OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **November 28, 2023**

TO: Phillip Fielder, P.E., Chief Engineer

THROUGH: Eric L. Milligan, P.E., Engineering Manager, Engineering Section

THROUGH: David Schutz, P.E., New Source Permits Section

FROM: Jian Yue, P.E., New Source Permits Section

SUBJECT: Evaluation of Permit Application No. **2010-278-C (M-11) PSD**
Georgia-Pacific Muskogee, LLC
Muskogee Mill (SIC 2621, NAICS 322121)
Facility ID: 643
Section 33-34, Township 15N, Range 19E, Muskogee County, Oklahoma
Latitude: 35.73385°N; Longitude: 95.29733°W
Directions: From the Muskogee Turnpike in Muskogee, take Chandler Road exit and head east. Turn south on 45th Street then turn east on Harold Abitz Drive. Continue straight to the facility.

SECTION I. INTRODUCTION

Georgia-Pacific Muskogee, LLC (applicant or Georgia-Pacific) has submitted a construction permit application for the Muskogee Mill to revise the particulate matter emission limits for the paper machines. The facility is currently operating under Title V Operating Permit No. 2010-278-TVR (M-5), issued on December 4, 2018, Construction Permit No. 2010-278-C (M-4), issued on March 26, 2018, and Construction Permit No. 2010-278-C (M-12), issued on September 20, 2023. The facility is a major source for PSD for criteria pollutants and a major source of HAPs.

The facility is a recycle deinking paper mill. The Muskogee Mill manufactures pulp from various grades of wastepaper and market pulp and processes it through one of five paper machines to produce commercial and retail grades of tissue, toweling, and napkins.

SECTION II. REQUESTED CHANGES

Georgia-Pacific was issued Construction Permit No. 99-113-C (M-3) (PSD) for a Mill Process Improvement Project on March 27, 2006, which went through a full PSD evaluation including BACT, modeling, and public review.

The paper machine non-combustion PM_{10} emission factor used for the said evaluation was derived from stack testing performed at a sister facility on a paper machine producing tissue products of similar weight and moisture to those produced at the Muskogee Mill. The PM/PM_{10} emission

factor of 0.204 lb/ton represented the sum of the Yankee dryer exhaust (exclusive of fuel burning) emission factor of 0.096 lb/ton and the roof vent exhausts emission factor of 0.108 lb/ton.

Georgia-Pacific later discovered that this PM_{10} emission factor underrepresents emissions at the Muskogee Mill due to several incorrect assumptions:

1. The stack test results for the roof exhausts were incorrectly interpreted. The flow rate of a single stack was used to represent the overall machine room, even though multiple roof exhausts are associated with each paper machine.
2. Emission factors for other process vents (e.g., former exhaust, fan pump silo exhaust, vacuum pump exhaust) were calculated without adjusting for air flow differences between the different machines tested.
3. The stack tests did not include the condensable "back half" emissions.

Georgia-Pacific then conducted extensive paper machine stack testing at multiple facilities including Muskogee Mill and submitted the finalized data with the Title V renewal application in January 2019 as illustrated in the following table.

EU ID	Description	Currently Permitted PM/PM_{10} Emission Factor	Proposed Emission Factors		
			PM	$PM_{2.5}$	PM_{10}
		lb/ADT(1)	lb/MDT(2)	lb/MDT	lb/MDT
PM-11	Paper Machine No. 11	0.204	1.666	0.255	0.409
PM-12	Paper Machine No. 12		0.297	0.124	0.167
PM-13	Paper Machine No. 13		0.405	0.163	0.220
PM-14	Paper Machine No. 14		1.343	0.257	0.383
PM-15	Paper Machine No. 15		0.936	0.229	0.327

(1) Air dried ton containing 10% moisture
(2) Machine dried ton containing less than 5% moisture

GP has also requested production rate changes for the paper machines as listed below:

EU ID	Paper Throughput		Emissions (TPY)		
	Current ADT/yr	Proposed MDT/yr	Current PM_{10}	Proposed PM_{10}	Proposed $PM_{2.5}$
PM-11	91,250	74,000	9.31	15.13	9.44
PM-12	127,750	100,000	13.03	8.35	6.20
PM-13	109,500	80,000	11.17	8.80	6.52
PM-14	109,500	100,000	11.17	19.15	12.85
PM-15	100,845	104,000	10.29	17.00	11.91
PM-15 Winder Dust Collection*	-	-	9.82	9.82	9.82
Totals	**538,845**	**458,000**	**64.79**	**78.25**	**56.74**

*Emission is not based on production but is based on 2.24 lb/hr derived from engineering data (i.e. grain loading, air flow rate) along with an additional safety factor of 2.81 TPY. 9.82 TPY limit is found in Specific Condition 1, Table 15 of Permit 2010-278-TVR (M-1).

The following table shows difference in production rate for ADT and MDT.

EU ID	Production Rates		MDT	ADT
	MDT/year	ADT/year Equivalent	%Moisture	%Moisture
PM-11	74,000	77,737	4.5	10
PM-12	100,000	105,050	4.5	
PM-13	80,000	83,600	5.0	
PM-14	100,000	104,500	5.0	
PM-15	104,000	110,053	3.8	
Totals	**458,000**	**480,940**	**-**	**-**

Since the updated emissions are greater than the current emission limits and BACT limits, it was determined that:

1. A new BACT analysis for PM_{10} and $PM_{2.5}$ emissions from the paper machines is required and
2. A new PSD air quality modeling for PM_{10} and $PM_{2.5}$ emissions is required to validate that the new emission rates will not require additional controls or exceed applicable PSD Class II increment standards or the current NAAQS.

This permit will incorporate the new emission factors for PM_{10} and $PM_{2.5}$ and address both BACT and modeling.

SECTION III. PROCESS DESCRIPTION

The facility is a major manufacturer and converter of sanitary paper products, i.e., parent rolls and finished products such as tissue, napkins, and paper towels. Many of these products are printed with decorative inks during the converting process. Nominal capacity of the plant is 1,476 tons of air-dried finished paper per day.

The main processes involved in papermaking are pulping, de-inking (bleaching out the inks in the recycled paper), paper production, and printing. The company's basic raw materials for wet papermaking are currently recycled wastepaper and purchased pulp, which are processed into pulp using a proprietary process. The facility typically recycles over a thousand tons of wastepaper per day. The applicant has indicated that future products may be made from other sources of fiber. Since this may result in different emissions from the materials or the use of different additives and also the applicability of additional regulations and/or MACT standards, the facility will evaluate these issues to determine the needs for submitting a permit application.

Pulping and Pulp Processing

Following is a description of the equipment used in the pulping process.

Pulpers - Use mechanical agitation and water to convert wastepaper to a pulp slurry.

Stock Blend Tank - Used to blend pulp.
Screens - Separate solid contaminants from the pulp slurry.
Washers - Separate solid contaminants from the pulp slurry.
Stock Presses - Used to dewater the pulp slurry and increase consistency.
Mixer - Used to mix the pulp slurry with process water, dilution water, chemicals, etc.
Flotation Cell Washers - Remove solid contaminants from the pulp slurry.
Cleaners - Remove solid particle contaminants.
Bleach Towers - Provide residence time to allow the bleach medium to react with the pulp slurry.
Thickeners - Used to increase pulp slurry consistency.

The pulping and pulp processing systems process and bleach wastepaper for use in the manufacture of tissue, towel, and napkin paper. This proprietary process uses bleaching agents on most grades of paper. Recycled wastepaper is re-pulped by physical and chemical processes into a pulp slurry to recover usable fiber, blended with various de-inking and bleaching compounds, and processed into paper stock to make the paper products. At the pulpers, recycled wastepaper is blended with hot water while mechanical agitation is used to convert the mixture into pulp slurry. Generally, the incoming slurry is screened to remove debris and impurities. Contaminants are removed in this step, as well. Additional contaminant removal is accomplished by means of processes performed by other equipment described above. Bleaching agents are added to the slurry for the purpose of increasing brightness. The facility uses no chlorine or chlorine dioxide to bleach pulp. The significance of this is that the facility is not subject to 40 CFR Part 63, Subpart S, National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry. Bleached pulp is stored in storage tanks for later use on paper machines to make paper. Volatile organic compounds and organic pollutants are released during pulp processing as a result of chemical and mechanical processes.

The Low Consistency Washers aerate the pulp slurry, which results in bubbles on top of the material. A rotating vacuum arm removes the bubbles from the top of the material and into a separator where liquids and vapors are separated. The vent from the No. 2 flotation unit vacuum system was tested by The National Council for Air and Stream Improvement (NCASI). The vapors are vented to the atmosphere. Two vented bleaching towers were also tested by NCASI. The applicant has indicated that bleaching agents and aids other than those currently used, may be used in PP-1 in the future. If other bleaching agents or aids are proposed, then the facility will evaluate emission impacts to determine permitting requirements.

Paper Production

The processed secondary pulp fiber is pumped to the paper machines, PM-11, PM-12, PM-13, PM-14, and PM-15, where the parent rolls are produced. Much of this paper is converted to finished product at the facility. Water is removed from the incoming pulp stock by a screen. The pulp is then sprayed onto a belt where a vacuum is pulled from below to remove additional water. Residual moisture is removed from the produced paper as it is dried in the Yankee Dryers by steam and/or fuel-burning hoods. These drying processes result in emissions of VOCs from the pulp and paper. Natural gas is the primary fuel and propane is a secondary fuel for PM-11, PM-12, and PM-13 only. PM-12 and PM-13 have after-dryers that use steam from the power plant. Combustion emissions and some additional VOC emissions are generated from the fuel-burning

processes. Emissions were measured from building vents and equipment vents for PM-12 and PM-14 by NCASI. Additional emissions from the additives incorporated into the process subsequent to the NCASI testing are assumed to be 100% of the VOC content, a conservatively high estimate. Following is a description of each paper machine.

PM-11 is a 209-inch, dry crepe twin-wire periformer, manufactured by KMW, with a suction forming roll, single-felted press section, two pressure rolls, and an 18-foot Yankee dryer equipped with two 25 MMBTU/HR gas-fired hoods. Propane can be used as a backup fuel. The stock system is conventional, utilizing a drum save-all for fiber recovery and an air flotation clarifier for water recycling.

PM-12 is a 209-inch, wet crepe twin-wire periformer, manufactured by KMW, with a suction forming roll, single-felted press section, two pressure rolls, an 18-foot Yankee dryer equipped with two 16.5 MMBTU/HR gas-fired hoods, and eighteen after-dryers. Propane can be used as a backup fuel. The stock system is conventional, utilizing a drum save-all for fiber recovery and an air flotation clarifier for water recycling.

PM-13 is a 209-inch, dry crepe S-wrap twin-wire periformer, manufactured by KMW, with a solid forming roll, single-felted press section, two pressure rolls, an 18-foot Yankee dryer equipped with two burners rated at 16.5 MMBTU/HR gas-fired hoods, and eight after-dryers. Propane can be used as a backup fuel. The stock system is conventional, utilizing a drum save-all for fiber recovery and an air flotation clarifier for water recycling.

PM-14 is a 273-inch, dry crepe twin-wire periformer, manufactured by Beloit, with a solid forming roll, single-felted press section, two pressure rolls, and an 18-foot Yankee dryer equipped with two 24 MMBTU/HR gas-fired hoods. The stock system is conventional, utilizing a drum save-all for fiber recovery and an air flotation clarifier for water recycling.

PM-15 is a 273-inch, dry crepe twin-wire periformer, manufactured by Beloit, with a solid forming roll, single-felted press section, two pressure rolls, and an 18-foot Yankee dryer equipped with two 25 MMBTU/HR gas-fired hoods and high temperature hot water. The stock system is conventional, utilizing a disc save-all for fiber recovery and an air flotation clarifier for water recycling.

VOC emissions and organic hazardous air pollutants (HAP) were measured from Paper Machines No. 12 and 14 by NCASI. Emission measurements for Paper Machine No. 12 were taken at the Fourdrinier Vent, the Fan Pump Silo Vent, the Vacuum Systems Vent, the After Dryer Vent No. 1, the Yankee Dryer Vent, and the After Dryer Vent No. 2. Emission measurements for Paper Machine No. 14 were taken at the Fan Pump Silo Vent, the Yankee Wet-Side Dryer, the Yankee Dry-Side Dryer, the Vacuum Systems Vent, and the Wet End Roof Vents.

The table below summarizes the equipment used in each system line and the point of entry in the process for additives in the order they are utilized. Items in *italics* represent chemical additives and items in **bold** represent emission units that were tested by NCASI.

Process Flow – Paper Machines

PM-11	**PM-12**	**PM-13**	**PM-14**	**PM-15**
Wet Strength Resin (Grade Specific)	*Wet Strength Resin (Grade Specific)*	*Wet Strength Resin (Grade Specific)*	*Wet Strength Resin (Grade Specific)*	
	Sheet Texture (Grade Specific)			*Sheet Texture (Grade Specific)*
Machine Chest	Machine Chest	Machine Chest	Machine Chest	
Charge Control				
		Dry Strength (Grade Specific)	*Dry Strength (Grade Specific)*	
Dyes (Grade Specific)	*Dyes (Grade Specific)*	*Dyes (Grade Specific)*	*Dyes (Grade Specific*	
Absorbency Aid (Grade Specific)	*Absorbency Aid (Grade Specific)*	*Absorbency Aid (Grade Specific)*	*Absorbency Aid (Grade Specific)*	
Flow Box	Flow Box	Flow Box	Flow Box	Flow Box
Biocide	*Biocide*	*Biocide*	*Biocide*	*Biocide*
Defoamer	*Defoamer*	*Defoamer*	*Defoamer*	*Defoamer*
Silo	Silo	Silo	Silo	Silo
Wire Passivation	*Wire Passivation (Normally off)*	*Wire Passivation*	*Wire Passivation*	*Wire Passivation*
Inner & Outer Wire	Inner & Outer Wire	Inner & Outer Wire	Inner & Outer Wire	Inner & Outer Wire
Solvent (As Needed)	*Solvent (As Needed)*	*Solvent (As Needed)*	*Solvent (As Needed)*	*Solvent (As Needed)*
	Felt Cleaner	*Felt Cleaner*	*Felt Cleaner*	*Felt Cleaner*
Wires & Felt	Wires & Felt	Wires & Felt	Wires & Felt	Wires & Felt
Yankee Coating	*Yankee Coating*	*Yankee Coating*	*Yankee Coating*	*Yankee Coating*
Yankee Release	*Yankee Release*	*Yankee Release*	*Yankee Release*	*Yankee Release*
Yankee Dryer	Yankee Dryer	Yankee Dryer	Yankee Dryer	Yankee Dryer
Charge Additive		*Charge Additive*	*Charge Additive*	*Charge Additive*
Polymer		*Polymer*	*Polymer*	*Polymer*
Krofta (part of water system)	Krofta (part of water system)	Krofta (part of water system)	Krofta (part of water system)	Krofta (part of water system)
Felt Cleaner (As Needed)	*Caustic Felt Cleaner (As Needed)*	*Caustic Felt Cleaner (As Needed)*	*Caustic Felt Cleaner (As Needed)*	*Caustic Felt Cleaner (As Needed)*
	Acid Felt Cleaner (As Needed)	*Acid Felt Cleaner (As Needed)*		
Felt Guardboard	Felt Guardboard	Felt Guardboard		
Dye Neutralizer (Grade Specific	*Dye Neutralizer (Grade Specific*	*Dye Neutralizer (Grade Specific*	*Dye Neutralizer (Grade Specific*	

PM-11	**PM-12**	**PM-13**	**PM-14**	**PM-15**
& part of water system)	*& part of water system)*	*& part of water system)*	*& part of water system)*	
Chlorine Neutralizer (Grade Specific & part of water system)	*Chlorine Neutralizer (Grade Specific & part of water system)*	*Chlorine Neutralizer (Grade Specific & part of water system)*	*Chlorine Neutralizer (Grade Specific & part of water system)*	
	After Dryers	After Dryers		
				Slimicide (Batch Use)
				White Water Tanks (Part of water system)
Vacuum System (not part of the direct flow of paper)	Vacuum System (not part of the direct flow of paper)	Vacuum System (not part of the direct flow of paper)	Vacuum System (not part of the direct flow of paper)	Vacuum System (not part of the direct flow of paper)
			Wet End Roof Vents (not in the direct flow of paper)	

Solvent Cleaning of Paper Machines

SC-1 is the designation of emissions generated from solvent cleanup of the paper machine clothing (felts and wires). Cleanup solvent is pumped from tanks or totes to paper machines PM-11, PM-12, PM-13, PM-14, and PM-15 for application on the machine clothing. The purpose of this cleanup is to rid the machine clothing of any contaminants, commonly known as stickies, which may be deposited from the paper stock going to the machines. These contaminants would adversely affect product from the machine by forming small holes or creating inconsistencies in the paper if not cleaned regularly. Additionally, smaller amounts of solvent are used occasionally for cleaning equipment at the pulp processing mill, PP-1.

