NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review and Preliminary Determination

Issue Date: XXXX XX, 2025

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400036
Inspector's Name: Jmanda Dunston
Date of Last Inspection: 09/18/2024
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): International Paper - Riegelwood Mill

Facility Address:
International Paper - Riegelwood Mill
865 John L. Riegel Road
Riegelwood, NC 28456

SIC: 2611 / Pulp Mills
NAICS: 322120 / Paper Mills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0503, .0504, .0515, .0516, .0519, .0521, 02Q .0317
NSPS: N/A
NESHAP: Subparts S, MM, DDDDD, and GGGGG
PSD: 02D .0530
PSD Avoidance: Yes
NC Toxics: Yes
112(r): N/A
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Stephen Greer Environmental Manager (910) 362-3476 865 John L. Riegel Road Riegelwood, NC 28456	Jason Hoffman Mill Manager (910) 362-4883 865 John L. Riegel Road Riegelwood, NC 28456	Kevin Spargo Senior Environmental Engineer (910) 362-4918 865 John L. Riegel Road Riegelwood, NC 28456

Application Data

Application Number: 2400036.24B
Date Received: 04/12/2024
Application Type: Modification
Application Schedule: PSD

Existing Permit Data
Existing Permit Number: 03138/T46
Existing Permit Issue Date: 07/24/2024
Existing Permit Expiration Date: 02/29/2028

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2022	1476.75	1569.68	2363.96	2408.47	397.73	1082.51	890.82 [Methanol (methyl alcohol)]
2021	1603.36	1667.59	2596.98	2933.87	417.45	1196.70	986.53 [Methanol (methyl alcohol)]
2020	1566.80	1654.45	2680.10	2887.05	424.30	1217.27	1003.54 [Methanol (methyl alcohol)]
2019	1340.71	1602.67	2491.04	2519.75	416.14	1148.82	945.54 [Methanol (methyl alcohol)]
2018	1546.81	1693.61	2571.81	2533.19	447.28	1188.49	978.87 [Methanol (methyl alcohol)]

Review Engineer: Emily Supple

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 03138/T47
Permit Issue Date: XXXXX XX, 2025
Permit Expiration Date: March 3, 2028

1. Purpose of Application

International Paper – Riegelwood Mill (IPRW) submitted a PSD (Prevention of Significant Deterioration) application to modify the carbon monoxide (CO) Best Available Control Technology (BACT) for the No. 5 Power Boiler (ID No. ES-PB5) and to modify the No. 18 Pulp Dryer (ID No. ES-JJ-030) to accommodate 1,400 tons per day of finished pulp production (increasing maximum production of this source from about 1,000 tons per day), due to the reasons below.

IPRW shut down one of the mill's two remaining pulp dryers in 2023, reducing production at the mill to 1,400 tons per day of finished pulp. This resulted in the permanent shut down of the following permitted equipment:

- Woodyard Chip Silos (ID Nos. ES-CW-5-1 and ES-CW-6-1)
- Small Batch Digesters (ID No. ES-SBD)
- No. 4 Brownstock Washer Set (ID No. ES-BSW4)
- No. 5 Evaporator Set (ID No. ES-EVAP5)
- No. 4 Smelt Dissolving Tank (ID No. ES-ST4)
- No. 4 Recovery Furnace (ID No. ES-RB4)
- Pulp Dryer (ID No. ES-PD)
- No. 3 Lime Kiln (ID No. ES-LK3), removed with the T45 revision
- No. 3 Lime Kiln Auxiliary Engine (ID No. ES-EE1)

Accordingly, the above sources will be removed from the permit.

Finally, with this project, IPRW will also be converting the Black Liquor Oxidation Tanks (ID Nos. ES-RX-010 and ES-RX-011) to heavy black liquor storage tanks.

As requested by the application, DAQ will process this application in accordance with the "one-step" procedure in 15A NCAC 02Q .0501(b)(1).

2. Application Chronology

February 16, 2024	Pre-application meeting held with the applicant.
April 12, 2024	Permit Application No. 2400036.24B received.
April 17, 2024	Acknowledgement letter sent to facility.
April 26-30, 2024	Provided applicant with copy of PSD application from 1983 which established BACT for the No. 5 Power Boiler.
April 30, 2024	Application fees were received.
May 2, 2024	Applicant provided additional justification for reestablishment of BACT for the No. 5 Power Boiler based on the 1983 PSD application.
May 9, 2024	Application determined to be complete for PSD processing, effective April 30, 2024 (the date the application fees were received), and the statutory 1-year processing clock for PSD began.
June 3-4, 2024	Discussion with applicant about reasoning behind including only boilers from the forest products industry in the submitted BACT analysis.

November 6, 2024	Draft permit and review forwarded to applicant, SSCB, regional office and Supervisor for comments. No comments were received from the regional office or SSCB.
November 15, 2024	Comments received from Amy Marshall of ALL4. Most comments received were minor and editorial in nature. The facility requested updates to the approved toxics emissions rates. The Air Quality Analysis Branch (AQAB) issued a revised memo on December 13, 2024.
December XX, 2024	Draft permit and permit review forwarded for public noticing via DAQ website.
XXXXX XX, 2025	Public comment period ends. No comments were received.
XXXXX XX, 2025	EPA comment period ends. No comments were received.
XXXXX XX, 2025	Permit issued.

3. Site Description

The following manufacturing description is taken from the T45 permit review:

Wood Chipping: Wood chips and bark are utilized as the primary raw material feed to this facility. They are almost entirely derived from logs that are purchased. Since the startup of the new wood yard, very few chips have been purchased. Only softwood chips are utilized in the pulping process, while the bark is utilized as a fuel for the boilers. Logs are received via truck or rail and are stored in the log storage area just to the west of the Roll Warehouse. They are then loaded, either by the new circular crane or the existing Heeded crane into a log feeder bin that feeds the Drum Debarker, which in turn feeds the Chipper. The wood chips are then conveyed to the pine wood chip pile.

Digestion: From the wood chip pile, the chips are conveyed to either the wood chip silos or directly to the digesters. In the digesters, a strong alkaline aqueous solution reacts with wood chips under conditions of elevated temperature and pressure to break down (de-polymerize) the wood fibers by attacking the lignin and leaving behind the cellulose fiber pulp. The alkaline solution used is an aqueous mixture of sodium hydroxide and sodium sulfide called "white liquor". Its total alkalinity is ~14%. Both continuous and batch digesters are used at this facility.

Washing: During the digestion process, alkali and the sodium sulfide in the white liquor are consumed to produce sodium carbonate and sodium sulfate. Since residual alkaline contaminants in wet paper can yellow the fluff pulp under drying conditions utilized in this process, virtually all of the excess alkali has to be removed from the "brown stock" cellulose pulp. This is accomplished is a series of filtration/washing stages.

From the blow tank the pulp passes to the De-knotters and then onto 1st stage vacuum filter, followed by the 2nd stage filter. The brown cellulose pulp then moves to the caustic extractive oxy-peroxide delignification process. Here, pulp is fed to a pre-oxygen washer and then onto the oxygen reactor/post oxygenation steps, where the lignin is partially oxidized in the presence of the alkaline peroxide at ~210ºF. After a final washing step, the pulp moves on to the bleach plant.

Bleaching/ClO_2: Oxidation of the lignin is completed in the bleaching process. At the bleach plant, the pre-treated brown stock is reacted with chlorine dioxide (ClO_2) bleaching solution that bleaches the brown cellulose fibers white. IP operates three separate Elemental Chlorine Free (ECF) bleach plants. The chlorine dioxide bleaching solution is generated onsite. The three bleaching lines are utilized in this bleaching process. Two of the bleaching lines employ a 4 stage (D_0, E_{OP}, D_1, D_2) bleaching process, while the other utilizes a five stage (D_0, E_{OP}, D_2, E, D_3) bleaching sequence. The D is an industry accepted abbreviation designating a chlorine dioxide bleaching step. The E and E_{OP} bleaching steps consist of an alkaline sodium hydroxide extraction, either

alone (E) or with oxygen and peroxide (E_{OP}). Each stage consists of a mixing step, where the bleaching agent is mixed into the pulp and fed to a bleaching tower, where the bleaching actually occurs. The last step in each stage is a washing step, where the pulp is washed free of the bleaching mixture. The bleached pulp is then fed to a pulp dryer.

The chlorine dioxide bleaching agent is generated on-site in the chlorine dioxide plant. IP utilizes the Single Vessel Process (SVP) ClO_2 production process. This process uses sodium chlorate as an oxidizing agent and methanol as a reducing agent according to the balanced equation below:

$$6NaClO_3 + CH_3OH + 4H_2SO_4 \rightarrow 6ClO_2 + CO_2 + 2Na_3H(SO_4)_2 + 5H_2O$$

Crystalline sodium chlorate is received via railcar and is fed to the ClO_2 generator as 650 – 660 gpl aqueous solution. Sulfuric acid (93%) and 100% methanol are reacted under vacuum. The ClO_2 product stream is about 10.5 gpl ClO_2.

IP's total ClO_2 storage capacity is ~620,000 gallons, but they typically maintain about 500,000 gallons (~22 tons) or about 10 hrs of inventory. Because of this, the ClO_2 product exceeds the regulatory threshold for this substance under CAA §112(r) as one of two 112(r) substances it maintains on site.

Fluff: The No. 18 Pulp Dryer operates in the position that the No. 18 paper machine once operated. This paper line was modified to convert it from paper production to a pulp dryer as part of a prior mill conversion to softwood pulp production. All modifications have been completed and the unit is operational. The design capacity of this line is ~1002 ADTFP (Air Dried Tons Finished Product). With this permitting action, the capacity of this line is increasing from about 1,000 tons per day to 1,400 tons per day of finished pulp product.

The original pulp dryer is known as the Carolina King Line (ID No. ES-PD) and is being removed with this permitting action.

The pulp dryer produces loose and baled fiber that is utilized in absorbent products such as baby diapers, feminine hygiene and incontinence products. The process building is divided into two sections – fluff market pulp production and bale finishing.

Currently, the mill only operates the No. 18 pulp dryer.

Recovery: The dilute and depleted digestion fluid, called black liquor, is sent to Recovery where it is concentrated by multi-effect evaporation. The concentrated black liquor solution is then fed to a recovery boiler and utilized as a source of fuel to generate steam and to regenerate sodium sulfide by the reduction of sulfate with carbon-containing lignin compounds. IP operates one recovery boiler that can fire black liquor, No. 2 or No. 6 fuel oil, or natural gas. Recovery Boiler No. 5 can fire ~7.39 MM lbs of black liquor solids/day. The boiler generates about 80% of the steam required by the facility. The remaining steam is generated by the power boilers discussed further below. The molten smelt that results from the combustion process is quenched/dissolved with water to produce "green liquor", which is an aqueous mixture of sodium carbonate and sodium sulfide.

The No. 4 Recovery Boiler has been shut down as of December 2023 and is removed from the permit with this permitting action.

Lime Kiln: Recycled calcium oxide, which is generated in the No. 4 lime kiln, is reacted with water to produce calcium hydroxide in the lime slakers. Calcium hydroxide solution from the lime slakers is then added to the green liquor and precipitates calcium carbonate, generating sodium hydroxide in the process. The calcium carbonate is separated from the regenerated white liquor and sent to the lime kiln, where it is converted back to the calcium oxide, which is sent to the lime slakers to begin the process again. The regenerated white liquor is used in the digestion of the wood chips. Overall, the recovery of sulfur and alkali from the pulping process is >95%.

Power Boilers: Because of the energy intensive nature of the Kraft process (steam & power), the internal generation of electricity and steam is warranted. The massive steam loads required in the evaporation trains required for concentrating weak process streams make internal power generation economical. IP has two power boilers onsite to accomplish this, PB2 and PB5.

The facility is a Title V facility because emissions of VOC, PM10, SO2, NOx, CO, total HAPs, and individual HAPs exceed the applicable thresholds (100 tons per year for VOC, PM10, SO2, NOx, and CO; 25 tons per year for total HAPs; 10 tons per year for individual HAPs).

4. Project Description

IPRW announced in 2023 that it would shut down one of the mill's two remaining pulp dryers, reducing production at the mill to 1,400 tons per day of finished pulp. The Mill Reconfiguration Project includes the permanent shut down of the following permitted equipment:

- Woodyard Chip Silos (ID Nos. ES-CW-5-1 and ES-CW-6-1)
- Small Batch Digesters (ID No. ES-SBD)
- No. 4 Brownstock Washer Set (ID No. ES-BSW4)
- No. 5 Evaporator Set (ID No. ES-EVAP5)
- No. 4 Smelt Dissolving Tank (ID No. ES-ST4)
- No. 4 Recovery Furnace (ID No. ES-RB4)
- Pulp Dryer (ID No. ES-PD)
- No. 3 Lime Kiln (ID No. ES-LK3); removed with the T45 revision
- Auxiliary Engine for No. 3 Lime Kiln (ID No. ES-EE1)

The mill is also proposing the following modifications as part of the Mill Reconfiguration Project:

- Modifications to the No. 18 Pulp Dryer (ID No. ES-JJ-030) to accommodate 1,400 tons per day of finished pulp production.
- Convert the black liquor oxidation tanks (ID Nos. ES-RX-010 and ES-RX-011) to heavy black liquor storage tanks.
- Update the carbon monoxide (CO) BACT limit on the No. 5 Power Boiler (ID No. ES-PB5) to minimize natural gas combustion and maximize biomass combustion.
- Remove coal, No. 4 equivalent used fuel oil, and No. 6 fuel oil from the list of permitted fuels for the No. 2 Power Boiler.
- Remove coal from the list of permitted fuels for the No. 5 Power Boiler.

5. Emissions Review and Permit Changes

Overview of Emissions Factors

The applicant utilized several sources of emissions data for estimating emissions rates for both Baseline Actual Emissions and Projected Actual Emissions.

- Published National Council for Air and Stream Improvement (NCASI) database, emission reports, and technical bulletins.
- U.S. EPA's AP-42 Compilation of Air Emission Factors
- 40 CFR Part 98
- Permit limits; and
- Site-specific data

NCASI Emissions Factors

The applicant has used the NCASI technical bulletins and database, as follows:

- TB No. 701 (October 1995), Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Sources at Chemical Wood Pulp Mills;

- TB No. 847 (June 2002), Factors Affecting NOx Generation from Burning Stripper Off-Gases in Power Boilers and Lime Kilns;

- TB No. 884 (August 2004), Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers;

- TB No. 942 (November 2007), Measurement of PM, PM10, PM2.5, and CPM Emissions from Paper Machine Sources;

- TB No. 973 (February 2010), Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources – A Second Update;

- TB No. 1020 (November 2013), Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers – An Update to Technical Bulletin No. 884;

- TB No. 1050 (September 2018), Compilation of Air Toxics Emissions Data for Pulp and Paper Sources – Publication Accompanying the 2018 Air Toxics Emissions Database;

- Particulate Emissions Data for the Pulp and Paper Industry; and

- Reduced Sulfur Compound Emissions from the Wastewater Treatment Plant at International Paper Company's Riegelwood, North Carolina Mill (June 2006 NCASI Study).

U.S. EPA AP-42 Emissions Factors

The applicant has used emission factors from U.S. EPA's AP-42 as follows:

- Section 1.4, Natural Gas Combustion;
- Section 1.6, Wood Residue Combustion in Boilers;
- Section 3.3, Gasoline and Diesel Industrial Engines;
- Section 10.3, Plywood Veneer and Layout Operations [4th edition];
- Section 11.17, Lime Manufacturing;
- Section 11.19, Crushed Stone Processing and Pulverized Mineral Processing; and
- Section 13.2, Introduction to Fugitive Dust Sources.

Site-Specific Data

Site-specific stack test data, continuous emissions monitoring system (CEMS) data, and fuel certification data were used to calculate emissions when available.

Stack test data were used as the basis of emissions factors for the following pollutants/emissions sources:

- Filterable and condensable PM, SO_2, and total reduced sulfur (TRS) from natural gas and No. 6 fuel oil firing in the No. 4 Lime Kiln;

- NOx, filterable and condensable PM, and CO from bark, natural gas, and sludge firing and SO_2 from bark, non-condensable gases (NCG), natural gas, and sludge firing in the No. 2 Power Boiler;

- CO (baseline factor only) from bark, natural gas, and sludge firing and NOx, filterable and condensable PM, and SO_2 from bark, No. 6 fuel oil, natural gas, and sludge firing in the No. 5 Power Boiler;

- TRS and VOC from the Brownstock Washer System, Kamyr Digester, Oxygen Delignification System, Heavy Black Liquor Tanks;
- CO, NOx, filterable and condensable PM, SO_2, TRS, and VOC from black liquor solids firing in the No. 4 Recovery Boiler;
- CO, NOx, filterable and condensable PM, SO_2 (baseline factor only), TRS, and VOC from black liquor solids firing in the No. 5 Recovery Boiler;
- Filterable and condensable PM, TRS, and VOC from the No. 4 Smelt Dissolving Tank;
- Filterable and condensable PM, TRS, and VOC from the No. 5 Smelt Dissolving Tank;
- Filterable and condensable PM from the Wood Cyclones (testing at former IP Lumber Mills).

CEMS data were used as the basis of emissions factors for TRS from black liquor solids firing in the No. 5 Recovery Boiler.

Additionally, monthly fuel certifications were used as the basis of SO_2 emissions factors for No. 6 fuel oil firing in both recovery boilers.

Emissions Changes

Since the proposed Mill Reconfiguration Project will shut down many pieces of permitted equipment and reduce the mill's production to 1,400 tons per day, this project is expected to decrease emissions overall.

Table 5.1 is taken from the application emissions spreadsheet and shows the expected change in emissions for each area of the mill. The emissions calculations appear to be correct. Baseline actual emissions and projected actual emissions calculations are further discussed in Section 7 below.

