of CR 216; West of US 17** City: **Palatka** County: **Putnam** Zip Code: **32177**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Myra Carpenter, Superintendent of Environmental Affairs**
2. Application Contact Mailing Address: Organization/Firm: **Georgia-Pacific Corporation** Street Address: **P.O. Box 919** City: **Palatka** State: **FL** Zip Code: **32178-0919**
3. Application Contact Telephone Numbers: Telephone: **(386) 325 - 2001** Fax: **(386) 328 - 0014**

Application Processing Information (DEP Use)

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

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

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

Current construction permit number:_____

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

Current construction permit number:_____

Operation permit number to be revised:_____

[ ] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected:_____

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

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[X] Air construction permit to construct or modify one or more emissions units.

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

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

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Theodore D. Kennedy, Vice President, Georgia-Pacific, Palatka Operations
2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **Georgia-Pacific Corporation**
   Street Address: **P.O. Box 919**
   City: **Palatka** State: **FL** Zip Code: **32178-0919**
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(386) 325 - 2001** Fax: **(386) 328 - 0014**
4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. 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. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

Theodore D. Kennedy — Signature

11/12/02 — Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **David A. Buff**
   Registration Number: **19011**
2. Professional Engineer Mailing Address:
   Organization/Firm: **Golder Associates Inc.***
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**
3. Professional Engineer Telephone Numbers:
   Telephone: **(352) 336 - 5600** Fax: **(352) 336 - 6603**

***Board of Professional Engineers Certificate of Authorization #00001670**

4. 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.

If the purpose of this application is to obtain a Title V source 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 schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], 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.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision 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.

David a. Buff
Signature

11/11/02
Date

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
036	No. 3 Bleach Plant	ACM1	$7,500

Application Processing Fee

Check one: [X] Attached - Amount: $: $7,500 [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

   To revise CO emission limit for the No. 3 Bleach Plant. See Attachment A for details.

2. Projected or Actual Date of Commencement of Construction: **Upon Receipt of Permit**

3. Projected Date of Completion of Construction: **N/A ***

Application Comment

***No physical construction necessary for the proposed project. Application is for CO emission limit increase only for the purpose of accommodating process variability.**

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **434.0** North (km): **3283.4**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): **29 / 41 / 0** Longitude (DD/MM/SS): **81 / 40 / 45**			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **26**	6. Facility SIC(s): **2611, 2621**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **Myra Carpenter, Superintendent of Environmental Affairs**
2. Facility Contact Mailing Address: Organization/Firm: **Georgia-Pacific Corporation** Street Address: **P.O. Box 919** City: **Palatka** State: **FL** Zip Code: **32178-0919**
3. Facility Contact Telephone Numbers: Telephone: **(386) 325-2001** Fax: **(386) 328-0014**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?
5. [ ] Synthetic Minor Source of HAPs?
6. [X] One or More Emissions Units Subject to NSPS?
7. [X] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters):

List of Applicable Regulations

62-210.700(1) - Excess Emission
62-210.700(4) - Excess Emission
62-210.700(5) - Excess Emission
62-210.700(6) - Excess Emission
62-296.320(4) - General VE Limit
See Title V Core List, Effective 3/1/02

Title V Core List Effective: 03/01/02

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61, Subpart M: NESHAP for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: (description)

CHAPTER 62-4, F.A.C.: PERMITS, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 06-21-01

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(5), F.A.C.: Notification of Startup.
62-210.300(6), F.A.C.: Emissions Unit Reclassification.
62-210.300(7), F.A.C.: Transfer of Air Permits.

62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.
62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400, F.A.C.: Emission Estimates.
62-210.650, F.A.C.: Circumvention.
62-210.700, F.A.C.: Excess Emissions

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1), F.A.C.: Application for Air Permit - Title V Source, Form and Instructions.
62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.
62-210.900(7), F.A.C.: Application for Transfer of Air Permit - Title V and Non-Title V Source.

CHAPTER 62-212, F.A.C.: STATIONARY SOURCES- PRECONSTRUCTION REVIEW, effective 08-17-00

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.415, F.A.C.: Trading of Emissions Within a Source.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.450, F.A.C.: Permit Review by EPA and Affected States
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
62-213.900(7), F.A.C.: Statement of Compliance Form

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.
62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter

CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99

62-297.310, F.A.C.: General Test Requirements.
62-297.330, F.A.C.: Applicable Test Procedures.
62-297.340, F.A.C.: Frequency of Compliance Tests.
62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
62-297.350, F.A.C.: Determination of Process Variables.
62-297.570, F.A.C.: Test Report.
62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

Miscellaneous:

CHAPTER 28-106, F.A.C.: Decisions Determining Substantial Interests
CHAPTER 62-110, F.A.C.: Exception to the Uniform Rules of Procedure, effective 07-01-98
CHAPTER 62-256, F.A.C.: Open Burning and Frost Protection Fires, effective 11-30-94
CHAPTER 62-257, F.A.C.: Asbestos Notification and Fee, effective 02-09-99
CHAPTER 62-281, F.A.C.: Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lbs/hr	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
PM	A				Particulate Matter – Total
PM_{10}	A				Particulate Matter – PM_{10}
SO_2	A				Sulfur Dioxide
NO_X	A				Nitrogen Oxides
CO	A				Carbon Monoxide
VOC	A				Volatile Organic Compounds
SAM	A				Sulfuric Acid Mist
TRS	A				Total Reduced Sulfur
HAPs	A				Total Hazardous Air Pollutants
H001	A				Acetaldehyde
H021	B				Beryllium Compounds
H043	A				Chloroform
H095	A				Formaldehyde
H106	A				Hydrochloric Acid
H115	A				Methanol

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [X] Attached, Document ID: GP-FI-C1 [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [X] Attached, Document ID: GP-FI-C2 [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID: GP-FI-C3 [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [X] Attached, Document ID: Attachment A [ ] Not Applicable
7. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

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

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

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements:
    [ ] Attached, Document ID:_____[X] Not Applicable

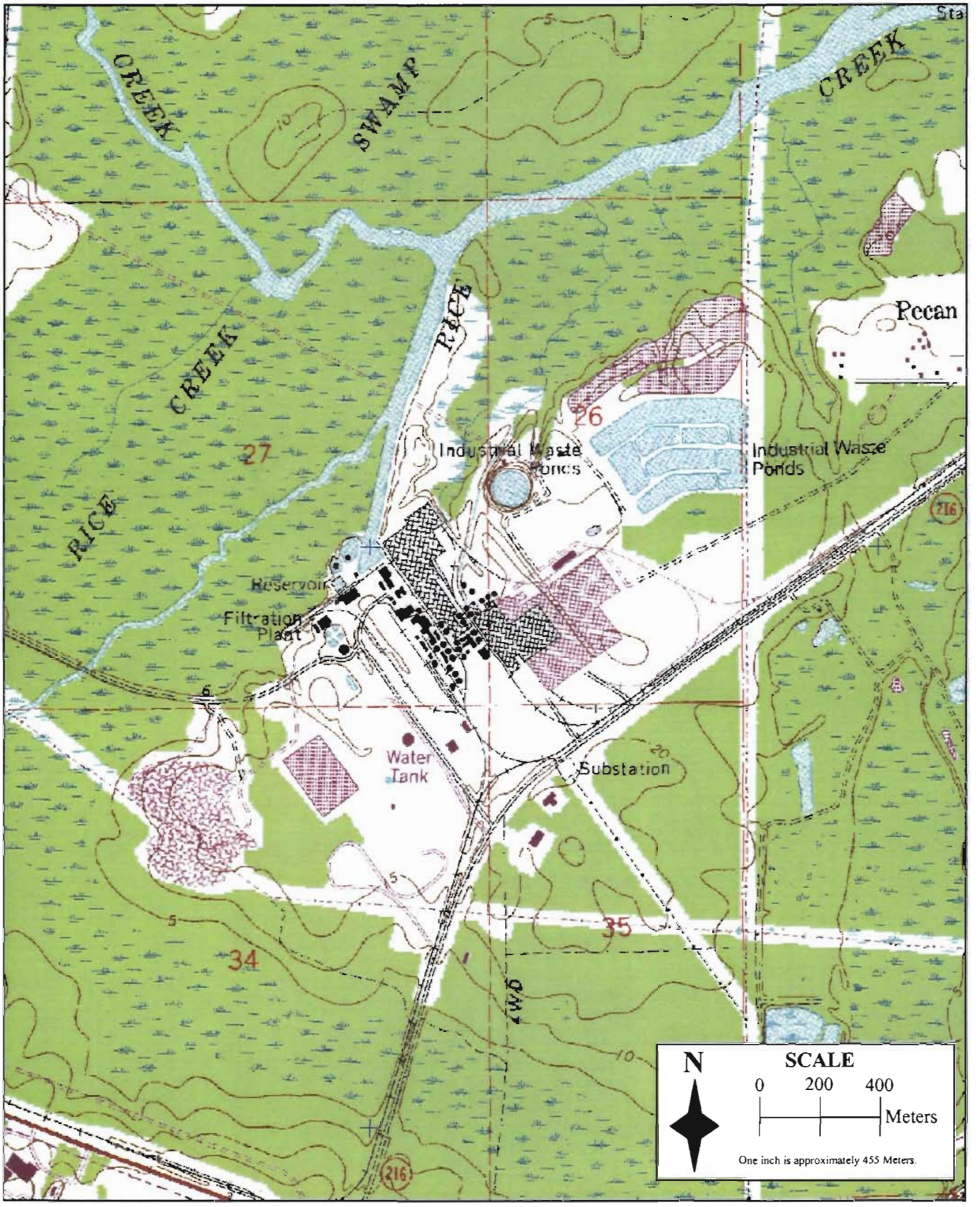
13. Risk Management Plan Verification:
    [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:) _____ or previously submitted to DEP (Date and DEP Office:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [X] Not Applicable

14. Compliance Report and Plan:
    [ ] Attached, Document ID:_____ [X] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [ ] Attached, Document ID:_____ [X] Not Applicable

ATTACHMENT GP-FI-C1

AREA MAP SHOWING FACILITY LOCATION



Attachment GP-FI-C1
Area Map
Georgia-Pacific Corporation, Palatka Mill

Source: Golder, 2002.

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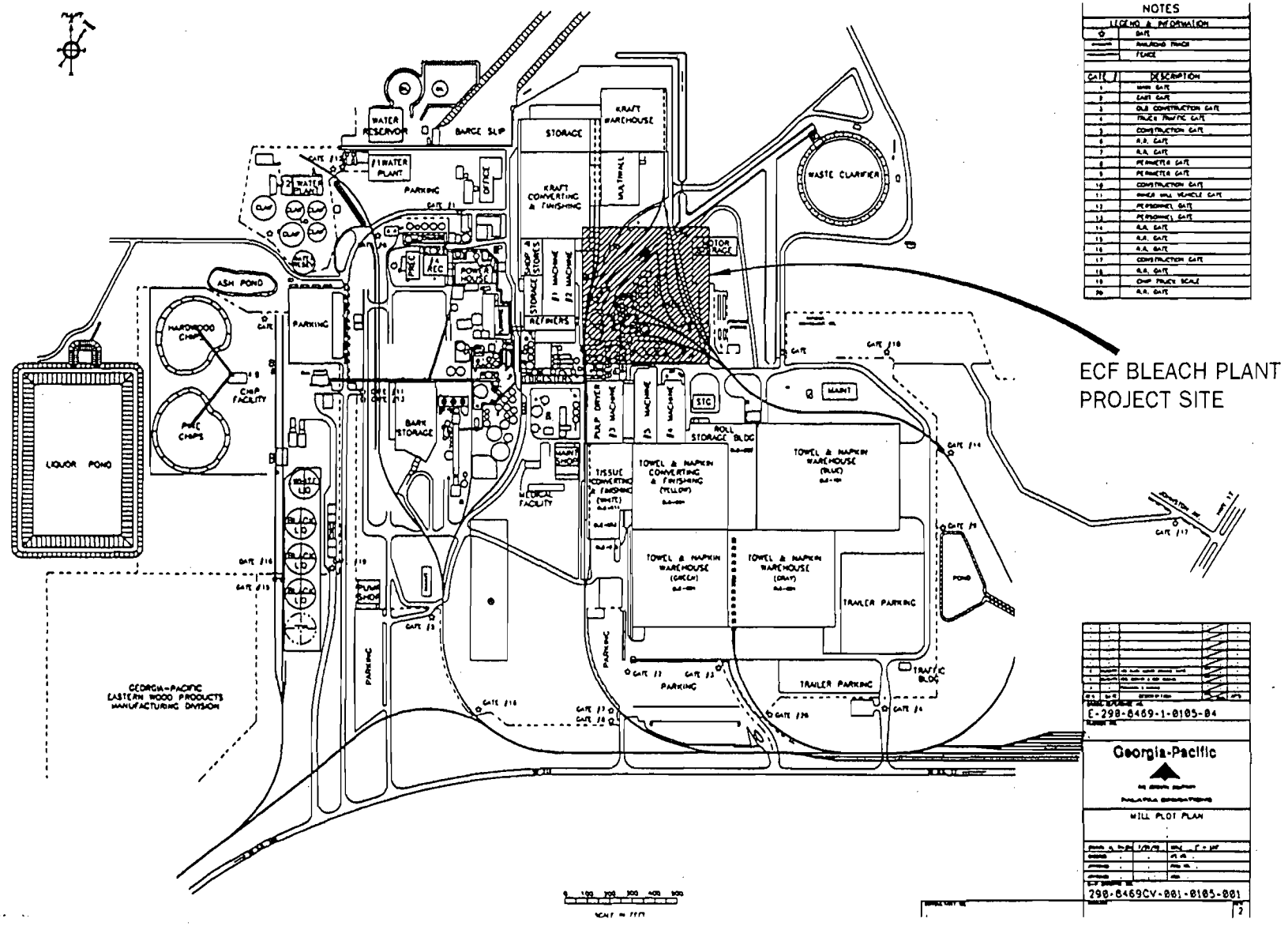
ATTACHMENT GP-FI-C2

FACILITY PLOT PLAN



Attachment GP-FI-E2a
Plot Plan

Source: Georgia Pacific, 1998.