Flexographic Paper Printing

Designs are printed on the tissue products by flexographic paper printer systems FP-1 and FP-8. All systems use water-based inks for printing.

FP-1 consists of two flexographic printing presses that print paper parent rolls to produce printed parent rolls. These printed parent rolls become paper towel and napkin products.

FP-8 is a 4-color, 78-inch wide, flexographic printing press, manufactured by Bretting. It was custom built and has no number. FP-8 is situated in Building No. 31 and was in operation by June of 2005.

Steam and Electricity Co-generation (Power Plant)

The facility has a power plant utilizing four boilers, identified as emission units B-1, B-3, B-4 and B-5 which co-generate most of the electrical and steam needs of the facility. They are fueled by coal and natural gas. The ash residue generated from this operation is landfilled in an approved on-site landfill. Opacity of the boiler emissions is monitored continuously and recorded by the use of strip charts. Following is a description of each boiler.

B-1 is a natural gas-fired package boiler rated at 310 MMBTU/HR. The unit co-generates steam and electricity for use on-site.

B-3 is primarily a pulverized coal-fired boiler rated at 557.11 MMBTU/HR. It is capable of firing natural gas only as ignitor fuel. The unit co-generates steam and electricity for use on-site. It uses a baghouse for particulate control and shares a common stack with boiler B-4.

B-4 is primarily a pulverized coal-fired boiler rated at 557.11 MMBTU/HR. It is capable of firing natural gas as a backup fuel. The unit co-generates steam and electricity for use on-site. It uses a baghouse for particulate control and shares a common stack with boiler B-3.

B-5 is a natural gas-fired package boiler rated at 415 MMBTU/HR. The unit co-generates steam and electricity for use on-site. It utilizes Stack #2, a stack that was built for Boiler B-3 but was abandoned in the 1980s and remained inactive since then but now serves B-5.

Emergency Engine

DFP-1 is a 240-horsepower Cummins N-855-F, diesel fire pump.

Coal Preparation Plant

The coal preparation plant supplies the boilers with pulverized coal fuel. All emission units except the coal pile and preceding unloading/conveying equipment are subject to the provisions of 40 CFR, Part 60, Subpart Y, "Standards of Performance for Coal Preparation Plants." Subpart Y does not contain monitoring requirements. More detail on the applicability criteria is found in the NSPS discussion of Section XI.

Coal Storage

Coal fuel used in the boilers is stored in an outdoor storage pile (FS-1) prior to processing into pulverized coal. Solid, bituminous and sub-bituminous coal is delivered by railcar and unloaded into a below-grade receiving bin. Some coal is also occasionally received by truck and unloaded into the coal pile. A conveyor moves the coal from the receiving bin to a radial stacker. The radial stacker unloads the coal into an aboveground stockpile.

Coal Processing and Conveying Equipment

A front-end loader is then used to transfer coal from the storage stockpile to the grizzly feeder. A conveyor transfers the coal from the grizzly feeder to the sizer/crusher for sizing, which also

separates debris such as rocks. Except for the outlet chute opening to the conveyor, the sizer/crusher is enclosed and housed in a small building. There are openings on two sides of the building for the ingoing and outgoing conveyors. From the sizer/crusher, a conveyor transfers the sized coal to the coal bunkers ahead of the coal feeders, which in turn feed the pulverizers and subsequently the boilers. The coal feeders and pulverizers are enclosed processes. Dust suppression systems are located at the railcar unloading, the grizzly feeder, and the sizer/crusher.

Wastewater Treatment Plant

The facility also operates its own wastewater treatment plant consisting of primary and secondary treatment stages. The solid wastewater residues are landfilled on-site.

SECTION IV. PERMIT HISTORY

Permit No.	Date Issued	Description
75-053-C	10/6/1975	Original construction permit to install Boilers No. 1 and 2 (B-1 and B-2), Yankee Dryers for Paper Machines No. 11 and 12 (PM-11 and PM-12), and two 10,000-gallon gasoline storage tanks.
77-076-C	1/9/1978	Construction permit to install Boiler No. 3 (B-3) and associated equipment.
79-021-C	3/22/1979	Construction permit to install a Yankee Dryer for Paper Machine No. 13 (PM-13).
75-053-O	8/31/1979	Original operating permit.
80-059-C	1/5/1981	Construction permit to install a dual fuel gas turbine generator.
81-081-C	9/1/1981	Construction permit to install two emergency generators (DG-1 and DG-2).
81-066-C	9/29/1981	Construction permit to install Boiler No. 4 (B-4) and Paper Machine No. 14 (PM-14).
79-021-O	12/8/1981	Operating permit to incorporate the changes authorized in Permit No. 79-021-C.
77-076-O	3/31/1982	Operating permit to incorporate the changes authorized in Permit No. 77-076-C.
81-081-O	2/9/1983	Operating permit to incorporate the changes authorized in Permit No. 81-081-C.
83-062-C	9/14/1983	Construction permit to install three polyethylene extruders and two flexographic printing presses.
81-066-O	5/13/1985	Operating Permit to incorporate the changes authorized in Permit No. 81-066-C.
91-127-C	4/22/1992	Construction Permit to install Paper Machine No. 15 (PM-15) and a ClO_2 Plant.
91-127O	6/19/1995	Operating Permit to incorporate the changes authorized in Permit No. 91-127-C. The ClO_2 Plant was not constructed.
97-218-C	5/30/1997	Construction Permit to install two flexographic printing presses. Only one of the flexographic printing presses was installed.
83-062-O (PSD)	9/29/1997	PSD operating permit to incorporate the changes authorized in Permit No. 83-062-C.

Permit No.	Date Issued	Description
91-127-O (M-1)	10/17/1997	Administrative amendment to correct the size of burners and emissions estimates for Paper Machine No. 15 (PM-15).
97-218-O	-	Application was withdrawn.
99-113-AD	6/7/2002	Applicability determination to correct the factors used in certain emission calculations to bring them into agreement with current AP-42 numbers.
99-113-TV	3/13/2006	Initial Title V operating permit to authorize the use of propane as an additional secondary fuel and install a flexographic printer.
99-113-TV (M-1)	-	Application was withdrawn.
99-113-TV (M-2)	-	Application was withdrawn.
99-113-C (M-3) (PSD)	3/27/2006	Construction permit modification to authorize the Mill Process Improvement Project. The project affected three areas: the paper machine and converting area, the polyethylene plant, and the System 5 Pulp area.
99-113-C (M-4) (PSD)	6/12/2006	Administrative amendment to add clarification to the specific conditions outlined in Permit No. 99-113-C (M-3) (PSD).
99-113-AD (M-6)	6/1/2007	Applicability determination to install a new drum pulper in the pulp processing area known as EUG 4-Pulp Processing Units.
99-113-AD (M-7)	8/18/2008	Applicability determination to address two maintenance projects on Boiler No. 3 (B-3) as routine maintenance, repair, and replacement.
99-113-AD (M-8)	4/13/2009	Applicability determination to address the replacement of wall panels and tubing on the west water wall of Boiler No. 2 (B-2) as routine maintenance, repair, and replacement.
99-113-TV (M-9)	10/12/2009	Title V modification to revise the compliance reporting periods and due dates.
99-113-AD (M-10)	11/23/2010	Applicability determination to address two replacements on Boiler No. 4 (B-4) as routine maintenance, repair, and replacement.
99-113-TV (M-5)	1/5/2011	Title V modification to address the applicability of Part 51, Appendix Y, “Guidelines for BART Determinations Under the Regional Haze Rule”.
99-113-AD (M-11)	8/13/2012	Applicability determination to repair the system and optimize the collection ductwork on Paper Machine No. 15 (PM-15).
99-113-C (M-12)	8/12/2013	Construction permit to install a new dust collection and control system on the winder section of Paper Machine No. 15 (PM-15).
2010-278-TVR	7/31/2014	Title V renewal.
2010-278-TVR (M-1)	4/25/2016	Title V modification to incorporate the changes authorized in Permit No. 99-113-C (M-12).
2010-278-TVR (M-2)	-	Application was withdrawn.
2010-278-C (M-3)	3/21/2017	Title V construction permit to replace Boiler No. 2 (B-2) with Boiler No. 5 (B-5) and to install a dry sorbent injection system on Boilers No. 3 and 4 (B-3 and B-4).
2010-278-C (M-4)	3/26/2018	Administrative amendment to correct a change of ownership.
2010-278-TVR (M-3)	12/3/2018	Administrative amendment to correct a change of ownership.

Permit No.	Date Issued	Description
2010-278-TVR (M-5)	12/4/2018	Title V modification to incorporate the changes authorized in Permit No. 2010-278-C (M-3) and additional minor modifications.
2010-278-C (M-6)	-	Application was withdrawn.
2010-278-C (M-7)	-	Application was withdrawn.
2010-278-AD (M-8)	9/28/2020	Applicability determination to install a new dust collection and control system on Paper Machine No. 11 (PM-11).
2010-278-AD (M-9)	9/28/2020	Applicability determination to install a new dust collection and control system on Paper Machine No. 14 (PM-14).
2010-278-TVR (M-10)	1/27/2022	Administrative Amendment to change the ownership from Georgia-Pacific Consumer Operations, LLC, to Georgia-Pacific Muskogee, LLC.
2010-278-C (M-12)	9/20/2023	Construction permit to replace two natural gas burners on existing Paper Machine #11 (PM-11)

SECTION V. EQUIPMENT

The following tables list the Emission Units (EUs) at the facility that contribute to a process that generates significant emissions. The tables are categorized by Emission Unit Groups (EUGs), based on the type of emission and/or an applicable rule.

EUG 1 Boilers

EU ID	Description	Manufacturer	Model	Boiler Rating	DSI Throughput	Construction Date
				MMBTU/HR	lbs/hr/boiler	
B-1	Boiler No. 1	Zurn Industries, Inc.	Keystone SAOH-MJ-DAR-48	310	-	1975
B-3	Boiler No. 3	Combustion Engineering, Inc.	VU-40	557.11	-	1978
B-4	Boiler No. 4	Riley Stoker	RX Turbofurnace	557.11	-	1981
B-5	Boiler No. 5	Rentech	JZHC/Coen ECOjet	415	-	2016
DSI	DSI System	Dustex	-	-	30	2016

EUG 2 Combustion Sources Not Subject to NSPS or NESHAP

EU ID	Description	Manufacturer	Model	Burner Rating	Construction Date
				MMBTU/HR	
PM-11	Paper Machine No. 11	Maxon	Kinedizer 27M	2 x 25	2023
PM-12	Paper Machine No. 12	Maxon	Oven-Pak II EB6 Model 400	2 x 16.5	2017

EU ID	Description	Manufacturer	Model	Burner Rating MMBTU/HR	Construction Date
PM-13	Paper Machine No. 13	Maxon	Oven-Pak EB6 Model 400	2 x 16.5	1979
PM-14	Paper Machine No. 14	Maxon	Combustifume	2 x 24	2015 (1)
PM-15	Paper Machine No. 15	Maxon	LV-85	2 x 25	1992

(1) - Like-kind replacement notification to DEQ submitted on October 29, 2015.

EUG 3 Coal Preparation Plant

EU ID	Description	Manufacturer/Model	Construction Date	NSPS
	Railcar Unloading	FEECO	1991, est.	-
	Radial Stacker	FEECO	1991, est.	-
	Grizzly Feeder	FEECO / Fairfield	1991, est.	Y
	Coal Sizer/Crusher	Gundlach / Model No. 56-DA-1294	1977, est.	Y
	Conveyor	Fort Howard (Manufactured on-site when owned by Fort Howard)	1977, est.	Y
B-3	Coal Bunkers	CE	1978, est.	Y
B-3	Coal Feeders	Stock Equipment Co. / Gravimetric Feeder	1978, est.	Y
B-3	Pulverizers	CE / Bowl Mill 533ARB	1978, est.	Y
B-4	Coal Bunkers	Riley	1981, est.	Y
B-4	Coal Feeders	Merrick / Coalometer	1981, est.	Y
B-4	Pulverizers	Riley / 556 Hammer Mill	1981, est.	Y
FS-1	Coal Pile	Open Pile – N/A	1975	Y

EUG 4 Pulp Processing Units (Subpart S Affected/No Applicable Standards)

EUG 4, Pulp Processing Units, emits VOCs from the bleaching and pulping processes. Some of these units are affected processes under 40 CFR Part 63, Subpart S, "National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry," but are not subject to any performance standard or other requirements at this time because of the type of bleaching agents currently used in the pulping process. The facility uses secondary wood (recycled paper) fiber and is therefore an affected facility. However, as a result of the processes and bleaching chemicals used in producing the secondary fiber pulp, there are no standards in the subpart that currently apply to the facility. Therefore, this EUG is reserved for any future Subpart S regulated units. Emissions from these units are included and represented with those for EUG 6. The Mill Process Improvement Project modified several items as identified by a 2006 construction date in the following table, without altering the applicability of any MACT requirements. The bulk of these changes occurred in System 5.

EU ID	Description	Construction Date
PP-1	Pulpers (not system specific)	1977, 1979, 1981, 1983, 1992, est.
	Unbleached Stock Blend Tanks	1977 & 1983, est.

EU ID	Description	Construction Date
	Screens	1977, 1979, 1981, 1983, & 1992, est., 2006
	Unbleached Washers	1977, est., 2006
	Flotation Cell Washers	1977, 1979, 1981, 1983, & 1992, est., 2006
	Unbleached Thickener	1977 & 1992, est.
	Bleached Washers	1977, 1981, 1983, 1992, est., 2006
	Storage (not system specific)	1977, 1979, 1981, 1983, 1992 est.
	Bleach Towers	1977, 1979, 1981, 1983, 1992, est.
	Thickeners	1979, 1981, 1983, est., 2006
	Unbleached Stock Presses	1992, est., 2006
	Mixers	1992, est.
	Cleaners	1992, est., 2006

EUG 5 Flexographic Printing (Subpart KK)

EU ID	Description	Manufacturer/Model	Construction Date	NESHAP
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/Model No. 7416	1993	KK
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	June, 2005	KK

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP

EUG 6 includes emission units that are subject to a VOC limit or may potentially be subject to OAC 252:100-42. It includes units that are part of the paper making process, having VOC or HAP emissions and not subject to Subpart S (PP-1 Pulp Processing Units are affected but not subject to standards at this time), units not subject to an NSPS or NESHAP performance standard, and units subject to an NSPS or NESHAP performance standard but emitting VOC pollutants not covered by the standard (such as the flexographic printers).

EU ID	Description	Manufacturer/Model	Construction Date
PP-1	Pulp Processing Units	N/A [(1)]	1975-1992
PM-11	Paper Machine No. 11	KMW	1975
PM-12	Paper Machine No. 12	KMW	1975
PM-13	Paper Machine No. 13	KMW	1979
PM-14	Paper Machine No. 14	Beloit	1981
PM-15	Paper Machine No. 15	Beloit	1992
	Paper Machine Additives	N/A	N/A
SC-1	Solvent Cleaning PM-11, PM-12, PM-13, PM-14	N/A	1975
PM-15	Solvent Cleaning	N/A	1992
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/Model No. 7416	1993
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	2005

[(1)]- Components are detailed in the following table.

EU ID	Description	Construction Date
PP-1	Pulpers (not system specific)	1975, 1979, 1981, 1983, 1992, est.
	Unbleached Stock Blend Tanks	1975 & 1983, est.
	Screens	1975, 1979, 1981, 1983, & 1992, est.
	Unbleached Washers	1975, est.
	Flotation Cell Washers	1975, 1979, 1981, 1983, & 1992, est.
	Unbleached Thickener	1975 & 1992, est.
	Bleached Washers	1975, 1981, 1983, 1992, est.
	Storage (not system specific)	1975, 1979, 1981, 1983, 1992 est.
	Bleach Towers	1975, 1979, 1981, 1983, 1992, est.
	Thickeners	1979, 1981, 1983, est.
	Unbleached Stock Presses	1992, est.
	Mixers	1992, est.
	Cleaners	1992, est.

Note: Although all of the equipment items listed in the table are part of the pulping process, not all of them are listed in the permit. The equipment list included in the permit was revised to reflect only those units that have emissions, i.e., it does not include closed units.

EUG 7 Non-Combustion PM Sources Not Subject to NSPS or NESHAP

EU ID	Description	Manufacturer	Construction Date
PM-11	Paper Machine No. 11	KMW	1975
PM-12	Paper Machine No. 12	KMW	1975
PM-13	Paper Machine No. 13	KMW	1979
PM-14	Paper Machine No. 14	Beloit	1981
PM-15	Paper Machine No. 15 Building Vents	Beloit	1992
	Paper Machine No. 15 Reel Section & Winder Section Dust Collection and Control System[(1)]	Beloit	11/2014

[(1)]- An additional particulate matter emissions control was installed November, 2014.