Table 5.1
Affected Sources Summary
International Paper - Riegelwood Mill

Area	Source Group	Source	Pollutant	Baseline Actual Emissions (tpy)	Projected Actual Emissions (tpy)	Emissions Change (tpy)
Bleach	BP	Bleach Plants	CO	2.85E+02	2.07E+02	-78.45
			TRS	4.85E-01	3.51E-01	-0.13
			VOC	5.46E+01	3.96E+01	-15.01
	ClO2 Generator	Methanol Tank	VOC	2.84E-01	2.06E-01	-0.08
		CLO2 Plant (SVP)	VOC	2.54E-01	1.84E-01	-0.07
Caustic	Lime Handling	Lime Bucket Elevator	PM	1.43E-02	1.28E-02	-0.002
			PM_{10}	1.43E-02	1.28E-02	-0.002
		Lime Conveyor	PM	1.43E-02	1.28E-02	-0.002
			PM_{10}	1.43E-02	1.28E-02	-0.002
		Lime Crushing	PM	8.68E-03	7.76E-03	-0.001

			PM_{10}	8.68E-03	7.76E-03	-0.001
		Lime Silos-Caustic	PM	3.11E-01	2.78E-01	-0.03
			PM_{10}	3.11E-01	2.78E-01	-0.03
		Lime Unloading-Fresh	PM	1.32E-02	9.48E-03	-0.004
			PM_{10}	1.32E-02	9.48E-03	-0.004
	Lime Mud Processing	LK4	GHGs	8.49E+04	8.71E+04	2,127.44
			CO	5.62E+00	5.02E+00	-0.60
			Lead	1.51E-03	1.35E-03	-1.61E-04
			NOx	1.42E+02	1.26E+02	-15.04
			PM	1.65E+01	1.48E+01	-1.76
			PM_{10}	1.44E+01	1.29E+01	-1.53
			$PM_{2.5}$	1.33E+01	1.19E+01	-1.41
			SO_2	4.70E+00	4.20E+00	-0.50
			H_2SO_4	3.33E-01	1.87E-01	-0.15
			TRS	4.72E-01	4.22E-01	-0.05
			VOC	8.30E+00	7.42E+00	-0.88
			H_2S	3.32E-01	2.97E-01	-0.04
	White Liquor Processing	Causticizers	TRS	6.02E+00	5.57E+00	-0.46
		Slaker	TRS	9.53E+00	8.81E+00	-0.72
			PM	3.17E+00	2.93E+00	-0.24
General	PM -Road Emissions	Haul Roads	PM	2.72E+01	1.95E+01	-7.73
			PM_{10}	5.32E+00	3.81E+00	-1.51
			$PM_{2.5}$	7.98E-01	5.71E-01	-0.23
Pulp Dryers	PM18	PM18-Pulp Dryer	PM	1.78E+01	2.56E+01	7.74
			PM_{10}	1.72E+01	2.46E+01	7.46
			$PM_{2.5}$	1.51E+01	2.16E+01	6.56
			TRS	1.25E+00	1.79E+00	0.54
			VOC	2.75E+01	3.94E+01	11.95
	PM20 - Pulp Dryer	PM20 - Pulp Dryer	PM	1.86E+01	0.00E+00	-18.65
			PM_{10}	1.80E+01	0.00E+00	-17.97
			$PM_{2.5}$	1.58E+01	0.00E+00	-15.80
			TRS	1.31E+00	0.00E+00	-1.31
			VOC	2.88E+01	0.00E+00	-28.78
Power	PB2	PB2	GHGs	1.28E+05	1.83E+05	55,041.33
			CO	4.10E+02	4.82E+02	71.55
			HF	8.38E-03	1.89E-02	0.01
			Lead	1.02E-02	2.24E-02	0.01

			NOx	2.98E+02	3.12E+02	13.63
			PM	5.07E+01	7.77E+01	26.95
			PM_{10}	5.07E+01	7.77E+01	26.95
			$PM_{2.5}$	5.07E+01	7.77E+01	26.95
			SO_2	1.21E+03	8.30E+02	-375.82
			H_2SO_4	1.75E+00	1.20E+00	-0.55
			VOC	4.43E+00	8.09E+00	3.66
	PB5	PB5	GHGs	2.09E+05	3.00E+05	90,711
			CO	4.28E+02	1.06E+03	628.57
			HF	1.92E-02	3.39E-02	0.01
			Lead	2.29E-02	4.02E-02	0.02
			NOx	3.07E+02	3.85E+02	78.85
			PM	4.94E+01	6.00E+01	10.58
			PM_{10}	4.94E+01	6.00E+01	10.58
			$PM_{2.5}$	4.94E+01	6.00E+01	10.58
			SO_2	6.16E+00	7.59E+00	1.44
			H_2SO_4	1.14E-01	4.81E-01	0.37
			VOC	8.70E+00	1.41E+01	5.38
Pulp	Batch Digesters	Batch Digesters (SB+LB)	TRS	1.87E+00	9.09E-01	-0.96
			VOC	3.11E+01	1.51E+01	-15.95
	BSW1	BSW Decker System 5&6 (SWD)	TRS	6.27E+00	8.52E+00	2.25
			VOC	3.82E+01	5.19E+01	13.70
		BSW Drum & Press System (SWD)	TRS	1.71E-01	2.32E-01	0.06
			VOC	4.82E+02	6.56E+02	173.21
			H_2S	9.37E-03	1.27E-02	3.36E-03
		No1&2 O2Delig Screen Systems Accepts & Rejects Tanks (SWD)	TRS	1.15E-01	1.56E-01	0.04
			VOC	8.69E-01	1.18E+00	0.31
	BSW4	BSW4 (Drum & Decker System - SWD)	TRS	1.77E+02	0.00E+00	-177.33
			VOC	8.74E+02	0.00E+00	-873.54
			H_2S	1.09E+01	0.00E+00	-10.86
		Screen System Accepts&Rejects Tanks	TRS	1.03E-01	0.00E+00	-0.10
			VOC	2.54E+00	0.00E+00	-2.54
	BSWs (1&4)	BSW1&4 Knotter System (Accepts & Rejects Tanks)	TRS	3.32E+00	2.38E+00	-0.94
			VOC	6.11E+01	4.38E+01	-17.34
	Kamyr Digester	Digester- Kamyr Chip Bin (on fresh steam)	TRS	8.73E-04	1.10E-03	2.23E-04
			VOC	8.44E-01	1.06E+00	0.22
	O2-Delig	Oxygen Delignification System (SWD)	CO	9.10E+00	1.21E+01	2.96
			TRS	1.58E+00	2.09E+00	0.51

			VOC	2.02E+02	2.67E+02	65.61
			H_2S	3.89E-01	5.15E-01	0.13
Recovery	BL Storage	HBL Tanks	TRS	4.55E+00	7.26E+00	2.72
			VOC	8.91E+00	1.42E+01	5.33
			H_2S	1.73E+00	2.76E+00	1.03
	RB System	BLOx 1&2	PM	8.70E-01	0.00E+00	-0.87
			TRS	1.53E+01	0.00E+00	-15.27
			VOC	2.58E+02	0.00E+00	-257.92
			H_2S	7.94E-01	0.00E+00	-0.79
		Saltcake MixTnk	VOC	2.17E+00	1.63E+00	-0.54
	RB4	RB4	GHGs	4.36E+05	0.00E+00	-435,671
			CO	1.21E+03	0.00E+00	-1,212
			HF	2.29E-01	0.00E+00	-0.23
			Lead	1.70E-03	0.00E+00	0.00
			NOx	1.57E+02	0.00E+00	-157.16
			PM	9.44E+01	0.00E+00	-94.44
			PM_{10}	8.23E+01	0.00E+00	-82.25
			$PM_{2.5}$	7.58E+01	0.00E+00	-75.77
			SO_2	2.09E+02	0.00E+00	-208.64
			H_2SO_4	2.94E+00	0.00E+00	-2.94
			TRS	2.73E+01	0.00E+00	-27.35
			VOC	1.27E+02	0.00E+00	-126.59
			H_2S	1.78E+01	0.00E+00	-17.75
	RB5	RB5	GHGs	1.39E+06	1.39E+06	-1,327
			CO	3.36E+02	3.42E+02	5.52
			HF	1.07E-02	7.67E-03	0.00
			Lead	6.98E-03	6.89E-03	0.00
			NOx	7.08E+02	7.10E+02	2.71
			PM	1.68E+02	1.65E+02	-3.54
			PM_{10}	1.08E+02	1.05E+02	-2.70
			$PM_{2.5}$	8.91E+01	8.74E+01	-1.70
			SO_2	1.55E+02	1.35E+02	-19.70
			H_2SO_4	5.46E+00	5.07E+00	-0.38
			TRS	6.60E+00	6.55E+00	-0.05
			VOC	4.55E+01	4.54E+01	-0.11
			H_2S	6.02E-01	5.98E-01	0.00
	SDT4	SDT4	CO	2.32E+00	0.00E+00	-2.32
			Lead	1.36E-04	0.00E+00	0.00
			PM	3.21E+01	0.00E+00	-32.13
			PM_{10}	2.67E+01	0.00E+00	-26.67
			$PM_{2.5}$	2.39E+01	0.00E+00	-23.86

			SO_2	1.07E+00	0.00E+00	-1.07
			TRS	8.62E-01	0.00E+00	-0.86
			VOC	6.21E-01	0.00E+00	-0.62
			H_2S	4.62E-01	0.00E+00	-0.46
	SDT5	SDT5	CO	7.21E+00	7.16E+00	-0.05
			Lead	4.21E-04	4.18E-04	0.00
			PM	5.64E+01	5.60E+01	-0.40
			PM_{10}	4.74E+01	4.70E+01	-0.33
			$PM_{2.5}$	4.27E+01	4.24E+01	-0.30
			SO_2	3.31E+00	3.29E+00	-0.02
			TRS	7.48E+00	7.43E+00	-0.05
			VOC	7.09E+00	7.04E+00	-0.05
			H_2S	3.12E+00	3.10E+00	-0.02
Woodyard	Chip Handling	Wood Cyclones	PM	1.71E+01	1.32E+00	-15.74
			PM_{10}	5.12E+00	3.96E-01	-4.72
	Chip Piles	Wood Fugitives	PM	3.41E+00	2.64E+00	-0.77
			PM_{10}	1.02E+00	7.91E-01	-0.23
			VOC	7.91E+01	6.11E+01	-17.92
	Log Debarking	Wood Debarking	PM	3.29E+00	3.13E-01	-2.98
			PM_{10}	9.87E-01	9.39E-02	-0.89
WWTP	Fugitives	WWTP	TRS	2.70E+01	2.70E+01	0.00
			VOC	1.78E+02	1.28E+02	-49.92
			H_2S	2.69E+01	2.69E+01	0.00

Permit Changes

The following Table 5.2 shows the changes made to the current permit, 03138T46:

Page No.	Section	Description of Changes
All	All	• Updates dates and permit revision number.
Throughout	-	• Remove coal, No. 4 equivalent used oil, and No. 6 fuel oil from list of permitted fuels for the No. 2 Power Boiler • Remove coal from list of permitted fuels for the No. 5 Power Boiler • Update “bark” and “woodwaste” to “biomass”
Throughout	-	• Remove the following sources: o Nos. 3 and 4 Chip Silos (ID No. ES-CW-5-1) o Nos. 1 and 2 Chip Silos (ID No. ES-CW-6-1) o Small Batch Digester System (ID No. ES-SBD) o Brownstock Washer Set No. 4 (ID No. ES-BSW4) o Evaporator Set No. 5 (ID No. ES-EVAP5) o No. 4 Recovery Boiler (ID No. ES-RB4) o No. 4 Smelt Dissolving Tank (ID No. ES-ST4) o No. 20 Pulp Dryer (ID No. ES-PD) o No. 3 Lime Kiln Auxiliary Engine (ID No. ES-EE1)

Throughout	-	• Convert black liquor oxidation tanks (ID Nos. ES-RX-010 and ES-RX-011) to heavy black liquor storage tanks
10	2.1 B.1.c	• Remove monitoring condition for coal firing for PB2
12	2.1 B.4.c	• Remove monitoring, recordkeeping, reporting conditions for No. 4 equivalent used oil, No. 6 fuel oil, and coal firing for PB2
13	2.1 B.5.a	• Remove emission limit for coal firing for PB2
19	2.1 C.4.a	• Remove emission limit for coal firing for PB5
20-21	2.1 C.6	• Update CO BACT for PB5 • Remove coal firing BACT for all pollutants for PB5
56-59	2.2 A.1	• Updates to Subpart S including: o Adding alternate emission limit of 0.002 pounds of chlorinated HAP/ODTP o Added testing requirement for the Bleach Plant Scrubber every five years o Added SSM requirements per 40 CFR 63.453(q) and 63.454(g)
80-84	2.2 E	• Updated TAP limits based on submitted modeling
92	3	• Move emergency engines (ID Nos. ES-EE2 and ES-EE3) to insignificant sources list
93-100	4	• Updated General Conditions to most recent version (8.0, 07/10/24)
-	-	• Removed 112(j) SSM requirements for Subpart S
-	-	• Removed requirements for 40 CFR 63 Subpart GGGGG

Title V Equipment Editor (TVEE)

Title V Equipment Editor (TVEE) was updated with this application. TVEE was reviewed and approved by Connie Horne of DAQ on XXXXX XX, 2024.

6. Regulatory Applicability

The following regulations were reviewed with this permitting action:

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
- 15A NCAC 02D .0504, Particulates from Wood Burning Indirect Heat Exchangers
- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources
- 15A NCAC 02D .0519, Control of Nitrogen Dioxide and Nitrogen Oxides Emissions
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .0524, New Source Performance Standards
- 15A NCAC 02D .0530, Prevention of Significant Deterioration
- 15A NCAC 02D .0614, Compliance Assurance Monitoring
- 15A NCAC 02D .1100, Control of Toxic Air Pollutants
- 15A NCAC 02D .1111, Maximum Achievable Control Technology
- 15A NCAC 02Q .0317, Avoidance of NSPS (40 CFR 60 Subpart D)

a. 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers

This rule applies to the No. 5 Power Boiler and states that emissions of particulate matter from the combustion of fuels in this boiler shall not exceed the allowable emission rate as determined by the equation $E = 1.090*Q^{-0.2594}$ where Q equals the maximum heat input in million Btu per hour.

At the time when the No 5. Power Boiler was first permitted, the following sources were subject to 02D .0503, contributing to the overall maximum heat input at the plant site:

- No. 1 Power Boiler (250 million Btu per hour, maximum heat input)*;
- No. 2 Power Boiler (425 million Btu per hour, maximum heat input);
- No. 3 Power Boiler (280.5 million Btu per hour, maximum heat input)*;
- No. 4 Power Boiler (385 million Btu per hour, maximum heat input)*;
- No. 5 Power Boiler (249 million Btu per hour, maximum heat input when firing natural gas, fuel oil, or coal);
- Nos. 1 and 2 Temporary Package Boilers (between 10 and 100 million Btu per hour, maximum heat input rate, each**).

*The Nos. 1, 3, and 4 Power Boilers have previously been removed from the permit.
**It is assumed that the Nos. 1 and 2 Temporary Package Boilers will each have a maximum heat input rate of 100 million Btu per hour.

Thus, the total maximum heat input rate used to determine the 02D .0503 allowable particulate emission limit is (250 + 425 + 280.5 + 385 + 249 + 100 + 100) = 1,789.5 million Btu per hour.

For firing coal, natural gas, or fuel oil only, the allowable particulate emission limit shall be calculated by the equation:

$E = 1.090 * Q^{-0.2594}$

Where: E = allowable emission limit for particulate matter in pounds per million Btu (lb/MMBtu); and
Q = maximum heat input in million Btu per hour.

Therefore, the allowable particulate emission limit for the No. 5 Power Boiler, when firing only natural gas or fuel oil, is calculated as follows:

$E = 1.090 * (1.789.5)^{-0.2594} = 0.16$ lb/MMBtu

As given by the application, the expected actual particulate emission rate for the No. 5 Power Boiler is 0.04 pounds per million Btu, based on stack testing conducted in November of 2023. This emission rate is below the allowable particulate emission rate given above. Therefore, the No. 5 Power Boiler is expected to be in compliance with this regulation when combusting bark/biomass.

The No. 5 Power Boiler is controlled by a multicyclone and a wet scrubber. To ensure compliance with the 02D .0503 particulate emission limit, the scrubbing liquid flow rate and the pressure drop of the scrubber shall be maintained at the operating parameter limit established during performance testing. The Permittee shall continuously monitor and record the scrubbing liquid flow rate and pressure drop of the scrubber.

The proposed project is not expected to affect compliance with this regulation. Continued compliance with 02D .0503 is expected. No changes to this condition are needed with this permitting action.

b. <u>15A NCAC 02D .0504, Particulates from Wood Burning Indirect Heat Exchangers</u>

This rule applies to the No. 5 Power Boiler and states that emissions of particulate matter shall not exceed the allowable emission rate as calculated by the following equation:

$$E_c = [(E_w)(Q_w) + (E_o)(Q_o)] / Q_t$$

Where;
Ec = emission limit for combined firing (pound per mmBtu);
Ew = 0.25 pounds per million Btu heat input (when firing bark/wood fiber sludge only) - determined for 02D .0504
Eo = 0.16 pounds per million Btu heat input (when firing natural gas/coal/ fuel oil only) – determined for

02D .0503
Qw = actual wood heat input including wood fiber sludge in Btu per hour;
Qo = actual heat input other than wood heat input in Btu per hour; and
Qt = Qw + Qo

The heat input ratings for ES-PB5 will not change with this proposed project. Thus, the allowable particulate emission rate for ES-PB5 can be calculated as follows:

$$E_c = [(0.25)(600) + (0.16)(249)] \div (600 + 249) = 0.223\ lb/mmBtu$$

As given by the application, the expected actual particulate emission rate for the No. 5 Power Boiler is 0.04 pounds per million Btu, based on stack testing conducted in November of 2023. This actual emission rate is below the allowable particulate emission rate given above. Therefore, the No. 5 Power Boiler is expected to be in compliance with this regulation when combusting bark/biomass.