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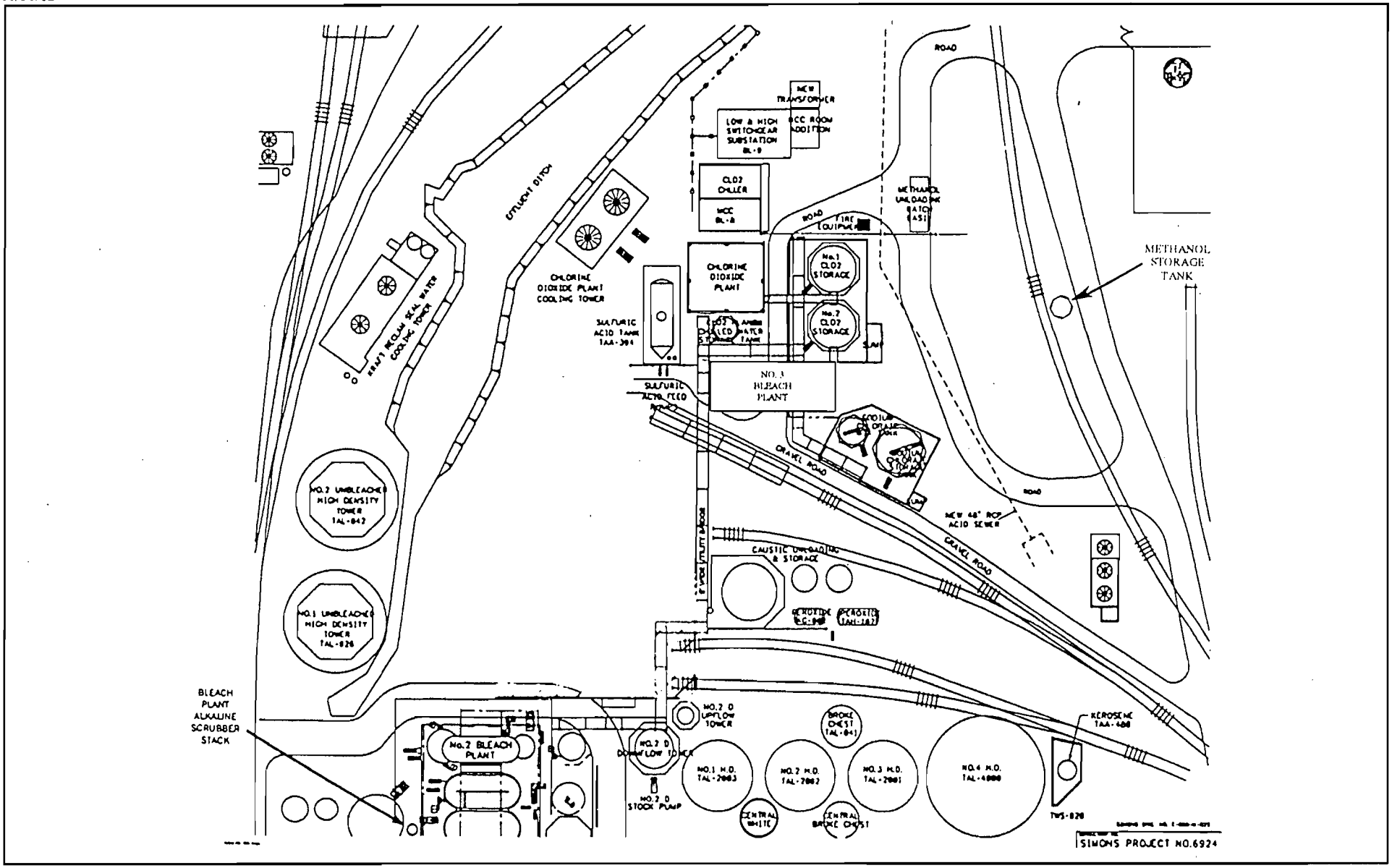

Attachment GP-FI-C2b
Plot Plan

Source: Golder, 2001.

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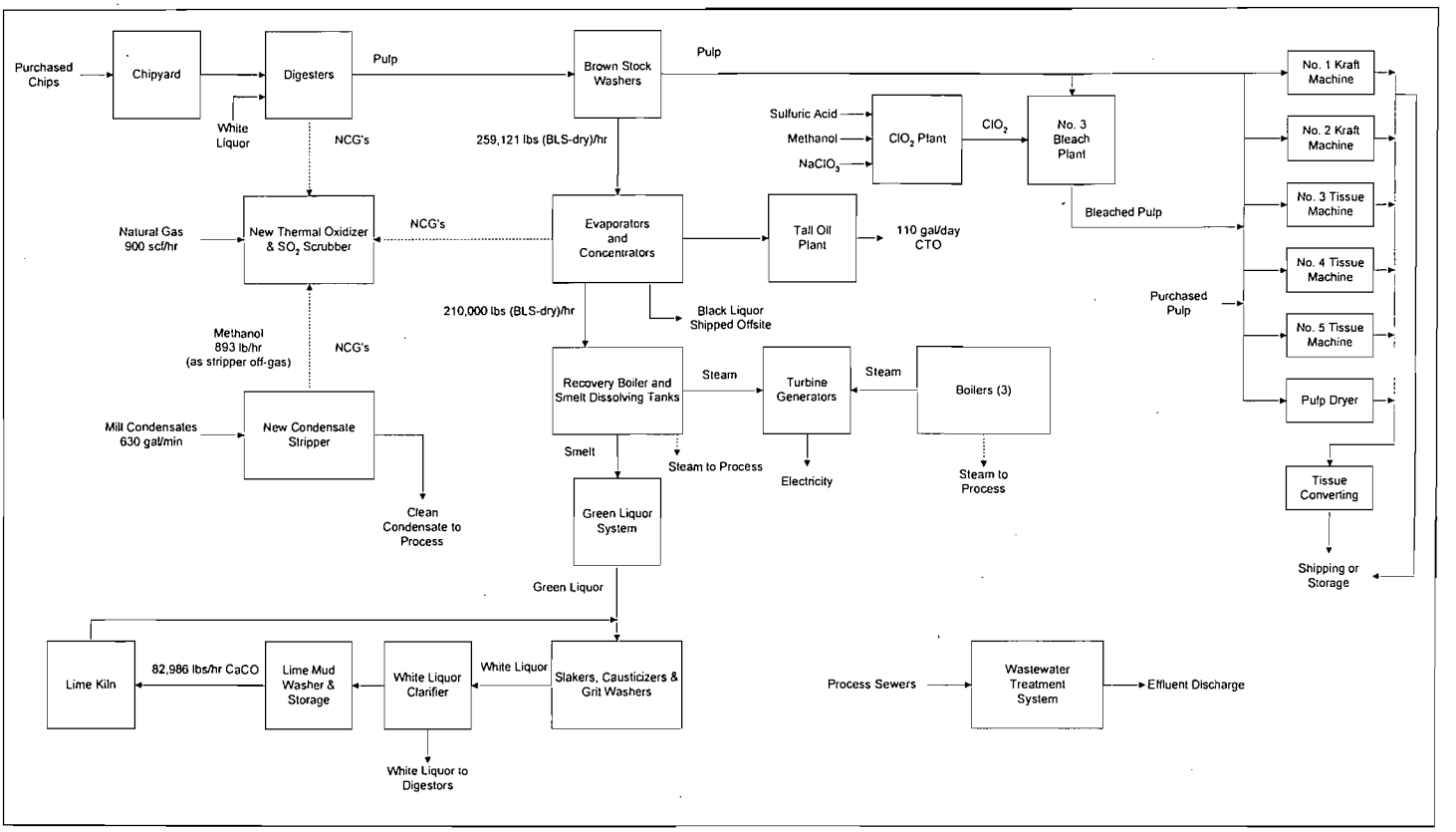
ATTACHMENT GP-FI-C3

PROCESS FLOW DIAGRAM



Attachment GP-FI-C3
Facility Process Flow Diagram
Georgia-Pacific Palatka Operations
Palatka, Florida

Notes:
ADUP = Air Dried Unbleached Pulp
CTO = Crude Tall Oil
Solid/Liquid
Gas

Filename: 0237561\4\4.4\4.4.1\GP-FI-C3.VSD
Date: 11/11/02

Golder Associates

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Elemental Chlorine Free (ECF) No. 3 Bleach Plant

4. Emissions Unit Identification Number:
ID: **036**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**2/15/2001**	**26**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Packed-Gas Adsorption Column

2. Control Device or Method Code(s): **050**

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lbs/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate:		**1,440 ADTPB/day**		
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year

6. Operating Capacity/Schedule Comment (limit to 200 characters):

Maximum production rate refers to maximum daily production of air-dried tons of bleached pulp (ADTBP). Annual average permitted rate is 1,350 ADTBP/day.

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment GP-EU1-C.

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **Bleach Plant Alkaline Scrubber Stack**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **118** feet	7. Exit Diameter: **3.5** feet
8. Exit Temperature: **~85** °F	9. Actual Volumetric Flow Rate: **~15,400** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters): **Values representative of scrubber exhaust stack. Exit temperature and actual volumetric flow rate values are constantly changing with ambient conditions.**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
Pulp and Paper and Wood - Sulfate (Kraft) Pulping; Industrial processes. Sulfate (Kraft) Pulping Bleaching Reactors		
2. Source Classification Code (SCC): **3-07-001-14**	3. SCC Units: **Tons of air-dried unbleached pulp produced**	
4. Maximum Hourly Rate: **65.2**	5. Maximum Annual Rate: **535,598**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **See Attachment GP-EU1-E10. Maximum hourly rate based on 1,440 ADTBP/day. Maximum annual rate based on an average of 1,350 ADTBP/day. ADTBP÷0.92 = ADTUP.**		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	050		NS
HAPs	050		WP
H115	050		NS
H043	050		WP
CO			EL
H038	050		EL

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **20.4** lbs/hr **83.8** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **NCASI**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment GP-EU1-G8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **VOCs are from bleach plant alkaline wet scrubber.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lbs/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **HAPS**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **18.8** lbs/hr **77.4** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Manuf. Info & NCASI**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment GP-EU1-G8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lbs/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **H115-Methanol**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.4** lbs/hr **71.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **NCASI**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment GP-EU1-G8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lbs/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **H043-Chloroform**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.49** lbs/hr **2.02** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **NCASI**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment GP-EU1-G8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lbs/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **100** lbs/hr **324** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **1.68 lbs/ADTBP (100% softwood factor)** Reference: **See Attachment A**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See Table 2-1 for presentation of emission rates. Detailed calculations provided in Appendix A to Attachment A.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **324 TPY**	4. Equivalent Allowable Emissions: **100** lbs/hour **324** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 10**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **See Attachment A.**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **H038-Chlorine**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.72** lbs/hr **3.14** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **10 ppmvd** Reference: **Permit No. 1070005-006-AC**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See Attachment GP-EU1-G8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **10 ppmvd**	4. Equivalent Allowable Emissions: **0.72** lbs/hour **3.14** tons/year
5. Method of Compliance (limit to 60 characters): **Initial compliance testing by EPA Method 26A.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Permit No. 1070005-006-AC and 40 CFR 63, Subpart S.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 10**	
5. Visible Emissions Comment (limit to 200 characters): **Based on Rules 62-296.320 and 62-296.404(2)(b), F.A.C., and Permit No. 1070005-006-AC; PSD-FL-264.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **pH**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **40 CFR 63.453(c)(1) requires pH monitoring of the gas scrubbing medium. G-P proposes to record pH data on a 3-hour average basis.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **40 CFR 63.453(c)(2) requires measurement of vent gas inlet flow rate. EPA approved an alternative monitoring plan to monitor fan amperage of the bleaching system vent gas fan. G-P proposes to record fan amperage on a 3-hour average basis.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor 3 of 3

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **40 CFR 63.453(c)(3) requires measurement of the gas scrubber liquid flow rate. G-P will monitor the recirculation flow, which is the actual amount of liquid introduced to the scrubber. G-P proposes to record scrubber recirculation flow on a 3-hour average basis.**	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram
   [X] Attached, Document ID: GP-EU1-J1 [ ] Not Applicable [ ] Waiver Requested

2. Fuel Analysis or Specification
   [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested

3. Detailed Description of Control Equipment
   [X] Attached, Document ID: GP-EU1-J3 [ ] Not Applicable [ ] Waiver Requested

4. Description of Stack Sampling Facilities
   [ ] Attached, Document ID: _____ [X] Not Applicable[ ] Waiver Requested

5. Compliance Test Report
   [ ] Attached, Document ID: _____
   [X] Previously submitted, Date: 11 JUN 2001
   [ ] Not Applicable

6. Procedures for Startup and Shutdown
   [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested

7. Operation and Maintenance Plan
   [X] Attached, Document ID: GP-EU1-J7 [ ] Not Applicable [ ] Waiver Requested

8. Supplemental Information for Construction Permit Application
   [X] Attached, Document ID: Attachment A [ ] Not Applicable

9. Other Information Required by Rule or Statute
   [X] Attached, Document ID: GP-EU1-J9 [ ] Not Applicable

10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID: _____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID: _____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID: _____ [X] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

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

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

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

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

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID: _____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID: _____

[X] Not Applicable

ATTACHMENT GP-EU1-C

LIST OF APPLICABLE REGULATIONS

ATTACHMENT GP-EU1-C

LIST OF APPLICABLE REGULATIONS

(Page 1 of 2)

40 CFR 63.445(a)(2)	Standards for the bleaching system
40 CFR 63.445(b)	Standards for the bleaching system
40 CFR 63.445(c)(1)	Standards for the bleaching system
40 CFR 63.445(d)	Standards for the bleaching system
40 CFR 63.450(a)-(d)	Standards for enclosures and closed-vent systems
40 CFR 63.453(a)	Monitoring Requirements
40 CFR 63.453(c)-(d)	Monitoring Requirements
40 CFR 63.453(k)	Monitoring Requirements
40 CFR 63.453(n)-(o)	Monitoring Requirements
40 CFR 63.454(a)-(b)	Recordkeeping Requirements
40 CFR 63.454(d)	Recordkeeping Requirements
40 CFR 63.455(a)	Recordkeeping Requirements
40 CFR 63.454(d)	Recordkeeping Requirements
40 CFR 63.457(a)-(b)	Test Methods and Procedures
40 CFR 63.457(d)-(e)	Test Methods and Procedures
40 CFR 63.457(h)-(i)	Test Methods and Procedures
62-212.400	PSD
62-210.700	Excess Emissions
40 CFR 63.1(a)(1)-(4)	Applicability
40 CFR 63.1(a)(11)-(14)	Applicability
40 CFR 63.1(b)(2)-(3)	Applicability
40 CFR 63.1(c)(1)-(2)	Applicability
40 CFR 63.1(c)(5)	Applicability
40 CFR 63.1(e)	Applicability
40 CFR 63.2	Definitions
40 CFR 63.3	Units and Abbreviations
40 CFR 63.4(a)(1)	Prohibited Activities and Circumvention
40 CFR 63.4(a)(3)	Prohibited Activities and Circumvention
40 CFR 63.4(a)(5)	Prohibited Activities and Circumvention
40 CFR 63.4(b)-(c)	Prohibited Activities and Circumvention
40 CFR 63.5(a)	Construction and Reconstruction
40 CFR 63.5(b)(1)	Construction and Reconstruction
40 CFR 63.5(b)(3)-(6)	Construction and Reconstruction
40 CFR 63.5(d)(1)	Construction and Reconstruction
40 CFR 63.5(d)(3)-(4)	Construction and Reconstruction
40 CFR 63.5(e)	Construction and Reconstruction
40 CFR 63.5(f)	Construction and Reconstruction
40 CFR 63.6(a)	Compliance with Standards and Maintenance Requirements
40 CFR 63.6(e)-(g)	Compliance with Standards and Maintenance Requirements
40 CFR 63.6(i)-(j)	Compliance with Standards and Maintenance Requirements
40 CFR 63.8(a)(1)-(2)	Monitoring Requirements
40 CFR 63.8(a)(4)	Monitoring Requirements
40 CFR 63.8(b)(1)	Monitoring Requirements
40 CFR 63.8(b)(3)	Monitoring Requirements
40 CFR 63.8(c)(1)-(3)	Monitoring Requirements
40 CFR 63.8(c)(6)-(8)	Monitoring Requirements