EUG 8 Emergency Engine

EU ID	Manufacturer/Model	Horsepower	Fuel
		Hp	
DFP-1	Cummins N-855-F	240	Diesel

SECTION VI. EMISSIONS

Due to the length of the emission discussions and illustrative tables for each Emission Unit, a facility emission summary table is first offered in this section. Emission calculations for each emission unit identified in the applications, as re-grouped into the following Emission Unit Groups, are detailed in the discussion and tables following this section.

Facility-Wide Emissions Summary

EU ID, Description	$PM_{2.5}$ TPY	PM_{10} TPY	NO_X TPY	SO_2 TPY	VOC TPY	CO TPY	HCl TPY	H_2SO_4 TPY	HF TPY
EUG 1 Boilers									
B-1, 310-MMBTU/HR Boiler No. 1	10.12	10.12	135.78	0.80	7.32	111.82	-	-	-
B-3, 557.11-MMBTU/HR Boiler No. 3	76.13	114.20	1,708.1	2,928.2	8.87	61.00	53.68	23.43	18.30
B-4, 557.11-MMBTU/HR Boiler No. 4 (1)	76.13	114.20	1,708.1	2,928.2	13.16	200.95	53.68	23.43	18.30
B-5, 415-MMBTU/HR Boiler No. 5	13.54	13.54	181.77	1.07	9.80	90.89	-	-	-
DSI, Dustex DSI System	1.13E-5	1.13E-5	-	-	-	-	-	-	-
EUG 2 Combustion Sources Not Subject to NSPS or NESHAP									
PM-11, Paper Machine No. 11	1.60	1.60	7.88	0.13	1.16	63.95	-	-	-
PM-12, Paper Machine No. 12	1.08	1.08	14.17	0.09	0.78	11.90	-	-	-
PM-13, Paper Machine No. 13	1.08	1.08	14.17	0.09	0.78	11.90	-	-	-
PM-14, Paper Machine No. 14	1.57	1.57	20.61	0.12	1.13	17.31	-	-	-
PM-15, Paper Machine No. 15	1.63	1.63	21.5	0.13	1.18	18.40	-	-	-
EUG 3 Coal Preparation Plant									
Railcar Unloading	5.87	35.23	-	-	-	-	-	-	-
Radial Stacker									
Grizzly Feeder									
Coal Sizer/Crusher	82.03	82.03	-	-	-	-	-	-	-
Conveyor	1.37	8.20	-	-	-	-	-	-	-
B-3 & B-4, Coal Bunkers	1.37	8.20	-	-	-	-	-	-	-
B-3 & B-4, Coal Feeders	Closed Process (2)		-	-	-	-	-	-	-
B-3 & B-4, Pulverizers									
FS-1, Coal Pile	14.76	14.76	-	-	-	-	-	-	-
EUG 4 Pulp Processing Units (Subpart S Affected/No Applicable Standards) (3)									
PP-1, Pulp Processing Units	-	-	-	-	-	-	-	-	-

EU ID, Description	$PM_{2.5}$ TPY	PM_{10} TPY	NO_X TPY	SO_2 TPY	VOC TPY	CO TPY	HCl TPY	H_2SO_4 TPY	HF TPY
EUG 5 Flexographic Printing (Subpart KK) (4)									
FP-1, Flexographic Paper Printer	-	-	-	-	-	-	-	-	-
FP-8, Flexographic Paper Printer									
EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP									
PP-1, Pulp Processing Units	-	-	-	-	127.62	-	-	-	-
PM-11 through PM-15, Paper Machine No. 11-15	-	-	-	-	-	-	-	-	-
Paper Machine Additives	-	-	-	-	180.35	-	-	-	-
SC-1, Solvent Cleaning for PM-11, PM-12, PM-13, & PM-14	-	-	-	-	702.17	-	-	-	-
PM-15, Solvent Cleaning for PM-15									
FP-1, Flexographic Paper Printer	-	-	-	-	82.48	-	-	-	-
FP-8, Flexographic Paper Printer									
EUG 7 Non-Combustion PM Sources Not Subject to NSPS or NESHAP									
PM-11, Paper Machine No. 11	9.44	15.13	-	-	-	-	-	-	-
PM-12, Paper Machine No. 12	6.20	8.35	-	-	-	-	-	-	-
PM-13, Paper Machine No. 13	6.52	8.80	-	-	-	-	-	-	-
PM-14, Paper Machine No. 14	12.85	19.15	-	-	-	-	-	-	-
PM-15, Paper Machine No. 15 Building Vents	11.91	17.00	-	-	-	-	-	-	-
PM-15, Paper Machine No. 15 Winder & Reel Section Dust Collection and Control System	9.82	9.82	-	-	-	-	-	-	-

EU ID, Description	$PM_{2.5}$ TPY	PM_{10} TPY	NO_X TPY	SO_2 TPY	VOC TPY	CO TPY	HCl TPY	H_2SO_4 TPY	HF TPY
EUG 8 Emergency Engine									
DFP-1, 240-hp Cummins N-855-F	0.13	0.13	1.86	0.12	0.15	0.40	-	-	-
Insignificant Activities									
Ash Handling	0.93	2.42	-	-	-	-	-	-	-
Converting Trim Vent	0.03	0.03							
Ash Storage Silo	0.12		-	-	-	-	-	-	-
Totals	**346.23**	**471.27**	**3784.56**	**5858.95**	**1136.95**	**588.52**	**107.36**	**46.86**	**36.60**

(1) The highest emissions from all fuels considered is shown.
(2) This is a closed process and is not expected to have visible emissions.
(3) This EUG is reserved for future Subpart S applicable units. VOC and HAP emission calculations are illustrated in the discussion of emissions for EUG 6 and are not repeated here.
(4) VOC emissions for the printers, not subject to an NSPS or NESHAP, are illustrated in the discussion of emissions for EUG 6 and are not repeated here.

EUG 1 Boilers

The emission calculations for Boilers No. 1, 3, and 4 (B-1, B-3, and B-4) are based on 8,760 hours of annual operation and emission factors from either AP-42 or emission testing as footnoted. Permit limits are based on regulatory limits, justified by modeling to establish compliance with existing air quality standards at the time of issuance of Permit No. PSD-OK-404. Emission calculations for Boiler No. 5 (B-5) are based on 8,760 hours of annual operation and emission factors from either AP-42 or manufacturer's data as footnoted. Emission calculations for the DSI System (DSI) are based on 8,760 hours of annual operation and a vendor $PM_{2.5}$ emission factor of 0.005 gr/SCF.

EUG 1 Boilers Operating Parameters

EU ID	Boiler Rating MMBTU/HR	DSI Throughput lbs/hr/boiler	Firing Configuration	Controls	Low NO_X	Fuels
B-1	310	-	Forced Draft Package	-	-	Gas
B-3	557.11	-	Tilting Tangential	Baghouse Filter	-	Coal
B-4	557.11	-	Wall Fired, Opposing Walls	Baghouse Filter	Yes	Coal/Gas
B-5	415	-	Forced Draft	-	Yes	Gas
DSI	-	30	-	-	-	-

EUG 1 Boilers Emission Factors

Pollutant	Coal Emissions Factor	Natural Gas Emissions Factor
310-MMBTU/HR Boiler No. 1 (B-1)		
$PM_{2.5}$	-	7.6 lbs/MMCF (1)
PM_{10}	-	7.6 lbs/MMCF (1)

Pollutant	Coal Emissions Factor	Natural Gas Emissions Factor
NO_X	-	0.1 lbs/MMBTU (2)
SO_2	-	0.6 lbs/MMSCF (1)
VOC	-	5.5 lbs/MMCF (1)
CO	-	84 lbs/MMCF (3)
557.11-MMBTU/HR Boiler No. 3 (B-3)		
$PM_{2.5}$	0.0312 lbs/MMBTU (4)	-
PM_{10}	0.0468 lbs/MMBTU (4)	-
NO_X	0.7 lbs/MMBTU (5)	-
SO_2	1.2 lbs/MMBTU (5)	-
VOC	0.003 lbs/MMBTU (6)	-
CO	0.025 lbs/MMBTU (7)	-
HCL	0.022 lbs/MMBTU (8)	-
H_2SO_4	0.0096 lbs/MMBTU (9)	-
HF	0.0075 lbs/MMBTU (10)	-
557.11-MMBTU/HR Boiler No. 4 (B-4)		
$PM_{2.5}$	0.0312 lbs/MMBTU (4)	7.6 lbs/MMCF (1)
PM_{10}	0.0468 lbs/MMBTU (4)	7.6 lbs/MMCF (1)
NO_X	0.7 lbs/MMBTU (5)	190 lbs/MMCF (3)
SO_2	1.2 lbs/MMBTU (5)	0.6 lbs/MMCF (1)
VOC	0.003 lbs/MMBTU (6)	5.5 lbs/MMCF (1)
CO	0.025 lbs/MMBTU (7)	84 lbs/MMCF (3)
HCL	0.022 lbs/MMBTU (8)	-
H_2SO_4	0.0096 lbs/MMBTU (9)	-
HF	0.0075 lbs/MMBTU (10)	-
415-MMBTU/HR Boiler No. 5 (B-5)		
$PM_{2.5}$	-	7.6 lbs/MMCF (1)
PM_{10}	-	7.6 lbs/MMCF (1)
NO_X	-	0.2 lbs/MMBTU (11) 0.1 lbs/MMBTU (11)
SO_2	-	0.6 lbs/MMCF (1)
VOC	-	5.5 lbs/MMCF (1)
CO	-	0.05 lbs/MMBTU (12)

(1) The emission factor is based on AP-42 (7/98), Table 1.4-2.

(2) The emission factor of 0.1 lb NO_X/MMBTU, which is derived from 744 lb NO_X/day limit (per Permit No. 2010-278-TVR (M-1) Specific Condition 1.D).

(3) The emission factor is based on AP-42 (7/98), Table 1.4-1.

(4) The PM emission factor is based on the BMACT limit of 0.04 lb/MMBTU. This is a total filterable PM emission factor. The condensable portion of PM is 0.01 lb/MMBTU (AP-42, 7/98, Table 1.1-5, Footnote f). PM_{10} and $PM_{2.5}$ factors are derived using the particle size distribution factors in AP-42 (7/98), Table 1.1-6. (For $PM_{2.5}$: 0.04 lb/MMTBU * 53% for baghouse control = 0.0212 lb/MMBTU + 0.01 lb/MMBTU condensable PM for a total factor of 0.0312 lb/MMBTU) (For PM_{10}: 0.04 lb/MMTBU * 92% for baghouse control = 0.0368 lb/MMBTU + 0.01 lb/MMBTU condensable PM for a total factor of 0.0468 lb/MMBTU).

(5) The emission factor is based on limits in NSPS Subpart D; emission factor for NO_X: 0.7 lb/MMBTU; for SO_2: 1.2 lb/MMBTU.

(6) The emission factor is based on the AP-42 (7/98), Table 1.1-19 emission factor of 0.06 lb/ton. This is divided by 20 MMBTU/ton (Table 1.1-5, footnote e, sub-bituminous coal) to get an emission factor of 0.003 lb/MMBTU.

(7) The emission factor is based on the AP-42 (7/98), Table 1.1-3, emission factor of 0.5 lb/ton. This is divided by 20 MMBTU/ton (Table 1.1-5, footnote e, sub-bituminous coal) to get an emission factor of 0.025 lb/MMBTU.

(8) The emission factor is based on the BMACT limit of 0.022 lb/MMBTU.

(9) The emission factor is based on the NSPS Subpart D SO_2 standard of 1.2 lb/MMBTU. The 0.0084 lb/MMBTU emission factor is based on 0.7% of the SO_2 is emitted as SO_3 SO_2 standard (AP-42 (7/98), Table 1.1-3, footnote b). The 0.7% SO_3 was scaled up by the molecular weight ratio of SO_4 to SO_3 (96/80) for 0.8% emitted as SO_4.
(10) The emission factor is based on the AP-42 (7/98), Table 1.1-15 emission factor of 0.15 lb/ton. This is divided by 20 MMBTU/ton (Table 1.1-5, footnote e, sub-bituminous coal) to get an emission factor of 0.0075 lb/MMBTU.
(11) The NSPS Subpart D at 40 CFR §60.44(a)(1) and Oklahoma Rule 252:100-33-2(a)(1) limit is 0.2 lbs-NOx/MMBTU, 3-hour average. The NSPS Subpart Db limit is 0.1 lbs NOx/MMBTU, 30-day rolling average. Georgia-Pacific may reach the 0.2 lbs/hr limit, 3-hour average, on a short term basis provided it does not exceed 0.1 lbs/hr, 30-day rolling average.
(12) The emission factor is a vendor guaranteed value.

EUG 1 Boilers Emissions Summary

EU ID	$PM_{2.5}$	PM_{10}	NO_X	SO_2	VOC	CO	HCL	H_2SO_4	HF
	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Coal Fired Boiler Emissions									
B-3	76.13	114.20	1,708.10	2,928.17	8.87	61.00	53.68	23.43	18.30
B-4	76.13	114.20	1,708.10	2,928.17	8.87	61.00	53.68	23.43	18.30
Natural Gas Fired Boiler Emissions									
B-1	10.12	10.12	135.78	0.80	7.32	111.82	-	-	-
B-4	18.18	18.18	454.54	1.44	13.16	200.95	-	-	-
B-5	13.54	13.54	181.77	1.07	9.80	90.89	-	-	-
DSI System Emissions									
DSI (1)	1.13E-05	-	-	-	-	-	-	-	-

(1) Emissions for the DSI System (DSI) are based on 8,760 hours of annual operation and a vendor $PM_{2.5}$ emission factor of 0.005 gr/SCF.

EUG 2 Combustion Sources Not Subject to NSPS or NESHAP

EUG 2 Combustion Sources Not Subject to NSPS or NESHAP Operating Parameters

EU ID	Rating	Firing Configuration	Controls	Fuels
	MMBTU/HR			
PM-11	2 x 25	NA	None	Gas/Propane
PM-12	2 x 16.5	NA	None	Gas/Propane
PM-13	2 x 16.5	NA	None	Gas/Propane
PM-14	2 x 24	NA	None	Gas
PM-15	2 x 25	NA	None	Gas

$PM_{2.5}$, PM_{10}, NO_X, SO_2, VOC, and CO emissions from combustion sources that are not subject to NSPS or NESHAP were based on AP-42 (7/98), Tables 1.4-1 and 1.4-2, burner ratings, and fuel heating values.

EUG 2 Combustion Sources Not Subject to NSPS or NESHAP Emission Factors

EU ID	Rating	Emission Factors					
		$PM_{2.5}$ (1)	PM_{10} (1)	NO_X (1)	SO_2 (2)	VOC (2)	CO (1)
	MMBTU/HR	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF
PM-11	2 x 25	7.6	7.6	100	0.6	5.5	84
PM-12	2 x 16.5	7.6	7.6	100	0.6	5.5	84
PM-13	2 x 16.5	7.6	7.6	100	0.6	5.5	84

EU ID	Rating	Emission Factors					
		$PM_{2.5}$ (1)	PM_{10} (1)	NO_X (1)	SO_2 (2)	VOC (2)	CO (1)
	MMBTU/HR	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF
PM-14	2 x 24	7.6	7.6	100	0.6	5.5	84
PM-15	2 x 25	7.6	7.6	100	0.6	5.5	84

(1) The emission factor is based on AP-42 (7/98), Table 1.4-2.
(2) The emission factor is based on AP-42 (7/98), Table 1.4-1.

EUG 2 Combustion Sources Not Subject to NSPS or NESHAP Emissions Summary

EU ID	$PM_{2.5}$	PM_{10}	NO_X	SO_2	VOC	CO
	TPY	TPY	TPY	TPY	TPY	TPY
PM-11	1.60	1.60	7.88	0.13	1.16	63.95
PM-12	1.08	1.08	14.17	0.09	0.78	11.90
PM-13	1.08	1.08	14.17	0.09	0.78	11.90
PM-14	1.57	1.57	20.61	0.12	1.13	17.31
PM-15	1.63	1.63	21.5	0.13	1.18	18.40
Totals	**6.96**	**6.96**	**78.33**	**0.56**	**5.03**	**123.46**

EUG 3 Coal Preparation Plant

Coal Processing and Conveying
The applicant submitted the following methodology for calculating emissions from the coal handling processes. Regulatory standards are limited to opacity standards. There were no limits placed on this EUG in the permit.