The No. 5 Power Boiler is controlled by a multicyclone and a wet scrubber. To ensure compliance with the 02D .0504 particulate emission limit, the boiler shall be tested at least once every five years (no more than 61 months after the previous test). The monitoring and recordkeeping required by 02D .0503, as discussed above, is sufficient to demonstrate compliance with the 02D .0504 emission limit.

No changes to this condition are needed with this permitting action.

c. 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources

This rule applies to the Nos. 2 and 5 Power Boilers and states that emissions of sulfur dioxide shall not exceed 2.3 pounds per million Btu heat input.

As given by the application, the emission rate of sulfur dioxide in the No. 5 Power Boiler when firing bark/biomass is 3.67E-03 pounds per million Btu, based on stack testing conducted in October 2017 and November 2022. This actual emission rate is below the allowable sulfur dioxide emission limit given above.

Therefore, the No. 5 Power Boiler is expected to be in compliance with this regulation while combusting bark/biomass.

The permit currently requires that while burning No. 4 or No. 6 fuel oil or biomass absorbed oil residue in the No. 5 Power Boiler, the Permittee shall monitor the scrubbing liquid flow rate and pH and monitor fuel oil supplier certification per each shipment. No monitoring is required during firing of No. 2 fuel oil, natural gas, bark, or wood fiber sludge.

No changes to this condition are needed with this permitting action for the No. 5 Power Boiler.

For the No. 2 Power Boiler, since coal, No. 4 equivalent used fuel oil, and No. 6 fuel oil are being removed from the list of permitted fuels for this source, no monitoring, recordkeeping, or reporting requirements are needed under 02D .0516, and the existing monitoring, recordkeeping, and reporting requirements will be removed with this permitting action.

Continued compliance is expected.

d. 15A NCAC 02D .0519, Control of Nitrogen Dioxide and Nitrogen Oxides Emissions

This rule applies to the Nos. 2 and 5 Power Boilers and states that the emission limit of nitrogen oxides for a boiler, while burning fuel oil or natural gas is 0.8 pounds per million Btu heat input.

With the proposed project, coal is being removed from the list of permitted fuels in the Nos. 2 and 5 Power Boilers. Therefore, the only applicable emission limit under this regulation is 0.8 pounds per million Btu. The permit will be updated to remove the equation given in 02D .0519(c).

As given by the application, the expected actual NOx emission rates for the No. 2 and the No. 5 Power Boilers are 0.265 and 0.253 pounds per million Btu, respectively, which is below the allowable emission limit of 0.8 pounds per million Btu.

Due to the low expected actual emission rate of NOx, no monitoring, recordkeeping, or reporting is required to ensure compliance with this condition.

Continued compliance with 02D .0519 is expected.

e. 15A NCAC 02D .0521, Control of Visible Emissions

This rule applies to the No. 5 Power Boiler and states that visible emissions from this source shall not exceed 20 percent opacity.

To ensure compliance with this condition, the Permittee shall monitor the scrubbing liquid flow rate and pressure drop of the wet scrubber. The wet scrubber is not required while the boiler is firing natural gas only.

The proposed project is not expected to affect compliance with this regulation. Continued compliance with 02D .0521 is expected. No changes to this condition are needed with this permitting action.

f. 15A NCAC 02D .0524, New Source Performance Standards

Applicability of the following regulations under 40 CFR Part 60 (NSPS) has been determined for the No. 5 Power Boiler and the new heavy black liquor storage tanks:

- **40 CFR 60 Subparts BB and BBa**

  NSPS Subpart BB - applies to facilities in kraft pulp mills including digester systems, brown stock washer systems, multiple-effect evaporator systems, recovery furnaces, smelt dissolving tanks, lime kilns, and condensate stripper systems that commenced construction, reconstruction, or modification after September 24, 1976, and on or before May 23, 2013. The new heavy black liquor storage tanks do not meet the definition of any of the affected facilities under Subpart BB.

  NSPS Subpart BBa - applies to facilities in kraft pulp mills including digester systems, brown stock washer systems, multiple-effect evaporator systems, recovery furnaces, smelt dissolving tanks, lime kilns, and condensate stripper systems that commenced construction, reconstruction, or modification after May 23, 2013. The new heavy black liquor storage tanks do not meet the definition of any of the affected facilities under Subpart BBa.

- **40 CFR 60 Subparts D and Db**

  NSPS Subpart D – This subpart does not currently apply to PB5. This subpart applies to each fossil fuel-fired steam generating unit rated greater than 250 million Btu per hour heat input and each fossil fuel-fired and wood-residue-fired steam generating unit capable of firing fossil fuel at more than 250 million Btu per hour heat input. This subpart applies to affected facilities that commenced construction, reconstruction, or modification after August 17, 1971.

  Based on the permit application, the No. 5 Power Boiler was constructed in 1982 and is rated at 600 million Btu per hour but only fires up to 249 million Btu per hour of fossil fuel. Thus, the facility avoids the requirements of NSPS Subpart D. Since the facility does not currently have an enforceable

avoidance condition in the permit, a permit condition will be added with this permitting action to add an avoidance condition pursuant to 15A NCAC 02Q .0317 for NSPS Subpart D.

See Section 6.k below for a discussion of NSPS avoidance under 15A NCAC 02Q .0317.

NSPS Subpart Db – This subpart does not currently apply to PB5. This subpart applies to steam generating units with a heat input capacity greater than 100 million Btu per hour that commence construction, reconstruction, or modification after June 19, 1984. PB5 was constructed in 1982, as per the application.

As given in 40 CFR 60.14, a modification to a source subject to NSPS is defined as "any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere." NSPS Subpart Db regulates emissions of sulfur dioxide, filterable PM, and NOx. This project does not include any physical modifications or operational changes to the power boiler, and neither the capacity nor the maximum hourly emission rate of the boiler is increasing. Therefore, the project does not constitute a modification per 40 CFR 60.14 and does not trigger applicability of NSPS Subpart Db.

As given in 40 CFR 60.15, a reconstruction is defined as "the replacement of components of an existing facility to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (1) it is technologically and economically feasible to meet the applicable standards set forth in this part." This project does not include any physical modifications to the power boiler, so no construction costs for the boiler are associated with this project. Therefore, the project does not constitute a reconstruction per 40 CFR 60.15 and does not trigger applicability of NSPS Subpart Db.

- **40 CFR 60 Subparts Kb and Kc**

NSPS Subpart Kb – This subpart does not currently apply to the Black Liquor Oxidation Tanks. This subpart applies to each storage vessel with a capacity greater than or equal to 75 cubic meters that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984 and on or before October 4, 2023.

Per 40 CFR 60.111b, "process tank" means a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or byproduct storage vessel, or to a vessel used to store recovered solvent or raw material. The new Heavy Black Liquor Storage Tanks (converted from the Black Liquor Oxidation Tanks) appear to meet the definition of "process tank." Process tanks are explicitly excluded from the definition of storage tanks. Thus, the new Heavy Black Liquor Storage Tanks are not subject to NSPS Subpart Kb.

NSPS Subpart Kc – This subpart does not currently apply to the Black Liquor Oxidation Tanks. This subpart applies to each storage vessel with a capacity greater than or equal to 75 cubic meters that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after October 4, 2023.

Per 40 CFR 60.111c, "process tank" means a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or byproduct storage vessel, or to a vessel used to store recovered solvent or raw material. The new Heavy Black Liquor Storage Tanks (converted from the Black Liquor Oxidation Tanks) appear to meet the definition of "process tank." Process tanks are explicitly excluded from the

definition of storage tanks. Thus, the new Heavy Black Liquor Storage Tanks are not subject to NSPS Subpart Kc.

g. 15A NCAC 02D .0530, Prevention of Significant Deterioration

PSD applicability is discussed in Section 7 below.

h. 15A NCAC 02D .0614, Compliance Assurance Monitoring

Compliance Assurance Monitoring (CAM) applicability was addressed in the permit renewal application submitted by IPRW in 2016 (App. No. 2400036.16A) which is currently still being processed.

The new heavy black liquor storage tanks will not use a control device and will not be subject to CAM.

Outside of the equipment being shut down as part of this project, applicability of CAM is not changing with this permitting action. This project does not alter the proposed compliance demonstration submitted with the 2016 renewal application.

i. 15A NCAC 02D .1100, Control of Toxic Air Pollutants

Facility wide air toxics are discussed in Section 13 below.

j. 15A NCAC 02D .1111, Maximum Achievable Control Technology

Applicability of the following regulations under 40 CFR Part 63 (NESHAP/MACT) has been determined for the No. 5 Power Boiler and the new heavy black liquor storage tanks:

- 40 CFR 63 Subpart S – This subpart applies to the total of all HAP emission release points in the pulping and bleaching system. Both low-volume, high-concentration (LVHC) and high-volume, low-concentration (HVLC) pulping vents are required to be controlled under this rule. As an alternative to the control requirements for HVLC vents, IPRW complies with the clean condensate alternative (CCA) provisions given in 40 CFR 63.447 for the Brownstock Washing System and the Oxygen Delignification System by implementing projects that reduce HAP emissions from the facility by an amount equivalent to the reductions that would otherwise be achieved by compliance with 40 CFR 63.443.

  The CCA approach included reducing methanol emissions from the chemical recovery area and collection and treatment of additional condensates. Some of the equipment included in the CCA monitoring, recordkeeping, and reporting requirements is being shutdown with this project. Overall methanol emissions are expected to decrease. Following completion of this project, the mill will perform updated methanol analyses, demonstrate ongoing equivalency between the MACT requirements as written and the CCA approach, and propose updates to the CCA procedures in a separate permit application to be submitted in 2024.

  In addition, the Startup, Shutdown, and Malfunction (SSM) provisions of Subpart S, as promulgated on September 11, 2012, were added to the permit with this revision, and the expired 112(j) SSM conditions for Subpart S were removed.

- 40 CFR 63 Subpart MM – This subpart applies to HAP emissions from chemical recovery systems located at Kraft pulp mills. This rule regulates emissions of filterable PM for recovery furnaces, smelt dissolving tanks, and lime kilns. Facilities subject to this rule have the option of complying with either the emissions limit for each individual emission source or a "bubble limit" established by the facility for each source in the chemical recovery system. Prior to the T45 permit revision, IPRW had been complying with a bubble limit for the chemical recovery system at the mill. With the T45 revision, the bubble limits were removed from the permit. No further updates to Subpart MM applicability are needed with this permitting action.

- 40 CFR 63 Subpart ZZZZ – This subpart applies to the No. 4 Lime Kiln 377 hp diesel-fired auxiliary engine (ID No. IES-EE2) and the 290 hp diesel-fired emergency fire pump (ID No. IES-EE3). Both engines are classified as existing compression ignition (CI) emergency engines and are less than 500 hp, located at a major source of HAPs.

  Per Table 2c of 40 CFR 63 Subpart ZZZZ, Requirements for Existing Compression Ignition Stationary RICE Located at a Major Source of HAP Emissions and Existing Spark Ignition Stationary RICE ≤500 HP Located at a Major Source of HAP Emissions, each emergency stationary CI RICE must meet the following requirements, except during periods of startup:

  a. Change oil and filter every 500 hours of operation or within 1 year plus 30 days of the previous change, whichever comes first. **This requirement has been updated from "annually", which implies once per calendar year, to "within 1 year plus 30 days", which specifies a more stringent period.**

  b. Inspect air cleaner every 1,000 hours of operation or within 1 year plus 30 days of the previous inspection, whichever comes first, and replace as necessary. **This requirement has been updated from "annually", which implies once per calendar year, to "within 1 year plus 30 days", which specifies a more stringent period.**

  c. Inspect all hoses and belts every 500 hours of operation or within 1 year plus 30 days of the previous inspection, whichever comes first, and replace as necessary. **This requirement has been updated from "annually", which implies once per calendar year, to "within 1 year plus 30 days", which specifies a more stringent period.**

  During periods of startup, the Permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

  Per 63.6625(f), a non-resettable hour meter shall be installed on each existing emergency stationary RICE.

  Per 63.6640(f), each emergency stationary RICE shall be operated according to the requirements of paragraphs (1) through (3) below. In order for the engine to be considered an emergency stationary RICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (1) through (3) below, is prohibited.

  (1) There is no time limit on the use of emergency stationary RICE in emergency situations.

  (2) The emergency stationary RICE may be operated for the purpose specified in paragraph (f)(2)(i) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraphs (f)(3) and (4) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2).

  (i) Emergency stationary RICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per calendar year.

(3) Emergency stationary RICE located at major sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (f)(2) of this section. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

No performance tests are required for the existing emergency engines at IPRW, and no reporting requirements apply. The Permittee shall keep records of all maintenance conducted on the emergency engines and records of the hours of operation of each engine, recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.

Based on the most recent inspection, conducted on September 18, 2024 by Jmanda Dunston of the Wilmington Regional Office, IPRW appears to be in compliance with the requirements of this regulation.

With this permitting action, the emergency engines (ID Nos. IES-EE2 and IES-EE3) will be reclassified as insignificant activities because the actual emissions from each engine meets the definition of insignificant activities per 15A NCAC 02Q .0503(8): "Insignificant activities because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year."

The permit condition for 40 CFR 63 Subpart ZZZZ will be removed from the permit with this permitting action. However, the facility is still responsible for maintaining compliance with this regulation. Compliance is expected and will be verified during the next compliance inspection.

- 40 CFR 63 Subpart DDDDD – This subpart applies to boilers and process heaters located at major sources of HAPs. IPRW is a major source of HAPs, so the No. 2 and No. 5 power boilers are subject to this rule as existing hybrid suspension grate units designed to burn biomass as defined in 40 CFR 63.7575.

The requirements for the boilers under Subpart DDDDD are as follows:

§63.7500(a)(1): On October 6, 2022, effective December 5, 2022, EPA finalized amendments to several numeric emission limits for new and existing boilers and process heaters and set compliance dates for these new emission limits.

As per 40 CFR 63.7500(a)(1), IPRW shall meet each emission limit and work practice standard that applies in Tables 2, 3, and 15 for existing boilers. IPRW may choose to comply with the alternative limits pursuant to 63.7500(a)(1)(v) such that existing boilers may comply with either the limits in Table 2 to this subpart or the emission limits given in Table 15 to this subpart until October 6, 2025. On or after October 6, 2025, IPRW shall comply with the emission limits in Table 2 to this subpart.

Stack testing was conducted on the No. 2 and No. 5 Power Boilers in November of 2023 to verify compliance with the Subpart DDDDD emission limits. Compliance with both Table 2 and Table 15 emission limits was verified.

The following Table 6.1 shows the applicable emission limits from Table 2 and Table 15 to Subpart DDDDD:

Table 6.1: Applicable Emission Limits from Table 2 and Table 15 to Subpart DDDDD

Emission Source ID No.	Pollutant	Table 2 Emission Limit	Table 15 Emission Limit	Nov. 2023 Stack Testing Emission Rate	% of Table 2 Emission Limit	% of Table 15 Emission Limit
ES-PB2	HCl	2.0E-02 lb/MMBtu	2.2E-02 lb/MMBtu	<2.40E-04 lb/MMBtu	1.2%	1.1%
	Hg	5.4E-06 lb/MMBtu	5.7E-06 lb/MMBtu	9.69E-07 lb/MMBtu	17.9%	17%
	CO	3,500 ppmvd @ 3% O_2	3,500 ppmvd @ 3% O_2	1709.7 ppmvd*	48.8%	48.8%
	Filterable PM	4.4E-01 lb/MMBtu	4.4E-01 lb/MMBtu	0.0710 lb/MMBtu	16.1%	16.1%
ES-PB5	HCl	2.0E-02 lb/MMBtu	2.2E-02 lb/MMBtu	<2.26E-04 lb/MMBtu	1.1%	1.0%
	Hg	5.4E-06 lb/MMBtu	5.7E-06 lb/MMBtu	9.45E-07 lb/MMBtu	17.5%	16.6%
	CO	3,500 ppmvd @ 3% O_2	3,500 ppmvd @ 3% O_2	534.9 ppmvd*	15.3%	15.3%
	Filterable PM	4.4E-01 lb/MMBtu	4.4E-01 lb/MMBtu	0.028 lb/MMBtu	6.4%	6.4%

*CO ppmvd @ 3% O_2 = CO ppmvd (measured) x [(20.9 - %O_2 reference)/(20.9 – %O_2 measured)]

Table 6.1 shows that IPRW is in compliance with both Table 2 and Table 15 emission limits with a large margin of compliance.

Table 6.2 shows the applicable work practice standards from Table 3 to Subpart DDDDD and how IPRW complies with each standard.