ATTACHMENT GP-EU1-C

LIST OF APPLICABLE REGULATIONS

(Page 2 of 2)

40 CFR 63.8(d)	Monitoring Requirements
40 CFR 63.8(e)	Monitoring Requirements
40 CFR 63.8(f)(1)-(5)	Monitoring Requirements
40 CFR 63.8(g)	Monitoring Requirements
40 CFR 63.9(a)-(b)	Notification Requirements
40 CFR 63.9(c)	Notification Requirements
40 CFR 63.9(g)(1)	Notification Requirements
40 CFR 63.9(h)-(j)	Notification Requirements
40 CFR 63.10(a)-(c)	Recordkeeping and Reporting Requirements
40 CFR 63.10(d)(1)-(2)	Recordkeeping and Reporting Requirements
40 CFR 63.10(d)(4)-(5)	Recordkeeping and Reporting Requirements
40 CFR 63.10(e)(1)	Recordkeeping and Reporting Requirements
40 CFR 63.10(e)(2)(i)	Recordkeeping and Reporting Requirements
40 CFR 63.10(e)(3)	Recordkeeping and Reporting Requirements
40 CFR 63.10(f)	Recordkeeping and Reporting Requirements
40 CFR 63.12	State Authority and Delegation
40 CFR 63.13	Addresses of State Air Pollution Control Agencies and EPA Regional Offices
40 CFR 63.14	Incorporations by References
40 CFR 63.15	Availability of Information and Confidentiality

ATTACHMENT GP-EU1-E10

SEGMENT COMMENT

ATTACHMENT GP-EU1-E10

SEGMENT COMMENT

Maximum Annual Rate based on average monthly No. 3 Bleach plant production of 1,350 Air Dried Tons of Bleached Pulp (ADTBP) per day. Maximum hourly rate based on maximum daily production of 1440 ADTBP per day. Values converted to Air-Dried Tons Unbleached Pulp (ADTUP) using a conversion factor of Unbleached/Bleached = 1:0.92.

1,350 ADTBP ÷ 0.92 = 1,467 ADTUP (monthly average)

1,440 ADTBP ÷ 0.92 = 1,565 ADTUP (maximum daily)

Maximum Hourly Rate: 1,440 ADTBP per day ÷ 24 hrs/day = 60.0 ADTBP

60.0 ADTBP/hr ÷ 0.92 = 65.2 ADTUP/hr

Maximum Annual Rate: 1,350 ADTBP x 365 days/year = 492,750 ADTBP per year

492,750 ADTBP/yr ÷ 0.92 = 535,598 ADTUP/year

ATTACHMENT GP-EU1-G8

CALCULATION OF EMISSIONS

Attachment GP-EU1-G8. Estimated HAP and VOC Emissions From Proposed No. 3 Bleach Plant, Georgia Pacific, Palatka Florida (revised 11/8/02)

Pollutant Name	HAP?	VOC?	Avg Factor (lb/ADTBP) (a)	Maximum ADTBP/hr (b)	Average ADTBP/hr (c)	Emissions lb/hr	Emissions TPY	HAP Emissions lb/hr	HAP Emissions TPY	VOC Emissions lb/hr	VOC Emissions TPY
Acetaldehyde	YES	YES	ND	--	--	--	--	--	--	--	--
Benzene	YES	YES	1.80E-04	60.0	56.3	0.01	0.04	0.01	0.04	0.01	0.04
Carbon Tetrachloride	YES	NO	ND	--	--	--	--	--	--	--	--
Chlorine (d)	YES	NO	--	--	--	0.72	3.14	0.72	3.14	--	--
Chlorine Dioxide (e)	NO	NO	--	--	--	2.14	9.38	--	--	--	--
Chlorobenzene	YES	YES	2.10E-04	60.0	56.3	0.01	0.05	0.01	0.05	0.01	0.05
Chloroform (f)	YES	YES	8.19E-03	60.0	56.3	0.49	2.02	0.49	2.02	0.49	2.02
1,2-Dichloroethane (Ethylene Dichloride)	YES	YES	ND	--	--	--	--	--	--	--	--
Dimethyl Sulfide	NO	YES	ND	--	--	--	--	--	--	--	--
Formaldehyde (g)	YES	YES	ND	--	--	--	--	--	--	--	--
Methanol	YES	YES	2.90E-01	60.0	56.3	17.40	71.45	17.40	71.45	17.40	71.45
Methyl Ethyl Ketone	YES	YES	6.70E-04	60.0	56.3	0.04	0.17	0.04	0.17	0.04	0.17
Methyl Isobutyl Ketone	YES	YES	4.50E-04	60.0	56.3	0.03	0.11	0.03	0.11	0.03	0.11
Methyl Mercaptan	NO	YES	3.80E-02	60.0	56.3	2.28	9.36	--	--	2.28	9.36
Methylene Chloride	YES	YES	ND	--	--	--	--	--	--	--	--
Alpha-Pinene	NO	YES	4.70E-04	60.0	56.3	0.03	0.12	--	--	0.03	0.12
Beta-Pinene	NO	YES	2.20E-04	60.0	56.3	0.01	0.05	--	--	0.01	0.05
Styrene	YES	YES	3.50E-04	60.0	56.3	0.02	0.09	0.02	0.09	0.02	0.09
Tetrachloroethyene	YES	YES	ND	--	--	--	--	--	--	--	--
Toluene	YES	YES	1.70E-04	60.0	56.3	0.01	0.04	0.01	0.04	0.01	0.04
1,2,4-Trichlorobenzene	YES	YES	5.00E-04	60.0	56.3	0.03	0.12	0.03	0.12	0.03	0.12
1,1,1-Trichloroethane (Methyl Chloroform)	YES	YES	ND	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	YES	YES	ND	--	--	--	--	--	--	--	--
Trichloroethylene	YES	YES	ND	--	--	--	--	--	--	--	--
M&P-Xylene	YES	YES	4.80E-04	60.0	56.3	0.03	0.12	0.03	0.12	0.03	0.12
O-Xylene	YES	YES	2.70E-04	60.0	56.3	0.02	0.07	0.02	0.07	0.02	0.07
							Total =	18.81	77.42	20.41	83.81

ND = Non Detectable
ADTBP = Air Dried Tons of Bleached Pulp
ODTBP = Oven Dried Tons of Bleached Pulp
lb/hr = pounds per hour
TPY = tons per year

(a) All emission factors (except chlorine, chlorine dioxide, chloroform and formaldehdye) based on data in NCASI Technical Bulletin No. 701: Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Sources at Chemical Wood Pulp Mills. Mill Codes BPF and BPME1 are most representative of the proposed ECF bleach plant at Georgia Pacific's Palatka mill. If values were given for both mill codes, then the values were averaged. Non-detectable limits not used.

(b) Based on a maximum production rate of 1,440 ADTBP (short-term operation) per day divided by 24 hours per day operation. This value is used to calculate short-term emissions (lb/hr).

(c) Based on a maximum monthly average production rate of 1,350 ADTBP (long-term operation) per day divided by 24 hours per day operation. This value is used to calculate long-term emissions (TPY).

(d) Based on Permit No. 1070005-006-AC, Specific Condition 7.(a), 10 ppmvd limit for chlorinated HAPs (as chlorine) and flow rate of 13,000 dscfm (based on reent test data).

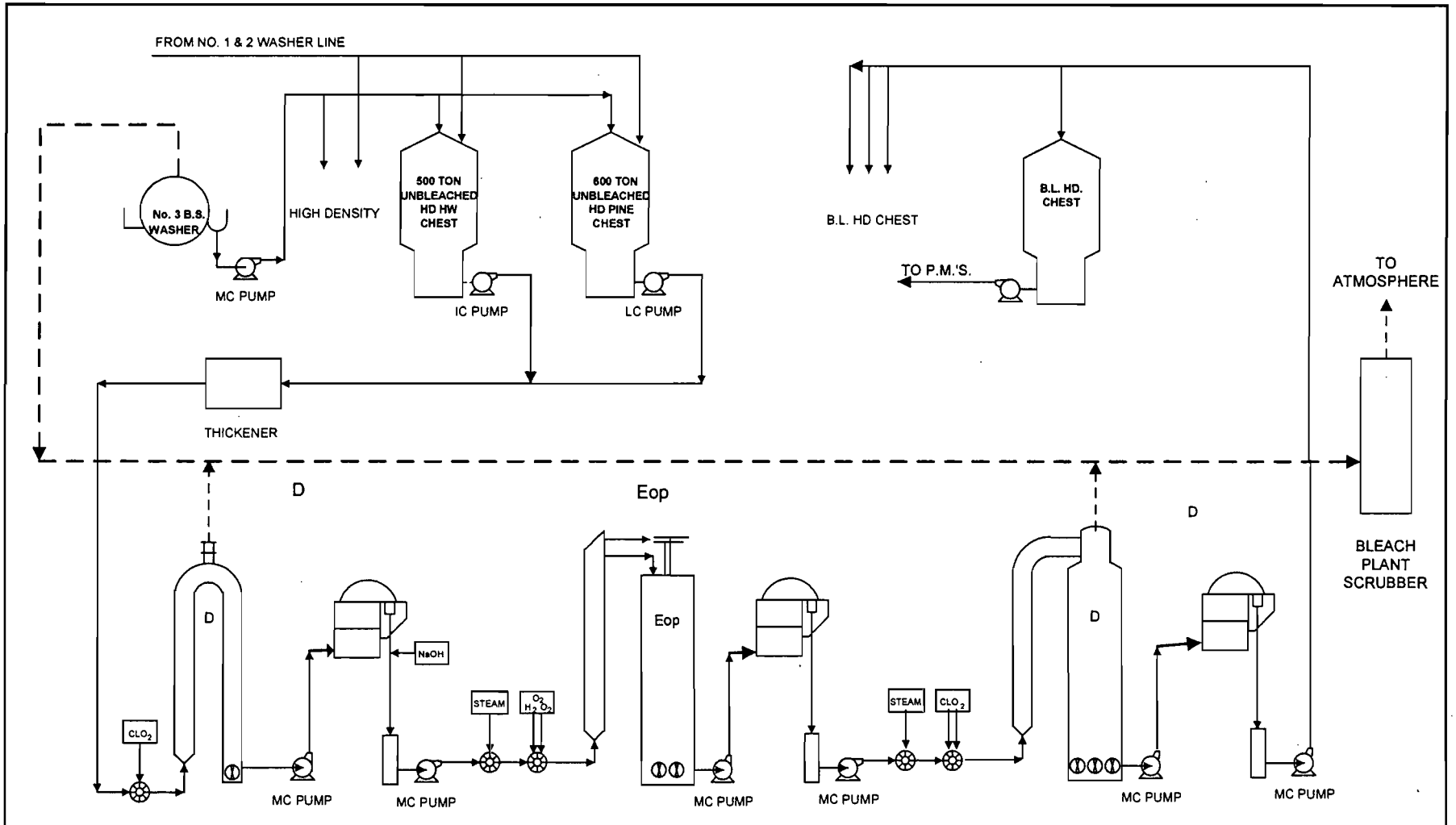
(e) Based on design information provided by scrubber manufacturer. Emissions based on 1,350 ADTBP/day and 214.25 lb/hr uncontrolled chlorine dioxide and 99% scrubber removal efficiency.

(f) Based on data in NCASI Technical Bulletin No. 679: Volatile Organic Emissions From Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants. Mill Code E "c" Line is most representative of the proposed ECF bleach plant at Georgia Pacific's Palatka mill. Chloroform emission factor converted to lb/ADTBP using the following formula: 9.1 e-3 lb/ODTBP * (0.90 ODTBP/ADTBP) = 8.19 e-3 lb/ADTBP.

(g) Based on data in NCASI Technical Bulletin No. 701: Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Sources at Chemical Wood Pulp Mills. Formaldehyde data based on Mill Code BPMN.

ATTACHMENT GP-EU1-J1

PROCESS FLOW DIAGRAM



NO. 3 BLEACH PLANT - D(Eop)D

ATTACHMENT GP-EU1-J1
ECF BLEACH PLANT FLOW DIAGRAM

Source: Georgia-Pacific, 1998.

Process Flow Legend:
Solid / Liquid ——→
Gas ----------→

Project: 0237561\4\4.4\4.4.1
Filename: GP-EU1-J1.VSD
Date: 10/30/02

Golder Associates

ATTACHMENT GP-EU1-J3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

ATTACHMENT GP-EU1-J3

Georgia-Pacific Corporation Palatka Facility

No. 3 Bleach Plant

Alkaline Scrubber Equipment Design Parameters

Scrubber Type	Packed Bed Wet Scrubber
Scrubbant	Alkaline Liquid
Packing Material	No. 2 Super Interlocks
Packing Arrangement	Two 25-ft beds
Outlet Gas Temp (°F)	85
Outlet Gas Flow Rate (ACFM)	15,400
Average Scrubbant pH	>7.0
Scrubbant Flow Rate (gpm)	>1,200

ATTACHMENT GP-EU1-J7

OPERATION AND MAINTENANCE PLAN

No. 3 Bleach Plant
O & M Plan

Plant Overview

The Georgia-Pacific Palatka Operations mill uses a Prewash-D_o-E_{op}-D_1 bleaching sequence.