Emissions from railcar unloading, the Radial Stacker, filling the Grizzly Feeder with the front-end loader, coal conveying, and the Coal Bunkers were calculated utilizing emission factors derived from Equation 1 of AP-42 (11/06), Section 13.2.4 and the potential coal throughput. The derivation of these emission factors is detailed as follows:

$$E\ (lbs/ton) = k*0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$$

where: k = particle size
(0.35 for PM_{10} and 0.053 for $PM_{2.5}$, from AP-42 (11/06), Section 13.2.4)
U = wind speed
(15 mph, worst case value from Ranges of Source Conditions)
M = moisture content
(0.25 %, worst case value from Ranges of Source Conditions)

Applying the above factors: E = 0.0859 lbs PM_{10}/ton of coal
E = 0.013 lbs $PM_{2.5}$/ton of coal

Coal handling factors for crushing and conveying were taken from "Compilation of Past Practices and Interpretations by EPA Region VIII on Air Quality Review of Surface Mining Operations." These factors are also consistent with those used in an Oklahoma power plant Title V permit. A factor of 0.2 lbs PM/ton of coal was used for crushing, and a factor of 0.02 lbs PM/ton coal was used both for conveying and the conveying/filling process into the bunkers. No factors were

compiled for the coal feeders or the pulverizers. These are closed processes and are expected to have no visible emissions. However, they are subject to a 20% opacity limit by regulation.

Applying the above emission factors to a throughput of 519,362 tons of coal in 2003, the applicant estimated actual emissions as shown in the following table. Generally, sub-bituminous coal would have a heat value content of more than 8,300 Btu/lb and less than 11,500 Btu/lb. Using the low value and the total combined heat input rating of Boilers B-2, B-3, and B-4, operating on a continuous schedule, coal consumption should not exceed 820,178 TPY. The PTE shown in the table is based on a throughput of 820,200.

EUG 3 Coal Preparation Plant
Coal Processing and Conveying Emissions

EU ID	Description	$PM_{2.5}$ Emission Factors	PM_{10} Emission Factors	Potential Coal Throughput	$PM_{2.5}$ Emissions	PM_{10} Emissions
		lbs/ton coal	lbs/ton coal	TPY	TPY	TPY
	Railcar Unloading	0.013	0.0859	519,362	5.87	35,23
	Radial Stacker					
	Grizzly Feeder					
	Coal Sizer/Crusher	0.20	0.20	820,000	82.03	82.03
	Conveying	0.02	0.02	519,362	1.37	8.20
B-3 & B-4	Coal Bunkers	0.02	0.02	519,362	1.37	8.20
B-3 & B-4	Coal Feeders	Closed Process No Emissions				
B-3 & B-4	Pulverizers					

Concerning the building housing the Coal Sizer/Crusher, there are openings on two sides of the building for the ingoing and outgoing conveyors. Except for the outlet chute opening to the conveyor, the Coal Sizer/Crusher is enclosed. Based on this and visual observation, the applicant feels that Coal Sizer/Crusher emissions are probably less than Unloading/Stacker/Feeder emissions, because of the enclosure. Although the applicant was not able to find a more representative published factor. The only limit placed in the permit at this time by AQD is opacity.

Coal Storage
Solid fuels that will be used in the boilers are stored in outdoor storage piles at the mill site. Emissions from the Coal Pile (FS-1) pertains to the particulate emissions resulting from pile building, wind erosion, and pile breakdown. The Coal Pile (FS-1) has an estimated area of 465,000 ft^2 based on site visits and aerial photos. Based on information from a 1984 report by the Electric Power Research Institute, CS 3455, the following calculation was used to determine emissions from the coal pile:

$$E = 1.9(S/1.5)[(365-P)/235)](f/15)$$

where: E = emission factor (kg of PM/hectare-day)

S = silt content of aggregate
P = number of days with > 0.25 mm of precipitate per year.
f = percentage of time that the unobstructed wind speeds exceeds 5.4 m/s at the mean pile height.

for Muskogee:

S = 2.2 (AP-42 table 11.2, 3.1)
P = 90 (AP-42 figure 11.2,1-1)
f = 39 from the 1988 Windrose for Tulsa, OK (1 knot = .5 m/s)

As a result, for every hectare of coal stored, the following was used to determine the coal dust emissions.

Kg/hectare-day = 1.9(2.2/1.5)[(365-90)/235](39/15) = 8.5

The approximate square footage of the coal pile is 465,000 ft^2.

Converting coal pile square footage to hectares = 465,000 ft^2 (0.00000929 hectare/ft^2) = 4.319 hectares

EU ID	Emissions Factor (kg/hectare-day)	Throughput (hectares)	Control Efficiency	PM Emissions (TPY)
FS-1	8.5	4.319	None	14.76

EUG 3 Coal Preparation Plant
Coal Storage Emissions

EU ID	Emissions Factor	Coal Pile Area	Control Efficiency	PM Emissions (1)
	kg/hectare-day	hectares	%	TPY
FS-1	8.5	4.32	None	14.76

(1) There is no data for PM_{10} and $PM_{2.5}$, therefore they are assumed to be equal to total PM.

EUG 3 Coal Preparation Plant
Total Emissions Summary

EU ID	Description	$PM_{2.5}$ Emissions	PM_{10} Emissions
		TPY	TPY
	Railcar Unloading	5.87	35.23
	Radial Stacker		
	Grizzly Feeder		
	Coal Sizer/Crusher	82.03	82.03
	Conveyor	1.37	8.20
B-3 & B-4	Coal Bunkers	1.37	8.20
B-3 & B-4	Coal Feeders	Closed Process No Emissions	Closed Process No Emissions
B-3 & B-4	Pulverizers		
FS-1	Coal Pile	14.76	14.76
Totals		**105.40**	**147.94**

EUG 4 Pulp Processing Units

This EUG is reserved for future Subpart S applicable units. VOC and HAP emission calculations are included in EUG 6 VOC Sources Not Subject to an NSPS or NESHAP and are not represented here.

EUG 5 Flexographic Printing (Subpart KK)

Emissions of HAPs from the Flexographic Paper Printers (FP-1 and FP-8) are limited by Subpart KK to 400 kilograms per month. In addition to restrictions on HAP emissions, these units have a large amount of VOC emissions. Non-HAP emissions may become subject to the requirements of OAC 252:100-42. VOC emissions for the Flexographic Paper Printers (FP-1 and FP-8), not subject to an NSPS or NESHAP, are included in EUG 6 VOC Sources Not Subject to an NSPS or NESHAP and are not represented here.

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP

EU ID	Description	Manufacturer/Model	Construction Date
PP-1	Pulp Processing Units	N/A (1)	1977-1992
PM-11	Paper Machine No. 11	KMW	1975
PM-12	Paper Machine No. 12	KMW	1975
PM-13	Paper Machine No. 13	KMW	1979
PM-14	Paper Machine No. 14	Beloit	1981
PM-15	Paper Machine No. 15	Beloit	1992
	Paper Machine Additives	N/A	
SC-1	Solvent Cleaning for PM-11, PM-12, PM-13, PM-14	N/A	1975
PM-15	Solvent Cleaning for PM-15	N/A	1992
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/Model No. 7416	1993
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	June, 2005

(1) Components are detailed in Section V of the Memorandum under EUG 4 and EUG 6.

Pulp Processing Units (PP-1)
HAP Emission factors for the Pulp Processing Units (PP-1) were developed from a comprehensive emissions testing program by The National Council for Air and Stream Improvement, Inc. (NCASI).

The HAP emissions for all Pulp Processing Units (PP-1) are estimated in the following table. This is also the table submitted (in its latest revision) for the Title V permit application. The permitted VOC factor was established in Permit No. 99-113-C (M-4) PSD.

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Pulp Processing Units (PP-1) HAP Emissions

EU ID	HAP	HAP Emissions	
		lb/hr	TPY
PP-1	1,2-dimethoxyethane	0.01	0.05
	Acetaldehyde	2.78	12.19
	Chloroform	9.06	39.70
	Formaldehyde	<0.01	<0.01
	Methanol	7.77	34.03
	Methyl ethyl ketone	0.13	0.57
	Methylene chloride	<0.01	<0.01
	Naphthalene	0.12	0.54
	Phenol	0.47	2.04
	Propionaldehyde	0.06	0.26
	Toluene	3.17	13.90

The following combined emission factor was developed per Permit No. 99-113-C (M-4) PSD.

$$\text{Emission Factor} = \frac{\sum \text{VOC Constituents}}{\text{Total Pulp Process Rate}} = \frac{28.11 \text{ lbs/hr}}{64.59 \text{ TPH}} = 0.44 \text{ lbs/ton}$$

The permitted factor is 0.45 lbs/ton.

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Pulp Processing Units (PP-1) Potential VOC Emissions

EU ID	Pulp Use	Emission Factor	VOC Emissions
	TPY	lb/ton	TPY
PP-1	567,205	0.45	127.62

Paper Machines (PM-11, PM-12, PM-13, PM-14, and PM-15)
Mass balance based on the solvent content of additives consumed is used to calculate VOC emission factors for the paper machines. This methodology is detailed in the following sub-section titled "Paper Machine Additives."

Paper Machine Additives
VOC emissions are generated primarily from paper enhancement chemicals such as softness aids, dyes, biocides, etc. The basis for the emissions calculation is a mass balance using the summation of the estimated VOCs emitted from additives. Therefore, VOC emission calculations are based on VOC concentrations and throughput of each chemical. A 100% release factor is applied in the same way as demonstrated for paper machine solvent emissions in SC-1.

In Permit No. 99-113-C (M-4) PSD, the applicant reviewed all chemical use in terms of VOC content for baseline years 2002 and 2003. An emission factor was derived using the quotient of the VOC totals and paper production for those years, inflated by nearly 50% to provide a

contingency for variations of VOC that may occur in additive formulations that may become available. The following table shows the data used in calculating the emissions factor.

Additive	**VOC Usage**		
	2002	**2003**	**Maximum 2002/2003**
	TPY	**TPY**	**TPY**
Wet Strength	30.63	50.22	50.22
Softeners	4.67	1.76	4.67
Release Agents	0.26	0.44	0.44
Miscellaneous	10.11	7.03	10.11
Felt/Wire Conditioners	6.79	6.90	6.90
Defoamers	8.73	6.11	8.73
Biocides	0	9.94	9.94
Paper Machine Dyes	0.19	0.18	0.19
Total VOC Usage	**61.39 TPY**	**82.58 TPY**	**91.21 TPY**
Paper Production	342,202 ADT/yr	349,558 ADT/yr	345,880 ADT/yr (1)
VOC Emission Factor	0.359 lbs VOC/ADT	0.472 lbs VOC/ADT	0.527 lbs VOC/ADT

(1) Two-year average of paper production from 2002 and 2003.

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Paper Machine Additives VOC Emissions

Paper Production	**Emission Factor**	**VOC Emissions**
ADT/yr	**lb/ADT**	**TPY**
480,940*	0.75	180.35

*Equivalent to 458,000 MDT/yr of the proposed paper production

Solvent Cleaning of Paper Machines 11, 12, 13, and 14 (SC-1)

Emissions of VOCs from Solvent Cleaning (SC-1) are based on the use of a 100% VOC solvent to clean Paper Machine wires. This solvent is applied through spray nozzles located across a boom that stretches across the Paper Machine. In Permit No. 99-113-C (M-4) PSD, the applicant reviewed the solvent use in terms of VOC content for baseline years 2002 and 2003. An emission factor was derived by comparing the solvent use with paper production for each of the two years. The most-polluting ratio was taken to represent future production. The first table following shows the data used to calculate the ratio. Note that this approach assumes that all of the VOC is emitted, making recordkeeping much simpler, and assuring conservatively high calculations. It also combines the emissions and conditions for Solvent Cleaning for PM-11, 12, 13, and 14 with those for PM-15 into a single set of requirements.

	2002	**2003**
VOC Solvent Usage	500 TPY	414 TPY
Paper Production	342,202 ADT/yr	349,558 ADT/yr
Emission Factor	2.92 lbs VOC/ADT	2.37 lb VOC/ADT

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Solvent Cleaning (SC-1) VOC Emissions

Paper Production	Emission factor	VOC Emissions
ADT/yr	lb/ADT	TPY
480,940*	2.92	702.17

*Equivalent to 458,000 MDT/yr of the proposed paper production

Since HAP are required to be speciated for annual emission inventory purposes, and since enumeration of various HAP will not alter the status of this permit, no attempt is made here to analyze the individual components of the solvents, or to establish anticipated quantities of each that may be emitted.

Flexographic Paper Printers (FP-1 and FP-8)
At the time the VOC level was authorized, average VOC concentration in water-based inks ranged from approximately 6% to 8%. A conservatively high 10% was used to calculate emissions and to allow for flexibility in varying ink VOC concentrations. Therefore, emissions are calculated by estimating 10% of the maximum ink usage, 922.76 tons of ink/yr, is VOC. The data used imply use of 0.343 pounds of VOC per ton of paper.

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Flexographic Paper Printers (FP-1 and FP-8) VOC Emissions

Paper Production	Emission factor	VOC Emissions
ADT/yr	lb/ADT	TPY
480,940*	0.343	82.48

*Equivalent to 458,000 MDT/yr of the proposed paper production

EUG 6 VOC Emissions Not Covered by an NSPS or NESHAP
Emissions Summary

EU ID	Description	VOC Emissions
		TPY
PP-1	Pulp Processing Units	127.62
PM-11– PM-15	Paper Machine No. 11 – Paper Machine No. 15 (1)	-
	Paper Machine Additives	180.35
SC-1	Solvent Cleaning for PM-11, PM-12, PM-13, PM-14	702.17
PM-15	Solvent Cleaning for PM-15	
FP-1	Flexographic Paper Printer	82.48
FP-8	Flexographic Paper Printer	
Total		**1,092.62**

(1) The methodology that was used in calculating emissions for the paper machines presented in the public draft permit has been abandoned & replaced. Emissions are now illustrated under Paper Machine Additives.

EUG 7 Non-Combustion PM Sources Not Subject to NSPS or NESHAP

Paper Machines

Emission factors in the following table are based on stack testing at Muskogee Mill and other paper mills.

Permit No. 99-113-C (M-12) authorized the installation of the PM-15 "Winder Section Dust Collection and Control System" with the general objectives of improving indoor air quality and minimizing dust (particulate matter/PM) accumulation and entrainment in paper rolls. PM-15 had an existing limit of 10.29 TPY for the entire Paper Machine PM-15 process, which applied whether or not the "Reel Section Dust Collection System" is in operation. Additional PM emissions of 9.82 TPY ($PM/PM_{10}/PM_{2.5}$) were authorized for PM-15 under Permit No. 99-113-C (M-12). In justifying the new additional limits, Georgia-Pacific obtained stack test data for a similar scrubber at the Rincon facility that indicate controlled emissions off the new scrubber for the Muskogee facility will be approximately 7.01 tons per year (1.6 lbs/hr) of total PM. Due to uncertainties described in the memorandum of Permit No. 99-113-C (M-12), Georgia-Pacific requested an enforceable limit of 9.82 TPY $PM/PM_{10}/PM_{2.5}$ for the Winder Section Dust Collection and Control System to avoid PSD applicability which they believed would provide a margin of compliance. On November 19, 2014, uncontrolled emissions were tested to be 17.7 TPY and controlled emissions were tested to be 2.2 TPY. The existing limit of 10.29 PM_{10} tons per year for the PM-15 building vents and the Reel Section Dust Collection System remains in effect.

EUG 7 Non-Combustion PM Sources Not Subject to NSPS or NESHAP
PM Emissions Summary

EU ID	Description	Paper Production	Emission Factors [1]			Emissions		
			PM	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}
		MDT/yr	lb/MDT	lb/MDT	lb/MDT	TPY	TPY	TPY
PM-11	Paper Machine No. 11	74,000	1.666	0.255	0.409	61.65	9.44	15.13
PM-12	Paper Machine No. 12	100,000	0.297	0.124	0.167	14.86	6.20	8.35
PM-13	Paper Machine No. 13	80,000	0.405	0.163	0.220	16.20	6.52	8.80
PM-14	Paper Machine No. 14	100,000	1.343	0.257	0.383	67.17	12.85	19.15
PM-15	Paper Machine No. 15 Building Vents	104,000	0.936	0.229	0.327	48.69	11.91	17.00
	Paper Machine No. 15 Winder & Reel Section Dust Collection and Control System		-	-	-	9.82	9.82 [2]	9.82 [2]
Totals		**458,000**		**-**	**-**	**218.39**	**56.74**	**78.25**

(1) Emission factors are based on stack testing at the Muskogee Mill and other Georgia-Pacific mills.
(2) PM_{10} and $PM_{2.5}$ emissions are assumed to be equal to total PM.

Paper Machine 15 Dust Collection System
Paper Machine 15 (PM-15) is equipped with dust collection systems that are specifically designed to reduce dust inside the paper machine building. Reducing the dust in the paper machine building allows the employees to work in the area without the use of a respirator, which could otherwise be required by OSHA due to employee exposure limits. The Reel Section Dust Collection System and the Winder Section Dust Collection and Control System utilize wet scrubbers to filter collected dust prior to discharge. As previously noted, the PM emissions listed above for the PM-15 Reel Section Dust Collection System are potential emissions without this collection system operating. Since emissions for this system are permitted at potential levels, previous permit memorandums stated that no monitoring or recordkeeping would be required for this collection system. However, since uncontrolled emissions from the Winder Section Dust Collection and Control System would be above the significance level as confirmed by testing, monitoring and maintenance conditions are appropriate for that system scrubber.