Table 6.2: Applicable Work Practice Standards from Table 3 to Subpart DDDDD

Emission Source ID No.	If your unit is…	Work Practice Standard	Compliance Method
ES-PB2 and ES-PB5	A new or existing boiler or process heater without a continuous oxygen trim system and with heat input capacity of 10 million Btu per hour or greater	Conduct a tune-up of the boiler or process heater annually as specified in 63.7540.	Initial tune-up conducted 03/20/19, and annual tune-ups conducted, per inspection report dated 06/04/2024.
	An existing boiler or process heater located at a major source facility, not including limited use units	Conduct a one-time energy assessment performed by a qualified energy assessor.	The one-time energy assessment was conducted 03/20/19, per inspection report dated 06/04/2024.
	An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or 11 through 15 to this subpart during startup	a. Operate all CMS during startup b. For startup of a boiler or process heater, use one or a combination of the following clean fuels: natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultra-low	IPRW operates an oxygen analyzer system. No deviations with the work practice standards were reported with the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024).

		sulfur diesel, fuel oil-soaked rags, kerosene, hydrogen, paper, cardboard, refinery gas, liquified petroleum gas, clean dry biomass, and any fuels meeting the appropriate HCl, mercury, and TSM emission standards by fuel analysis. c. Comply using either of the following work practice standards: (1) Once you start firing fuels that are not clean fuels you must vent emissions to the main stack(s) and engage all of the applicable control devices except limestone injection in fluidized bed combustion (FBC) boilers, dry scrubber, fabric filter, and selective catalytic reduction (SCR). Startup ends when steam or heat is supplied for any purpose, OR (2) Once you start to feed fuels that are not clean fuels, you must vent emissions to the main stack(s) and engage all of the applicable control devices so as to comply with the emission limits within 4 hours of start of supplying useful thermal energy. You must engage and operate PM control within one hour of first feeding fuels that are not clean fuels. You must start all applicable control devices as	

		expeditiously as possible, but, in any case, when necessary to comply with other standards applicable to the source by a permit limit or a rule other than this subpart that require operation of the control devices. You must develop and implement a written startup and shutdown plan, as specified in § 63.7505(e). d. Comply with all applicable emission limits at all times except during startup and shutdown periods at which time you must meet this work practice. You must collect monitoring data during periods of startup, as specified in 63.7535(b). You must keep records during periods of startup. You must provide reports concerning activities and periods of startup, as specified in 63.7555.	
	An existing or new boiler or process heater subject to emission limits in Table 1 or 2 or Tables 11 through 15 to this subpart during shutdown	You must operate all CMS during shutdown. While firing fuels that are not clean fuels during shutdown, you must vent emissions to the main stack(s) and operate all applicable control devices, except limestone injection in FBC boilers, dry scrubber, fabric filter, and SCR but, in any case, when necessary to comply with other standards applicable to the source that require operation of the control device. If, in addition to the fuel used prior to initiation of shutdown, another fuel	IPRW operates an oxygen analyzer system. No deviations with the work practice standards were reported with the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024).

		must be used to support the shutdown process, that additional fuel must be one or a combination of the following clean fuels: Natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultra-low sulfur diesel, refinery gas, and liquefied petroleum gas. You must comply with all applicable emissions limits at all times except for startup or shutdown periods conforming with this work practice. You must collect monitoring data during periods of shutdown, as specified in § 63.7535(b). You must keep records during periods of shutdown. You must provide reports concerning activities and periods of shutdown, as specified in § 63.7555	

IPRW appears to be in compliance with all applicable work practice standards.

§63.7500(a)(2): IPRW shall meet each applicable operating limit given in Table 4 to Subpart DDDDD. Table 6.3 below shows the applicable operating limits in Table 4 to Subpart DDDDD.

Table 6.3: Applicable Operating Limits from Table 4 to Subpart DDDDD

Emission Source ID No.	When complying with a numerical emission limit using…	Meet the following operating limits…
PB2 and PB5	Wet acid gas (HCl) scrubber control on a boiler or process heater not using a HCl CPMS	Maintain the 30-day rolling average effluent pH at or above the lowest one-hour average pH and the 30-day rolling average liquid flow rate at or above the lowest one-hour average liquid flow rate measured during the performance test demonstrating compliance with the HCl emission limitation according to 63.7560(b) and Table 7 to this subpart

IPRW monitors the pH and liquid flow rate of the venturi scrubbers for PB2 and PB5 and appears to be in compliance with the requirements of this section.

§63.7500(a)(3): At all times, the boilers and associated air pollution control equipment shall be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

§63.7500(f): These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time the facility shall comply only with items 5 and 6 of Table 3 to this subpart.

§63.7505(a): The facility shall be in compliance with the emission limits, work practice standards, and operating limits in this subpart. These emission and operating limits apply at all times the affected unit is operating except for the periods noted in §63.7500(f).

§63.7505(c): The facility shall demonstrate compliance with all applicable emission limits using performance stack testing, fuel analysis, or continuous monitoring systems (CMS), including a continuous emission monitoring system (CEMS), continuous opacity monitoring system (COMS), continuous parameter monitoring system (CPMS), or particulate matter continuous parameter monitoring system (PM CPMS), where applicable. The facility may demonstrate compliance with the applicable emission limit for hydrogen chloride (HCl), mercury, or total selected metals (TSM) using fuel analysis if the emission rate calculated according to §63.7530(c) is less than the applicable emission limit. For gaseous fuels, the facility may not use fuel analyses to comply with the TSM alternative standard or the HCl standard. Otherwise, the facility shall demonstrate compliance for HCl, mercury, or TSM using performance stack testing, if subject to an applicable emission limit listed in Table 1 or 2 or Tables 11 through 15 to this subpart.

IPRW conducts annual performance testing to demonstrate compliance with the applicable emission limits. The facility also operates an oxygen analyzer system. The facility appears to be in compliance with the requirements of this section.

§63.7505(d): The facility shall develop a site-specific monitoring plan according to the requirements of §63.7505(d)(1) through (4).

IPRW has developed a site-specific monitoring plan and appears to be in compliance with the requirements of this section.

§63.7510(a): For each boiler or process heater that is required to demonstrate compliance with any of the applicable emission limits in Table 1 or 2 or Tables 11 through 15 to this subpart through performance testing, the initial compliance requirements include the following:

(1) Conduct performance tests according to 63.7520 and Table 5 to this subpart.

(2) Conduct a fuel analysis for each type of fuel burned in the boiler or process heater according to 63.7521 and Table 6 to this subpart except as specified in 63.7510(a)(2)(i) through (iii).

(3) Establish operating limits according to 63.7530 and Table 7 to this subpart.

(4) Conduct CMS performance evaluations according to 63.7525.

IPRW completed initial and subsequent performance tests and fuel analyses for the boilers as per the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024). Operating limits have been established for pH and scrubbing liquid flow rate of the venturi scrubbers associated with the No. 2 and No. 5 Power Boilers. IPRW appears to be in compliance with the requirements of this section.

§63.7510(c): For a boiler or process heater that is subject to a CO emission limit, the initial compliance demonstration for CO is to conduct a performance test for CO according to Table 5 to this subpart.

IPRW conducted an initial performance test for the No. 2 and No. 5 Power Boilers in October 2019 to determine compliance with the CO emission limit. Compliance was indicated during testing.

§63.7510(d): For a boiler or process heater that is subject to a PM emission limit, the initial compliance demonstration for PM is to conduct a performance test in accordance with §63.7520 and Table 5 to this subpart.

IPRW conducted an initial performance test for the No. 2 and No. 5 Power Boilers in October 2019 to determine compliance with the PM emission limit. Compliance was indicated during testing.

§63.7510(e): For existing affected sources, the initial compliance demonstrations must be completed no later than 180 days after the compliance date that is specified for the source in §63.7495 and according to the applicable provisions in § 63.7(a)(2) as cited in Table 10 to this subpart, except as specified in paragraph (j) of this section. The Permittee shall complete an initial tune-up by following the procedures described in § 63.7540(a)(10)(i) through (vi) no later than the compliance date specified in § 63.7495, except as specified in paragraph (j) of this section. The Permittee shall complete the one-time energy assessment specified in Table 3 to this subpart no later than the compliance date specified in § 63.7495.

IPRW conducted an initial performance test for the No. 2 and No. 5 Power Boilers in October 2019 to determine compliance with the PM emission limit. Compliance was indicated during testing. The compliance date for these sources was May 20, 2019, so the testing was conducted within 180 days of the compliance date.

The initial tune-up and one-time energy assessment were both conducted on March 20, 2019 which is no later than the compliance date of May 20, 2019.

IPRW appears to be in compliance with the requirements of this section.

§63.7515(a): The Permittee shall conduct all applicable performance tests according to §63.7520 on an annual basis, except as specified in §63.7515(b) through (e), (g), and (h). Annual performance tests shall be completed no more than 13 months after the previous performance test, except as specified in §63.7515(b) through (e), (g), and (h).

The most recent performance testing on the No. 2 and No. 5 Power Boilers was conducted in November of 2023 and demonstrated compliance with the applicable emissions limits. IPRW appears to be in compliance with the requirements of this section.

§63.7515(b): If the performance tests for a given pollutant for at least 2 consecutive years show that emissions are at or below 75 percent of the emission limit (or, in limited instances as specified in Tables 1 and 2 or 11 through 15 to this subpart, at or below the emission limit) for the pollutant, and if there are no changes in the operation of the individual

boiler or process heater or air pollution control equipment that could increase emissions, the Permittee may choose to conduct performance tests for the pollutant every third year. Each such performance test must be conducted no more than 37 months after the previous performance test.

Performance testing of the No. 2 and No. 5 Power Boilers has historically demonstrated a large margin of compliance with the applicable MACT DDDDD emissions limits, so IPRW complies with this regulation by conducting performance testing of the No. 2 and No. 5 Power Boilers once every third year. IPRW appears to be in compliance with the requirements of this section.

§63.7515(c): If a performance test shows emissions exceeded the emission limit or 75 percent of the emission limit (as specified in Tables 1 and 2 or 11 through 15 to this subpart) for a pollutant, the Permittee shall conduct annual performance tests for that pollutant until all performance tests over a consecutive 2-year period meet the required level (at or below 75 percent of the emission limit, as specified in Tables 1 and 2 or 11 through 15).

Performance testing of the No. 2 and No. 5 Power Boilers has historically demonstrated a large margin of compliance with the applicable MACT DDDDD emissions limits, so IPRW complies with this regulation by conducting performance testing of the No. 2 and No. 5 Power Boilers once every third year. If results of performance testing show emissions exceeded the emission limit or 75 percent of the emission limit, then IPRW would be required to test the No. 2 and No. 5 Power Boilers on an annual basis. IPRW appears to be in compliance with the requirements of this section.

§63.7515(d): The Permittee shall conduct an annual, biennial, or 5-year performance tune-up according to §63.7540(a)(10), (11), or (12), respectively. Each annual tune-up specified in §63.7540(a)(10) must be no more than 13 months after the previous tune-up. Each biennial tune-up specified in §63.7540(a)(11) must be conducted no more than 25 months after the previous tune-up. Each 5-year tune-up specified in §63.7540(a)(12) must be conducted no more than 61 months after the previous tune-up.

IPRW conducts annual tune-ups of the No. 2 and No. 5 Power Boilers and appears to be in compliance with the requirements of this section.

§63.7515(f): The Permittee shall report the results of performance tests and the associated fuel analyses within 60 days after the completion of the performance tests. This report must also verify that the operating limits for each boiler or process heater have not changed or provide documentation of revised operating limits established according to §63.7530 and Table 7 to this subpart, as applicable. The reports for all subsequent performance tests must include all applicable information required in §63.7550.

The most recent performance testing of the No. 2 and No. 5 Power Boilers was conducted on November 13 through 17, 2023. The results were received by DAQ on January 16, 2024. IPRW appears to be in compliance with the requirements of this section.

§63.7520: The Permittee shall conduct performance testing in accordance with the requirements of §63.7520(a) through (f), §63.7(c), (d), (f), and (h), and Table 5 of Subpart DDDDD, as applicable.

The most recent performance testing of the No. 2 and No. 5 Power Boilers was conducted in November of 2023. The testing results were reviewed and approved by the Stationary Source Compliance Branch on May 9, 2024. IPRW appears to be in compliance with the requirements of this section.

§63.7521: The Permittee shall conduct fuel analyses for solid and liquid fuels for chloride and mercury according to the procedures in §63.7521(b) through (e) and Table 6 to Subpart DDDDD.

IPRW completed initial and subsequent fuel analyses for the boilers as per the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024). IPRW appears to be in compliance with the requirements of this section.

§63.7525(a): If a boiler or process heater is subject to a CO emission limit in Table 1 or 2 or Tables 11 through 15 to this subpart, the Permittee shall install, operate, and maintain an oxygen analyzer system, as defined in §63.7575, according to the procedures in §63.7525(a)(1) through (6) of Subpart DDDDD.

IPRW operates an oxygen analyzer system and appears to be in compliance with the requirements of this section.

§63.7525(e): IPRW has an operating limit that requires the use of a flow monitoring system, so IPRW shall meet the requirements in §63.7525(d) and (e)(1) through (4) of Subpart DDDDD. IPRW appears to be in compliance with the requirements of this section.

§63.7525(g): IPRW has an operating limit that requires the use of a pH monitoring system, so IPRW shall meet the requirements in §63.7525(d) and (g)(1) through (4) of Subpart DDDDD. IPRW appears to be in compliance with the requirements of this section.

§63.7530: The Permittee shall demonstrate initial compliance with each emission limit that applies by conducting initial performance tests and fuel analyses and establishing operating limits, as applicable, according to the requirements of §63.7520, §63.7530(b) and (c), and Tables 5 and 7 to Subpart DDDDD. A Notification of Compliance Status shall be submitted containing the results of the initial compliance demonstration.

IPRW submitted the Notification of Compliance Status on December 27, 2019, amended in January 2020 to provide updated scrubber differential pressure limits for both power boilers and in June 2020 to provide updates to the compliance method for mercury for the No. 5 Power Boiler. IPRW appears to be in compliance with the requirements of this section.

§63.7535: The Permittee shall monitor and collect data according to the requirements of §63.7535(a) through (d) and the site-specific monitoring plan required by §63.7505(d).

IPRW monitors scrubbing liquid flow rate and pH of the venturi scrubbers associated with the power boilers as well as the oxygen content of the boiler flue gas using the oxygen analyzer system. IPRW appears to be in compliance with the requirements of this section.

§63.7540(a)(1): IPRW shall demonstrate continuous compliance with each emission limit in Tables 1 and 2 or 11 through 15 to this subpart, the work practice standards in Table 3 to this subpart, and the operating limits in Table 4 to this subpart that applies according to the methods specified in Table 8 to this subpart.

IPRW shall establish operating limits during performance testing demonstrating compliance with the applicable emissions limits. Operating limits must be confirmed or reestablished during performance testing.

Table 6.4 below shows the applicable continuous compliance requirements in Table 8 to Subpart DDDDD.

Table 6.4: Continuous Compliance Requirements in Table 8 to Subpart DDDDD

Emission Source ID No.	Applicable Operating Limit or Work Practice Standards	Required Continuous Compliance Demonstration
ES-PB2 and ES-PB5	Wet Scrubber Liquid Flow Rate	Collecting the liquid flow rate monitoring system data according to §63.7525 and 63.7535; and
		Reducing the data to 30-day rolling averages; and
		Maintaining the 30-day rolling liquid flow rate at or above the operating limits established during the performance test according to §63.7530(b).
	Wet Scrubber pH	Collecting the pH monitoring system data according to §63.7525 and 63.7535; and
		Reducing the data to 30-day rolling averages; and
		Maintaining the 30-day rolling average pH at or above the operating limit established during the performance test according to §63.7530(b).

IPRW has established operating limits and complies with the continuous compliance requirements listed above. IPRW appears to be in compliance with the requirements of this section.

§63.7540(a)(2): IPRW shall keep records of the type and amount of all fuels burned in each boiler. As per the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024), IPRW appears to be in compliance with the requirements of this section.

§63.7540(a)(10): For a boiler or process heater that has a heat input capacity of 10 million Btu per hour or greater, the Permittee shall conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance. As per the Annual Compliance Certification received March 4, 2024 (postmarked February 28, 2024), IPRW appears to be in compliance with the requirements of this section.

§63.7545: IPRW shall submit all applicable notifications as required by §63.7545(a) through (h), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h).

IPRW has submitted all required notifications including the Notification of Compliance Status.

§63.7550: IPRW shall submit each report in Table 9 to this subpart that applies including a semiannual compliance report containing the information required in §63.7550(c)(1) through (5), (d), and (e). IPRW shall also submit the results of each performance test within 60 days of the completion of each performance test as required by §63.7550(h).

IPRW submits semiannual compliance reports and performance test results as required, so IPRW appears to be in compliance with the requirements of this section.

§63.7555: IPRW shall keep the records required by §63.7555(a) through (h), as applicable, including but not limited to a copy of each notification and report submitted to comply with Subpart DDDDD, records of performance tests, fuel analyses, compliance demonstrations, all monitoring data and calculated averages for applicable operating limits, records of monthly fuel use, records of the date, time, and occurrence and duration of each startup and shutdown, and the amount of fuel used during each startup and shutdown.

Based on the most recent inspection on September 18, 2024, IPRW appeared to be in compliance with all recordkeeping requirements of this section.

- 40 CFR 63 Subpart GGGGG – This subpart applies to facility which conduct a site remediation, as defined in 40 CFR 63.7957. This subpart applied to the black liquor ponds which have been removed from the permit. A comment from Amy Marshall of ALL4, facility consultant, in a June 2022 mark-up permit document indicated that all black liquor has been removed from the facility's ponds more than 5 years ago. Thus, no additional permitting requirements apply, and this regulation can be removed from the permit.

k. 15A NCAC 02Q .0317, Avoidance of NSPS (40 CFR 60 Subpart D)

The facility avoids applicability of NSPS Subpart D by limiting the heat input rate of fossil fuel fired in the No. 5 Power Boiler to less than 250 MMBtu/hr. The current Permit No. 03138T46 does not include an enforceable permit condition restricting the heat input rate of fossil fuel fired in the boiler. Instead, the Section 1 equipment description of the No. 5 Power Boiler is written to restrict the heat input rate of fossil fuel fired in the boiler. However, Section 1 equipment descriptions are not enforceable permit terms. Thus, an avoidance condition is needed pursuant to 15A NCAC 02Q .0317.

NSPS Subpart D applies to fossil fuel-fired steam generating units of more than 250 million Btu per hour heat input rate. To avoid the applicability of this subpart, IPRW shall limit the heat input rate of fossil fuel fired in the No. 5 Power Boiler to less than 250 million Btu per hour.

IPRW shall monitor and record the amount of fossil fuel fired in the No. 5 Power Boiler and calculate, on a monthly basis, the heat input rate of fossil fuel fired in the No. 5 Power Boiler according to the following calculation:

$$\left[\frac{X\ Mgal\ fuel\ oil}{month} X \frac{150\ MMBtu}{Mgal} + \frac{Y\ MMSCF}{month} X \frac{1{,}020\ MMBtu}{MMSCF}\right] \div \frac{\#\ hrs}{month} =< 250\ MMBtu/hr$$

Where: X = Thousand gallons of fuel oil combusted in the preceding month.
Y = Million standard cubic feet of natural gas combusted in the preceding month.