In simple terms, the bleaching sequence is:

Prewash Stage - provides final washing and consistency control of the pulp before starting the bleaching process.

D_o Stage - the first bleaching stage, where chlorine dioxide (D_o; ClO_2) followed by washing. This stage solubilizes most of the remaining lignin.

E_{op} Stage -the second bleaching stage, where the sequential addition of caustic (E; NaOH), then hydrogen peroxide (p; H_2O_2) and oxygen (0; O_2) takes place, followed by washing. This stage dissolves the soluble lignin and removes it at the stage's wash press.

D_1 Stage - the final bleaching stage, where the true bleaching of the pulp occurs using chlorine dioxide (D_1; ClO_2), followed by washing. In this stage, the pulp is bleached to the desired brightness and the impact of impurities (wood dirt, shives) is greatly reduced.

The main objective of bleaching is to increase the brightness (whiteness) of the pulp while still maintaining good physical strength properties. The pulp is then used by the paper mill to manufacture a wide variety of consumer goods.

When bleaching pulp, there are a number of key parameters that influence the results of the chemical reactions and the effectiveness of each treatment. To obtain optimal bleaching results, specific conditions need to be met in each stage. The chemicals used in the different bleaching stages vary in their selectivity when reacting with cellulose and lignin as well as their ability to brighten the pulp.

The four key parameters for all bleaching stages are:

1) chemical dosage
2) reaction time
3) reaction temperature
4) stock pH.

All bleaching chemicals react according to the same principle with a fast initial reaction phase and then a slower subsequent phase. Chlorine dioxide (ClO_2) is unique, however, having an almost instantaneous reaction with pulp.

In order to take advantage of this known reaction mechanism, a typical bleaching stage usually involves chemical addition, a chemical/pulp mixer, reaction in a tower to provide retention time, followed by washing to remove the excess chemicals and reaction products.

The Palatka facility utilizes this type of equipment for the bleaching of both hardwoods and softwoods in the same and only bleach plant. The physical equipment operation is fundamentally the same for both species with different targeted values for the four key parameters mentioned above.

The following are examples of the type of instrumentation used to assure a safe, effective, and efficient bleaching process:

- Flow Indication for stock, water, effluent, chemicals, and steam.
- Consistency meters prior to each beaching sequence for chemical addition.
- Temperatures for all flows in all stages of the process.
- pH probes for stock and effluent throughout the process.
- Chemical residual analyzers for stock streams throughout process. >- Stock Kappa analyzer at each stage for chemical addition.
- Brightness instrumentation at each stage for brightness development and chemical addition.
- Fiber length analyzers for accurate species tracking and correct chemical addition.
- ClO_2 strength analyzer for maximizing ClO_2 addition on stock.
- Local and DCS gas emission alarms strategically placed throughout all levels of the operation.
- Conductivity probes in sewer effluent.

Operator training consisted of the following:

- 24 hours of Computer Based Training
- 16 hours of Class Room Training
- 16 hours of in the Field Training
- 40 hours of one on one Running the Plant Training.

The operating staff of this equipment utilizes sophisticated Digital Controls Systems via remote PC to monitor and make every control adjustment to the key parameters.

Operators maintain a log sheet that contains critical operating data. A shift by shift equipment checklist is completed each day for equipment lubrication, vibration, noise, and temperature. A multitude of alarm limits and safety interlocks also help to assure that the four key parameters are kept in check.

In an effort to verify that the control instrumentation is correct, operating staff complete manual test verification log sheets periodically during the day. Deviations from field instrumentation are adjusted as needed and calibrations are made as soon as possible.

To minimize the need for frequent adjustments, field instrumentation is inspected, cleaned, replaced and/or calibrated on either a daily, weekly, or monthly basis.

All environmental, safety, or major pieces of equipment have written maintenance procedures and parts lists readily available to the maintenance staff. Preventative Maintenance routes are completed routinely via either vender recommendations or historical performance. All maintenance work on any piece of equipment is tracked electronically for repetitive issue resolution.

ATTACHMENT GP-EU1-J9

OTHER INFORMATION REQUIRED BY RULE OR STATUTE

ATTACHMENT GP-EU1-J9

This application is being submitted to revise the PSD Permit (Permit No. 1070005-010-AC) to increase the CO emission rate for the No. 3 Bleach Plant at Georgia-Pacific (G-P) Palatka.

Specific Condition 3 of Permit No. 1070005-010-AC requires that an Operation and Maintenance (O&M) Plan for the No. 3 Bleach Plant be submitted which sets forth the practices which are employed to result in efficient bleaching operations. The required O & M Plan is contained in Attachment GP-EU1-J7.

As per Specific Condition 12 of Permit No. 1070005-010-AC, G-P operates continuous monitors for pH of the gas scrubber liquid, the gas scrubber liquid recirculation flow rate, and gas scrubber vent inlet flow rate. The monitoring of the fan loading is an alternative to the continuous monitoring of the gas scrubber vent inlet flow rate. The EPA letter of approval for use of alternative monitoring is attached. Monitoring fan loading insures that gas is flowing to the scrubber. Monitoring pH insures heat gas scrubber liquid is the appropriate strength to control emissions from the vent gas. Monitoring the scrubber recirculation flow ensures that scrubber liquid is actually flowing into the scrubber.

As required, G-P has established parametric monitoring values based on the compliance test conducted on the No. 3 Bleach Plant. These values are presented as follows:

- Fan loading - 85 percent,
- pH - 9.5, and
- Scrubber recirculation flow rate - 1,500 gpm.

G-P proposes to collect this data on a 3-hour average basis. G-P requests that any condition placed on the Title V permit to require minimum or maximum scrubber operating parameters state the following: "Such parameters remain valid until a compliance test demonstrates that compliance can be achieved at lower or higher values. Upon such demonstration, the lower or higher values become the new limitations for the gas scrubber."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

DEC 2 ? 2000

received
12-27-00

4APT-ARB

Myra J. Carpenter
Superintendent, Environmental Affairs
Georgia-Pacific Corporation
P. O. Box 919
Palatka, Florida 32178-0919

Dear Ms. Carpenter:

Thank you for your letter dated December 1, 2000, regarding a request from the Georgia-Pacific Corporation, Palatka, Florida, for approval of a bleach plant alternative monitoring parameter pursuant to the Pulp & Paper MACT standard. Section 63.453(c)(2) of the MACT requires subject mills to continuously monitor the gas scrubber vent gas inlet flow rate. However, the facility states that because the inlet to the gas scrubber is a very corrosive, moist environment, it is not conducive to continuous flow measurement and therefore Georgia-Pacific is seeking approval of a system to continuously monitor operation of the fan used to convey hazardous air pollutants to the bleach plant scrubber.

Based on the discussion of the alternative monitoring parameter issue in the Environmental Protection Agency's (EPA's) Q&A Document for the Pulp & Paper MACT (Volume 1, Page 8 - 10), Region 4 concurs that adequate rationale for using an alternative parameter (as required in 63.453(n)), has been demonstrated. Therefore, Region 4 concurs with the Georgia-Pacific request to substitute vent gas fan data (i.e., install, calibrate, operate and properly maintain a continuous monitoring system to monitor the fan amperage of the bleaching system vent gas fan) as an alternative monitoring parameter to 63.453(c)(2) and accordingly approves this specific request.

If further assistance is needed, please contact Lee Page of the EPA Region 4 staff at (404) 562-9131.

Sincerely,

Paul Stagner

R. Douglas Neeley
Chief
Air and Radiation Technology Branch
Air, Pesticides and Toxics
Management Division

cc: Howard Rhodes, FL DEP

ATTACHMENT A

SUPPLEMENTAL INFORMATION FOR CONSTRUCTION PERMIT APPLICATION

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Georgia-Pacific Corporation (G-P) operates a Kraft pulp mill located in Palatka, Florida. As part of the paper making process, pulp bleaching is conducted at the facility. In 1999, G-P applied for a construction permit to construct an elemental chlorine-free (ECF) three-stage bleach plant. On June 30, 1999, the Florida Department of Environmental Protection (FDEP) issued G-P a Prevention of Significant Deterioration (PSD) permit to construct the No. 3 Bleach Plant. Construction for the No. 3 Bleach Plant was completed by February 15, 2001 and the bleach plant is now operational. Based on initial test data from the new bleach plant, G-P believes that the carbon monoxide (CO) emission limit that the bleach plant is subject to does not adequately reflect process variability of the bleach plant.

G-P is now submitting this application to revise the CO emission limit in the No. 3 Bleach Plant PSD permit, Permit No. 1070005-006-AC; PSD-FL-264. The current permit limit is 46 pounds per hour (lbs/hr) and 201 tons per year (TPY). G-P is proposing to increase the CO emission limit to 100 lbs/hr and 324 TPY. This increase in emissions reflects the potential for 100 percent softwood processing on a short-term (daily) basis, as well as increased application of chlorine dioxide to the pulp compared to what was originally proposed in the PSD permit application. G-P believes that the revised emission estimate is more representative of potential CO emissions from the No. 3 Bleach Plant. It should be noted that G-P estimated an average hourly CO emission rate of 63.4 lbs/hr in the original PSD application, based on processing 65 percent softwood and 35 percent hardwood. The revised potential CO emissions contained in this application, reflects the scenario of 100 percent softwood production on a short-term (daily) basis.

This report contains background information relating to the CO emissions, an update on Best Available Control Technology (BACT), and a modeling analysis showing that the proposed higher emission rate for CO will not have any adverse air quality impacts.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

G-P operates a Kraft pulp and paper mill located in Palatka, Florida. Processes and systems at the mill include a batch digester system, multiple effect evaporator (MEE) system, condensate stripper system, recovery boiler and smelt dissolving tanks, lime kiln, tall oil plant, utilities, bleach plant, chlorine dioxide plant, and other equipment to produce finished paper products from virgin wood.

Prior to the construction of the No. 3 Bleach Plant, G-P operated two bleach plants, the No. 1 and No. 2 Bleach Plants. These bleach plants used a combination of chlorine dioxide (ClO_2) and elemental chlorine to bleach pulp. The No. 3 Bleach Plant was constructed to replace the No. 1 and the No. 2 Bleach Plants and to help G-P meet the Maximum Achievable Control Technology (MACT) Standards promulgated for the pulp and paper industry (40 CFR Part 63, Subpart S) by converting the bleaching system to a totally ECF process.

The No. 3 Bleach Plant has the ability to bleach either softwood or hardwood pulp. The bleach plant operates in three stages, with a prewash prior to the front sequence. The three stages consist of a D_0 stage (chlorine dioxide stage), an E_{OP} stage (caustic extraction with oxygen and peroxide), and a D_1 stage (chlorine dioxide stage), resulting in a $D_0(E_{OP})D_1$ sequence. Pulp is supplied to the bleach plant from the No. 2 High Density (HD) chest for hardwood and from the No. 3 HD chest for softwood. The bleach plant is designed for a maximum daily production rate of 1,440 air-dried tons of bleached pulp (ADTBP) per day and an average daily production rate of 1,350 ADTBP per day.

2.2 PROJECTED CO EMISSIONS

2.2.1 ORIGINAL CONSTRUCTION PERMIT APPLICATION

When G-P applied for the PSD construction permit for the bleach plant, G-P did not have specific data for its three stage bleaching plant on which to base CO emissions. CO emissions from the No. 3 Bleach Plant were estimated based on emissions presented in technical literature. Specifically, National Council for Air and Stream Improvement, Inc. (NCASI) Technical Bulletin No. 760 was used to estimate emissions from the No. 3 Bleach Plant.

As discussed further in the Technical Bulletin, the NCASI data indicated that CO emissions from softwood bleaching are dependent on the rate of ClO_2 application to the pulp, but CO emissions from

hardwood bleaching are not dependent on ClO_2 application rate. To estimate CO emissions from softwood bleaching in the No. 3 Bleach Plant, an interpolation of the presented data was performed using estimated peak and average ClO_2 application rates (see Appendix A to the original permit application). CO emissions from hardwood bleaching were estimated by averaging the limited data available in the Technical Bulletin (see Appendix A of the original permit application).

The projected CO emissions from softwood bleaching were estimated as 1.03 lbs/ADTBP for short-term emissions and 0.91 lbs/ADTBP for long-term emissions. The projected CO emissions from hardwood bleaching were estimated as 0.64 lbs/ADTBP. Maximum hourly emissions from the No. 3 Bleach Plant were based on a projected maximum pulp production rate of 1,702 ADTBP per day and a processing ratio of 65 percent softwood and 35 percent hardwood. Annual emissions were based on a projected daily average pulp production rate of 1,350 ADTBP per day and a processing ratio of 65 percent softwood and 35 percent hardwood. This resulted in an hourly emission rate of 63.4 lbs/hr and an annual emission rate of 201 TPY. These derivations can be found in Appendix A of the original PSD application.

2.2.2 REVISED PROJECTIONS BASED ON OPERATIONAL DATA

Since the bleach plant is now operating, G-P has actual operating experience with the No. 3 Bleach Plant. Furthermore, as actually constructed, G-P now believes the maximum hourly throughput that can be achieved by the No. 3 Bleach Plant is 60 ADTBP per hour (1,440 ADTBP per day). G-P believes that the average daily throughput rate, on an annual basis, that was presented in the original application (1,350 ADTBP per day) is still representative.

A series of test runs were recently conducted (October 2002) to measure actual CO emissions from the No. 3 Bleach Plant when processing 100 percent softwood. Of nine test runs conducted over a three-day period, six of the runs were conducted at throughput rates approaching 50 ADTBP per hour or higher. As such, these six runs were thought to be most representative of future operating conditions. The remaining three runs were conducted at lower throughput rates of 35 ADTBP per hour or less. These data are presented in Appendix A.

The average CO emission factor that was calculated from the six "representative" test runs was 1.32 lbs/ADTBP. In order to account for the limited data set, the scatter of the data, and the potential for process variation (*e.g.*, Kappa number, chlorine dioxide application rate, etc.), G-P has utilized a 95-

percent confidence level (statistically corresponding to two standard deviations) in computing a final emission factor of 1.68 lbs/ADTBP for softwood. This results in a maximum, hourly CO emission rate of approximately 100 lbs/hour.

The annual CO emission rate that is being proposed is based on a wood species mix of 65% softwood and 35% hardwood on an annual basis. This is consistent with the assumption that was presented in the original PSD permit application. The Mill-derived factor of 1.68 lbs/ADTBP is utilized for calculating the annual CO emissions attributable to softwood processing. Due to the lack of Mill-specific data for hardwood processing, G-P is continuing to utilize the average NCASI emission factor (0.64 lb/ADTBP) as represented in the original permit application (see Appendix A of the original application). The use of these factors and assumptions results in an annual CO emission rate of 324 TPY. The detailed calculations are presented in Appendix A to this permit application.