EUG 8 Emergency Engine

Estimated NO_X, CO, SO_2, PM, and VOC emissions for the emergency diesel fire pump engine were calculated based upon 500 hrs/yr of operation and emission factors from AP-42 (7/98), Table 3.3-1 for diesel fuel.

EUG 8 Emergency Engine Emission Factors

EU ID	Description	$PM_{2.5}$	PM_{10}	NO_X	SO_2	VOC	CO
		lb/hp-hr	lb/hp-hr	lb/hp-hr	lb/hp-hr	lb/hp-hr	lb/hp-hr
DFP-1	240-hp Cummins N-855-F	0.0022	0.0022	0.031	0.00205	0.00251	0.0068

EUG 8 Emergency Engine Emissions Summary

EU ID	$PM_{2.5}$		PM_{10}		NO_X		SO_2		VOC		CO	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
DFP-1	0.53	0.13	0.53	0.13	7.44	1.86	0.49	0.12	0.60	0.15	1.63	0.40

SECTION VII. BACT FOR PM_{10} and $PM_{2.5}$ EMISSIONS FROM PROCESS OPERATIONS OF PAPER MACHINES NO. 11, 12, 13, 14, AND 15

As this permit will modify previous BACT limits for PM_{10} emissions and add BACT limits for $PM_{2.5}$ emissions from the process operations of the paper machines, the BACT evaluation in this section is only for PM_{10} and $PM_{2.5}$.

The requirement to conduct a BACT analysis is set forth in OAC 252:100-8-34(b). BACT is defined in OAC 252:100-8-31 as:

"…best available control technology means an emissions limitation (including a visible emission 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 Director, 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 combustion techniques for control of such pollutant."

The following methodology for performing a top-down BACT analysis has been developed from the US EPA's 1990 Draft New Source Review Workshop Manual - BACT Guidance. The analysis utilizes five key steps to identify the most suited BACT option for the project. The first step in this approach is to determine, for the emission units in question, the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically, environmentally, or economically infeasible for the unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

Step 1: Identify Available Control Technologies

Available control technologies are identified for each emission unit in question. The following methods are used to identify potential control technologies: 1) researching the Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) database; 2) surveying regulatory agencies; 3) drawing from previous engineering experience; 4) surveying air pollution control equipment vendors; and 5) surveying available literature.

Step 2: Eliminate Technically Infeasible Options

After the identification of control options, an analysis is conducted to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that prohibit the implementation of the control technology.

Step 3: Rank Remaining Control Options by Control Effectiveness

Once technically infeasible options are removed from consideration, the remaining options are ranked based on their control effectiveness. If there is only one remaining option, or all of the remaining technologies could achieve equivalent control efficiencies, ranking based on control efficiency is not required.

Step 4: Evaluate and Eliminate Control Technologies Based on Energy, Environmental, and Economic Impacts

Beginning with the most efficient control option in the ranking, detailed economic, energy, and environmental impact evaluations are performed. If a control option is determined to be economically feasible without adverse energy or environmental impacts, it is not necessary to evaluate the remaining options with lower control efficiencies.

The economic evaluation centers on the cost effectiveness of the control option. Costs of installing and operating control technologies are estimated following the methodologies outlined in the EPA's OAQPS Control Cost Manual (CCM) and other industry resources. Cost effectiveness is expressed as dollars per ton of pollutant controlled. Objective analyses of energy and

environmental impacts associated with each option are also conducted. Both beneficial and adverse impacts are discussed and quantified.

Step 5: Select BACT and Document the Selection as BACT

In the final step, one pollutant specific control option is proposed as BACT for each emission unit under review based on evaluations from the previous step. The resulting BACT standard is an emission limit unless technological or economic limitations of the measurement methodology would make the imposition of an emissions standard infeasible, in which case a work practice standard can be imposed.

Lastly, if a source is subject to an NSPS, the minimum control efficiency to be considered in a BACT analysis must result in an emission rate less than or equal to the NSPS emission rate. In other words, the applicable NSPS limit represents the maximum allowable emission limit (or ceiling) for an emission source.

A. Step 1:Identify Available Control Technologies

Potentially available control technologies were investigated by reviewing the Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) database, technical literature, control equipment vendor information, and by using process knowledge and engineering experience from similar types of units in operation at other Georgia-Pacific facilities.

Potentially Available Control Technologies

Pollutant	Listed Control Technologies
$PM_{10}/PM_{2.5}$	Baghouses
	Drum Filters
	Dry Electrostatic Precipitators (ESPs)
	Wet ESPs
	Wet Scrubbers
	Cyclone Separators
	Good Operation Practices

B. Step 2:Eliminate Technically Infeasible Options

A control option is eliminated from consideration if it is shown that the technology has not been demonstrated on similar emission sources and that it also is not commercially available, or it cannot be applied to the emissions source under consideration.

1. Baghouses

A baghouse, or fabric filter, is one of the most efficient devices for removing Particulate matter from an exhaust stream. Baghouses can achieve collection efficiencies greater than 99% for particles as small as 0.3 micrometers in diameter. The basic components of a fabric filter unit are woven or felted fabric, usually in the form of bags that are suspended in a housing structure, an

induced draft or forced draft fan, and a blow-back fan, reverse air fan, pulse-jet fan, or a mechanical shaking mechanism. The emission stream is distributed by means of specially designed entry and exit plenum chambers, providing equal gas flow through the filtration medium. The particle collection mechanism for fabric filters includes inertial impaction, Brownian diffusion, gravity settling, and electrostatic attraction. The particles are collected in dry form on a cake of dust supported by the fabric or on the fabric itself. The process occurs with a low pressure-drop requirement (usually within the range of 2 to 6 inches of water column pressure). Periodically, most of the cake dust is removed for disposal by shaking or a rapping system, with the use of reverse air or a pulse jet of air. Dust is collected in a hopper at the bottom of the baghouses and is removed through a valve and dumped into a storage container. Usually, the dust is disposed of at an industrial landfill.

Baghouses can be a combustible dust risk due to the collection of dust in a confined space that can lead to a fire or explosion if an ignition source is present. Cellulosic fibers that are prominent in the wood products industry can fuel a flash fire or explosion with potentially catastrophic consequences. Over the past several years, Georgia-Pacific has taken many measures to reduce combustible dust explosion risks across the company including removing baghouses and installing cyclones or drum filters. As such, GP does not consider installing a baghouse on any of the paper machine exhaust streams to be technically feasible for safety reasons.

In addition, baghouses are an inherently poor choice for airstreams containing moisture. High moisture or humidity levels cannot be tolerated by a baghouse as the filter media would quickly become “blinded” due to the moisture in the stream, and as a result, would not collect dust efficiently. The collected particulate matter cannot be effectively removed from wet bag filters, which could result in plugging of the bags. The air stream entering a baghouse must be very dry for the technology to work effectively.

Due to the safety and moisture/humidity concerns identified above, the use of a baghouse for controlling any exhaust stream from the paper machines is not technically feasible and will not be considered further.

2. Drum Filters

Drum filtering systems work on the same principle as a baghouse, except that instead of using suspended bags in a housing structure, drum filter systems use a rotating perforated drum inside an enclosure. A main system balancing fan pulls air and particulate matter into the enclosure. The clean air passes through the filter media covering the drum. Dust and particulate matter remain on the media and are removed by an arrangement of suction nozzles as the drum rotates against them. The dust that is removed from the rotating drum is directed to a cyclone separator that drops the dust into a collection bin The collected dust can be reused or sent to an industrial landfill for disposal. The clean, filtered air passing through the drum is discharged from the system. The collection efficiency for a drum filtering system is equivalent to a baghouse, with collection efficiencies at or above 99% for particles smaller than 1 µm.

Like baghouses, drum filters are an inherently poor choice for air steams containing moisture or high humidity due to the difficulty of cleaning particulate matter from wet filter media. This is of

particular concern in the paper industry because the paper dust collected on the filter media will itself become wet and sticky and will not vacuum off the filter media during cleaning. Drum filters are also not well suited to very high temperature exhaust streams, such as the Yankee Hood exhaust, as they reduce the life of the filter media, bearings, and other components, making the unit unreliable.

The use of a drum filter for controlling particulate matter emissions from paper machines other than the general building exhaust is not technically feasible due to the high humidity and/or moisture of the exhaust gases generated by a paper machine. However, for completeness, drum filters are further evaluated for all sections of the paper machines.

3. Dry Electrostatic Precipitators (ESPs)

ESPs use electrical energy to charge and collect particles with a very high removal efficiency. The classification of ESPs may be as wet or dry systems and/or single-stage or two-stage systems. Dry systems are the predominant type used in industrial applications but are suited only to dry exhaust streams. Wet systems are increasing in use today because they eliminate the possibility of fires, which can sometimes occur in dry systems.

The principal components of a dry ESP are the housing, discharge and collection electrodes, power source, cleaning mechanism, and solids management systems. The housing is gas-tight, weatherproof, and grounded for safety. Dust particles entering the housing are charged by ions from the discharge electrodes. Dust is collected on the collection electrodes, which are also referred to as plates The system voltage and the distance between the discharge and collection electrodes govern the electric field strength and the amount of charge on the particles. Dry ESPs are most effective at collecting coarse particles larger than 1.0 um in diameter. Smaller particles are difficult to remove because they can inhibit the generation of the charging corona in the inlet field and thereby reduce collection efficiency.

Rappers serve as the cleaning mechanisms for dry ESPs. Dust hoppers collect the precipitated particles from a dry ESP. Dust is removed continuously or periodically from the hopper and stored in a container until final disposition. Collection efficiencies for dry ESPs are usually at or above 98%.

Like baghouses, dry ESPs are also considered a combustible dust risk. Dry ESPs are also an inherently poor choice for airstreams containing moisture because the electrodes in these units are not designed for moisture-containing airstreams. As such, GP does not consider installing a dry ESP on any of the paper machine exhaust streams to be technically feasible.

4. Wet Electrostatic Precipitators

Wet ESPs work on the same principle as dry ESPs, except that wet ESPs operate a wet wall with the ESP with either continuous or intermittent water flow. The water flow is collected into a sump. The advantages of a wet ESP are that it has no back coronas and a reduced risk of developing fires. Wet ESPs are specifically designed to collect particulate matter from wet air streams. Therefore,

wet ESPs are considered technically feasible for controlling particulate matter emissions from paper machines.

5. Wet Scrubbers

Wet scrubbers are collection devices that trap wet particles to remove them from a gas stream. They utilize inertial impaction and/or Brownian diffusion as the particle collection mechanism. Wet scrubbers use water as the cleaning liquid. Water usage and wastewater disposal requirements are important factors in the evaluation of a wet scrubber control device. There are several types of wet scrubbers including spray scrubbers, cyclone scrubbers, packed-bed scrubbers, plate scrubbers, and venturi scrubbers.

The most common particulate matter removal scrubber is the venturi scrubber because of its simplicity and high collection efficiency. In this type of scrubber, the gas stream entering the converging section is accelerated as a low-pressure liquid (usually water) is injected into the throat. The liquid is atomized by the turbulence in the throat and begins to collect particles impacting the liquid because of differing velocities for the gas stream and atomized droplets. A separator is used to remove the particles or liquid from the gas stream. The most important design consideration is the pressure drop across the venturi. Generally, the higher the pressure drop is, the higher the collection efficiency gets to. Wet scrubbers are considered technically feasible for paper machines.

6. Cyclone Separators

Cyclone separators are devices that utilize centrifugal forces and low pressure caused by spinning motion to separate materials of different density, size, and shape. Gas cyclones are used to separate particulate matter from dust-laden air streams. Cyclones are popular because they are simple to operate, inexpensive to manufacture, require little maintenance, and operate at high temperatures and pressures. The two types of separators available are tangential and axial. In axial flow cyclones, the gas stream enters from the top of the unit and particles are forced to the wall b centrifugal force and then fall down the wall due to gravity. In tangential cyclones, the gas stream enters from an inlet on the side that is positioned tangentially to the body of the unit. Multi-stage cyclones can increase the amount of particulate matter that is removed by connecting several single stage cyclones in series. The first stage of a multi-stage cyclone removes the larger particles while the remaining stages remove smaller particles. The collection efficiency of cyclone systems varies between 25% and 95%, depending greatly on the number of cyclone stages in the system and the particle size range.

Cyclones can sufficiently manage gas streams with high moisture and do not present a combustible dust concern because dust is continuously removed from the system. As such, cyclone separators are considered technically feasible for controlling particulate matter emissions from paper machine exhaust points.

7. Good Operating and Combustion Practices

Good operating practices for the paper machine include routine cleaning of the paper machine and paper machine area. In addition, good combustion practices may be used to minimize emissions

from the Yankee Hood burners. Good operating and combustion practices are considered technically feasible.

C. Step 3 -Rank the Technically Feasible Control Alternatives to Establish a Control Hierarchy

Remaining control technologies that were not eliminated on a technical basis are ranked in order of control effectiveness in the following table.

Pollutant	Control Technology	Control Efficiency
$PM_{10}/PM_{2.5}$	Drum Filter(1)	99%+
	Wet ESP	99%
	Wet Venturi Scrubber	90-99%
	Cyclone Separator	80-95%
	Good Operating & Combustion Practices	Varies

(1) The use of drum filters for exhausts other than the general building ventilation exhaust is not technically feasible due to humidity/moisture and sticky material concerns.

D. Step 4 – Evaluate and Eliminate Control Technologies Based on Energy, Environmental, and Economic Impacts

This step evaluates economic, energy, and environmental impacts of remaining technologies from the previous step, beginning with the most efficient control option in the ranking. If a control option is determined to be economically feasible without adverse energy or environmental impacts, it is not necessary to evaluate the remaining options with lower control efficiencies.

The economic evaluation centers on the cost effectiveness of the control option, following the methodologies outlined in the EPA's OAQPS Control Cost Manual (CCM) and other industry resources. Costs of installing and operating control technologies are supplied by equipment vendors and the GP engineering department. When needed, typical values were selected from the OAQPS Manual for the various parameters used in the analyses. Vendor quotes obtained for a recent paper machine project at a similar GP facility or other recent projects were used as much as possible to estimate purchased equipment costs. Portion of EPA's cost control spreadsheets originally developed by OAQPS in 1990 and updated several times since have also been used to prepare the cost estimates and cost effectiveness calculation in this BACT analysis.

The following table lists operating cost data used for all cost estimates.

Parameter	Cost
Operating Labor Cost	$36.05/hr
Maintenance Labor Cost	$36.05/hr
Electricity Cost	$0.04/kWh
Water Cost	$0.25/Mgal
Wastewater Treatment Cost	$0.42/Mgal
Natural Gas Cost	$3.63/MMBTU

Since vendor-based equipment cost factor is based on flow rate in ACFM, the following table lists flow rate and uncontrolled PM_{10} emissions from each vent associated with each paper machine.

Emission Sources	Flow Rate	Uncontrolled PM_{10} Emissions
	ACFM	TPY
Paper Machine 11		
Building Ventilation (All Vents)	502,000	10.85
Yankee Hood Exhaust	145,420	2.88
Vacuum Pump Exhaust	25,000	0.66
Former Exhaust	53,100	0.36
Fan Pump Silo Exhaust	5,890	0.37
Paper Machine 12		
Building Ventilation (All Vents)	375,500	2.98
Yankee Hood Exhaust	95,585	2.22
Vacuum Pump Exhaust	25,000	0.89
Former Exhaust	51,000	0.49
Fan Pump Silo Exhaust	5,000	0.50
After Dryer Exhaust	124,998	1.28
Paper Machine 13		
Building Ventilation (All Vents)	323,680	5.19
Yankee Hood Exhaust	48,431	1.77
Vacuum Pump Exhaust	36,000	0.71
Former Exhaust	48,729	0.39
Fan Pump Silo Exhaust	7,000	0.40
After Dryer Exhaust	66,000	0.34
Paper Machine 14		
Building Ventilation (All Vents)	340,000	13.27
Yankee Hood Exhaust	201,874	3.89
Vacuum Pump Exhaust	16,200	0.89
Former Exhaust	22,850	0.50
Fan Pump Silo Exhaust	29,000	0.49
Transfer Box Exhaust	2,500	0.09
Paper Machine 15		
Building Ventilation (All Vents)	381,024	10.28
Yankee Hood Exhaust	152,192	4.05
Vacuum Pump Exhaust	12,813	0.93
Former Exhaust	15,200	0.52
Fan Pump Silo Exhaust	24,730	0.51
Reel Dust Scrubber Exhaust	76,600	0.71

Drum Filter

The top control technology to be evaluated for economic feasibility is a drum filter. The cost of drum filters recently installed on a converting operation at a similar Georgia-Pacific facility was

used as the basis for determining the total capital investment for drum filters on the aper machines. A detailed cos analysis was completed for a theoretical system rated at 100,000-ACFM and then scaled to the flow rate for each exhaust point on the paper machine.