The calculations contained in this application indicate that the heat input rate of fossil fuel fired in the No. 5 Power Boiler was approximately 99.5 MMBtu/hr, averaged over the 2-year baseline period discussed in Section 7 below.

Compliance with this regulation is expected and will be determined during the next compliance inspection.

7. PSD Applicability

IPRW is located in Columbus County, which is classified as in attainment or unclassifiable for all regulated NSR pollutants. Therefore, Nonattainment New Source Review (NAA/NSR) regulations do not apply.

Kraft paper mills are listed as one of 28 source categories for which a source emitting more than 100 tons per year (tpy) of any regulated NSR pollutant is considered a major stationary source under the Prevention of Significant Deterioration (PSD) rules. IPRW is a kraft paper mill and is a 100 ton per year existing major stationary source under PSD.

PSD Applicability

The PSD regulations are applicable to construction of any new major stationary source or an existing major stationary source undergoing a major modification. As discussed above, IPRW is classified as an existing major stationary source for PSD purposes. Preconstruction review requires an evaluation to determine if the proposed project results in a net emission increase of any regulated pollutant above its associated significant emission rate (SER) listed in 40 CFR 51.166(b)(23). Projects determined to exceed these thresholds if also result in a significant net emissions increase for any regulated NSR pollutants, then they must undergo a detailed review of control technology, ambient impacts analysis, and additional analysis to obtain a PSD permit prior to the start of construction.

Table 7.1 below was included in the application and shows the units which were identified as "affected units" for the proposed project, where affected units are units which are expected to have a change in emission rate and are included in the PSD applicability determination.

Table 7.1: Affected Units for the Mill Reconfiguration Project

Area	Source Group	Source	Modified/ Affected/Unaffected/ Shutdown	Comments
Bleach	BP	Bleach Plants Nos. 1-3	Affected	
	ClO_2 Generator	Methanol Tank	Affected	
		ClO_2 Plant (Single Vessel Process)	Affected	
Caustic	Lime Handling	Lime Bucket Elevator	Affected	
		Lime Conveyor	Affected	
		Lime Crushing	Affected	
		Lime Silos-Caustic	Affected	
		Lime Unloading-Fresh	Affected	
	Lime Mud Processing	LK4	Affected	Note - LK3 has not run since before the baseline period (December 2019 - November 2021). Startup and shutdown emissions where lime is not in the kiln are not affected by the project.
	White Liquor Processing	Causticizers	Affected	
		Slaker	Affected	
General	PM -Road Emissions	Haul Roads	Affected	
Pulp Dryers	PM18	PM18 - Pulp Dryer	Modified	Modifications to speed up the machine to reach future pulp target

	PM20 - Pulp Dryer	PM20 - Pulp Dryer	Shutdown	
Power	PB2	PB2	Affected	
	PB5	PB5	Affected	Also updating PB5 CO BACT limit for biomass
Pulp	Batch Digesters	Batch Digesters (SB+LB)	Affected	Shutdown SBD
	BSW1	BSW Decker System 5&6 (SWD)	Affected	
		BSW Drum & Press System (SWD)	Affected	
		No1&2 O2Delig Screen Systems Accepts & Rejects Tanks (SWD)	Affected	
	BSW4	BSW4 (Drum & Decker System - SWD)	Shutdown	
		Screen System Accepts&Rejects Tanks	Shutdown	
	BSWs (1&4)	BSW1&4 Knotter System (Accepts & Rejects Tanks)	Affected	BSW4 being shut down
	Kamyr Digester	Digester- Kamyr Chip Bin (on fresh steam)	Affected	
	O2-Delig	Oxygen Delignification System (SWD)	Affected	
	Pulp Storage	HD Tanks - HWD	Unaffected	emission factor is lb/hr/tank
		HD Tanks - SWD	Unaffected	emission factor is lb/hr/tank
Recovery	BL Storage	HBL Tanks	Affected	BLOx tanks 1&2 are becoming two HBL storage tanks
		WBL Tanks	Unaffected	emission factor is lb/hr/tank
	RB System	BLOx 1&2	Modified	Convert tanks to heavy black liquor storage - account for emissions at HBL Tanks group
		Saltcake MixTnk	Affected	
	RB4	RB4	Shutdown	
	RB5	RB5	Affected	
	SDT4	SDT4	Shutdown	
	SDT5	SDT5	Affected	
Wood yard	Chip Handling	Wood Cyclones	Affected	
	Chip Piles	Wood Fugitives	Affected	
	Log Debarking	Wood Debarking	Affected	
WWTP	Fugitives	WWTP	Affected	

To determine PSD applicability for the proposed project with this application, the facility used the "hybrid test for projects that involve multiple types of emissions units" as specified in 40 CFR 51.166(a)(7)(iv)(f). For

existing equipment that will remain in its current operational mode or be shutdown, IPRW used the "actual-to-projected-actual applicability test for projects that only involve existing emissions units", as specified in 40 CFR 51.166(a)(7)(iv)(c), by comparing baseline actual emissions (BAE) to the projected actual emissions (PAE) for those units. For the conversion of the black liquor oxidation (BLOX) tanks to heavy black liquor tanks, IPRW used the "actual-to-potential test" in 40 CFR 51.166(a)(7)(iv)(d) by comparing BAE for the BLOX tanks to the potential to emit of two heavy black liquor tanks.

Baseline Actual Emissions

Baseline actual emissions (BAE) are defined as "the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period within the five-year period immediately preceding the date that a complete permit application is received by the Division" as per 15A NCAC 02D .0530(b)(1)(A).

The subject application was deemed complete as of April 30, 2024. The baseline period selected for all pollutants was from December 2019 through November 2021 and is an appropriate baseline period given the date of the complete application.

The summary of baseline emissions for all regulated NSR pollutants is shown in Table 7.1 below. The 5-year production data and source-by-source calculations are included in the application. No adjustments to the baseline emissions calculations were needed pursuant to 15A NCAC 02D .0530(b)(1)(A)(ii) because no non-compliant emissions occurred while the source was operating above any emission limitation that was legally enforceable during the baseline period.

With the issuance of Permit No. 03138T43 on January 21, 2020, emission limits for CO and filterable PM under MACT Subpart DDDDD were introduced which were more stringent than the facility's case-by-case MACT emissions limits under 15A NCAC 02D .1109 (112(j)). However, no adjustments to the baseline emissions calculations were needed pursuant to 15A NCAC 02D .0530(b)(1)(A)(iii) to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply because the facility calculated baseline emissions using emission rates compliant with the current MACT Subpart DDDDD emission limits.

Projected Actual Emissions

Projected actual emissions (PAE) are defined, in part, as "the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years following the date the unit resumes regular operation after the project…" as per 40 CFR 51.166(b)(40)(i).

The projected actual emissions were calculated based on the future production goal of 1,400 tons of finished pulp per day for the equipment that will remain at the mill. For equipment that will be shutdown following the proposed project, the PAE were set to zero. PAE for the Nos. 2 and 5 Power Boilers were based on an energy balance that accommodates the future mill production goals, the amount of electricity that the mill will need, and the desire to maximize biomass firing and minimize fossil fuel firing.

The summary of projected actual emissions for all regulated NSR pollutants is shown in Table 7.1 below. The source-by-source calculations are included in the application.

Projected Emission Increases

Projected emissions increases (PEI) are calculated by subtracting the BAE from the PAE for each regulated NSR pollutant. If any projected emissions increases are above the SER for a given NSR regulated pollutant, then the project may be a major modification under PSD and must undergo a detailed review of control technology, ambient impacts analysis, and additional analysis to obtain a PSD permit prior to the start of construction. If any projected emissions increases are greater than 50% of the applicable SER, then an emissions recordkeeping and reporting condition must be added to the permit pursuant to 15A NCAC 02D .0530(u). DAQ reviewed the calculations included in the application for both BAE and PAE and finds both the

emissions estimation methods and calculations correct. Table 7.2 shows the results of the BAE to PAE applicability test.

Table 7.2: Baseline Actual to Projected Actual Emission Rates

	Emissions (tpy)											
	CO	**Pb**	**NOx**	**PM**	**PM10**	**PM2.5**	**SO2**	**H2SO4**	**H2S**	**TRS**	**VOC**	**F**
Baseline Actual Emissions	2,696	0.04	1,611	560	426	377	1,584	10.6	63	299	2,531	0.27
Projected Actual Emissions	2,111	0.07	1,534	426	333	302	980	6.94	34.2	79.5	1,402	0.06
PSD Significant Emissions Rate	100	0.60	40	25	15	10	40	7	10	10	40	3
Project Emissions Increase	-585	0.03	-77	-134	-93.9	-75	-604	-3.65	-28.8	-219.5	-1,129	-0.21
PSD Review Required?	No	No	No	No	No	No	No	No	No	No	No	No
.0530(u) Required?	No	No	No	No	No	No	No	No	No	No	No	No

The emissions shown in Table 7.2 above demonstrate that the proposed Mill Reconfiguration Project does not itself trigger PSD review, and a 02D .0530(u) emissions tracking condition is not required for emissions.

For a complete review of emissions on a source-by-source basis before and after the proposed Mill Reconfiguration Project, see Table 5.1 above.

Although the proposed project does not result in a significant emissions increase of any regulated NSR pollutant, the proposed project does include a request to revise the existing CO BACT for the No. 5 Power Boiler due to increased biomass firing. Thus, this application triggers PSD review according to EPA guidance[1]. Further, consistent with this guidance, a CO BACT analysis, an air dispersion modeling analysis, and an additional impacts analysis for CO emissions from the No. 5 Power Boiler were required and included with this application and are discussed in Section 8 below.

8. BACT Analysis

A major source review is triggered for this application due to the facility's request to revise the CO BACT limit for the No. 5 Power Boiler to address the operating scenario where biomass combustion is maximized, and fossil fuel combustion is minimized. BACT analysis will be conducted for emissions of CO from firing biomass as the primary fuel in the No. 5 Power Boiler.

Background – Establishment of Original BACT

[1] *"Request for Determination on Best Available Control Technology (BACT) Issues – Ogden Martin Tulsa Municipal Waste Incinerator Facility"*, US EPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, November 19, 1987.

The No. 5 Power Boiler was originally permitted as a multi-fuel boiler burning coal, No. 6 fuel oil, and biomass (bark and dewatered wastewater treatment plant sludge). It was intended to supply 50% of its steam from biomass and 50% from fossil fuel. The No. 5 Power Boiler is currently equipped with a multicyclone in series with a venturi scrubber.

BACT was originally established for the No. 5 Power Boiler in 1983, and emission limits for PM, SO_2, NOx, VOC, and CO were added to the permit, with separate BACT limits for firing coal, oil, and biomass. The current BACT limits are shown in Table 8.1 below.

Table 8.1: Current BACT Limits

Pollutant	Emission Limits
Particulate matter	0.16 pounds per million Btu heat input for coal 0.0562 pounds per million Btu heat input for oil 0.25 pounds per million Btu heat input for bark/wood fiber sludge
Sulfur dioxide	0.80 pounds per million Btu heat input for coal 0.80 pounds per million Btu heat input for oil 0.024 pounds per million Btu heat input for bark/wood fiber sludge
Nitrogen Oxides	0.4 pounds per million Btu heat input for coal 0.367 pounds per million Btu heat input for oil 0.35 pounds per million Btu for bark/wood fiber sludge
Carbon Monoxide	0.208 pounds per million Btu heat input for coal 0.033 pounds per million Btu heat input for oil 0.50 pounds per million Btu heat input for bark/wood fiber sludge
Volatile Organic Compounds	0.00292 pounds per million Btu heat input for coal 0.00187 pounds per million Btu heat input for oil 0.213 pounds per million Btu heat input for bark/wood fiber sludge

The original CO BACT included in the 1983 application was based on good combustion practices – use of overfired air and excess air control. The basis for the original CO BACT for bark was AP-42, Supplement 13, Section 1.6[2], which presents the CO emission factor for bark/biomass combustion of between 4-47 pounds per ton. The 1983 application established CO BACT for bark firing using the low end of the AP-42 range, 4 pounds per ton.

Based on an email from Amy Marshall of ALL4, consultant for IPRW, on May 2, 2024, it is assumed that IPRW used this low emission factor because the mill intended to co-fire fossil fuel with bark/biomass and determined lower CO emissions were achievable in this firing mode. The No. 5 Power Boiler has never been permitted as a bark/biomass-fired-only boiler, and it can be assumed that the original BACT analysis in 1983 did not anticipate the mill firing the No. 5 Power Boiler on primarily biomass. Therefore, the 0.5 pounds per million Btu CO limit for biomass is essentially a limit for co-firing biomass and fossil fuel and does not represent the performance of the No. 5 Power Boiler when most or all of its heat input comes from biomass.

Background – Furnace Design

The No. 5 Power Boiler is a stoker type boiler that has an unusual furnace geometry when compared to other biomass stoker or hybrid suspension grate boilers, in that the furnace is tall in comparison to its width and depth, so the furnace's geometry leads to high flue gas velocities and the potential for unburned fuel, which causes elevated CO emissions.

Combustion of wet biomass (bark and wastewater treatment plant sludge), rather than dry biomass (e.g., sawdust) also contributes to higher CO emissions. The difference in CO emissions from combustion of wet

[2] "*Supplement No. 13 for Compilation of Air Pollutant Emissions Factors"*, US EPA, Office of Air, Noise, and Radiation and Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, August 1982.

biomass was recognized by EPA when different limits for CO emissions from industrial boilers were established in the Boiler MACT (40 CFR 63 Subpart DDDDD) based on both their design and on the fuel that they burn. Boilers burning wet biomass have the highest CO emissions limits under the Boiler MACT as per Table 2 of 40 CFR 63 Subpart DDDDD. The CO limit under the Boiler MACT that applies to the No. 5 Power Boiler is 3,500 parts per million by volume (ppmvd) at 3% oxygen (3-run average) or 900 ppmvd at 3% oxygen (30-day average).

The boiler is equipped with an overfired air system, which was upgraded in 2003 with the goal of burning more biomass and less fossil fuel but is not able to reliably meet the current CO BACT limit when firing more than about 70% biomass by heat input. Therefore, IPRW proposes to revise the CO BACT for the No. 5 Power Boiler to reflect the unit's performance while firing primarily biomass.

BACT Approach

As per 40 CFR 51.166(b)(12), best available control technology (BACT) means:

"an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Part 60, 61, or 63. If the reviewing authority determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."

The EPA developed guidance, commonly referred to as "Top-Down" BACT[3], for PSD applicants for determining BACT. This guidance is a non-binding reference material for permitting agencies, which process PSD applications pursuant to their SIP-approved regulations. NCDAQ issues PSD permits in accordance with its SIP-approved regulations in 15A NCAC .02D .0530 and .0544. Therefore, the DAQ does not strictly adhere to EPA's "top-down" guidance. Rather, it implements BACT in accordance with the statutory and regulatory language. As such, NCDAQ's BACT conclusions may differ from those of the EPA.

With this application, IPRW has opted to use a stepwise approach consistent with "top-down" guidance as described in the Draft New Source Review Workshop Manual[4]. This process begins with the identification of the alternative control technologies available for the source category based upon a review of:

- Those technologies required by previous BACT determinations made by the EPA or state agencies; and
- Those technologies applied in practice to the same category or a similar source category by means of technology transfer.

The available control technologies are then evaluated to determine whether they are technically feasible for the given application. Those control technologies found to be technically infeasible are eliminated from further

[3] *"Improving New Source Review (NSR) Implementation"*, J. Craig Potter, Assistant Administrator for Air and Radiation US EPA, Washington D.C., December 1, 1987, and *"Transmittal of Background Statement on "Top-Down" Best Available Control Technology"*, John Calcagni, Director, Air Quality Management Division, US EPA, OAQPS, RTP, NC, June 13, 1989.

[4] *"New Source Review Workshop Manual – Prevention of Significant Deterioration and Nonattainment Area Permitting"*, US EPA, Office of Air Quality Planning and Standards, October 1990.

consideration. Next, the technically feasible control technologies are evaluated on the basis of the associated economic, energy, and environmental impacts. If an alternative technology, starting with the highest performance level, is eliminated based on any of these criteria, the control technology with the next highest performance level is evaluated until a control technology qualifies as BACT.

BACT Analysis for CO

CO emissions from boilers result from incomplete combustion of the fuel. Therefore, the typical CO emissions reduction strategy is to optimize combustion conditions within the boiler to promote more complete combustion of the carbon in the fuels to carbon dioxide (CO_2) rather than CO and VOC.

Good Combustion Practices

"Good combustion practices" (GCP) are most commonly understood to encompass a wide range of design, equipment, management, maintenance, training, work practice, and operational standards (in addition to actual combustion techniques) that have the intended, reliable, and reproducible effect of minimizing pollutant formation in the first place. For example, in the case of CO emissions, GCP can include standard boiler operating procedures designed to optimize combustion conditions (time, temperature, turbulence) to achieve maximum carbon burnout.

Oxidation Catalyst

Oxidation catalyst was identified in the application as a CO emissions reduction technology that has been used by other industries on certain types of combustion sources to control emissions of CO. Oxidation catalyst technology completes the final oxidation step to form CO_2 over a precious metal catalyst bed. Platinum group metal catalysts are the current standard typically utilizing platinum, palladium, and/or rhodium. Most systems employ a monolith honeycomb substrate coated with the metal compounds with many small parallel channels, offering a high catalytic contact area to the exhaust gases. The "light-off" temperature of an oxidation catalyst system is considered one of the most important catalyst performance parameters and can range from 600 to 1,200°F depending on the configuration. Generally speaking, the higher the temperature, the higher the conversion rate. Oxidation catalysts are typically installed directly into the exhaust stream where the optimal temperature zone exists. As with any catalyst system, poisoning of the catalyst bed over time via exhaust stream pollutants can be a limiting factor in successfully applying this technology.