2.3 SUMMARY

Based on the information presented above, G-P is requesting a higher emission limit for CO for the No. 3 Bleach Plant. G-P is requesting a CO emission limit of 100 lbs/hr and 324 TPY. The derivation of these emission rates is summarized in Appendix A of this application. The short-term and annual CO emissions for the No. 3 Bleach Plant are summarized in Table 2-1.

Table 2-1. Revised Maximum CO Emissions for the No. 3 Bleach Plant

Averaging Period	Wood Species	Emission Factor (lbs/ADTBP) (a)	Throughput Rate	Emission Rate
Short-Term (Hourly)	Softwood	1.68	60 ADTBP/hour	100.8 lbs/hour (d)
Long-Term (Annual)	Softwood	1.68	320,287.5 ADTBP/year (b)	269.0 tons/year
	Hardwood	0.64	172,462.5 ADTBP/year (c)	55.2 tons/year
	Total (Long-Term)	1.32 (1.45 lbs/ODTBP)	492,750 ADTBP/year 447,955 ODTBP/year	324.2 tons/year

(a) Refer to Appendix A for derivation of softwood and hardwood emission factors.

(b) Based on an average daily throughput of 1,350 ADTBP and assuming 65% softwood on an annual basis (1,350 ADTBP/day x 365 days/year x 0.65 = 320,287.5 ADTBP/year).

(c) Based on an average daily throughput of 1,350 ADTBP and assuming 35% hardwood on an annual basis (1,350 ADTBP/day x 365 days/year x 0.35 = 172,462.5 ADTBP/year).

(d) Actual calculated value is 100.8 lbs/hour; G-P is proposing a maximum hourly permitted rate for CO of 100 lbs/hour.

Note: ADTBP = air-dried tons of bleached pulp.

ODTBP = oven-dried tons of bleached pulp.

3.0 AIR QUALITY MONITORING REQUIREMENTS

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

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

FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the *de minimis* monitoring levels (FDEP Rule 62-212.400, F.A.C.). Presented in Table 3-1 is a comparison of the maximum future CO impact of the No. 3 Bleach Plant to the CO *de minimis* monitoring concentration. Since the maximum 8-hour CO concentration of 293 micrograms per cubic meter ($\mu g/m^3$) is less than the 8-hour *de minimis* monitoring concentration of 575 $\mu g/m^3$, the proposed project is exempt from monitoring requirements for CO.

Table 3-1. Comparison of Maximum Future Impact of the No. 3 Bleach Plant to the *De Minimis* Monitoring Concentration

Pollutant	Impact Due to Future Proposed Project[a] ($\mu g/m^3$)	*De Minimis* Monitoring Concentration ($\mu g/m^3$)	Preconstruction Ambient Monitoring Analysis Required?
Carbon Monoxide	293, 8-hour	575, 8-hour	No

[a] Impact presented is for maximum hourly CO emissions from the No. 3 Bleach Plant.

Source: Golder Associates Inc., 2002.

4.0 BEST AVAILABLE CONTROL TECHNOLOGY REQUIREMENTS

In the case of the Bleach Plant addition at G-P, only CO required a BACT analysis for the proposed No. 3 Bleach Plant. The following section presents a summary and update to the BACT analysis for CO.

4.1 BACT FOR CO FROM THE NO. 3 BLEACH PLANT

CO is a byproduct that is formed when bleaching pulp in a pulp mill. It has been known for some time that CO is formed in the stages of a chlorine, caustic extraction, and chlorine dioxide (CEDED) bleaching sequence. This sequence is similar to the sequence used in G-P's existing bleaching process. However, until recently, it was not known how much CO formation could be expected from bleaching using up to 100 percent chlorine dioxide (ClO_2) substitution (National Council for Air and Stream Improvement Inc. (NCASI) Technical Bulletin 760, 1998).

Based on studies performed by NCASI, it has been postulated that CO formation from ClO_2 substitution occurs as a result of the synergistic reaction between ClO_2 and certain precursors formed from bleaching with chlorine. The results of the studies do not show a correlation between CO formation and percent ClO_2 substitution. However, there is evidence to show that, when using 100 percent ClO_2 substitution, CO emissions appear to increase linearly with the total percent ClO_2 applied on the pulp. Therefore, it would appear that when bleaching using an ECF bleaching process (*i.e.*, 100 percent ClO_2 substitution), CO formation may be reduced be reducing the amount of ClO_2 applied to the pulp. This would suggest that CO emissions from the ECF bleaching process could be "controlled" by maintaining the percentage of ClO_2 applied to the pulp at minimum levels that would ensure proper bleaching of the pulp. Thus, ensuring efficient use of ClO_2 and efficient operation of the bleaching process would minimize CO emissions.

In addition to reviewing the EPA BACT Clearinghouse database, FDEP has requested that G-P address various oxidation techniques in a BACT analysis. In an April 24, 1999 submission to FDEP, Golder Associates presented generic cost information for thermal and catalytic oxidation. In this update, G-P applied the updated emission rate and refined costs for three oxidation techniques: thermal, catalytic, and incineration in a boiler. Three factors account for the more accurate costs presented in Appendix B. First, G-P has gained recent experience with incinerators and the selection of chlorine-resistant materials of construction. Over the past 18 months, incinerators and associated

equipment to meet the High-Volume Low-Concentration (HVLC) emission standards of the Cluster Rule have been specified and costed for various G-P operations in the U.S. Thus, the approach to estimating costs is very specific to our recent experience, and reflects "as-built" costs for equipment. Second, the refined costs estimates also reflect recent experience with costing gas-conditioning systems for incinerators. Third, the refined costs reflect materials of construction specifically for bleach plant exhaust service. Because of the corrosive nature of chlorine compounds, the updated costs reflect more suitable materials. The refined BACT analysis is presented in Appendix B.

As presented in Appendix B, G-P still asserts that "efficient bleaching operations" as a work practice to minimize CO emissions represents BACT for the No. 3 Bleach Plant. No other technically or economically feasible means of CO emissions control or reduction have been demonstrated to control bleach plant CO emissions.

5.0 AIR QUALITY MODELING ANALYSIS

5.1 INTRODUCTION

To demonstrate that the increased CO emissions will not have an adverse affect on air quality, a modeling analysis for CO was performed. Except as noted below, this analysis was performed in the same manner as the modeling performed in the original construction permit application that was submitted in 1999 for the No. 3 Bleach Plant, except as discussed below. The latest version of the Industrial Source Complex Short-Term [(ISCST3), Version 02035] dispersion model (EPA, 2002) was used to evaluate the CO impacts due to the proposed project in areas within 50 kilometers (km) of the proposed facility. A listing of ISCST3 model features is presented in Table 5-1.

A different receptor grid was used in this modeling analysis. To determine the CO significant impact area for the proposed project, concentrations were predicted using polar grids. The receptor grids, comprised of 36 radials spaced at 10-degree intervals, began at the plant property and extended out to a distance of 5.5 km. An additional 334 Cartesian grid receptors, spaced at 100-meter (m) intervals, were used to predict impacts along the fence line areas. A summary of the fence line receptors is presented in Table 5-2.

At the off-property areas between the fence line and the outermost ring distance of 5.5 km, 205 discrete polar receptors were used, spaced at 10-degree intervals at ring distances of 0.5, 0.6, 0.7, 1.0, 2.0, 3.0, 4.0, 4.5, 5.0, and 5.5 km from the origin. All receptor locations are relative to the former TRS Incinerator stack location, an origin that was used for the modeling in the original PSD application. The radial and property line receptors are presented in Figure 5-1.

Eleven receptors were used to predict the CO concentrations at the Okefenokee and Wolf Island National Wilderness Area (NWA) PSD Class I areas. Ten of the 11 receptors were located along the southern and eastern boundaries of Okefenokee NWA. One additional receptor was located at the Wolf Island NWA. A list of these receptors is presented in Table 5-3. Because allowable PSD increments do not exist for CO, the Class I modeling analysis was performed only for the air quality related value (AQRV) assessment.

5.2 EMISSION INVENTORY

The maximum short-term CO emissions for the No. 3 Bleach Plant are 100 lbs/hr as presented in Section 2.0. The maximum CO impacts due to these future maximum CO emissions from the No. 3 Bleach Plant were compared to the CO significant impact levels. The stack parameters for the bleach plant scrubber used in the modeling analysis are presented in Table 5-4.. Since the original PSD application was submitted prior to construction of the No. 3 Bleach Plant, some of the stack parameters varied slightly from the original design parameters.

5.3 BUILDING DOWNWASH EFFECTS

The potential for building downwash to occur was evaluated for all source/structure combinations at the G-P Palatka facility. A total of 12 building structures were evaluated. All building structures were processed in the EPA Building Input Profile (BPIP, Version 95086) program to determine direction-specific building heights and projected widths for each 10-degree azimuth direction for the bleach plant scrubber. The evaluated structures are presented in Table 5-5. A plot plan showing building and stack locations is presented in Attachments GP-FI-C2a and GP-FI-C2b.

5.4 MODEL RESULTS - SIGNIFICANT IMPACT ANALYSIS

Results of the significant impact screening analyses for CO are summarized in Table 5-6. The maximum 8-hour and 1-hour CO impacts of 293 and 1,096 $\mu g/m^3$, respectively, are below the significant impact levels of 500 and 2,000 $\mu g/m^3$, respectively. Because the maximum predicted impacts from the screening analysis were less than 60 percent of the EPA significant impact levels, additional refinements were not performed. Furthermore, since the predicted CO impacts do not exceed the significant impact levels, an additional analysis comparing the CO impacts to the ambient air quality standards (AAQS) is not required.

Table 5-1. Major Features of the ISCST3 Model

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

Note: ISCST3 = Industrial Source Complex Short-Term.

References:

Bowers, J.F., J.R. Bjorklund and C.S. Cheney. 1979. Industrial Source Complex (ISC) Dispersion Model User's Guide. Volume I, EPA-450/4-79-030; Volume II. EPA-450/4-79-031. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

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Pasquill, F. 1976. Atmospheric Dispersion Parameters in Gaussian Plume Modeling - Part II. Possible Requirements for Change in the Turner Workbook Values. EPA-600/4-76-030b, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

Schulman, L.L. and J.S. Scire. 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide. Document P-7304B, Environmental Research and Technology, Inc., Concord, MA.