Cost Category	Value	Notes
Total Capital Investment (TCI)		
Vendor-Based Equipment Cost Factor	$16.4/ACFM	Quote in 2013 for a GP facility
Air Flow Analyzed	100,000 ACFM	
Vendor-Based Equipment Cost (PEC)	$1,640,000	
Engineering Factor (EF)	1.0	Vendor Quote
TCI	**$1,640,000**	**TCI=PEC x EF**
Capital Recovery Cost (CRC)		
Capital Recovery Factor (CRF)	0.0944	CRF=5% interest and 30-yr equipment life
CRC	**$154,804**	**CRC=TCI x CRF**
Operating Costs		
Direct Operating Cost (DOC)		
Operating Labor (A)	$13,158	Based on 1 hour per day
Supervisory Labor (B)	$1,974	B = 15% x A
Maintenance Labor (C)	$13,158	Based on 1 hour per day
Maintenance Materials (D)	$13,158	Equivalent to C
Electricity Usage for Fan Power (E)	3,029,081 kWh/yr	Based on fan power requirements for similar GP system
Cost of Electricity (F)	$121,163	=E x 0.04/kWh
DOC	**$162,612**	**DOC=A+B+C+D+F**
Indirect Operating Cost (IOC)		
Overhead (H)	$24,869	=60% x (A+B+C+D)
Property Tax (I)	$16,400	=1% of TCI
Insurance (J)	$16,400	=1% of TCI
Administrative Charges (K)	$32,800	=2% of TCI
IOC	**$90,469**	**IOC=H+I+J+K**
Total Annualized Cost (AC)	**$407,885**	**AC=CRC+DOC+IOC**

The following table lists the cost effectiveness for each vent associated with each paper machine using evaluation outlined in the above table. The amount of pollutant removed by each drum filter was estimated based on the uncontrolled emissions and a conservative control efficiency of 99.5% for PM_{10} for each drum filter, including both filterable and condensable particulate matter.

Emission Sources	Annualized Cost	Uncontrolled PM_{10} Emissions	Amount of PM_{10} Removed	Cost Effectiveness
	$	TPY	TPY	$/ton Removed
Paper Machine 11				
Building Ventilation (All Vents)	1,780,987	10.85	10.80	164,919
Yankee Hood Exhaust	563,025	2.88	2.86	196,586
Vacuum Pump Exhaust	151,709	0.66	0.66	231,093
Former Exhaust	247,690	0.36	0.36	689,593
Fan Pump Silo Exhaust	86,436	0.37	0.37	233,982
Paper Machine 12				
Building Ventilation (All Vents)	1,348,904	2.98	2.97	454,447
Yankee Hood Exhaust	392,795	2.22	2.20	178,217
Vacuum Pump Exhaust	151,709	0.89	0.89	171,009
Former Exhaust	240,517	0.49	0.49	495,521
Fan Pump Silo Exhaust	83,396	0.50	0.50	167,057
After Dryer Exhaust	493,270	1.28	1.27	386,912
Paper Machine 13				
Building Ventilation (All Vents)	1,171,904	5.19	5.16	227,046
Yankee Hood Exhaust	231,742	1.77	1.76	131,431
Vacuum Pump Exhaust	189,282	0.71	0.71	266,701
Former Exhaust	232,760	0.39	0.39	599,425
Fan Pump Silo Exhaust	90,227	0.40	0.40	225,927
After Dryer Exhaust	291,752	0.34	0.34	858,168
Paper Machine 14				
Building Ventilation (All Vents)	1,227,648	13.27	13.20	92,974
Yankee Hood Exhaust	755,854	3.89	3.87	195,257
Vacuum Pump Exhaust	121,652	0.89	0.89	137,181
Former Exhaust	144,366	0.50	0.50	288,883
Fan Pump Silo Exhaust	165,372	0.49	0.49	340,580
Transfer Box Exhaust	74,857	0.09	0.09	840,591
Paper Machine 15				
Building Ventilation (All Vents)	1,367,772	10.28	10.23	133,756
Yankee Hood Exhaust	586,156	4.05	4.03	145,625
Vacuum Pump Exhaust	110,083	0.93	0.92	119,314
Former Exhaust	118,236	0.52	0.52	227,738
Fan Pump Silo Exhaust	150,787	0.51	0.50	298,708
Reel Dust Scrubber Exhaust	327,958	0.71	0.71	462,245

Other Control Options

Similar evaluation was conducted for other feasible options.

Wet ESP (WESP)

Capital & Operating Cost for a 100,000-ACFM WESP

Cost Category	Value	Notes
Total Capital Investment (TCI)		
Vendor-Based Equipment Cost Factor	$25/ACFM	Quote in 2017 for a GP facility
Air Flow Analyzed	100,000 ACFM	
Vendor-Based Equipment Cost (PEC)	$2,500,000	
Engineering Factor (EF)	2.5	Cost of additional activities
TCI	**$6,250,000**	**TCI=PEC x EF**
Capital Recovery Cost (CRC)		
Capital Recovery Factor (CRF)	0.0944	CRF=5% interest and 30-yr equipment life
CRC	**$154,8045,89,956**	**CRC=TCI x CRF**
Operating Costs		
Direct Operating Cost (DOC)		
Operating Labor (A)	$13,158	Based on 1 hour per day
Supervisory Labor (B)	$1,974	B = 15% x A
Maintenance Labor (C)	$13,158	Based on 1 hour per day
Maintenance Materials (D)	$25,000	D= 1% of PEC
Electricity Usage for Fan Power (E)	1,314,000 kWh/yr	Based on fan power requirements for similar GP system
Cost of Electricity (F)	$52,560	=E x 0.04/kWh
Water Usage (G)	3,504 Mgal/yr	=(4 gpm/60,000 ACFM) x 100,000 ACFM
Cost of Water (H)	$876	
Cost of Waste Water Treatment (I)	$1,472	
DOC	**$108,198**	**DOC=A+B+C+D+F+H+I**
Indirect Operating Cost (IOC)		
Overhead (J)	$31,974	=60% x (A+B+C+D)
Property Tax (K)	$62,500	=1% of TCI
Insurance (L)	$62,500	=1% of TCI
Administrative Charges (M)	$125,000	=2% of TCI
IOC	**$281,974**	**IOC=J+K+L+M**
Total Annualized Cost (AC)	**$980,128**	**AC=CRC+DOC+IOC**

WESP Cost Effectiveness

Emission Sources	Annualized Cost	Uncontrolled PM_{10} Emissions	Amount of PM_{10} Removed	Cost Effectiveness
	$	TPY	TPY	$/ton Removed
Paper Machine 11				
Building Ventilation (All Vents)	4,738,279	10.85	10.74	440,980
Yankee Hood Exhaust	1,404,743	2.88	2.85	492,957
Vacuum Pump Exhaust	278,980	0.66	0.65	427,105
Former Exhaust	541,677	0.36	0.36	1,515,697
Fan Pump Silo Exhaust	100,328	0.37	0.37	272,959
Paper Machine 12				
Building Ventilation (All Vents)	3,555,677	2.98	2.95	1,203,960
Yankee Hood Exhaust	938,826	2.22	2.19	428,110
Vacuum Pump Exhaust	278,980	0.89	0.88	316,058
Former Exhaust	522,045	0.49	0.48	1,080,965
Fan Pump Silo Exhaust	92,008	0.50	0.50	185,238
After Dryer Exhaust	1,213,825	1.28	1.27	956,909
Paper Machine 13				
Building Ventilation (All Vents)	3,071,230	5.19	5.14	598,029
Yankee Hood Exhaust	498,028	1.77	1.75	283,880
Vacuum Pump Exhaust	381,815	0.71	0.71	540,700
Former Exhaust	500,814	0.39	0.39	1,296,255
Fan Pump Silo Exhaust	110,705	0.40	0.40	278,602
After Dryer Exhaust	662,274	0.34	0.34	1,957,870
Paper Machine 14				
Building Ventilation (All Vents)	3,223,800	13.27	13.14	245,384
Yankee Hood Exhaust	1,932,511	3.89	3.85	501,741
Vacuum Pump Exhaust	196,712	0.89	0.88	222,944
Former Exhaust	258,881	0.50	0.50	520,648
Fan Pump Silo Exhaust	316,375	0.49	0.48	654,858
Transfer Box Exhaust	68,636	0.09	0.09	774,629
Paper Machine 15				
Building Ventilation (All Vents)	3,607,319	10.28	10.17	354,545
Yankee Hood Exhaust	1,468,052	4.05	4.00	366,566
Vacuum Pump Exhaust	165,048	0.93	0.92	179,792
Former Exhaust	187,364	0.52	0.52	362,710
Fan Pump Silo Exhaust	276,456	0.51	0.50	550,423
Reel Dust Scrubber Exhaust	761,370	0.71	0.71	1,078,543

Wet Scrubber

Capital & Operating Cost for a 100,000-ACFM Wet Scrubber

Cost Category	Value	Notes
Total Capital Investment (TCI)		
Vendor-Based Equipment Cost Factor	$40/ACFM	Based on 2016 Paper Machine 19 Wider Scrubber Cost
Air Flow Analyzed	100,000 ACFM	
Vendor-Based Equipment Cost (PEC)	$4,000,000	
Engineering Factor (EF)	1.0	Cost from recent installation
TCI	**$4,000,000**	**TCI=PEC x EF**
Capital Recovery Cost (CRC)		
Capital Recovery Factor (CRF)	0.0944	CRF=5% interest and 30-yr equipment life
CRC	**$377,572**	**CRC=TCI x CRF**
Operating Costs		
Direct Operating Cost (DOC)		
Operating Labor (A)	$13,158	Based on 1 hour per day
Supervisory Labor (B)	$1,974	B = 15% x A
Maintenance Labor (C)	$13,158	Based on 1 hour per day
Maintenance Materials (D)	$13,158	Equivalent to maintenance labor
Electricity Usage for Fan Power (E)	3,732,261 kWh/yr	Based on fan power requirements for similar GP system
Cost of Electricity (F)	$149,290	=E x 0.04/kWh
Water Usage (G)	22,526 Mgal/yr	=(4 gpm/60,000 ACFM) x 100,000 ACFM
Cost of Water (H)	$5,631	
Cost of Waste Water Treatment (I)	$9,461	
DOC	**$205,831**	**DOC=A+B+C+D+F+H+I**
Indirect Operating Cost (IOC)		
Overhead (J)	$24,869	=60% x (A+B+C+D)
Property Tax (K)	$40,000	=1% of TCI
Insurance (L)	$40,000	=1% of TCI
Administrative Charges (M)	$80,000	=2% of TCI
IOC	**$184,869**	**IOC=J+K+L+M**
Total Annualized Cost (AC)	**$768,272**	**AC=CRC+DOC+IOC**

Wet Scrubber Cost Effectiveness

Emission Sources	Annualized Cost	Uncontrolled PM_{10} Emissions	Amount of PM_{10} Removed	Cost Effectiveness
	$	TPY	TPY	$/ton Removed
Paper Machine 11				
Building Ventilation (All Vents)	3,590,128	10.85	10.31	348,193
Yankee Hood Exhaust	1,087,100	2.88	2.73	397,551
Vacuum Pump Exhaust	241,806	0.66	0.63	385,781
Former Exhaust	439,055	0.36	0.34	1,280,274
Fan Pump Silo Exhaust	107,663	0.37	0.35	305,248
Paper Machine 12				
Building Ventilation (All Vents)	2,702,156	2.98	283	953,481
Yankee Hood Exhaust	737,260	2.22	2.10	350,351
Vacuum Pump Exhaust	241,806	0.89	0.85	285,478
Former Exhaust	424,314	0.49	0.46	915,595
Fan Pump Silo Exhaust	101,415	0.50	0.48	212,776
After Dryer Exhaust	943,746	1.28	1.22	775,321
Paper Machine 13				
Building Ventilation (All Vents)	2,338,403	5.19	4.93	474,505
Yankee Hood Exhaust	406,281	1.77	1.68	241,334
Vacuum Pump Exhaust	319,021	0.71	0.68	470,798
Former Exhaust	408,373	0.39	0.37	1,101,495
Fan Pump Silo Exhaust	115,454	0.40	0.38	302,788
After Dryer Exhaust	529,607	0.34	0.32	1,631,592
Paper Machine 14				
Building Ventilation (All Vents)	2,452,962	13.27	12.61	194,572
Yankee Hood Exhaust	1,483,381	3.89	3.70	401,349
Vacuum Pump Exhaust	180,034	0.89	0.85	212,634
Former Exhaust	226,714	0.50	0.48	475,155
Fan Pump Silo Exhaust	269,884	0.49	0.46	582,149
Transfer Box Exhaust	83,866	0.09	0.09	986,374
Paper Machine 15				
Building Ventilation (All Vents)	2,740,932	10.28	9.76	280,735
Yankee Hood Exhaust	1,134,636	4.05	3.84	295,242
Vacuum Pump Exhaust	156,259	0.93	0.88	177,385
Former Exhaust	173,015	0.52	0.50	349,035
Fan Pump Silo Exhaust	239,911	0.51	0.48	497,774
Reel Dust Scrubber Exhaust	604,015	0.71	0.68	891,663

Cyclone Separator

Cost Category	Value	Notes
Total Capital Investment (TCI)		
Vendor-Based Equipment Cost Factor	$8.6/ACFM	Quote in 2017 for a GP facility
Air Flow Analyzed	100,000 ACFM	
Vendor-Based Equipment Cost (PEC)	$860,000	
Engineering Factor (EF)	2.5	Cost for Additional Activities
TCI	**$2,150,000**	**TCI=PEC x EF**
Capital Recovery Cost (CRC)		
Capital Recovery Factor (CRF)	0.0944	CRF=5% interest and 30-yr equipment life
CRC	**$202,945**	**CRC=TCI x CRF**
Operating Costs		
Direct Operating Cost (DOC)		
Operating Labor (A)	$13,158	Based on 1 hour per day
Supervisory Labor (B)	$1,974	B = 15% x A
Maintenance Labor (C)	$13,158	Based on 1 hour per day
Maintenance Materials (D)	$13,158	Equivalent to C
Electricity Usage for Fan Power (E)	753,340 kWh/yr	Based on fan power requirements for similar GP system
Cost of Electricity (F)	$30,134	=E x 0.04/kWh
DOC	**$71,582**	**DOC=A+B+C+D+F**
Indirect Operating Cost (IOC)		
Overhead (H)	$24,869	=60% x (A+B+C+D)
Property Tax (I)	$21,500	=1% of TCI
Insurance (J)	$21,500	=1% of TCI
Administrative Charges (K)	$43,000	=2% of TCI
IOC	**$110,869**	**IOC=H+I+J+K**
Total Annualized Cost (AC)	**$385,396**	**AC=CRC+DOC+IOC**

The following table lists the cost effectiveness for each vent associated with each paper machine using evaluation outlined in the above table. The amount of pollutant removed by each cyclone was estimated based on the uncontrolled emissions and a conservative control efficiency of 90% for PM_{10} for each cyclone, including both filterable and condensable particulate matter.

Emission Sources	Annualized Cost	Uncontrolled PM_{10} Emissions	Amount of PM_{10} Removed	Cost Effectiveness
	$	TPY	TPY	$/ton Removed
Paper Machine 11				
Building Ventilation (All Vents)	1,668,091	10.85	9.77	170,770
Yankee Hood Exhaust	530,321	2.88	2.59	204,712
Vacuum Pump Exhaust	146,087	0.66	0.59	246,018
Former Exhaust	235,748	0.36	0.32	725,627
Fan Pump Silo Exhaust	85,111	0.37	0.33	254,716
Paper Machine 12				
Building Ventilation (All Vents)	1,264,457	2.98	2.68	470,963
Yankee Hood Exhaust	371,299	2.22	1.99	186,246
Vacuum Pump Exhaust	146,087	0.89	0.80	182,053
Former Exhaust	229,048	0.49	0.44	521,702
Fan Pump Silo Exhaust	82,271	0.50	0.45	182,200
After Dryer Exhaust	465,159	1.28	1.15	403,375
Paper Machine 13				
Building Ventilation (All Vents)	1,099,110	5.19	4.67	235,420
Yankee Hood Exhaust	220,850	1.77	1.59	138,475
Vacuum Pump Exhaust	181,186	0.71	0.64	282,241
Former Exhaust	221,801	0.39	0.35	631,496
Fan Pump Silo Exhaust	88,653	0.40	0.36	245,417
After Dryer Exhaust	276,909	0.34	0.31	900,485
Paper Machine 14				
Building Ventilation (All Vents)	1,151,184	13.27	11.94	96,386
Yankee Hood Exhaust	710,454	3.89	3.50	202,902
Vacuum Pump Exhaust	118,008	0.89	0.80	147,120
Former Exhaust	139,227	0.50	0.45	308,007
Fan Pump Silo Exhaust	158,850	0.49	0.44	361,681
Transfer Box Exhaust	74,295	0.09	0.08	922,341
Paper Machine 15				
Building Ventilation (All Vents)	1,282,083	10.28	9.25	138,610
Yankee Hood Exhaust	551,929	4.05	3.64	151,596
Vacuum Pump Exhaust	107,201	0.93	0.83	128,455
Former Exhaust	114,817	0.52	0.47	244,498
Fan Pump Silo Exhaust	145,226	0.51	0.46	318,058
Reel Dust Scrubber Exhaust	310,732	0.71	0.64	484,195

Summary

The following table summarizes the minimum cost per ton PM_{10}controlled of individual vent control systems. Since $PM_{2.5}$ emissions are less than or equal to PM_{10} emissions, the minimum cost per ton $PM_{2.5}$ is expected to be greater or equal to the cost for PM_{10}.