Feasibility of Available CO Control Technologies

Catalytic oxidizers are very sensitive to particle contamination and can normally only be used on very "clean" exhaust streams containing little or no particulate. The ash from the biomass combusted in the No. 5 Power Boiler would be expected to carry over to a catalyst placed in the optimal temperature zone and cause plugging and fouling (bark ash is very alkaline). The oxidation catalyst cannot be installed after the boiler's existing wet scrubber because the exhaust gas moisture would be too high, and the temperature would be too low for the catalyst to work properly. Using a duct burner to reheat the exhaust gas to achieve the proper temperature would use a significant amount of energy, run counter to the Mill's goal to use less natural gas and would increase emissions and fuel cost. Therefore, an oxidation catalyst is deemed to be a technically infeasible control option for CO emissions from No. 5 Power Boiler.

The Riegelwood Mill already uses GCP and an overfired air system to minimize emissions of CO from the No. 5 Power Boiler. Given its geometry and design, combustion conditions in the No. 5 Power Boiler have been optimized as much as possible, according to the application.

Redesigning the boiler (e.g., modification of the furnace to increase its size or conversion of the boiler to a fluidized bed unit) is not required to be considered as part of a BACT analysis based on EPA guidance[56] as "EPA does not consider the BACT requirement as a means to redefine the basic design of the source or change the fundamental scope of the project when considering available control alternatives."

Biomass boilers at forest products facilities fire the biomass residuals from mill processes as a readily available and relatively inexpensive source of fuel. Requiring continued co-firing of fossil fuel to meet the existing CO limit runs counter to the Project's goals of reducing fossil fuel use and optimizing fuel costs. The fuel cost savings for optimizing biomass firing in No. 5 Power Boiler is estimated to be up to $2 million per year, depending on operating conditions.

Energy, Environmental, and Economic Impacts

Considering the two options given above, good combustion practices and catalyst oxidation, the only feasible technique for controlling CO emissions from the No. 5 Power Boiler at the mill is good combustion practices, so energy, environmental, and economic impacts need not be considered.

Applicant Proposed BACT

Results of the applicant's BACT analysis indicate that the use of GCP and overfired air are feasible and demonstrated control methods for establishing BACT for emissions of CO from the No. 5 Power Boiler. Based on data obtained during required Boiler MACT CO testing, the boiler is unable to meet the current CO BACT limit of 0.50 pounds per million Btu when firing primarily biomass because of the high furnace shaft velocities and carryover of unburned fuel, even when using GCP and overfired air.

Thus, the applicant proposed the revised CO BACT for the No. 5 Power Boiler of 0.714 pounds per million Btu (24-hour average) when greater than or equal to 50% of the heat input is derived from biomass, based on the 30-day average emissions limit for both new and existing biomass hybrid suspension grate boilers given in 40 CFR 63 Subpart DDDDD (i.e. 900 ppmvd CO at 3% oxygen). To convert the MACT Subpart DDDDD CO emission limit from ppmvd to pounds per million Btu, Equation 19-1 from EPA Method 19 can be utilized:

$$E = C_d F_d \frac{20.9}{(20.9 - \%O_{2d})}$$

where: E = pollutant emission rate (lb/million Btu)
C_d = Pollutant concentration, dry basis (lb/scf)
F_d = Volume of combustion components per unit of heat content (scf/million Btu)
$\%O_{2d}$ = Concentration of oxygen on a dry basis (percent)

Tables 19-1 and 19-2 of EPA Method 19 provide factors and methodologies which can be used to calculate C_d and F_d.

The mill proposes to maintain the current 0.5 pounds per million Btu CO limit when biomass is being co-fired with fossil fuel and biomass makes up less than 50% of the heat input.

The applicant also proposes to remove coal from the list of fuels authorized to be fired in the No. 5 Power Boiler and from the BACT condition. The current CO BACT for firing No. 6 fuel oil will remain in the permit as well as the restriction on fossil fuel firing of 249 million Btu per hour.

BACT Determination

[5] *"Best Available Control Technology Requirements for Proposed Coal-Fired Power Plant Projects"*, US EPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, December 13, 2005.
[6] *"PSD and Title V Permitting Guidance for Greenhouse Gases"*, US EPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, March 2011.

For determining the appropriate BACT for the No. 5 Power Boiler, the DAQ first reviewed the RBLC data for the period from January 2004 through May 30, 2024, which indicates that that there are numerous BACT determinations for wood-fired boilers. These determinations are for a wide variety of boiler and industry types. It appears that there are ten determinations for wood waste/biomass/bark-fired, stoker type boilers used to generate steam for the forest products industry and are applicable to the No. 5 Power Boiler. They are summarized below in Table 8.2. The entire RBLC search is also included in Attachment 1 below.

Of the ten BACT determinations listed below, the RBLC data indicates that eight out of ten are based on GCP and overfired air. For one BACT determination, Verso Bucksport, LLC, the basis is not available in the RBLC database. This permit (Permit No. A-22-77-4-A) was issued through the Maine Department of Environmental Protection on November 29, 2010. The statement of basis indicates that oxidation catalyst and thermal oxidation are not feasible control technologies for control of carbon monoxide, so BACT was determined to be good combustion practices.

For the other determination, Sun Bio Material Company, the BACT for the power boiler is based on use of oxidation catalyst for CO control. Upon review of the Sun Bio Material Company air quality permit[7], the BACT determination was made in 2019 for a new major stationary source, including a 1,200 million Btu per hour wood-fired, bubbling fluidized bed power boiler. The design of the Sun Bio boiler is not comparable to the design of the IPRW No. 5 Power Boiler since the IPRW No. 5 Power Boiler is a stoker type boiler. Additionally, the Sun Bio boiler has not yet been built[8], so the feasibility of the proposed control technology has not yet been demonstrated. Thus, the Sun Bio Materials Company BACT determination can be disregarded from further consideration.

Thus, the BACT determined by various state/local agencies for the stoker biomass/wood waste/bark-fired boilers for the remaining nine determinations range between 0.23 lb/million Btu and 0.624 lb/million Btu with averaging periods ranging between 3-hours to 30-days, using good combustion control practices and/or over-fire air as control methods.

[7] Permit No. 2384-AOP-R0, Arkansas Department of Environmental Quality, Office of Air Quality, September 23, 2019

[8] Letter to Arkansas Governor Hutchinson, Shandong Sun Paper Co., Ltd., March 15, 2020

Table 8.1: Recent CO BACT Determinations for Wood-fired, Stoker Boilers for the Forest Products Industry

RBLCID	Facility Name	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Unit	Control Method	Emission Limit	Unit	Averaging Time	Case-by-Case	Compliance Verified?	BACT in lb/mmBtu
AR-0161	Sun Bio Material Company	9/23/2019	Power Boiler	Biomass	1200	mmBtu /hr	Oxidation Catalyst	0.075	lb/mm Btu	24-Hour	BACT-PSD	U	0.075
CA-1225	Sierra Pacific Industries -Anderson Division	4/25/2014	Stoker Boiler (Normal Operation)	Biomass	468	mmBtu /hr	Good combustion practices	0.23	lb/mm Btu	3-Hour Block Average	BACT-PSD	U	0.23
CA-1225	Sierra Pacific Industries -Anderson Division	4/25/2014	Stoker Boiler (Startup and Shutdown Periods)	Biomass	468	mmBtu /hr	Good combustion practices	108	lb/hr	8-Hr Avg. (Startup Periods)	BACT-PSD	U	0.231
LA-0178	Deridder Paper Mill	11/14/2003	Wood-fired Boiler	Bark	454.29	mmBtu /hr	Good Equipment Design and Proper Combustion Techniques	149.92	lb/hr	Hourly Maximum	BACT-PSD	U	0.330
LA-0188	Bogalusa Mill	11/23/2004	No. 12 Hogged Fuel Boiler	Bark	787.5	mmBtu /hr	Existing Overfire Air System and Good Combustion Practices	491.45	lb/hr	Hourly Maximum	BACT-PSD	U	0.624
ME-0021	S.D. Warren Co. - Skowhegan, ME	11/27/2001	Boiler, #2	Wood Waste	1300	mmBtu /hr	Good Boiler Design and Combustion Practices	520	lb/hr		BACT-PSD		0.400
ME-0037	Verso Bucksport LLC	11/29/2010	Biomass Boiler 8	Biomass	814	mmBtu /hr	Not Available	0.3	lb/mm Btu	30-Day Rolling	BACT-PSD	U	0.300
WA-0298	Aberdeen Division	10/17/2002	Hog Fuel Boiler	Waste Wood	310	mmBtu /hr	Good Combustion	0.35	lb/mm Btu		BACT-PSD		0.350
WA-0335	Simpson Tacoma Kraft Company, LLC	5/22/2007	Utility and Large Industrial Sized Boilers/Furnaces	Wood Waste	595	mmBtu /hr	Overfire Air System Installed in 2006 to Improve	0.35	lb/mm Btu	30-Day Rolling	BACT-PSD	U	0.350

							Combustion Conditions						
WA-0337	Boise White Paper LLC	2/1/2006	Utility and Large Industrial Sized Boilers/Furnaces	Wood/Bark	343	mmBtu /hr	Overfire Air System Added to Improve the Boiler's Combustion System. Boiler has an ESP.	500	ppmv d	12-Month Rolling Average	Other Case-by-Case	U	N/A

Based on the information presented above in Table 8.1 and the applicant's justifications on its proposed BACT, and the RBLC summary included in Appendix A below, DAQ agrees that no add-on control method has been prescribed for establishing BACT by various state/local permitting agencies to reduce CO emissions from wood-fired stoker type boilers located at forest products industries. Thus, good combustion practices, good equipment design, and overfired air systems are the only technically feasible and available options for controlling CO emissions from such sources.

The DAQ believes that the applicant-proposed BACT of 0.714 pounds per million Btu is similar to the BACT determinations discussed above for the wood-fired stoker type boilers. It should be noted that this emission rate is based upon the applicable standard for CO specified in 40 CFR 63 Subpart DDDDD (§112 standard) for existing biomass hybrid suspension grate boilers.

With regard to variability in emissions (e.g., approved BACT of 0.23 lb/million Btu to 0.624 lb/million Btu from RBLC summary), the EPA's Environmental Appeals Board (EAB) has recognized that it would be erroneous to set a BACT without determining that "the proposed facility can demonstrate compliance with [the limit] under all operational circumstances".[9] Moreover, this Board has stated that the BACT needs to be established by incorporating "sufficient margin over actual operational data to avoid continual compliance difficulties".[10] Finally, the EAB "has recognized that permitting agencies have the discretion to set BACT limits at levels that do not necessarily reflect the highest possible control efficiencies but, rather, will allow permittees to achieve compliance on a consistent basis."[11] Moreover, with respect to "achievable" criterion in both statutory and regulatory BACT definition, the court had said that "where a statute requires that a standard be "achievable," it must be achievable "under most adverse circumstances which can reasonably be expected to recur.""[12]

Accordingly, it is reasonable to propose a higher CO BACT for the PB5 boiler than the above BACT determinations (i.e., 0.23 lb/million Btu to 0.624 lb/million Btu) providing a small safety factor due to the furnace design (geometry) and the use of wet biomass fuel. Moreover, as discussed above, redesigning the boiler is not required to be considered for a BACT analysis.

Thus, after careful consideration, the DAQ proposes the CO BACT of 0.714 pounds per million Btu as a 24-hour average, based upon use of existing good combustion practices and overfired air system. This proposed BACT is at least as stringent as the applicable NESHAP standard for the PB5. Furthermore, the proposed BACT is more stringent than the applicable NESHAP due to the more restrictive averaging period of 24 hours. The BACT applies during all periods of operations (normal, start-ups, shutdowns, and malfunctions). The mill will be required to conduct initial emissions testing of the No. 5 Power Boiler within 180 days from the issuance of Permit No. 03138T47 to confirm the newly developed BACT and subsequent testing once every five years to demonstrate compliance with the emission limit, as it is currently required to. The mill will also be required to keep records of the amount of heat input to the boiler coming from biomass. Additionally, the mill will be required to submit a semiannual report summarizing the monitoring and recordkeeping activities for the No. 5 Power Boiler.

In summary, the above proposed CO BACT is both practically and legally enforceable, and meets the requirements in setting BACT; thus, it complies with the requirements of both the statutory (CAA §169(3)) and regulatory provisions (40 CFR §51.166(b)(12)).

9. Air Quality Analysis

§51.166(m)(1) requires that the major source or major modification application for a PSD permit include an analysis of the existing ambient air quality of the area where the source is located for any regulated NSR

[9] *In Re Three Mountain Power LLC*, 10 E.A.D. 53 (EAB 2001).
[10] Page 53, Id. at 14.
[11] *In Re. Masonite Corp.*, 5 E.A.D. 551, 560-561 (EAB 1994), *In Re Knauf Fiber Glass GmbH*, 9 E.A.D. 1,15 (EAB 2000).
[12] *Sierra Club v. EPA*, No. 97-1686, US Court of Appeals for the D.C. Circuit, Decided March 2, 1999 (citing *National Lime Association v. EPA*, No. 78-1385, Decided May 19, 1980, 627 F.2d 416).

pollutant exceeding the major source threshold or significant net emissions increase, respectively. This analysis is called "pre-application analysis" (generally called the "pre-construction monitoring" requirement). For pollutants with associated NAAQSs, the application must include 1 year of continuous monitoring data from the date of the receipt of the complete application. The permitting agency may accept ambient monitoring data for a shorter duration, but data cannot be for less than 4 months. For pollutants for which no NAAQS(s) exist, the permitting authority can require an analysis containing such data as it determines appropriate for assessing the ambient air quality in the area in which the source is located.

§51.166(m)(2) includes that the owner or operator of a major source or major modification, shall, after construction of such modification, conduct such ambient monitoring as the permitting authority determines to be necessary for determining the effect of emissions from the stationary source or modification may have, or are having, on air quality in any area. This monitoring is called "post-construction monitoring".

However, §51.166(i)(5) includes that permitting authority may exempt a proposed major stationary source or major modification from the requirements of §51.166(m), with regard to both "preconstruction monitoring" and "post-construction monitoring" for a specific pollutant, if the emissions increase of the pollutant from a new stationary source or the net emissions increase of the pollutant from a modification would cause, in any area, air quality impacts less than the following amounts:

Carbon monoxide - 575 ug/m^3, 8-hour average;
Nitrogen dioxide - 14 ug/m^3, annual average;
$PM_{2.5}$ - 0 µg/m^3, 24-hour average;
PM_{10} -10 µg/m^3, 24-hour average;
Sulfur dioxide - 13 ug/m^3, 24-hour average;
Lead - 0.1 µg/m^3, 3-month average.
Fluorides - 0.25 µg/m^3, 24-hour average;
Total reduced sulfur - 10 µg/m^3, 1-hour average
Hydrogen sulfide - 0.2 µg/m^3, 1-hour average; and
Reduced sulfur compounds - 10 µg/m^3, 1-hour average

The above concentrations are called "significant monitoring concentrations (SMC)".

In addition, for ozone, no *de minimis* air quality level (i.e., SMC) has been provided. As per EPA, any net emissions increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data.

The same provision includes some more exemptions from this air quality analysis requirement (both "preconstruction monitoring" and "post-construction monitoring") for the source (i.e., applicant) as follows: (i) If any regulated NSR pollutant is not listed with the associated impact level (i.e., SMC), or (ii) the concentrations of the pollutant in the area that the major modification would affect is less than the associated SMC.

As stated above, this major modification review is conducted for only CO. Because the project impact (See Table 10.1 below) is less than the applicable Significant Monitoring Concentration (SMC), the applicant is exempt from the requirements of 40 CFR 51.166(m).

10. Source Impact Analysis

The following information is taken from the modeling review memo completed on June 25, 2024 by the Air Quality Analysis Branch of NCDAQ.

Introduction

The PSD modeling analysis described in this section was conducted in accordance with current NCDAQ and USEPA PSD directives and modeling guidance. A summary of the modeling results is presented in the last

topic, PSD Air Quality Modeling Results Summary. A detailed description of the modeling and modeling methodology is described below.

Preliminary Impact Air Quality Modeling Analysis

An air quality preliminary impact analysis was conducted for CO. The modeling results were then compared to applicable Significant Impact Levels (SILs) to determine if a full impact air quality analysis would be required for that pollutant.

Class II Area Modeling Results for CO

Table 10.1 below shows the modeled project impacts for the Class II Area SILs for CO for both averaging periods. As shown, all modeled impacts from each operating scenario were below all applicable Class II Area SILs. Therefore, project emission impacts are not expected to cause or contribute to a violation of NAAQS, and thus, no full impact analysis was required. Table 10.2 shows the modeled source stack parameters.

Table 10.1: Class II Significant Impact Results (µg/m^3)

Pollutant	Averaging Period	Facility Maximum Impact	Class II Significant Impact Level	Project Impact ≥ SIL	% of SIL
CO	1-hour	130.40	2,000	No	7
	8-hour	77.21	500	No	15

Table 10.2: Modeled Source Stack Parameters

Source ID	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temp.	Exit Velocity	Stack Diameter	CO
	(m)	(m)	(m)	(ft)	(°F)	(fps)	(ft)	(lb/hr)
PB5	756291.1	3804778	15	250	150	41	10	331

11. Additional Impact Analysis

An additional impacts analysis, in accordance with the Federal New Source Review Workshop Manual, Chapter D (U.S. EPA, 1990) and with the requirements under §51.166(o), was conducted to assess the impact from growth, on soils and vegetation, and visibility from project emissions increases of CO.

Growth Impact

The number of employees is expected to decrease due to the shutdown of equipment and will not result in a quantifiable increase in emissions from residential, commercial, or industrial growth. Housing availability will not be impacted, and additional construction associated with the project will not be performed. Mobile emissions associated with the project are expected to decrease due to fewer employees commuting to the mill.