Table 5-2. Property Boundary Receptors Used in the G-P Modeling Analysis

Coordinates (m)		Coordinates (m)		Coordinates (m)		Coordinates (m)		Coordinates (m)		Coordinates (m)		Coordinates (m)		Coordinates (m)	
X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
-311.0	-1781.0	-3231.4	-279.6	-4162.2	2413.6	-3944.5	3977.0	-1217.8	4808.0	1914.3	4492.0	1574.6	2851.9	1248.5	842.0
-402.0	-1739.6	-3331.4	-276.3	-4168.3	2513.4	-4044.5	3977.0	-1117.8	4808.6	1911.6	4392.0	1527.7	2763.6	1348.5	842.0
-493.1	-1698.2	-3431.3	-273.0	-4174.5	2613.3	-4144.5	3977.0	-1017.8	4809.3	1908.9	4292.0	1480.8	2675.3	1448.5	842.0
-584.1	-1656.9	-3531.3	-269.7	-4180.6	2713.1	-4185.0	4036.5	-917.8	4809.9	1906.3	4192.1	1433.9	2587.0	1548.5	842.0
-675.1	-1615.5	-3631.2	-266.4	-4186.8	2812.9	-4185.0	4136.5	-817.8	4810.5	1903.6	4092.1	1341.7	2574.0	1648.5	842.0
-766.2	-1574.1	-3731.1	-263.1	-4193.0	2912.7	-4185.0	4236.5	-717.8	4811.2	1826.1	4069.0	1241.7	2574.0	1740.2	832.5
-857.2	-1532.7	-3831.1	-259.8	-4199.1	3012.5	-4161.5	4313.4	-617.8	4811.8	1739.0	4081.9	1141.7	2574.0	1737.6	740.0
-948.3	-1491.3	-3931.0	-256.5	-4205.3	3112.3	-4061.5	4315.0	-517.8	4812.5	1739.0	4181.9	1116.1	2482.6	1657.5	680.0
-1039.3	-1450.0	-3894.6	-190.3	-4211.4	3212.1	-3961.5	4316.6	-417.8	4813.1	1739.0	4281.9	1095.9	2384.7	1577.5	620.1
-1130.3	-1408.6	-3832.3	-112.1	-4217.6	3311.9	-3861.6	4318.3	-317.8	4813.7	1739.0	4381.9	1075.6	2286.8	1497.4	560.2
-1221.4	-1367.2	-3769.9	-33.9	-4176.6	3360.5	-3761.6	4319.9	-217.8	4814.4	1739.0	4481.9	1055.4	2188.8	1417.4	500.2
-1312.4	-1325.8	-3707.6	44.3	-4077.7	3346.0	-3661.6	4321.5	-117.8	4815.0	1739.0	4581.9	1035.1	2090.9	1337.3	440.3
-1403.4	-1284.4	-3651.2	125.9	-3978.8	3331.6	-3561.6	4323.2	-17.9	4815.7	1739.0	4681.9	1033.7	2027.3	1257.3	380.4
-1494.5	-1243.1	-3613.9	218.7	-3879.8	3317.1	-3461.6	4324.8	82.1	4816.3	1642.1	4685.0	1105.3	2097.0	1177.2	320.4
-1585.5	-1201.7	-3576.7	311.5	-3780.9	3302.6	-3361.6	4326.4	182.1	4816.9	1542.1	4685.0	1177.0	2166.7	1097.2	260.5
-1676.5	-1160.3	-3562.9	403.3	-3681.9	3288.1	-3261.6	4328.1	282.1	4817.6	1442.1	4685.0	1248.7	2236.4	1017.1	200.6
-1767.6	-1118.9	-3608.6	492.2	-3583.0	3273.7	-3161.6	4329.7	382.1	4818.2	1410.0	4624.5	1320.4	2306.2	937.1	140.6
-1858.6	-1077.5	-3654.2	581.2	-3484.0	3259.2	-3087.4	4349.2	482.1	4818.9	1421.4	4525.2	1392.1	2375.9	857.0	80.7
-1949.7	-1036.2	-3732.9	616.0	-3385.1	3244.7	-3120.8	4443.5	582.1	4819.5	1432.8	4425.8	1466.0	2440.6	777.0	20.7
-2040.7	-994.8	-3832.9	616.0	-3286.1	3230.2	-3154.1	4537.8	682.1	4820.1	1444.3	4326.5	1565.7	2448.5	696.9	-39.2
-2131.7	-953.4	-3924.1	634.0	-3187.2	3215.8	-3187.4	4632.1	782.1	4820.8	1455.7	4227.1	1615.7	2396.7	616.9	-99.1
-2222.8	-912.0	-3985.8	712.8	-3088.2	3201.3	-3220.7	4726.4	882.1	4821.4	1467.2	4127.8	1625.9	2297.2	536.8	-159.1
-2313.8	-870.6	-4039.0	789.7	-2989.3	3186.8	-3217.8	4795.2	982.1	4822.1	1478.6	4028.4	1636.0	2197.8	456.8	-219.0
-2404.8	-829.3	-3951.2	837.5	-2890.3	3172.3	-3117.8	4795.8	1082.1	4822.7	1490.0	3929.1	1646.2	2098.3	376.7	-278.9
-2495.9	-787.9	-3863.4	885.4	-2806.0	3174.8	-3017.8	4796.5	1182.1	4823.3	1551.6	3886.0	1656.4	1998.8	296.7	-338.9
-2586.9	-746.5	-3831.0	966.1	-2806.0	3274.8	-2917.8	4797.1	1282.1	4824.0	1651.6	3886.0	1666.6	1899.3	216.6	-398.8
-2678.0	-705.1	-3831.0	1066.1	-2806.0	3374.8	-2817.8	4797.7	1382.1	4824.6	1751.6	3886.0	1676.8	1799.8	169.7	-483.4
-2769.0	-663.7	-3899.1	1098.0	-2806.0	3474.8	-2717.8	4798.4	1482.1	4825.3	1851.6	3886.0	1687.0	1700.4	134.9	-577.2
-2860.0	-622.4	-3999.1	1098.0	-2806.0	3574.8	-2617.8	4799.0	1582.1	4825.9	1951.6	3886.0	1625.4	1642.7	100.2	-671.0
-2940.6	-573.9	-4082.1	1116.1	-2806.0	3674.8	-2517.8	4799.7	1682.1	4826.5	2051.6	3886.0	1537.4	1600.6	65.5	-764.7
-2945.1	-474.0	-4088.3	1215.9	-2806.0	3774.8	-2417.8	4800.3	1782.1	4827.2	2076.0	3837.1	1549.7	1501.3	30.7	-858.5
-2949.7	-374.1	-4094.4	1315.7	-2860.4	3831.0	-2317.8	4800.9	1882.1	4827.8	2034.9	3745.9	1562.0	1402.1	-4.0	-952.3
-2954.3	-274.2	-4100.6	1415.5	-2958.1	3852.7	-2217.8	4801.6	1982.1	4828.5	1993.9	3654.8	1617.3	1369.0	-38.8	-1046.1
-2958.8	-174.3	-4106.8	1515.3	-3055.7	3874.3	-2117.8	4802.2	2082.1	4829.1	1952.8	3563.6	1696.5	1367.8	-73.5	-1139.8
-2963.4	-74.4	-4112.9	1615.2	-3153.4	3895.9	-2017.8	4802.9	2182.1	4829.7	1911.7	3472.4	1723.6	1271.6	-108.2	-1233.6
-2968.0	25.5	-4119.1	1715.0	-3251.0	3917.5	-1917.8	4803.5	2282.1	4830.4	1940.0	3383.5	1641.3	1229.4	-143.0	-1327.4
-3004.4	92.0	-4125.2	1814.8	-3348.6	3939.1	-1817.8	4804.1	2376.0	4830.1	1924.8	3291.7	1548.4	1192.5	-177.7	-1421.1
-3104.4	92.0	-4131.4	1914.6	-3446.3	3960.7	-1717.8	4804.8	2280.4	4801.0	1875.8	3209.6	1457.8	1152.2	-212.4	-1514.9
-3190.0	77.6	-4137.5	2014.4	-3544.5	3977.0	-1617.8	4805.4	2184.7	4771.8	1787.8	3162.1	1389.9	1078.8	-247.2	-1608.7
-3190.0	-22.4	-4143.7	2114.2	-3644.5	3977.0	-1517.8	4806.1	2107.3	4712.3	1699.8	3114.6	1322.0	1005.4	-281.9	-1702.5
-3190.0	-122.4	-4149.9	2214.0	-3744.5	3977.0	-1417.8	4806.7	2036.6	4641.6	1654.9	3033.7	1254.1	931.9		
-3190.0	-222.4	-4156.0	2313.8	-3844.5	3977.0	-1317.8	4807.3	1965.9	4570.9	1621.5	2940.2	1186.2	858.5		

Note: All coordinates are relative to old TRS incinerator stack location.

Table 5-3. Class I Area Receptors Used in the Modeling Analysis

PSD Class I Area	UTM Coordinates	
	East (km)	North (km)
Wolf Island NWA	470.5	3459.0
Okefenokee NWA	391.0	3417.0
Okefenokee NWA	390.0	3410.0
Okefenokee NWA	392.0	3400.0
Okefenokee NWA	390.0	3395.0
Okefenokee NWA	391.0	3390.0
Okefenokee NWA	390.0	3384.0
Okefenokee NWA	383.0	3382.0
Okefenokee NWA	378.0	3382.0
Okefenokee NWA	374.0	3383.0
Okefenokee NWA	370.0	3383.0

NWA = National Wilderness Area

Table 5-4. No. 3 Bleach Plant Source Location and Operating Parameters Used in Modeling Analysis

Source	ISCST Source ID	CO Emissions		Stack Height		Stack Diameter		Gas Flow Rate	Gas Exit Temperature		Velocity		Location [a] X Coordinate		Location [a] Y Coordinate	
		lb/hr	g/sec	ft	m	ft	m	acfm	°F	K	ft/sec	m/sec	ft	m	ft	m
No. 3 Bleach Plant	BLEACH	126.6	16.0	118	36.0	3.5	1.07	15,400	85	302.6	26.7	8.13	358.6	109.3	464.2	141.5

[a] Relative to the old TRS incinerator stack and to true north.

Table 5-5. Structure Dimensions Used in the Georgia-Pacific Modeling Analysis

Structure	Height		Length		Width	
	ft	m	ft	m	ft	m
RB4 Precipitator	85	25.9	130	39.6	59	18.0
RB4 Boiler Building	193.7	59.0	104	31.7	90	27.4
Power Plant Building	107.6	32.8	92	28.0	92	28.0
Pulp Dryer No. 3	84.5	25.8	263	80.2	147	44.8
Pulp Dryer No. 5	70.5	21.5	306	93.3	95	29.0
Pulp Dryer No. 4	73	22.3	242	73.8	127	38.7
Warehouse Complex 1	62.67	19.1	1,382	421.2	411	125.3
Warehouse Complex 2	46.8	14.3	852	259.7	370	112.8
Nos. 1 and 2 Machines, Storage	71.16	21.7	232	70.7	412	125.6
Kraft Converting and Storing	60.75	18.5	264	80.5	516	157.3
Kraft Warehouse and Multi-Wall	56.7	17.3	274	83.5	507	154.5
Digester	62.2	19.0	264	80.5	32	9.8

Table 5-6. Maximum Predicted CO Concentrations for the No. 3 Bleach Plant Predicted in the Plant Vicinity, Georgia Pacific, Palatka

Averaging Time	Concentration [a] ($\mu g/m^3$)	Receptor Location [b] X (m)	Receptor Location [b] Y (m)	Time Period (YYMMDDHH) [c]
Annual	11.7	492	-180	84123124
	11.1	542	-109	85123124
	11.1	431	-242	86123124
	15.2	536.8	-159.1	87123124
	14.3	456.8	-219	88123124
High 24-Hour	180	296.7	-338.9	84011424
	119	616.9	-99.1	85070824
	162	169.7	-483.4	86121524
	140	492	-180	87102724
	157	492	-180	88022124
High 8-Hour	278	216.6	-398.8	84011308
	251	536.8	-159.1	85071716
	266	134.9	-577.2	86121524
	279	359	-292	87110508
	293	431	-242	88042808
High 3-Hour	416	296.7	-338.9	84011703
	398	456.8	-219	85062612
	463	431	-242	86051309
	574	431	-242	87072509
	444	231	-548	88011003
High 1-Hour	700	359	-292	84112008
	785	376.7	-278.9	85072002
	861	376.7	-278.9	86082921
	1,096	296.7	-338.9	87012008
	715	456.8	-219	88091822

[a] Predicted on 5-year meteorological record, Jacksonville and Waycross, 1984 to 1988.

[b] All receptor coordinates are relative to the old TRS incinerator stack location.

[c] YYMMDDHH = Year, Month, Day, Hour Ending

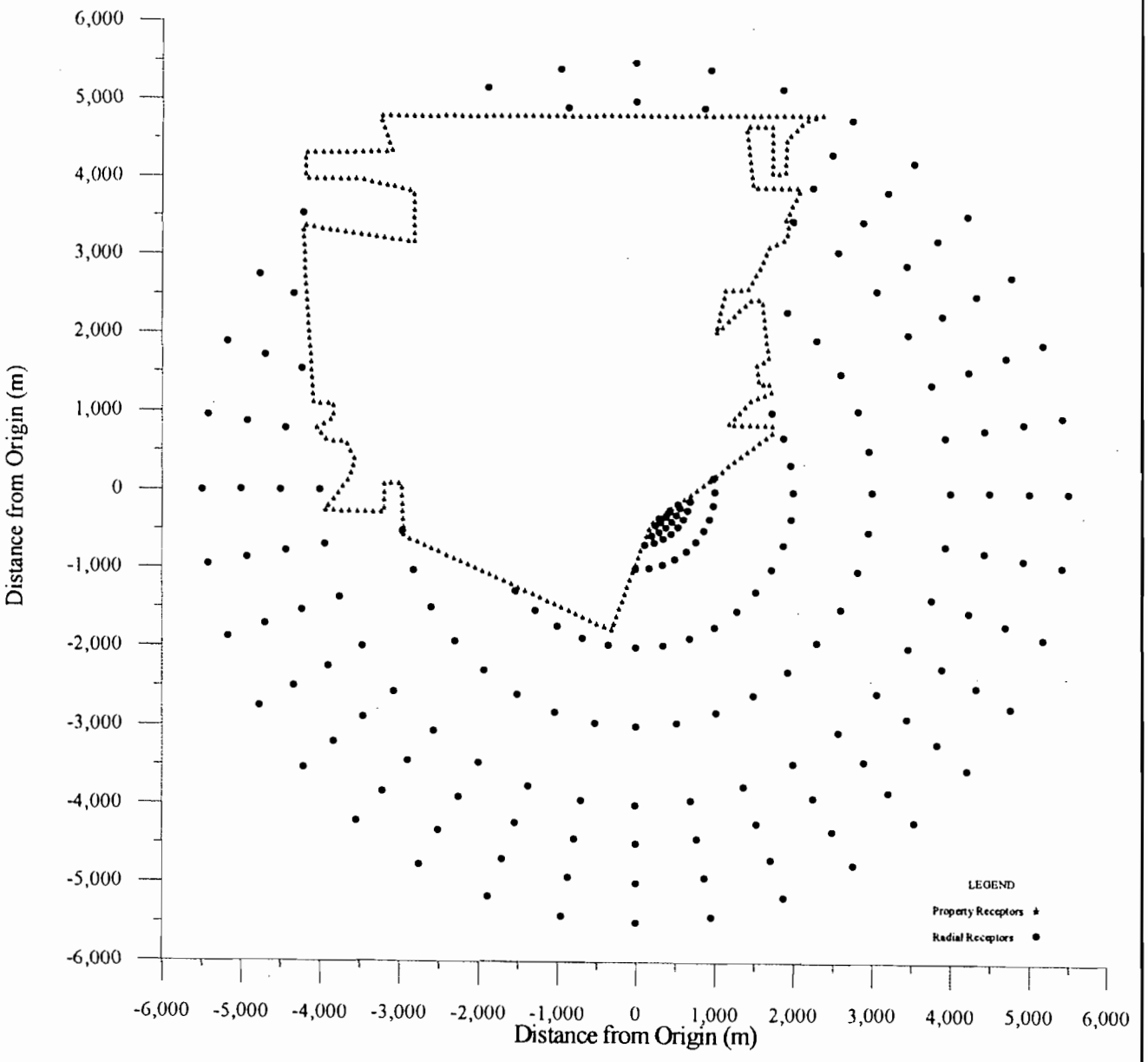


Figure 5-1. Property and Radial Receptors Used in Modeling Analysis
Georgia-Pacific, Palatka Mill

Source: Golder, 2002.

6.0 ADDITIONAL IMPACT ANALYSIS

6.1 INTRODUCTION

The additional impact analysis and the Class I area analysis address CO. The analysis addresses the potential impacts on vegetation, soils, and wildlife in the surrounding area and at the nearest two PSD Class I areas due to the increase in allowable CO emissions at G-P's Palatka Mill. Due to the distance from G-P, the Okefenokee NWA area would potentially receive much higher impacts than would the Wolf Island NWA. Therefore, only the Okefenokee NWA is addressed in this analysis.

A full CO impact analysis was performed for the initial PSD application. It was demonstrated that the predicted impacts due to the No. 3 Bleach Plant would not have any adverse affects on visibility, soil, vegetation, and wildlife at the G-P plant site and the Okefenokee NWA area. All of the predicted impacts were well below any reported levels of adverse affects. This analysis will compare the predicted impacts of the PSD application with the predicted impacts of the increased CO emissions to demonstrate that the increase in CO emissions will not have any adverse affects on the G-P plant site and the Okefenokee NWA Class I area.

6.2 PREDICTED IMPACTS IN VICINITY OF G-P PLANT

In the foregoing analysis, the maximum air quality impacts predicted to occur in the vicinity of the Georgia-Pacific plant and in the Class I area due to the No. 3 Bleach Plant are used. The ISCST3 model (Version 02035) was used to compute maximum concentrations. Maximum impacts in the vicinity of the G-P plant and in the Class I areas were predicted as discussed in Section 5.0. Meteorological data used in the ISCST3 consisted of the same 5-year record as used in the air quality analysis that was performed in support of the original PSD Permit Application. Emissions and stack data for the No. 3 Bleach Plant are presented in Section 5.0.