Control Technology	**PM_{10}**
	$/ton
Drum Filter	92,974
Wet ESP	179,792
Wet Scrubber	177,385
Cyclone Separator	96,386

E. Step 5 – Select BACT

As indicated in the above table, no add-on control devices are cost effective. Therefore, GP proposes that BACT be selected as good operating practices that include routine cleaning of the paper machine and paper machine area and good combustion practices that are used to minimize emissions from the Yankee Hood burners. GP also proposes BACT limits including emissions and emission factors for the combined exhaust points for each paper machine as shown in the following table.

EU ID	**EU Name**	**Add on Control**	**Production MDT/yr**	**PM_{10} BACT Limits**			**$PM_{2.5}$ BACT Limits**		
				lb/MDT	**lb/hr***	**TPY**	**lb/MDT**	**lb/hr***	**TPY**
PM-11	Paper Machine No. 11	None	74,000	0.409	3.50	15.12	0.255	2.19	9.45
PM-12	Paper Machine No. 12	None	100,000	0.167	1.93	8.36	0.124	1.43	6.18
PM-13	Paper Machine No. 13	None	80,000	0.220	2.04	8.81	0.163	1.51	6.51
PM-14	Paper Machine No. 14	None	100,000	0.383	4.43	19.13	0.257	2.97	12.83
PM-15	Paper Machine No. 15 Building Vents	None	104,000	0.327	3.93	16.99	0.229	2.76	11.91

*lb/hr numbers are slightly different from Emission Section to keep consistent with emission rates used in the modeling.

The following table lists RBLC results for paper machine BACT limitations.

RBLC ID	Facility	State	Issuance Date	Process Name	Controls	Pollutants	Emission Limits
ME-044	Woodland Pulp LLC	ME	7/27/2018	Tissue Machines (4)	Cyclones	$PM_{10}/PM_{2.5}$	2.44/2.38 lb/hr
PA-0313	First Quality Tissue LLC, Lock Haven	PA	7/27/2017	Paper Machine Wet End	None	PM_{10}	4 lb/hr
				Paper Machine Wet End	None	PM_{10}	8.19 lb/hr
MN-0078	Sappi Fine Paper	MN	10/28/2009	Paper Machine	None	$PM_{2.5}$	1.82 lb/hr
WI-02121	Green Bay packaging	WI	6/29/2006	Paper Machine	Good Operating Practices	PM	0.14 lb/ADT
OK-0112	Georgia-Pacific Muskogee	OK	3/27/2006	Paper Machines	None	PM	None
WI-0231	Packaging Corp of America, Tomahawk	WI	1/6/2006	Paper Machines	Good Operating Practices	PM	0.076 lb/ADT
WI-0230	Georgia-Pacific, Green Bay Broadway	WI	9/8/2005	Paper Machines	Good Operating Practices, Natural Gas Combustion	PM	0.21 - 0.245 lb/ADT
WI-0210	Proctor & Gamble	WI	6/30/2005	Paper Machines	Wet Scrubber to control the dry end/Cyclone to control wet end	PM	6.12 lb/hr – 10.57 lb/hr
PA-0244	First Quality Tissue	PA	10/20/2004	Paper Machine	Cyclone, Scrubber, Mesh Mist Pad Eliminator	PM_{10}	4.03 lb/hr 17.05 TPY
WI-0209	SCA Tissue, Menasha	WI	6/10/2004	Paper Machines	Good Operating Practices, Natural gas/Propane Combustion	PM	0.114 – 0.8 lb/ADT
WI-0216	Appleton Coated LLC	WI	6/8/2004	Paper Machine	Good Operating Practices	PM	0.078 lb/ADT
WI-0209	Georgia-Pacific Green Bay West	WI	2/24/2004	Paper Machine	Good Operating Practices	PM	0.245 lb/ADT

As shown in the above table, the BACT selected is comparable to BACTs in other approved PSD permits.

SECTION VIII. AIR QUALITY ANALYSES

Since GP is proposing to change the PM_{10} emission limits previously subject to PSD review, updated air quality dispersion modeling to demonstrate compliance with applicable standards is required. Moreover, because the 2006 project was permitted under EPA's PM_{10} surrogacy policy at a time when $PM_{2.5}$ NAAQS had been established but EPA had not yet issued implementing regulations, the project is also subject to review for $PM_{2.5}$. Therefore, GP has provided cumulative analyses to demonstrate compliance with appliable NAAQS and PSD Increments for PM_{10} and $PM_{2.5}$.

General Model Input Information

1. Dispersion Model Selection and Default Processing Options

This modeling analysis was performed using EPA's preferred regulatory model system, AERMOD (Version 21112). The AERMOD modeling system comprises a meteorological preprocessor (AERMET) and receptor and terrain preprocessor (AERMAP) that generate data utilized by the AERMOD dispersion algorithms.

Regulatory default model processing options were enabled for this analysis and performed in a manner consistent with EPA and DEQ Guidelines. The dispersion environment was determined through inspection of aerial photographs of the 3-km area surrounding the Muskogee Mill, which shows that the area is predominantly rural; the default dispersion option was used in the modeling analyses.

2. Meteorological Data

The modeling analyses were performed using five years (2011-2015) of surface meteorological data from Muskogee-Davis Regional Airport and upper air observations from Norman, Oklahoma, as specified by DEQ for sources in Muskogee County. The meteorological data was processed using AERMET (Version 19191). The surface meteorological observation site at Muskogee-Davis Regional Airport is presumptively representative of conditions at Muskogee Mill because of its proximity (approximately 6 miles or 10 km southwest) and similar surrounding environment in terms of land use and generally flat terrain.

3. Receptors and Terrain Elevations

Ground-level concentrations were calculated at receptors placed along the fence line facility boundary and within nested Cartesian discreet receptor grids surrounding Muskogee Mill using the following scheme:

- Boundary receptors were placed along the plant fence line at approximately 50-meter spacing.

- Fine Cartesian grid receptors extending approximately 1 km and 2.5 km from the facility centroid at 250-meter spacing.
- Coarse Cartesian grid receptors extending approximately 2.5 km and 5 km from the facility centroid at 500-meter spacing.
- Sparse Cartesian grid receptors extending approximately 5 km and 7.5 km from the facility centroid at 750-meter spacing.
- Distant Cartesian grid receptors extending approximately 7.5 km and 20 km from the facility centroid at 1,000-meter spacing.

AERMAP (Version 18081) was used to assign terrain elevations and hill height based on NED from the inputs of the AERMOD model for each receptor. The NED data consist of arrays of regularly spaced elevations at 1 arc-second (30-meter) intervals and are interpolated to determine elevations at the boundary and gridded receptors simulated in the modeling analysis. G

4. Source Types

The AERMOD dispersion model allows for emission units to be represented as point, area, or volume sources. The significant sources of emissions at Muskogee Mill can be reasonably represented by point sources in terms of the stack height, diameter, exhaust temperature, and flowrate representative of actual conditions. Exhaust parameters (i.e., temperature and velocity) were updated as necessary for emission points with characteristics that were validated to be different than represented in prior modeling analyses. GP updated the representation of several paper machine vents using the POINTHOR input type to simulate horizontal discharge with actual stack diameter and exhaust velocity. Volume sources are used to represent fugitive emissions from material handling operations, paved and unpaved roads, and finished paper products and byproducts. The input parameters for characterizing volume sources (i.e., release height, sigma-y and sigma-z) representing road segments were derived from recommended techniques described in EPA's Haul Road Work Group Final Report (March 2012). Additional fugitive road segments were included as a part of this analysis as several additional routes have been added to the facility since the previous modeling analysis.

5. Building Downwash and GEP Stack Height Analysis

Building structures that obstruct wind flow near emission points may cause stack discharges to become caught in the turbulent wakes of these structures leading to downwash of the plumes. Wind blowing around a building creates zones of turbulence that are greater than if the building were absent. These effects generally cause higher ground level pollutant concentration near the source because building downwash inhibits downwind dispersion from elevated stack discharges.

The direction-specific building dimensions used as input to the AERMOD model were calculated using the EPA's Building Profile Input Program (BPIP), which has been adapted to incorporate the PRIME downwash algorithms and released as "BPIPPRM" (Version 04274).

Per 40 CFR §51.100(ii), the default GEP stack height is 65 meters and stack heights in excess of GEP are not creditable for modeling purposes unless a larger GEP stack height is demonstrated due to the dimensions of nearby structures. Actual boiler stack height of 79.25 m was simulated because the BPIP analysis demonstrates a GEP stack height of 99.05 m based on an adjacent building height of 39.62 m.

NAAQS Analyses

The NAAQS impact analysis predicts the maximum ambient air concentration due to 1) all Mill sources emitting at maximum potential emission rates, 2) off-site sources at maximum permitted rates, and 3) natural and background sources. The total of these concentrations must be less than the NAAQS. The following table summarizes the currently effective NAAQS for PM_{10} and $PM_{2.5}$.

Pollutant	Averaging Period	NAAQS (µg/m^3)		Form of Standard
		Primary	Secondary	
PM_{10}	24-hour	150	150	High-sixth-highest for 5 years
$PM_{2.5}$	24-hour	35	35	High-eighth-highest for 5 years
	Annual	12	15	High-first-highest for 5 years

1. Emissions Modeled

For the paper machines, PM_{10} and $PM_{2.5}$ emissions were based on updated emission factors and validated maximum production capacities expressed on a daily and annual basis are modeled to represent the proposed potential and allowable emissions.

PM_{10} and $PM_{2.5}$ emissions from the existing boilers are not being modified as part of this analysis and, therefore, are evaluated using estimates of actual emissions. Although the remaining sources included in the cumulative analyses are also existing and could be evaluated for actual emissions in the same manner, GP has made a simplifying assumption that the updated emissions calculations represent potential or allowable emissions so that no additional evaluation is necessary.

Since this analysis includes a cumulative analysis to demonstrate compliance with $PM_{2.5}$ NAAQS, for which NOx and SO_2 emissions are precursors, secondary formation of $PM_{2.5}$ must be evaluated. GP utilized EPA's MERPs Guidance as a screening tool to quantify secondary $PM_{2.5}$ concentrations. EPA simulated emissions from an illustrative and hypothetical source in Muskogee County. For the hypothetical source, EPA's database viewer compiles the estimated maximum 24-hour/annual average $PM_{2.5}$ concentration as a function of the downwind distance, emissions of each precursor, and source stack height. The Muskogee County hypothetical source is located approximately 12 miles from the Muskogee Mill and is representative. The following table summarizes the estimated maximum concentrations of annual and 24-hour $PM_{2.5}$ secondarily formed from NOx and SO_2 emissions from the Muskogee Mill, based on the Muskogee County hypothetical source predicted concentrations at 10 km downwind for a 90-meter stack emitting 3,000 TPY of NOx and SO_2 each.

Simulated Emissions		**Secondary $PM_{2.5}$ Formation Derived from MERPs**					
Precursor	**TPY**	**Average**	**µg/m³/ton**	**µg/m³**	**Average**	**µg/m³/ton**	**µg/m³**
NOx	2,073	Daily	1.53E-04	0.32	Annual	5.85E-06	0.012
SO_2	2,293	Daily	9.47E-04	2.17	Annual	1.57E-05	0.036
		Daily	**Total $PM_{2.5}$**	**2.49**	**Annual**	**Total $PM_{2.5}$**	**0.048**

The resulted secondary $PM_{2.5}$ concentration were added to the results of the AERMOD analysis of direct emission (includes background concentrations) to calculate primary concentrations of $PM_{2.5}$ for comparison to each NAAQS.

2. Nearby Sources

GP simulated concentrations in the area surrounding the Muskogee Mill resulting from operations of nearby stationary sources by explicitly modeling 120 emission points at 12 facilities using data from an inventory provided by Oklahoma DEQ.

3. Background Concentrations

Background concentrations from an appropriate ambient monitor are added to the modeled concentrations prior to assessing compliance with the NAAQS to represent contributions from other industrial sources as well as mobile and organic sources. There are no monitors currently located nearby, but multiple monitors are located between approximately 50 to 65 km. Based upon an evaluation of multiple factors including distance, prevailing winds, monitoring objective and emissions of direct $PM_{2.5}$ and precursors in the surrounding airsheds, GP proposed, and DEQ concurred, the selection of the McAlester (Pittsburg County), Oklahoma monitor to represent background conditions.

4. Exceedance Events Associated with Nearby Sources

In each of the cumulative analyses for 24-hour average NAAQS and Increment, modeled design concentrations exceeded applicable standards at a local hotspot of up to three receptors located near (within the ambient boundary of) two facilities in the nearby source inventory.

The first hotspot is within the ambient boundary of Oakley's Port facility, located approximately 5.6 km north of the Muskogee Mill. GP determined that the Muskogee Mill neither causes nor contributes to these modeled exceedances by quantifying the highest modeled concentrations attributable to the Muskogee Mill for each pollutant and averaging period. In each case, the maximum attributable modeled concentration is less than the applicable SIL at all times. Therefore, under EPA policy, the Muskogee Mill is not considered to cause or contribute. Modeled concentrations at these receptors are excluded from the following compliance demonstrations and design concentrations are reported only for receptors at which the Muskogee Mill may cause or contribute an concentration level above the respective SILs.

The second hotspot is within the ambient air boundary of a OG&E generating station. Model runs were prepared for these receptors excluding emissions from OG&E facility, per EPA guidance, to

demonstrate that the resulting maximum modeled concentrations (due to the Muskogee Mill and all other nearby sources, plus background concentration) would not exceed the applicable standard.

5. NAAQS Analysis Results

The following table summarizes the results of the cumulative NAAQS analyses, including emissions from the Muskogee Mill, nearby sources, background concentrations, and $PM_{2.5}$ secondary concentrations resulting from precursor emissions.

Pollutant	Averaging Period	Air Quality Impacts (µg/m^3)				NAAQS
		MDC	Background	Secondary	Total	µg/m^3
PM_{10}	24-Hour	68.43	63.67	NA	132.10	150
	Annual	NA				
$PM_{2.5}$	24-Hour	32.40	21.80	2.49	34.89	35
	Annual	11.69	8.30	0.048	11.74	12.0

The modeled design concentration is less than the applicable NAAQS for each pollutant and averaging period, the cumulative analyses demonstrate compliance.

PSD Increment Analyses

The purpose of the increment modeling is to identify whether an increment violation is likely to occur in the future under realistic emissions and meteorology conditions. The recommended procedure for modeling impacts from increment consuming sources is model new and modified sources at their potential emissions and to base impacts from existing increment consuming sources on actual emissions.

PSD increments are the maximum allowable increases in ambient air concentrations that may occur above a baseline concentration for a specific pollutant, averaging period, and type of baseline area. The baseline concentration is the ambient concentration level that exists in the baseline area at the time of the applicable minor source baseline date.

There are three baseline dates:

- The major source baseline date (MSBD) is the date after which actual emissions associated with construction of a PSD major source or modification of an existing PSD major source affect the amount of available increment.
- The trigger date is the earliest date, after the major source baseline date, after which the minor source baseline date may be established.
- The minor source baseline date (mSBD) is the earliest date after the trigger date on which a complete application for a PSD major stationary source or modification of a PSD major source is received by the reviewing agency (EPA reviewed Oklahoma's PSD applications until 1984).

The following table lists the baseline dates for PM_{10} and $PM_{2.5}$.

Pollutants	Major Source Baseline Date	Trigger Date
PM_{10}	January 6, 1975	August 7, 1977
$PM_{2.5}$	October 20, 2010	October 20, 2011

Assessing compliance with PM_{10} increments is relatively straightforward because the Muskogee Mill originally commenced construction after the PM10 MSBD on January 6, 1975. Therefore, all PM_{10} emissions consume increment, and all emission units are modeled to demonstrate compliance with the applicable 24-hur average and annual average PM_{10} increments.