Soils and Vegetation

To evaluate potential impacts on soils and sensitive vegetation, IPRW compared maximum model-predicted concentrations to screening concentrations provided in U.S. EPA's *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* document[13], as shown in Table 11.1 below.

[13] *"A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals"*, A.E. Smith and J.B. Levenson, Argonne National Laboratory prepared for U.S. EPA, Argonne, IL, December 12, 1980

Table 11.1: Soil and Vegetation Concentrations

Pollutant	Screening Level (µg/m^3)	Averaging Period	1-hour Maximum Modeled Concentration (µg/m^3)	Secondary NAAQS (µg/m^3)	Modeled Concentration Below Screening Threshold?
CO	1,800,000	Weekly	130.40	None	Yes

The maximum 1-hour model-predicted concentration was compared to the weekly CO screening level as a surrogate for weekly concentration for the soils and vegetation impacts evaluation and was below the screening level threshold.

Class II Visibility Impairment Analysis

CO is not a pollutant that impacts the light scattering and absorption properties at visual wavelengths; therefore, CO does not influence the visual impacts from a plume. As such, a visibility impairment analysis was not conducted for this project.

12. Class I Increment/Air Quality Related Values (AQRV) Regional Haze Impact and Deposition Analyses

Under the PSD program, Class I areas are protected more stringently than other areas under the NAAQS. Class I areas include national parks, wilderness areas, and other areas of special national and cultural significance. There are eight Class I areas located within 300 kilometers of North Carolina. Two of the eight Class I areas are located within 300 kilometers of the mill. The two Class I areas, and the approximate distance from the mill, are Cape Romain National Wildlife Refuge, South Carolina (175 km), and Swanquarter National Wildlife Refuge, North Carolina (198 km). Because project emissions increases do not exceed any SERs, a Class I impact analysis was not performed.

DAQ emailed the appropriate Federal Land Manager (FLM) after the pre-application meeting. Because the FLM did not respond at all on whether they are concerned with regard to the proposed project emissions in a Class I Area, there was no need for a Class I Air Quality Related Value (AQRV) air quality analysis to assess visibility and deposition.

13. Facility Wide Air Toxics

The project will result in changes to the maximum hourly, daily, or annual emissions of several TAPs. Overall, TAP emissions are generally expected to decrease with this project.

Certain TAP emissions from the mill exceed the 15A NCAC 02Q .0711 emissions rates requiring a permit. Therefore, a facility-wide air toxics modeling analysis was conducted for all TAPs at the mill that exceed the respective toxic pollutant emissions rates (TPERs).

The following TPERs were exceeded:

- Acetaldehyde
- Acrolein
- Ammonia
- Arsenic
- Benzene
- Beryllium
- 1,3-Butadiene
- Cadmium
- Carbon Disulfide
- Carbon Tetrachloride

- Chlorine
- Chloroform
- Chromium VI
- Cresol
- Ethylene Dichloride
- Formaldehyde
- n-Hexane
- Hydrogen Chloride
- Hydrogen Fluoride
- Hydrogen Sulfide
- Manganese
- Mercury
- Methyl Mercaptan
- Methylene Chloride
- Nickel
- Phenol
- Sulfuric Acid
- Vinyl Chloride

A modeling analysis was conducted for each of the abovementioned toxic air pollutants to determine compliance with the applicable Acceptable Ambient Level (AAL) listed in 15A NCAC 02D .1104. This analysis includes toxic emissions from sources exempt from toxics permitting via 15A NCAC 02Q .0702.

The Air Quality Analysis Branch (AQAB) reviewed and approved the modeling analysis on June 25, 2024. A revised memo was issued on December 13, 2024 based on comments from the facility.

In addition to potential TAP emission rates, optimized emission rates that resulted in air concentrations of 98 percent of the AAL were also modeled. The modeling establishes maximum-allowable emission limits for each TAP on a source-by-source basis. Tables 13.1 and 13.2 below shows the maximum modeled impacts from potential emissions from IPRW.

Table 13.1: Maximum Modeled Impacts from Potential Emissions

Pollutant	Averaging Period	Max. Conc.* (µg/m^3)	AAL (µg/m^3)	% of AAL
Acetaldehyde	1-hour	108.51	27,000	<1
Acrolein	1-hour	3.78	80	5
Ammonia	1-hour	423.24	2,700	16
Arsenic	Annual	1.27E-4	2.1E-3	6
Benzene	Annual	0.02	0.12	14
Beryllium	Annual	2.92E-6	4.1E-3	<1
1,3-Butadiene	Annual	5.06E-3	0.44	1
Cadmium	Annual	5.66E-5	5.5E-3	1
Carbon Disulfide	24-hour	2.49	186	1
Carbon Tetrachloride	Annual	1.57	6.7	23
Chlorine	1-hour	66.52	900	34
	24-hour	12.85	37.5	7
Chloroform	Annual	0.19	4.3	4
Cresol	1-hour	97	2,200	4
Chromium VI	24-hour	2.5E-4	0.62	<1
Ethylene Dibromide	Annual	8.73E-4	0.4	<1
Formaldehyde	1-hour	6.37	150	4

Pollutant	Averaging Period	Max. Conc.* (µg/m^3)	AAL (µg/m^3)	% of AAL
n-Hexane	24-hour	1.5	1,100	<1
Hydrogen Chloride	1-hour	5.36	700	1
Hydrogen Fluoride	1-hour	0.01	250	<1
	24-hour	2.65E-3	30	<1
Hydrogen Sulfide	24-hour	4.74	120	4
Manganese	24-hour	0.02	31	<1
Mercury	24-hour	8.2E-4	0.6	<1
Methyl Mercaptan	1-hour	26.85	50	54
Methylene Chloride	1-hour	3.08	1,700	<1
	Annual	0.07	24	<1
Nickel	24-hour	0.01	6	<1
Phenol	1-hour	39.11	950	4
Sulfuric Acid	1-hour	94.62	100	95
	24-hour	7.75	12	65
Vinyl Chloride	Annual	0.01	0.38	3

*****Errors in Tables C-58 & C-59 of the application. Max. concentration should be µg/m^3

Table 13.2 Maximum Modeled Impacts from Optimized Emissions

Pollutant	Averaging Period	Max. Conc.* (µg/m^3)	AAL (µg/m^3)	% of AAL
Acetaldehyde	1-hour	27,456.36	27,000	98
Acrolein	1-hour	78.41	80	98
Ammonia	1-hour	2,645.26	2,700	98
Arsenic	Annual	2.06E-3	2.1E-3	98
Benzene	Annual	0.12	0.12	98
Beryllium	Annual	4.02E-3	4.1E-3	98
1,3-Butadiene	Annual	0.43	0.44	98
Cadmium	Annual	5.39E-3	5.5E-3	98
Carbon Disulfide	24-hour	182.29	186	98
Carbon Tetrachloride	Annual	6.56	6.7	98
Chlorine	1-hour	882.07	900	98
	24-hour	36.75	37.5	98
Chloroform	Annual	4.21	4.3	98
Cresol	1-hour	2,156.38	2,200	98
Chromium VI	24-hour	0.60	0.62	98
Ethylene Dibromide	Annual	3.72	0.4	98
Formaldehyde	1-hour	147.01	150	98
n-Hexane	24-hour	1,077.89	1,100	98
Hydrogen Chloride	1-hour	685.76	700	98
Hydrogen Fluoride	1-hour	245.02	250	98
	24-hour	29.35	30	98
Hydrogen Sulfide	24-hour	117.58	120	98
Manganese	24-hour	30.39	31	98
Mercury	24-hour	0.59	0.6	98
Methyl Mercaptan	1-hour	49.	50	98
Methylene Chloride	1-hour	1,665.90	1,700	98
	Annual	23.52	24	98

Pollutant	Averaging Period	Max. Conc.* (µg/m^3)	AAL (µg/m^3)	% of AAL
Nickel	24-hour	5.88	6	98
Phenol	1-hour	930.90	950	98
Sulfuric Acid	1-hour	97.99	100	98
	24-hour	11.76	12	98
Vinyl Chloride	Annual	0.3724	0.38	98

*****Errors in Tables C-58 & C-59 of the application. Max. concentration should be µg/m^3

With this permit revision, the source-by-source emission limits for non-exempt sources of toxic air pollutants will be updated in the permit. Tables 13.3 and 13.4 show the modeled emission rates for potential and optimized emission rates, respectively. Detailed emissions calculations can be found in the application and in the emissions spreadsheet. The emissions calculations were reviewed and appeared to be correct.

Table 13.3: Toxics Potential Emission Rates

Source ID	Acetaldehyde	Acrolein	Ammonia	Arsenic	Benzene	Beryllium	Butadiene	Cadmium	Carbon Disulfide	Carbon Tetrachloride
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2	6.72E-02	7.78E-02		6.23E-03	1.05E-01	2.93E-05		1.36E-03		
PB5	9.48E-02	1.10E-01		8.79E-03	1.48E-01	6.90E-05		1.92E-03		
RB5	6.17E-01	5.17E-04		6.06E-04	6.88E-02	9.26E-05		1.05E-03	7.78E-02	6.71E-03
ST5A			6.46E+00	3.31E-05		9.32E-06		5.20E-05		
ST5B			6.46E+00	3.31E-05		9.32E-06		5.20E-05		
LK4	2.61E-01	2.32E-02		1.59E-04	3.52E-02	1.90E-05		3.82E-04	2.59E-02	0.00E+00
BP123	9.79E-02	1.69E-03			2.38E-03					2.95E-04
NBSW1	3.32E-01				3.29E-03		6.09E-04		1.44E-02	
PACKBOIL	3.86E-02			3.97E-05	4.12E-04	4.19E-06		8.26E-05		
FIREPUMP	1.56E-03	1.88E-04			2.16E-05		9.06E-07			
LK4AUX	2.02E-03	2.44E-04			1.41E-04		5.89E-06			
O2	1.92E+00	7.57E-03			4.17E-03		5.61E-04		2.76E-03	2.21E-02
FIBER	6.32E-01	1.78E-02			2.97E-03		3.90E-04		1.90E-02	1.83E+00
CAUST			1.59E+01							
SVP	1.16E-02	0.00E+00								
WBLTK1	4.41E-04	2.54E-03			3.22E-04		4.62E-04		4.48E-02	2.81E-03
WBLTK2	4.41E-04	2.54E-03			3.22E-04		4.62E-04		4.48E-02	2.81E-03
BIGMWBL	4.41E-04	2.54E-03			3.22E-04		4.62E-04		4.48E-02	2.81E-03
HBLTK1	2.02E-02	1.78E-05			1.36E-05				1.99E-03	
HBLTK2	2.02E-02	1.78E-05			1.36E-05				1.99E-03	
PM18	2.36E-01	1.19E-01			2.32E-02					
WWTP	6.40E-01		5.71E-02							

Source ID	Chlorine Short Term	Chlorine Long Term	Chloroform	Chromium	Cresol	Ethylene Dichloride	Formaldehyde	N-hexane	Hydrogen Chloride	Hyd. Fluor. Short Term	Hyd. Fluor. Long Term
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2			8.54E-03	9.98E-05		1.24E-02	1.74E-01	7.04E-01	1.02E-01	1.08E-02	1.08E-02
PB5			1.21E-02	4.12E-04		1.75E-02	2.46E-01	9.94E-01	2.91E-01	1.52E-02	1.52E-02

RB5			1.34E-03	2.00E-03		3.83E-05	1.11E+00	4.23E-01	9.24E+00	1.96E-02	1.96E-02
ST5A				1.22E-04							
ST5B				1.22E-04							
LK4			3.69E-03	6.24E-04			1.68E-01	3.53E-01	3.14E-01	2.97E-02	2.97E-02
BP123	7.98E-01	8.01E-01	2.92E-01				2.99E-02	1.37E-03	9.21E-01		
NBSW1			2.39E-02		1.41E+00	3.66E-04	1.13E-02	7.31E-03			
PACKBOIL				1.03E-05			5.80E-02	3.32E-01			
FIREPUMP							2.40E-03				
LK4AUX							3.11E-03				
O2			3.72E-02		4.83E-01	4.51E-04	6.52E-02	3.13E-03			
FIBER			3.41E-02		1.17E+00	1.66E-04	6.95E-02	4.45E-03			
CAUST			0.00E+00								
SVP	2.50E+00	2.50E+00	2.42E-02								
WBLTK1			7.26E-06				1.05E-03	1.21E-04			
WBLTK2			7.26E-06				1.05E-03	1.21E-04			
BIGMWBL			7.26E-06				1.05E-03	1.21E-04			
HBLTK1			5.39E-05				5.23E-04	3.05E-05			
HBLTK2			5.39E-05				5.23E-04	3.05E-05			
PM18			1.18E-02				1.34E-01				
WWTP			1.06E-01		9.65E-04		2.48E-03				

Source ID	Hydrogen Sulfide	Manganese	Mercury	Methyl Mercaptan	Meth. Chlor. Short Term	Meth. Chlor. Long Term	Nickel	Phenol	Sulfuric Acid Short Term	Sulfuric Acid Long Term	Vinyl Chloride
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2		6.97E-02	3.94E-04		4.97E-02	4.97E-02	3.12E-03	7.61E-03	6.02E-01	6.02E-01	7.82E-03
PB5		9.84E-02	5.56E-04		7.02E-02	7.02E-02	8.47E-02	1.07E-02	4.07E+00	4.07E+00	1.10E-02
RB5	1.68E-01	2.59E-02	9.10E-04	5.63E-01	1.13E-02	1.13E-02	8.81E-02	1.27E+00	3.46E+00	3.46E+00	3.82E-04
ST5A	4.31E-01	1.86E-03	1.03E-05	7.24E-01			1.27E-04				
ST5B	4.31E-01	1.86E-03	1.03E-05	7.24E-01			1.27E-04				
LK4	1.12E-01	1.64E-02	3.97E-04	4.98E-03	4.76E-03	4.76E-03	7.29E-02	3.19E-01	3.46E+00	3.46E+00	
BP123				5.71E-02	4.63E-03	4.63E-03		1.99E-01			
NBSW1	3.05E-03			1.19E-02	1.36E-02	1.36E-02		9.98E-02			3.33E-02
PACKBOIL		5.84E-04	1.85E-04				2.22E-03		1.76E+00	1.76E+00	

FIREPUMP											
LK4AUX											
O2	1.18E-01			5.92E-02	4.03E-02	4.03E-02		3.30E-01			
FIBER	5.56E-01			4.27E-01	4.67E-03	4.67E-03		1.33E-01			
CAUST											
SVP					1.53E-03	1.53E-03		1.05E-02			
WBLTK1	2.86E-02			7.67E-02	1.72E-04	1.72E-04					
WBLTK2	2.86E-02			7.67E-02	1.72E-04	1.72E-04					
BIGMWBL	2.86E-02			7.67E-02	1.72E-04	1.72E-04					
HBLTK1	7.88E-02			6.53E-02	1.45E-05	1.45E-05		3.59E-03			
HBLTK2	7.88E-02			6.53E-02	1.45E-05	1.45E-05		3.59E-03			
PM18				5.77E-01	7.75E-02	7.76E-02		1.22E+00			
WWTP								1.09E-03			

Table 13.4: Toxics Optimized Emission Rates

Source ID	Acetaldehyde	Acrolein	Ammonia	Arsenic	Benzene	Beryllium	Butadiene	Cadmium	Carbon Disulfide	Carbon Tetrachloride
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2	1.64E+01	1.61E+00		1.01E-01	7.48E-01	4.03E-02		1.30E-01		
PB5	2.31E+01	2.28E+00		1.43E-01	1.06E+00	9.49E-02		1.83E-01		
RB5	1.50E+02	1.07E-02		9.84E-03	4.92E-01	1.27E-01		1.00E-01	5.70E+00	2.82E-02
ST5A			4.04E+01	5.38E-04		1.28E-02		4.96E-03		
ST5B			4.04E+01	5.38E-04		1.28E-02		4.96E-03		
LK4	6.36E+01	4.81E-01		2.58E-03	2.52E-01	2.61E-02		3.64E-02	1.90E+00	
BP123	2.39E+01	3.51E-02			1.70E-02					1.24E-03
NBSW1	8.10E+01				2.35E-02		5.20E-02		1.06E+00	
PACKBOIL	9.41E+00			6.44E-04	2.95E-03	5.77E-03		7.87E-03		
FIREPUMP	3.80E-01	3.89E-03			1.55E-04		7.73E-05			
LK4AUX	4.94E-01	5.06E-03			1.01E-03		5.02E-04			
O2	4.68E+02	1.57E-01			2.99E-02		4.79E-02		2.02E-01	9.27E-02
FIBER	1.54E+02	3.70E-01			2.12E-02		3.33E-02		1.39E+00	7.67E+00
CAUST			9.92E+01							
SVP	2.82E+00									
WBLTK1	1.07E-01	5.27E-02			2.30E-03		3.94E-02		3.28E+00	1.18E-02

WBLTK2	1.07E-01	5.27E-02			2.30E-03		3.94E-02		3.28E+00	1.18E-02
BIGMWBL	1.07E-01	5.27E-02			2.30E-03		3.94E-02		3.28E+00	1.18E-02
HBLTK1	4.93E+00	3.69E-04			9.73E-05				1.46E-01	
HBLTK2	4.93E+00	3.69E-04			9.73E-05				1.46E-01	
PM18	5.76E+01	2.47E+00			1.66E-01					
WWTP	1.56E+02	0.00E+00	3.57E-01							