The results of the CO air quality modeling for the No. 3 Bleach Plant, predicted in the vicinity of the plant are presented in Table 6-1. Maximum predicted CO concentrations are presented for the annual, 24-hour, 8-hour, 3-hour, and 1-hour averaging times. This table presents a comparison of the updated modeling results included in the original PSD Permit Application submittal. As expected, the predicted impacts due to the increase in CO emissions are higher than those predicted in the original PSD application. Although the predicted impacts are higher, the predicted impacts are still less than the lowest reported concentration that has had detrimental affects on vegetation

(1.15×10^5 $\mu g/m^3$) (EPA, 1978a). In addition, there are no reports of CO effects on soils, so no additional impacts to soils from CO are predicted. Therefore, the increase in CO should not have any adverse affects in the vicinity of G-P plant site.

Furthermore, there will be no significant increase in permanent employment at G-P as a result of the installation of the new bleach plant. Therefore, there will be no anticipated permanent impacts on air quality caused by associated population growth.

6.3 PREDICTED IMPACTS TO THE OKEFENOKEE NWA CLASS I AREA

The results of the revised Class I area air quality modeling for the higher CO emissions are presented in Table 6-2. Predicted air quality concentrations of CO are presented for the Okefenokee NWA for the annual, 24-hour, 8-hour, 3-hour, and 1-hour averaging times. These concentrations reflect the total revised CO emissions due to the No. 3 Bleach Plant.

A comparison of the impacts from the original PSD application and the impacts due to the revised CO emissions is presented in Table 6-3. As expected, the impacts resulting from the revised CO emissions are higher than the impacts presented in the original PSD application. Although, the predicted impacts for the increase in CO emissions are higher, the impacts are still extremely low and are not expected to cause any adverse affects on the Class I area.

Table 6-1. Comparison of Maximum Predicted CO Concentrations from the No. 3 Bleach Plant Only in the Vicinity of the G-P Plant Site

Averaging Time	CO Concentration ($\mu g/m^3$)	
	1999 PSD Application	2002 Proposed PSD Revision
Highest 1-hour	367	1,096
Highest 3-hour	220	574
Highest 8-hour	182	293
Highest 24-hour	107	180
Annual	8	15

Table 6-2. Maximum Predicted CO Concentrations due to the No. 3 Bleach Plant at the Okefenokee NWA Class I Area

Averaging Time	Concentration ($\mu g/m^3$) [a]	Receptor Location [b]		Time Period (YYMMDDHH) [c]
		UTM-E (m)	UTM-N (m)	
Annual	0.015	374000	3383000	84123124
	0.013	391000	3390000	85123124
	0.015	383000	3382000	86123124
	0.013	378000	3382000	87123124
	0.012	370000	3383000	88123124
High 24-Hour	0.35	383000	3382000	84102224
	0.38	370000	3383000	85072624
	0.39	390000	3384000	86041424
	0.43	378000	3382000	87070224
	0.51	370000	3383000	88050324
High 8-Hour	0.97	374000	3383000	84080208
	1.23	374000	3383000	85012808
	1.16	390000	3384000	86041424
	1.33	378000	3382000	87070208
	1.14	370000	3383000	88050324
High 3-Hour	1.88	392000	3400000	84080403
	2.45	374000	3383000	85012809
	2.05	383000	3382000	86082221
	2.40	378000	3382000	87070206
	2.09	390000	3395000	88102803
High 1-Hour	5.65	392000	3400000	84080401
	7.35	374000	3383000	85012808
	6.15	383000	3382000	86082220
	4.79	383000	3382000	87070206
	5.82	370000	3383000	88050321

[a] Predicted on 5-year meteorological record, Jacksonville and Waycross, 1984 to 1988.

[b] All receptor coordinates are reported in Universal Transverse Mercator (UTM) Coordinates.

[c] YYMMDDHH = Year, Month, Day, Hour Ending

Table 6-3. Comparison of Maximum Predicted CO Concentrations from the No. 3 Bleach Plant Only at the Okefenokee NWA Area

Averaging Time	CO Concentration ($\mu g/m^3$)	
	1999 PSD Application	2002 Proposed PSD Revision
Highest 1-hour	3.9	7.4
Highest 3-hour	1.8	2.5
Highest 8-hour	0.9	1.3
Highest 24-hour	0.3	0.5
Annual	0.007	0.015

APPENDIX A

DERIVATION OF PROPOSED CO EMISSION FACTORS

Appendix A
Derivation of Proposed CO Emission Factors

Derivation of Short-Term (hourly) Emission Estimate

				CO EMISSIONS	
Test Runs	10/28/02	Run 1	49.7 ADTBP/hour	54 lb/hr	1.08 lbs/ADTBP
		Run 2	49.7 ADTBP/hour	64 lb/hr	1.28 lbs/ADTBP
	10/29/02	Run 1	49.8 ADTBP/hour	58 lb/hr	1.16 lbs/ADTBP
	10/31/02*	Run 1	50.0 ADTBP/hour	73 "	1.45 lbs/ADTBP
		Run 2	50.2 ADTBP/hour	74	1.48 lbs/ADTBP
		Run 3	50.1 ADTBP/hour	75	1.49 lbs/ADTBP
	Average Emission Factor			66	1.32 lbs/ADTBP
	Standard Deviation			9	0.18 lbs/ADTBP
	Two Standard Deviations (95% Confidence Level)				0.36 lbs/ADTBP
	Average + Two Standard Deviations			84	1.68 lbs/ADTBP

60 ADTBP/Hour (maximum throughput) x 1.68 lbs/ADTBP = 100.8 lbs/hour (proposed limit = 100 lbs/hour)

Derivation of Long-Term (annual) Emission Estimate

From Appendix A of the original PSD permit application and based on NCASI Technical Bulletin 760:

CO Emissions from Hardwood Bleaching	Mill B	0.63 lb/ADTBP
	Mill C	0.84 lb/ADTBP
	Mill SA12	0.52 lb/ADTBP
	Mill SE2	0.62 lb/ADTBP
	Mill SH2	0.61 lb/ADTBP
	Average	0.64 lb/ADTBP

(1,350 ADTBP/day x 1.68 lbs/ADTBP x 0.65 (softwood percentage)) + (1,350 ADTBP/day x 0.64 lb/ADTBP x 0.35 (hardwood percentage)) x 365 days/year = 324.2 tons per year

* ClO_2 generator tail gas scrubber was in operation during these runs. This source always vents to the bleach plant scrubber.

APPENDIX B

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

APPENDIX B
BACT ANALYSIS
GEORGIA-PACIFIC CORPORATION
PALATKA, FL OPERATIONS
NO. 3 BLEACH PLANT

INTRODUCTION

Pursuant to the Prevention of Significant Deterioration (PSD) regulations (40 CFR 52.21) and the Regulations of the Florida Department of Environmental Protection (FDEP), Division of Air Resources Management, a Best Available Control Technology (BACT) analysis is a required part of a PSD permit application for each new or modified emissions unit. The following statement is provided in the federal regulation in regard to this requirement:

> *A major modification shall apply best available control technology for each pollutant subject to regulation under the Act for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation of the unit. (See 40 CFR 52.21(j)(3)).*

The requirements for BACT were promulgated within the framework of the PSD program in the 1977 Amendments to the Clean Air Act [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT) (EPA, 1978) and in the PSD Workshop Manual (EPA, 1990). These guidelines were drafted by the United States Environmental Protection Agency (EPA) to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area of the country may not be identical to BACT in another area. According to EPA (1980):

> *BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies*

should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis.

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

An integral part of the BACT analysis is a search of the EPA's RACT/BACT/LAER Clearing- house (RBLC).

The BACT analysis in this application follows the "top-down" approach. The following are the five basic steps of a "top-down" BACT analysis:

Step 1: Identify all control technologies
Step 2: Eliminate technically or economically infeasible options
Step 3: Rank remaining control technologies by control effectiveness
Step 4: Evaluate most effective controls and document results
Step 5: Select BACT

PROCESS DESCRIPTION

The No. 3 Bleach Plant was constructed to replace the No. 1 and the No. 2 Bleach Plants and to aid G-P in meeting the Maximum Achievable Control Technology (MACT) Standards promulgated for the pulp and paper industry (40 CFR Part 63, Subpart S) by converting the bleaching system to a totally elemental chlorine-free (ECF) process. The No. 3 Bleach Plant is a three-stage ECF system. The bleaching sequence design is

First Stage: Chlorine dioxide (ClO_2) addition

Second Stage: Caustic extraction and hydrogen peroxide addition

Final Stage: ClO_2 addition

This sequence is known as "$D_0(E_{OP})D_1$".

The first bleaching stage adds chlorine dioxide and sulfuric acid as necessary to adjust the pulp pH. Caustic, hydrogen peroxide, and oxygen are used in the second bleaching stage. The third stage uses ClO_2, with caustic or acid added as necessary to adjust the bleached pulp pH. The No. 3 Bleach Plant vent ties into the existing bleach plant scrubber system. The scrubber system uses sodium hydrogen sulfide (NaSH) and sodium hydroxide (NaOH) to control chlorine and chlorine dioxide emissions. The proposed revised CO emissions rate is 100 pounds per hour (lbs/hr), or approximately 800 parts per million (ppm) in the Bleach Plant exhaust gases. G-P also estimates that the bleach plant exhaust contains the following constituents:

Approximately 3 lbs/hr of chlorine compounds (Cl and ClO_2)

Approximately 20 lbs/hr of total VOC (primarily methanol), and

Approximately 2 lbs/hr of methyl mercaptan

BACT ANALYSIS FOR CARBON MONOXIDE (CO)

Identification of Applicable NSPS Emission Limits

There is no applicable NSPS for any pollutant for bleach plants.

Top-Down BACT Analysis

Step 1: Identify All Control Technologies

As part of the BACT analysis, EPA's BACT Clearinghouse database was searched for instances of similar BACT determinations for CO emissions from bleach plants. Other than G-P's original BACT determination for the No. 3 Bleach Plant, only three other such determinations were found. A summary of these determinations is provided in Table B-1. The determinations were made for two different Weyerhaeuser facilities, located in North Carolina and Mississippi. The BACT determinations were 2.2 pounds CO per oven-dried ton (lbs/ODT) and 0.98 lb/ODT, respectively, for these two facilities. There were no add-

on control technologies associated with these BACT determinations. The Mississippi Weyerhaeuser facility's BACT determination was based on efficient operations of the bleach plant. G-P's proposed annual average CO limit is equivalent to 1.45 lbs/oven-dried ton of bleached pulp (ODTBP), which falls within the range of previous determinations.

Beyond the RBLC database, potential control technologies for the control of CO emissions from bleach plants include the following: efficient bleach plant practices, thermal incineration, and catalytic incineration. Two additional oxidation technologies are incineration (with and without a catalyst) in a combustion source and chemical scrubbing. The common technical issue for all add-on control technologies is the need to pre-treat the Bleach Plant emissions to remove chlorine compounds and methyl mercaptan. Each of these options is discussed further in the following sections.

Efficient Bleach Plant Practices: Carbon monoxide is a product of complex reactions between the ClO_2, formed chloroform, and lignin in the stock. The results of the studies by NCASI do not show a correlation between CO formation and percent ClO_2 substitution. However, there is evidence to show that, when using 100 percent ClO_2 substitution, CO emissions appear to increase linearly with the total percent ClO_2 applied on the pulp. Therefore, it would appear that when bleaching using an ECF bleaching process (*i.e.*, 100 percent ClO_2 substitution), CO formation may be reduced be reducing the amount of ClO_2 applied to the pulp. This would suggest that CO emissions from the ECF bleaching process could be "controlled" by maintaining the percentage of ClO_2 applied to the pulp at minimum levels that would ensure proper bleaching of the pulp. Thus, ensuring efficient use of ClO_2 and efficient operation of the bleaching process would minimize CO emissions.

Thermal Incineration: Thermal incineration generally consists of an auxiliary fuel-fired burner and a combustion chamber. The principle of destruction is to raise the exhaust gases to a sufficiently high temperature, for an adequate retention time, so that oxidation occurs. Regenerative thermal oxidizers (RTOs) build on the principle of thermal oxidation, but with enhanced fuel efficiency. An RTO consists of two or more heat exchangers connected by a common combustion zone. The heat exchangers use beds of ceramic beads to store and release heat recovered from the oxidation process. The Bleach Plant exhaust air stream enters the first heat exchange bed where the air stream passes directly through the ceramic media where it is preheated before entering the combustion chamber. In the combustion

chamber, a burner is used to supply any heat necessary to reach the optimum combustion temperature (usually 1,400 degrees Fahrenheit or higher) and complete the oxidation process.

The cleaned air stream next enters a second heat exchanger where it passes directly through the ceramic media and is cooled, while simultaneously heating the media before the air stream is exhausted to the atmosphere. The air flow through the heat exchange beds is reversed at regular intervals to conserve the heat of combustion within the RTO. The thermal efficiency of the unit can be as high as 95%.

Catalytic Incineration: Catalytic incinerators use a bed of catalysts that facilitate the overall combustion of the gas in a similar manner as thermal incineration. In contrast to recuperative thermal oxidizers, recuperative catalytic oxidizer (RCO) systems use a catalyst to encourage the oxidation reaction instead of depending on heat alone. Reactions in a recuperative catalytic oxidizer usually take place between 500 and 600 degrees Fahrenheit. This creates the opportunity to reduce fuel expenses and material cost (since the materials of construction will be subjected to much lower temperatures). Of the two vendors contacted, only one vendor agreed that a catalytic system might be suitable for this type of application. These types of oxidizers are just as capable of oxidizing CO in a gas stream as an RTO. However, these systems have an additional operating issue for maintaining the catalyst.

Incineration in a Boiler: External combustion sources, such as a boiler, induct ambient air into the combustion zone of a primary fuel (*e.g.*, oil or bark) to produce heat and steam. The combustion zone of a boiler will oxidize CO to carbon dioxide. Possible combustion sources at the Mill include the Power Boiler and the Combination Boiler. The Recovery Boiler and Lime Kiln at the Mill combust and convert reactants to chemicals used in the Kraft process, and cannot accept chlorine-containing streams.

Chemical Scrubbing: Chemical scrubbing to oxidize CO can be achieved by using a non-selective oxidant, such as ozone in a scrubber system. The ozone will oxidize CO, and other reduced compounds, such as methyl mercaptan. This oxidation technology has been developed for oxidation of nitrogen oxides into a particulate (N_2O_5) that can then be scrubbed.

G-P conducted searches of the RBLC to identify control technologies for the control of carbon monoxide emissions from bleach plants. Searches were conducted for RBLC determinations added during or after January 1990, for historical determinations added before January 1990, and for New Source Review (NSR) early notification/under review determinations. As stated previously, the search results only yielded one technology as BACT: efficient bleach plant practices.