Source ID	**Chlorine Short Term**	**Chlorine Long Term**	**Chloroform**	**Chromium**	**Cresol**	**Ethylene Dichloride**	**Formaldehyde**	**N-hexane**	**Hydrogen Chloride**	**Hyd. Fluor. Short Term**	**Hyd. Fluor. Long Term**
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2			1.92E-01	2.43E-01		5.29E+01	4.02E+00	5.07E+02	1.31E+01	1.96E+02	1.20E+02
PB5			2.72E-01	1.00E+00		7.47E+01	5.68E+00	7.16E+02	3.73E+01	2.76E+02	1.69E+02
RB5			3.02E-02	4.87E+00		1.63E-01	2.55E+01	3.05E+02	1.18E+03	3.55E+02	2.17E+02
ST5A				2.97E-01							
ST5B				2.97E-01							
LK4			8.31E-02	1.52E+00			3.89E+00	2.54E+02	4.02E+01	5.38E+02	3.29E+02
BP123	1.06E+01	1.06E+01	6.57E+00				6.90E-01	9.87E-01	1.18E+02		
NBSW1			5.38E-01		3.13E+01	1.56E+00	2.60E-01	5.26E+00			
PACKBOIL				2.51E-02			1.34E+00	2.39E+02			
FIREPUMP							5.53E-02				
LK4AUX							7.19E-02				
O2			8.38E-01		1.07E+01	1.92E+00	1.50E+00	2.25E+00			
FIBER			7.67E-01		2.59E+01	7.10E-01	1.60E+00	3.21E+00			
CAUST											
SVP	3.32E+01	3.32E+01	5.45E-01								
WBLTK1			1.63E-04				2.43E-02	8.71E-02			
WBLTK2			1.63E-04				2.43E-02	8.71E-02			
BIGMWBL			1.63E-04				2.43E-02	8.71E-02			
HBLTK1			1.21E-03				1.21E-02	2.20E-02			
HBLTK2			1.21E-03				1.21E-02	2.20E-02			
PM18			2.67E-01				3.10E+00				
WWTP			2.38E+00		2.14E-02		5.73E-02				

Source ID	Hydrogen Sulfide	Manganese	Mercury	Methyl Mercaptan	Meth. Chlor. Short Term	Meth. Chlor. Long Term	Nickel	Phenol	Sulfuric Acid Short Term	Sulfuric Acid Long Term	Vinyl Chloride
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PB2		1.37E+02	2.83E-01		2.69E+01	1.76E+01	1.69E+00	1.81E-01	6.24E-01	9.14E-01	2.55E-01
PB5		1.93E+02	3.99E-01		3.80E+01	2.48E+01	4.58E+01	2.56E-01	4.21E+00	6.17E+00	3.59E-01
RB5	4.17E+00	5.09E+01	6.53E-01	1.03E+00	6.14E+00	4.01E+00	4.77E+01	3.03E+01	3.58E+00	5.25E+00	1.24E-02
ST5A	1.07E+01	3.65E+00	7.36E-03	1.32E+00			6.88E-02				
ST5B	1.07E+01	3.65E+00	7.36E-03	1.32E+00			6.88E-02				
LK4	2.78E+00	3.22E+01	2.85E-01	9.09E-03	2.58E+00	1.68E+00	3.95E+01	7.61E+00	3.59E+00	5.25E+00	
BP123				1.04E-01	2.50E+00	1.64E+00		4.73E+00			
NBSW1	7.57E-02			2.16E-02	7.34E+00	4.79E+00		2.38E+00			1.08E+00
PACKBOIL		1.14E+00	1.33E-01				1.20E+00		1.82E+00	2.67E+00	
FIREPUMP											
LK4AUX											
O2	2.91E+00			1.08E-01	2.18E+01	1.42E+01		7.86E+00			
FIBER	1.38E+01			7.78E-01	2.53E+00	1.65E+00		3.16E+00			
CAUST											
SVP					8.30E-01	5.42E-01		2.51E-01			
WBLTK1	7.08E-01			1.40E-01	9.33E-02	6.09E-02					
WBLTK2	7.08E-01			1.40E-01	9.33E-02	6.09E-02					
BIGMWBL	7.08E-01			1.40E-01	9.33E-02	6.09E-02					
HBLTK1	1.95E+00			1.19E-01	7.84E-03	5.12E-03		8.55E-02			
HBLTK2	1.95E+00			1.19E-01	7.84E-03	5.12E-03		8.55E-02			
PM18				1.05E+00	4.19E+01	2.74E+01		2.91E+01			
WWTP								2.60E-02			

14. Facility Emissions Review

The facility wide actual emissions for the years 2018 through 2022 are provided in the header of this permit review. Facility wide emissions are generally decreasing with this project. See Sections 5, 6, 7, and 13 for a discussion of changes in emissions.

15. Public Notice/EPA and Affected State(s) Review

This permit application processing is conforming to the public participation requirements, pursuant to both 15A NCAC 0530 "Prevention of Significant Deterioration" and 15A NCAC 02Q .0500 "Title V Procedures".

A public notice for the issuance of both the preliminary determination and the draft air quality permit will be published in a local newspaper of general circulation for 30 days for review and comments. Moreover, the DEQ's draft Environmental Justice (EJ) Analysis will also be noticed for public comments for 30 days. A copy of the public notice will be provided to the EPA, and all local and state authorities having authority over the location at which the proposed modification is to be constructed. Draft permit documents will also be provided to EPA, affected states, and all interested persons in mailing list, maintained by the DAQ. All documents will be placed on the DEQ's website.

The EPA will be deemed "public" or "citizen" in the context of PSD with regard to the 30-day public comment period while the same entity will separately be afforded a 45-day review under Title V provisions.

Public Notice of the DRAFT Title V Permit ran from XXXXX XX, 202X to XXXXX XX, 202X.

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXXXX XX, 202X to XXXXX XX, 202X.

16. Other Regulatory Considerations

- A P.E. seal is NOT required for this application because the proposed changes are not "modified" under 02Q .0103.
- A zoning consistency determination is NOT required for this application because the proposed changes are not deemed "expansion of existing facility" under 02Q .0507(d).
- A permit fee of $18,279 was assessed for this PSD application.
- The facility does not emit the new HAP, 1-bromopropane.

17. Conclusions, Comments, and Recommendations

This engineer recommends issuance of Permit No. 03138T47.

Attachment 1: RLBC Search Data (All RBLC Determinations for wood-fired, stoker type boilers included)

RBLCID	Facility Name	NAICS Code	Permit Issuance Date	Process Name	Primary fuel	Throughput	Throughput Unit	Control Method	Emission Limit 1	Emission Limit 1 Unit	Emission limit 1 avg time condition	Case-by-case basis	Compliance verified
AR-0161	Sun Bio Material Company	322110	9/23/2019	Power Boiler	Biomass	1200	MMBtu/H	Oxidation catalyst	0.075	LB/MMBTU	24-HOUR	BACT-PSD	U
CA-1203	Sierra Pacific Industries - Loyalton	221119	8/30/2010	Riley Spreader Stoker Boiler - Transient Period (see notes)	Wood	335.7	MMBTU/H	Riley stoker boiler shall be operated with high pressure over fire air for control of co emissions	1998	PPM	@12% CO2, 8-HR ROLLING AVG	BACT-PSD	U
CA-1203	Sierra Pacific Industries - Loyalton	221119	8/30/2010	Riley Spreader Stoker Boiler	Wood	335.7	MMBTU/H	Riley stoker boiler shall be operated with high pressure over fire air for control of co emissions	1443	PPM	@12% CO2, 8-HR ROLLING AVG	BACT-PSD	U
CA-1225	Sierra Pacific Industries - Anderson Division	321113	4/25/2014	Stoker Boiler (normal operation)	Biomass	468	MMBTU/H	Good combustion practices	0.23	LB/MMBTU	3-HOUR BLOCK AVERAGE	BACT-PSD	U
CA-1225	Sierra Pacific Industries - Anderson Division	321113	4/25/2014	Stoker Boiler (startup & shutdown periods)	Biomass	468	MMBTU/H	Good combustion practices	108	LB/H	8-HR AVG (STARTUP PERIODS)	BACT-PSD	U
CT-0156	Montville Power LLC	221119	4/6/2010	42 MW Biomass utility boiler	Clean wood	600	MMBTU/H	Oxidation catalyst	0.1	LB/MMBTU	8 HOUR BLOCK	BACT-PSD	N
CT-0156	Montville Power LLC	221119	4/6/2010	82 Utility Boiler		995	MMBTU/H	Oxidation catalyst	0.036	LB/MMBTU		BACT-PSD	U
FL-0369	Havana Mill	321212	12/19/2018	Boilers 4 and 5	A. Carbonaceous fuel (wood waste)	29.9	MMBtu/hr	Good combustion practices	770	PPMVD @ 3% O2		BACT-PSD	U
FL-0369	Havana Mill	321212	12/19/2018	Boiler 3	Carbonaceous fuel (wood waste)	85	MMBtu/hour	Good combustion practices	3500	PPMVD @ 3% O2		BACT-PSD	U
GA-0114	Inland Paperboard and Packaging,	322130	10/13/2004	Boiler, solid fuel	Bark	856	MMBTU/H	Staged combustion and good	368	PPM @ 3% O2		BACT-PSD	U

	Inc. - Rome Linerboard Mill							combustion practices					
GA-0117	Tri-Gen Biopower	221119	5/24/2001	Boiler, multifuel	Woodwaste and papermill sludge	302.2	MMBTU/H	Good design and combustion principles	90.7	LB/H		BACT-PSD	U
GA-0140	Mitchell Steam-generating Plant (Plant Mitchell)	221112	12/3/2010	Boiler, Wood-Fired	Wood, biomass	96	MW	Good combustion practices	0.45	LB/MMBTU	30 D ROLLING AVG	BACT-PSD	U
GA-0141	Warren County Biomass Energy Facility	221119	12/17/2010	Boiler, Biomass Wood	Biomass wood	100	MW	Good design and operating practices.	0.08	LB/MMBTU	30 D ROLLING AV / CONDITION 2.13	BACT-PSD	U
KS-0034	Abengoa Bioenergy Biomass of Kansas (ABBK)	325193	5/27/2014	Biomass to Energy Cogeneration Boiler	Different types of biomass	500	MMBtu/hr	Oxidation catalyst	260	PPMV	AT 3% O2 OR	BACT-PSD	U
LA-0178	Deridder Paper Mill	322121	11/14/2003	Wood-Fired Boiler	Bark	454.29	MMBTU/H	Good equipment design and proper combustion techniques	149.92	LB/H	HOURLY MAXIMUM	BACT-PSD	U
LA-0188	Bogalusa Mill	322110	11/23/2004	No. 12 hogged fuel boiler	Bark	787.5	MMBTU/H	Existing overfire air system and good combustion practices	491.45	LB/H	HOURLY MAXIMUM	BACT-PSD	U
ME-0021	S.D. Warren Co. - Skowhegan, ME	322121	11/27/2001	Boiler, #2	Wood waste	1300	MMBTU/H	Good boiler design and combustion practices.	520	LB/H		BACT-PSD	
ME-0037	Verso Bucksport LLC	322121	11/29/2010	Biomass Boiler 8	Biomass	814	MMBTU/H		0.3	LB/MMBTU	30 DAY ROLLING	BACT-PSD	U
MN-0046	District Energy St. Paul, Inc	221112	11/15/2001	Boiler	Wood	550	MMBTU/H	Good combustion	0.3	LB/MMBTU	BIOMASS (SEE NOTES UPDATED INFO)	BACT-PSD	Y
MN-0074	Koda Energy	221122	8/23/2007	Biomass Boiler 4				Good combustion practice	0.43	LB/MMBTU	30 DAY ROLLING AVERAGE	BACT-PSD	U

ND-0022	Northern Sun		5/1/2006	Wood/Hull Fired Boiler	Biomass			Good combustion practices	0.63	LB/MMBTU		BACT-PSD	U
NH-0018	Burgess Biopower	221122	7/26/2010	EU01 Boiler #1	Wood	1013	MMBTU/H	Bfb boiler design and fgr	0.075	LB/MMBTU(EXCL SU/SD)	CALENDAR DAY (EXCL SU/SD)	BACT-PSD	Y
OH-0307	South Point Biomass Generation	221119	4/4/2006	Wood Fired Boilers (7)	Wood	318	MMBTU/H	Oxidation catalyst	31.8	LB/H		BACT-PSD	N
SC-0114	GP Allendale LP	321219	11/25/2008	334 Million Btu/Hr Wood Fired Furnace #1	Wood	334	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked technology available for co control on this unit. The rto capacity is 18 million btu/hr, each.	302.11	LB/H		BACT-PSD	
SC-0114	GP Allendale LP	321219	11/25/2008	334 Million Btu/Hr Wood Fired Furnace #2	Wood	334	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked technology available for co control on this unit. The rto capacity is 18 million btu/hr, each	302.11	LB/H		BACT-PSD	
SC-0114	GP Allendale LP	321219	11/25/2008	197 Million Btu/Hr Wood Fired Furnace	Wood	197	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked technology available for co control on this unit. The rto capacity is 18 million btu/hr, each.	302.11	LB/H		BACT-PSD	
SC-0115	GP Clarendon LP	321219	2/10/2009	334 Million Btu/Hr Wood Fired Furnace #2	Wood	334	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked	302.11	LB/H		BACT-PSD	

								technology available for co control on this unit. The rto capacity is 18 million btu/hr,each.					
SC-0115	GP Clarendon LP	321219	2/10/2009	197 Million Btu/Hr Wood Fired Furnace	Wood	197	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked technology available for co control on this unit. The rto capacity is 18 million btu/hr,each.	302.11	LB/H		BACT-PSD	
SC-0115	GP Clarendon LP	321219	2/10/2009	334 Million Btu/Hr Wood Fired Furance #1	Wood	334	MMBTU/H	Regenerative thermal oxidation (rtos) were the highest ranked technology available for co control on this unit. The rto capacity is 18 million btu/hr, each.	302.11	LB/H		BACT-PSD	
SC-0117	Springs Global US, Inc. - Grace Complex	221119	11/6/2010	Industrial-size boilers/furnaces	Wood biomass	195	MMBTU/H	Overfire air and good combustion	0.45	LB/MMBTU - EACH	30 DAY ROLLING AVERAGE - EACH	BACT-PSD	
SC-0117	Springs Global US, Inc. - Grace Complex	221119	11/6/2010	Utility- and large industrial-size boilers/furnaces	Wood biomass	260	MMBTU/H	Overfire air and good combustion practices	0.45	LB/MMBTU	30 DAY ROLLING AVERAGE	BACT-PSD	
TX-0553	Lindale Renewable Energy	221119	1/8/2010	Wood fired boiler	Biomass	73	T/H	Good combustion practices	0.31	LB/MMBTU	ROLLING 30-DAY AVG	BACT-PSD	U
TX-0555	Lufkin Generating Plant	221122	10/26/2009	Wood-fired Boiler	Wood	693	MMBtu/H	Good combustion practices	0.075	LB/MMBTU	ROLLING 30-DAY AVERAGE	BACT-PSD	U
VA-0316	Altavista Power Station	221112	5/23/2012	Biomass-fired, spreader stoker boilers, (2)	Woody biomass	394	MMBTU/H	Good combustion practices (gcp). There is no independent,	0.3	LB/MMBTU	30 DAY ROLLING AVERAGE	BACT-PSD	U

								end-of-pipe air pollution control system for co for these boilers. Rather, each boiler employs good combustion practices (gcp) to limit the amount of co generated. The gcp are accomplished by the use of redesigned combustion air delivery systems (i.e., â€œenhanced over-fire airâ€•) which are inherently lower polluting processes.					
VA-0317	Hopewell Power Station	221112	5/23/2012	Biomass-fired, spreader stoker boilers, (2)	Woody biomass	394	mmBTU/H	Good combustion practices (gcp). There is no independent, end-of-pipe air pollution control system for co for these boilers. Rather, each boiler employs good combustion practices (gcp) to limit the amount of co generated. The gcp are accomplished by the use of redesigned combustion air delivery	0.3	LB/MMBTU	30 DAY ROLLING AVERAGE	BACT-PSD	U

								systems (i.e., â€œenhanced over-fire airâ€•) which are inherently lower polluting processes.					
VA-0318	Southampton Power Station	221112	5/23/2012	Biomass-Fired, Spreader Stoker Boilers, (2)	Woody biomass	394	MMBTU/H	Good combustion practices (gcp). There is no independent, end-of-pipe air pollution control system for co for these boilers. Rather, each boiler employs good combustion practices (gcp) to limit the amount of co generated. The gcp are accomplished by the use of redesigned combustion air delivery systems (i.e., â€œenhanced over-fire airâ€•) which are inherently lower polluting processes.	0.3	LB/MMBTU	30 DAY ROLLING AVERAGE	BACT-PSD	U
VT-0037	Beaver Wood Energy Fair Haven	221119	2/10/2012	Main Boiler	Wood	482	MMBTU/H	Good combustion control and a multi pollutant catalytic reactor (oxidation catalyst)	0.075	LB/MMBTU	24-HR ROLLING AVERAGE	BACT-PSD	U
VT-0039	North Springfield Sustainable Energy Project	221119	4/19/2013	Wood Fired Boiler	Wood	464	MMBTU/H	Bubbling fluidized bed boiler design	0.075	LB/MMBTU	24 HOUR - DOES NOT APPLY	BACT-PSD	U

											DURING STARTUP		
WA-0298	Aberdeen Division	321113	10/17/2002	Hog fuel boiler	Waste wood	310	MMBTU/H	Good combustion	0.35	LB/MMBTU		BACT-PSD	
WA-0329	Darrington Energy Cogeneration Power Plant	221112	2/11/2005	Wood waste-fired boiler	Wood waste	403	MMBtTU/H	Good combustion practices	0.35	LB/MMBTU	24-HR	BACT-PSD	U
WA-0335	Simpson Tacoma Kraft Company, LLC	322121	5/22/2007	Utility and large industrial sized boilers/furnaces	Wood waste	595	MMBTU/H	Overfire air system installed in 2006 to improve combustion conditions.	0.35	LB/MMBTU	30 DAY ROLLING	BACT-PSD	U
WA-0337	Boise White Paper LLC	322110	2/1/2006	Utility-and large industrial-size boilers/furnaces (>250 million btu/h)	Wood/bark	343	MMBTU/H	Overfire air system added to improve the boiler's combustion system. Boiler has an esp.	500	PPMVD	12 MONTH ROLLING AVERAGE	Other Case-by-Case	U