In addition, G-P interviewed NCASI on the experience of pulp and paper mills in North America and Metso Inc., the designers of the No.3 Bleach Plant. NCASI reports that no pulp and paper bleach plant in North America controls CO emissions with add-on controls and that all ECF bleach plants apply good bleach plant practices to minimize CO emissions. Metso Inc., which has designed over 50% of the world's operating bleach plants, (including over 25 in the past 10 years) also confirmed that none of its designed units are equipped with add-on control devices for CO.

Step 2: Eliminate Technically Infeasible Options

The most restrictive parameter that affects the feasibility of add-on oxidation controls is the presence of chlorine compounds in the exhaust gas stream. Chlorine, chloroform, and chlorine dioxide are present in the exhaust and can contaminate add-on control devices. Chlorine compounds in the exhaust stream will also react to form into hydrochloric acid that will attack metallic components of any collection and control system. Thus, significant conditioning of the bleach plant exhaust would be needed to accommodate any add-on controls. The options of thermal/catalytic/boiler incineration may be technically feasible. However, these options have never been demonstrated in North America, nor to our knowledge, in the world.

Chemical scrubbing with ozone also has never been demonstrated for oxidation of CO. While pilot systems have been trialed for control of nitrogen oxides, the vendors of these systems do not quantify or guarantee any level of CO reduction. The oxidation process using ozone is only theoretical. Further, ozone would first oxidize the hydrocarbons and chlorine in the gas stream. The relative reaction rate of conversion of CO to CO_2 is also less than 3×10^{-11} cubic centimeters per mole per second. This slow rate would be substantially reduced further by the competition of the hydrocarbons. Thus, while streams of 100% CO gas may be oxidized with a large amount of ozone, this technology is neither

technically feasible, nor demonstrated for a complex stream, such as a bleach plant exhaust. An additional technical problem for such a system is the management of any ozone that breaks through and exits the stack.

Of the control options identified, one is demonstrated (efficient bleach plant operations) and three additional options may be technically feasible. The following sections rank and address the cost effectiveness of efficient bleach plant operations, thermal/catalytic incineration, and incineration in a boiler.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The next step in the BACT analysis is to rank the various control options not eliminated in the previous step. Incineration by a thermal incinerator or boiler will yield a control effectiveness of approximately 95%. A catalytic incinerator may yield a control effectiveness of up to 90%. The last option, efficient bleach plant operations, is a process-oriented pollution prevention technique that does not have a specific control effectiveness.

Step 4: Evaluate Most Effective Controls and Document Results

This step of the BACT process determines the economic impact of the feasible control options listed in Step 3 and then selects the most appropriate technology as BACT for the Bleach Plant. The economic analysis is based on cost data supplied by the equipment suppliers and the use of EPA's Office of Air Quality Planning & Standards (OAQPS) Control Cost Manual, 6th Edition, January 2002 (Chapter 2-Cost Estimating Methodology). Because of the corrosive nature of chlorine and sodium compounds, a gas conditioning system is necessary to protect the incineration source. Heating, cooling, demisting, and additional wet scrubbing are incorporated into the designs to reduce chlorine and sodium loads into the incineration points. Typical values were selected from the OAQPS Manual for the various parameters used to determine the cost effectiveness for reducing pollutant emissions. Note that these cost calculations reflect the scale of the project. While large construction projects offer a savings on mobilization and labor rates, the installation of a new oxidizer or a ducting project will only attract less-competitive, higher unit cost rates. To allow for the effect, G-P used a contingency allowance of 40% of direct costs. These technologies have never been demonstrated for a bleach plant, and may warrant even a higher allowance. Because no vendor has experience with this type of installation, the cost estimates may be conservatively low. Further, in order to be even more conservative, G-P

applied a 95 to 98% level of CO destruction for the cost effectiveness (*i.e.*, $/ton) calculations.

The annualized cost effectiveness calculations for three options (thermal incineration, catalytic incineration, and incineration in a boiler) are presented in Table B-2. The cost effectiveness values for these three techniques are $12,842/ton, $8,924/ton, and $8,074/ton, respectively. Each of these options is considered economically infeasible.

Step 5: Select BACT

Based on the preceding analysis, efficient bleach plant operations is selected as BACT for the CO emissions from the No. 3 Bleach Plant. An emission limit of 324 tons per year is selected as the BACT level for the No. 3 Bleach Plant. This equates to an annual average CO emission rate of 1.45 lbs/ODT, which is in the range of the RBLC entries. "Efficient bleach plant operations" is consistent with all of the entries for bleach plants in the RBLC.

Table B-1. Summary of BACT Determinations for Carbon Monoxide Emissions from Bleach Plants

Company Name	State	RBLC ID	Permit Issue Date	Throughput Per Unit	Emission Limits As provided in BACT/LAER Clearinghouse	Emission Limits Converted to lb/hr [a]	Control Technology/Comment
Georgia-Pacific Corp.	FL	FL-0183	6/30/1999	1,532 ODT/D [b]	0.71 lb/ODT	46	--
Weyerhaeuser Company--Plymouth Pulp and Paper Mill	NC	NC-0070	11/25/1998	800 ODT/D	2.2 lb/ODT	73.3	--
Weyerhaeuser Company--Plymouth Pulp and Paper Mill	NC	NC-0070	11/25/1998	1,250 ODT/D	2.2 lb/ODT	114.6	--
Weyerhaeuser Company	MS	MS-0029	9/10/1996	1,685 ODT/D [b]	0.98 lb/ODT	69.0	Efficient Operation

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001
ADT/D = Air dried tons per day
ODT/D = Oven dried tons per day

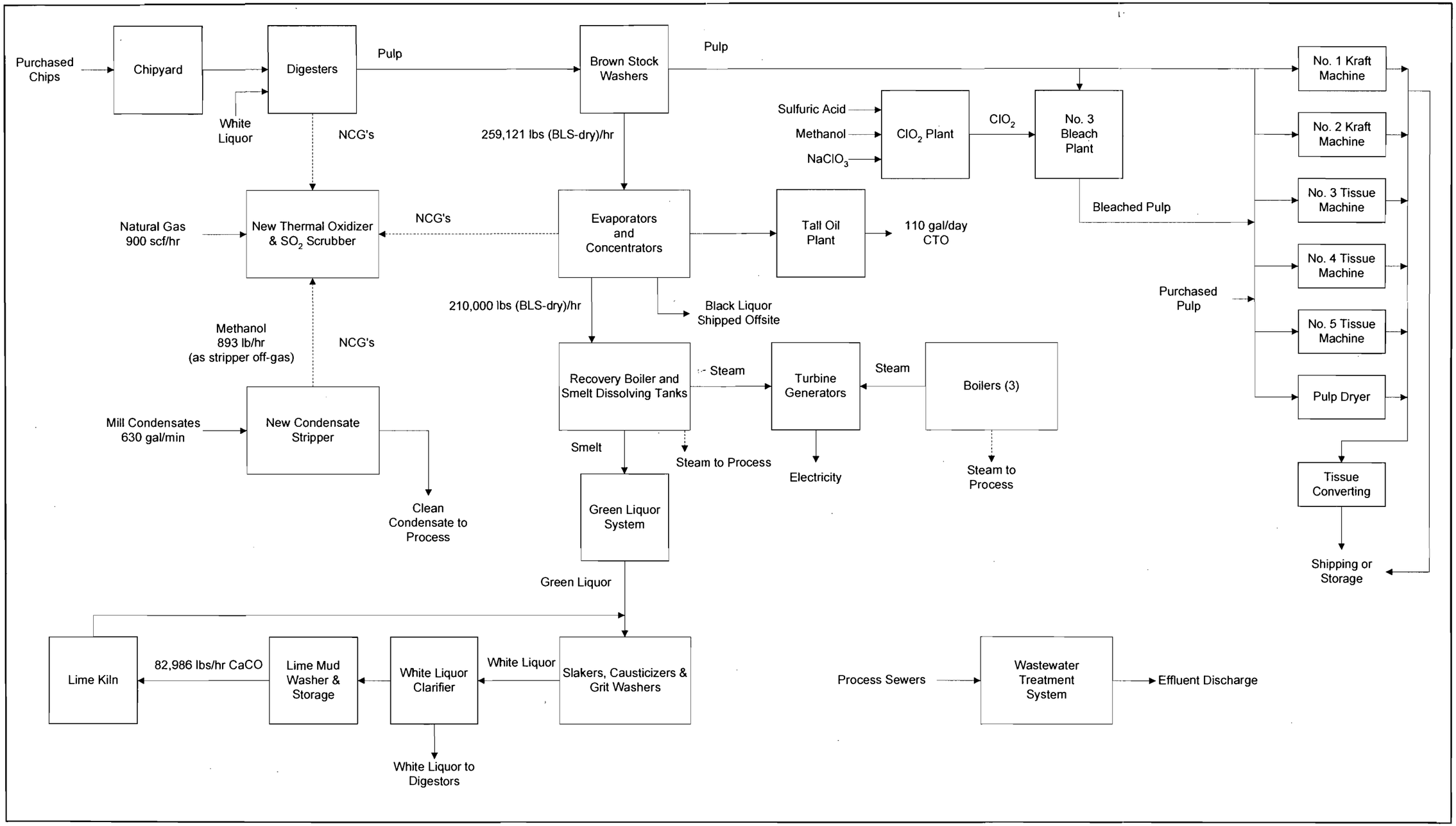
[a] Calculating assuming 24 hour operation per day.

[b] Converted from ADT/D to ODT/D using the conversion factor ADT/D = ODT/D x 1/0.90

Table B-2. Cost Effectiveness for Control CO Emissions From ECF Bleach Plant, Georgia Pacific, Palatka FL (revised November 2002)

Cost Items	Cost Factors	Cost ($) 98% Thermal Ox	Cost ($) 98% RCO	Cost ($) 95% Duct to Boiler
DIRECT CAPITAL COSTS (DCC):				
(1) Purchased Equipment Cost				
(a) Oxidizer/Air Injection Equip/Services	Based on Vendor Quote	2,500,000	1,163,400	100,000
Gas conditioning equipment	Based on Vendor Quote	2,000,000	2,000,000	2,000,000
(b) New Stack (118 ft total)	Based On Cost Control Manual Ch. 10	159,121	159,121	NA
(c) Ductwork and Electronic controls	Alloy20 10G 36" diameter based on GP exper.	390,000	162,500	1,126,000
(d) Structural Support	0.1 x (1a..1c) ; use 0.2 for Duct to Boiler	504,912	348,502	645,200
(f) Exhaust Fan	G-P experience	300,000	300,000	300,000
(g) Freight (a)	0.05 x (1a..1f)	292,702	206,676	208,560
(h) Sales Tax (Florida)	0.06 x (1a..1g)	368,804	260,412	262,786
(i) Instrumentation	0.1 x (1a..1f)	included	included	417,120
(j) Subtotal	(1a..1i)	6,515,539	4,600,611	5,059,666
(2) Direct Installation	0.40 x (1j)	2,606,216	1,840,244	2,023,866
Total DCC:	(1i) + (2)	9,121,754	6,440,856	7,083,532
INDIRECT CAPITAL COSTS (ICC):				
(3) Indirect Installation Costs				
(a) Engineering	(0.12) x (DCC)	912,175	644,086	708,353
(b) Construction & Field Expenses	(0.05) x (DCC)	456,088	322,043	354,177
(c) Construction Contractor Fee	(0.10) x (DCC)	912,175	644,086	708,353
(d) Contingencies (b)	(0.40) x (DCC)	3,648,702	2,576,342	2,833,413
(4) Other Indirect Costs				
(a) Startup	(0.05) x (DCC)	456,088	included	354,177
(a) Testing	(0.01) x (DCC)	91,218	64,409	70,835
(b) Working Capital	30-day DOC	54,781	42,425	1,539
Total ICC:	(3) + (4)	6,531,226	4,293,390	5,030,847
TOTAL CAPITAL INVESTMENT (TCI):	DCC + ICC	15,652,981	10,734,246	12,114,379
DIRECT OPERATING COSTS (DOC):				
(1) Operating Labor				
Operator	$22/hr; 3,260 hr/yr	71,720	71,720	3,212
Supervisor	15% of operator cost	10,758	10,758	482
(2) Maintenance				
Labor (includes inspection of boiler)	2 x Operating Labor	164,956	82,478	7,388
Materials	Equivalent to Maintenance Labor	164,956	82,478	7,388
(3) Utilities				
(a) Electricity	$0.075/kWh;; 8,760 hr/yr 26.7 kwh RTO, 94 kwh RCO	17,542	61,758	NA
(b) Natural Gas	5 MMBtu/hr RTO;2.8 MMBtu/hr RCO;$4.736/MMBtu	207,437	116,579	NA
(4) Chemicals and Materials				
Catalyst Replacement	Once per 3 yrs @ $250,000	NA	83,333	NA
Ceramic Bed Replacement	Once per 5 yrs @ $100,000	20,000	NA	NA
Total DOC:	(1) + (2) + (3) + (4)	657,369	509,105	18,469
INDIRECT OPERATING COSTS (IOC):				
(7) Overhead	60% of oper. labor & maintenance	247,434	148,460	11,081
(8) Property Taxes	1% of total capital investment	156,530	107,342	121,144
(9) Insurance	1% of total capital investment	156,530	107,342	121,144
(10) Administration	2% of total capital investment	313,060	214,685	242,288
Total IOC:	(7) + (8) + (9) + (10)	873,553	577,830	495,657
CAPITAL RECOVERY COSTS (CRC):	CRF of 0.1627 times TCI (10 yrs @ 10%)	2,546,740	1,746,462	1,971,009
ANNUALIZED COSTS (AC):	DOC + IOC + CRF	4,077,662	2,833,397	2,485,135
UNCONTROLLED CO EMISSIONS (TPY)		324	324	324
TOTAL CO REMOVED:		318	318	308
COST EFFECTIVENESS:	$ per ton of CO Removed	12,842	8,924	8,074

Vendor quote basis: Thermal oxidizer - G-P experience
RCO- Pro-Environmental, Inc.



Attachment GP-FI-C3
Facility Process Flow Diagram
Georgia-Pacific Palatka Operations
Palatka, Florida

Notes:
ADUP = Air Dried Unbleached Pulp
CTO = Crude Tall Oil
Solid/Liquid
Gas

Filename: 0237561\4\4.4\4.4.1\GP-FI-C3.VSD
Date: 11/11/02

Golder Associates