EPA established $PM_{2.5}$ increments in October 2010. Like any other pollutant for which PSD increments have been established, actual emissions changes after the relevant major and minor baseline dates affect increment consumption and expansion for $PM_{2.5}$. The $PM_{2.5}$ mSBD has not yet been established in Muskogee County because no complete PSD permit application has been submitted for a new major stationary source of $PM_{2.5}$ emissions or a major modification of an existing major source causing a significant net emissions increase of $PM_{2.5}$. This permit modification addresses required elements to demonstrate compliance with applicable PSD requirements of emission control technologies and air quality analyses, but is not a PSD permit application that establishes the mSBD because there is no project due to which $PM_{2.5}$ actual emissions will increase after the MSBD. Nevertheless, this permit modification is considered to consume $PM_{2.5}$ increment to the extent $PM_{2.5}$ emissions from paper machines quantified in this permit application exceed what would have been quantified in 2005, had such a requirement been effective.

This analysis also includes changes that expand $PM_{2.5}$ increment due to emissions reductions at a major source after the MSBD, notably including the replacement of the coal-fired Boiler B-2 with the natural gas-fired Boiler B-5 in 2016.

The following table summarizes the results of the cumulative PSD increment analyses, including emissions from GP Muskogee and nearby sources.

Pollutant	Averaging Period	PSD Increment Consumed (MDC) ($\mu g/m^3$)	PSD Increment Standard ($\mu g/m^3$)
PM_{10}	24-hour	29.57	30
	Annual	9.22	17
$PM_{2.5}$	24-hour	4.31	9
	Annual	1.32	4

The modeled design concentration is less that the applicable PSD Increment for each pollutant and averaging period. The cumulative analyses demonstrate compliance,

Additional Impacts and Class I Area Analyses

The 2006 PSD permit (99-113-C (M-3) (PSD)) evaluated additional impacts including soils and vegetation, growth, and visibility in the area surrounding the Muskogee Mill and concluded no adverse impacts were expected. Since no construction or changes in actual emissions are associated with this permit modification, and because potential emission of PM, NOx, and SO_2 are now lower than evaluated in 2006, this conclusion remains valid.

Generally, if the facility undergoing the modification is within 300 kilometers of a PSD Class I area, then a significant impact analysis is also performed to evaluate the impact due to the project alone at the PSD Class I areas. The three nearest PSD Class I areas to the Mill are the Upper Buffalo National Wilderness Area (NWA), 166 km northeast of the Mill, the Caney Creek NWA, 178 km east of the Mill, and the Hercules-Glades NWA, 233 km northeast of the Mill.

The 2006 PSD permit included an analysis of PSD Increments and air quality related values (AQRV) at these three Class I areas. No adverse impacts on AQRV were expected and concentrations of SO_2, NOx, and PM_{10} were computed to be less than all Class I SILs. Because no construction or changes in actual emissions are associated with this permit modification, and because potential emissions of PM_{10}, NOx, and SO_2 are now lower than evaluated in 2006, this conclusion remains valid.

Since NSR implementations for $PM_{2.5}$ in 2011, EPA established Class I SILs of 0.27 $\mu g/m^3$ 24-hour average and 0.05 $\mu g/m^3$ annual average in guidance issued in 2018. The PM_{10} Class I analysis in 2006 computed maximum impacts at any Class I area of 0.009 $\mu g/m^3$ 24-hour average and 0.0003 $\mu g/m^3$ annual average. Had $PM_{2.5}$ emissions been quantified as a subset of total PM_{10} emissions, the simulated modeled concentrations would be well below the $PM_{2.5}$ SILs established later after NSR implementation in 2011.

To demonstrate that the change in $PM_{2.5}$ emissions factors for paper machines quantified in this permit application would not adversely affect $PM_{2.5}$ increment at Class I areas within 300 km, GP conducted a screening analysis using AERMOD to compute the maximum 5-year average 24-hour and annual concentration. Concentrations were calculated along an arc of receptors arrayed at 50 km distance from the Muskogee Mill between the bearings of 53 degrees and 157 degrees to encompass the headings toward the three Class I areas within 300 km. Because the maximum 5-year average 24-hour average concentration (0.06261 $\mu g/m^3$) and annual concentration (0.00278 $\mu g/m^3$) are each less than the respective Class I SIL, no adverse impact on $PM_{2.5}$ PSD increments are expected to result.

SECTION IX. INSIGNIFICANT ACTIVITIES

Boiler Ash Handling

Following is an evaluation performed by the applicant based on research of two coal-fired power plants. One was permitted in Colorado, and the other in Kentucky.

Both permits used AP-42 to estimate particulate matter emissions from boiler ash handling operations. One permitting agency adapted AP-42 (2/72), Section 11.8 for clay and fly ash sintering. The other agency adapted AP-42 (10/01), Section 11.12 for cement batching. Fly ash sintering factors are uncontrolled, whereas cement batching offers controlled and uncontrolled emission factors. The boiler ash silos are equipped with baghouses that control emissions with a 99.9% efficiency. The applicant believes that cement exhibits very similar physical characteristics as boiler ash and therefore used the cement batching factors for the following emission estimate of silo emissions.

Ash generation was estimated using 600,000 TPY of coal at 8.5% ash. The applicant used this as a worse case ash content for all high BTU coal. However, it should be noted that the permit contains conditions limiting ash content to lower values. Both fly ash and bottom ash are pneumatically conveyed to elevated silos equipped with identical baghouses. The ash is then loaded into enclosed trucks and disposed in the mill's permitted on-site landfill cells. According to AP-42 (10/01), Table 11.12-2, total PM emissions from cement supplement unloading to elevated storage silo (pneumatic) are 0.0089 lbs PM/ton controlled and 3.14 lbs/ton uncontrolled. Estimating a maximum potential ash generation of approximately 51,000 TPY, potential PM emissions from unloading to elevated storage silos would equate to 454 lbs/year.

For truck loading, dumping and pile erosion, AP-42 (11/06), Section 13.2.4 Aggregate Handling and Storage Piles, was used.
From Section 13.2.4:

$$E\ (\text{lbs/ton}) = k*0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$$

where: $k = 0.35$ for PM_{10},
U = wind speed (15 mph, worst case value from Ranges of Source Conditions), and
M = moisture content (0.25 %, worst case value from Ranges of Source Conditions)

Applying the above factors, E = 0.0859 lbs PM/ton of ash.

At 51,000 TPY of ash, PM emissions would equal 4,381 lbs/year from truck loading, dumping, and pile erosion. This yields a total of 4,835 lbs/year (2.42 TPY) of PM emissions for all of ash handling.

Converting Trim Vent

Following is an evaluation performed by the applicant based on emissions information obtained from a sister facility in Green Bay, Wisconsin.

At the subject facility, scrap paper from the converting operations, called "trim" or "broke," is conveyed to the converting broke pulper to be mixed with water for reuse in the papermaking process. Much of the broke is transported in carts and dumpsters to a pulper or removed pneumatically from the point of generation and dumped on an overhead conveyor to a pulper. Some of the broke, however, is conveyed pneumatically all the way to the top of a pulper where airborne particulate is removed from the air stream, and the air stream is cleaned by a baghouse

before discharge to the atmosphere. This operational scenario describes the Converting operations at the subject facility as well as Converting operations at a sister tissue facility located in Green Bay, Wisconsin.

The Green Bay facility had stack testing performed on three stacks from their trim collection system. Those stack emissions totaled 7.22 lbs/hr (31.6 TPY), uncontrolled. The trim collection system at the subject facility is equipped with baghouses having collection efficiency ratings of 99.9% prior to discharge to the atmosphere. At 7.22 lbs/hr and 99.9% collection efficiency, annual emissions would equate to 63.2 lbs/year (0.03 TPY).

The insignificant activities identified and justified in the application are duplicated below. Records must be available to confirm the insignificance of the activities. Appropriate recordkeeping of activities indicated below with "*" is specified in the Specific Conditions.

1. Space heaters, boilers, process heaters, and emergency flares less than or equal to 5 MMBTU/hr heat input (commercial natural gas). The applicant operates several space heaters at the facility.
2. * Emissions from fuel storage/dispensing equipment operated solely for facility owned vehicles if fuel throughput is not more than 2,175 gallons/day, averaged over a 30-day period. There is one aboveground 1,000-gallon gasoline tank existing at the facility. The facility used only 9,500 gallons from this tank during the year 2003. This tank is equipped with a submerged fill pipe.
3. * Storage tanks with less than or equal to 10,000 gallons capacity that store volatile organic liquids with a true vapor pressure less than or equal to 1.0 psia at maximum storage temperature. There are several above-ground diesel tanks at the facility.
4. * Emissions from storage tanks constructed with a capacity less than 39,894 gallons which store VOC with a vapor pressure less than 1.5 psia at maximum storage temperature. There are several diesel and solvent tanks at the facility.
5. Additions or upgrades of instrumentation or control systems that result in emissions increases less than the pollutant quantities specified in OAC 252:100-8-3(e)(1).
6. Cold degreasing operations utilizing solvents that are denser than air. There are numerous activities under this category.
7. Site restoration and/or bioremediation activities of < 5 years expected duration. There are no activities under this category at the facility at this time.
8. Hydrocarbon contaminated soil aeration pads utilized for soils excavated at the facility only. There are no activities under this category at the facility at this time.
9. Emissions from the operation of groundwater remediation wells including but not limited to emissions from venting, pumping, and collecting activities subject to *de minimis* limits for air toxics (OAC 252:100-41-43) and HAPs (§112(b) of CAAA90). The facility currently operates groundwater monitoring wells that are required by the facility's solid waste landfill permits. There are no groundwater remediation wells at the facility at this time.
10. * Non-commercial water washing operations (less than 2,250 barrels/year) and drum crushing operations of empty barrels less than or equal to 55 gallons with less than three percent by volume of residual material.
11. Hazardous waste and hazardous materials drum staging areas. There are numerous activities under this category.

12. Sanitary sewage collection and treatment facilities other than incinerators and Publicly Owned Treatment Works (POTW). Stacks or vents for sanitary sewer plumbing traps are also included (i.e., lift station). All of the facility's sanitary sewage is collected by two lift stations and discharged to the local POTW.
13. Emissions from landfills and land farms unless otherwise regulated by an applicable state or federal regulation.
14. Exhaust systems for chemical, paint, and/or solvent storage rooms or cabinets, including hazardous waste satellite (accumulation) areas. There are numerous activities under this category.
15. Hand wiping and spraying of solvents from containers with less than 1 liter capacity used for spot cleaning and/or degreasing in ozone attainment areas. There are numerous activities under this category.
16. * Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant (see instructions).
    a. Ash Handling
    b. Converting Trim Vent
17. Vacuum cleaning systems used exclusively for industrial, commercial, or residential housekeeping purposes, except those systems used to collect particulate matter subject to 252:100 and hazardous and/or toxic air contaminants.

SECTION X. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]
Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-2 (Incorporation by Reference) [Applicable]
This subchapter incorporates by reference applicable provisions of Title 40 of the Code of Federal Regulations listed in OAC 252:100, Appendix Q. These requirements are addressed in the "Federal Regulations" section.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]
Subchapter 3 enumerates the primary and secondary ambient air quality standards and the significant deterioration increments. At this time, all of Oklahoma is in "attainment" of these standards. In addition, modeled emissions from the proposed facility (for previous permits) demonstrated that the facility would not have a significant impact on air quality.

OAC 252:100-5 (Registration, Emissions Inventory and Annual Operating Fees) [Applicable]
Subchapter 5 requires sources of air contaminants to register with Air Quality, file emission inventories annually, and pay annual operating fees based upon total annual emissions of regulated pollutants. Emission inventories were submitted and fees paid for previous years as required.

OAC 252:100-8 (Permits for Part 70 Sources) [Applicable]
Part 5 includes the general administrative requirements for Part 70 permits. Any planned changes in the operation of the facility that result in emissions not authorized in the permit and that exceed the "Insignificant Activities" or "Trivial Activities" thresholds require prior notification to AQD and may require a permit modification. Insignificant activities refer to those individual emission

units either listed in Appendix I or whose actual calendar year emissions do not exceed the following limits.

- 5 TPY of any one criteria pollutant
- 2 TPY of any one hazardous air pollutant (HAP) or 5 TPY of multiple HAPs or 20% of any threshold less than 10 TPY for a HAP that the EPA may establish by rule

Emission limitations and operational requirements necessary to assure compliance with all applicable requirements for all sources are taken from existing permits, the permit application, or developed from the applicable requirement.

Section 8-4 requires a construction permit prior to the following:

- Construction of a new source that would require an operating permit under 40 CFR Part 70;
- Reconstruction of a major HAP source under 40 CFR Part 63;
- Any physical change or change in method of operation that would be a significant modification under OAC 252:100-8-7.2(b)(2); or
- Any physical change or change in method of operation that would increase the PTE of any one regulated air pollutant by more than 10 TPY, calculated using the approach in 40 CFR § 49.153(b).

The requested modifications are not considered construction of a new major source or reconstruction of a new major source of HAP. The requested modifications are physical changes or changes in method of operation that would be a significant modification under OAC 252:100-8-7.2(b)(2) and require a construction permit.

OAC 252:100-9 (Excess Emissions Reporting Requirements) [Applicable]
Except as provided in OAC 252:100-9-7(a)(1), the owner or operator of a source of excess emissions shall notify the Director as soon as possible but no later than 4:30 p.m. the following working day of the first occurrence of excess emissions in each excess emission event. No later than thirty (30) calendar days after the start of any excess emission event, the owner or operator of an air contaminant source from which excess emissions have occurred shall submit a report for each excess emission event describing the extent of the event and the actions taken by the owner or operator of the facility in response to this event. Request for mitigation, as described in OAC 252:100-9-8, shall be included in the excess emission event report. Additional reporting may be required in the case of ongoing emission events and in the case of excess emissions reporting required by 40 CFR Parts 60, 61, or 63.

OAC 252:100-13 (Open Burning) [Applicable]
Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter.

OAC 252:100-19 (Particulate Matter (PM)) [Applicable]
Section 19-4 regulates emissions of PM from the combustion of fuel in any new and existing fuel-burning unit, with emission limits based on maximum design heat input rating. Fuel-burning unit is defined in OAC 252:100-19 as any internal combustion engine or gas turbine, or other combustion device used to convert the combustion of fuel into usable energy. Thus, Boilers No.

1, 3, 4, and 5 (B-1, B-3, B-4 and B-5), Paper Machines No. 11, 12, 13, 14, and 15 Drying Hoods (PM-11, PM-12, PM-13, PM-14, and PM-15) are subject to the requirements of this subchapter. AP-42 (7/98) Table 1.4-1 lists natural gas Total Particulate Matter (TPM) emissions to be 7.6 lbs/MMscf or about 0.0076 lbs/MMBTU, which demonstrates compliance. Converting these factors to units of lbs/MMBTU yields the values illustrated in the tables below, which demonstrates compliance with the allowable. Compliance with the applicable standard while burning coal was based on comparing the permitted emissions, which are the highest anticipated, to the Subchapter 19 standard.

EU ID	Description	Coal Emission Factor	Natural Gas Emission Factor	Appendix "C" Allowable
		lbs/MMBTU	lbs/MMBTU	lbs/MMBTU
B-1	310-MMBTU/HR Boiler No. 1	NA	0.0076	0.27
B-3	557.11-MMBTU/HR Boiler No. 3	0.078	0.0076	0.23
B-4	557.11-MMBTU/HR Boiler No. 4	0.078	0.0076	0.23
B-5	415-MMBTU/HR Boiler No. 5	NA	0.0076	0.25

EU ID	Description	Natural Gas Emission Factor	Appendix "C" Allowable
		lbs/MMBTU	lbs/MMBTU
PM-11	25-MMBTU/HR x 2 Paper Machine No. 11	0.0076	0.41
PM-12	16.5-MMBTU/HR x 2 Paper Machine No. 12	0.0076	0.45
PM-13	24-MMBTU/HR x 2 Paper Machine No. 13	0.0076	0.45
PM-14	24-MMBTU/HR x 2 Paper Machine No. 14	0.0076	0.41
PM-15	24-MMBTU/HR x 2 Paper Machine No. 15	0.0076	0.41

Section 19-12 limits particulate emissions from new and existing directly fired fuel-burning units and emission points in an industrial process based on process weight rate, as specified in Appendix G. The following table illustrates the calculated hourly rates of PM emissions. All emission points are in compliance with the Subchapter 19 limits.

EU ID	Description	Process Weight Rate	Emissions	Appendix "G" Allowable
		TPY	lbs/hr	lbs/hr
	Railcar Unloading	519,362	5.09	47.23
	Radial Stacker			
	Grizzly Feeder			
	Coal Sizer/Crusher	820,200	11.86	47.23

EU ID	Description	Process Weight Rate	Emissions	Appendix "G" Allowable
		TPY	lbs/hr	lbs/hr
	Conveyor	519,362	1.18	47.23
B-3 & B-4	Coal Bunkers	519,362	1.18	47.23
B-3 & B-4	Coal Feeders	Closed Process [1]		
B-3 & B-4	Pulverizers			
FS-1	Coal Pile	Emissions are included with above		
PM-11	Paper Machine No. 11	74,000	14.26	29.52
PM-12	Paper Machine No. 12	100,000	3.44	31.89
PM-13	Paper Machine No. 13	80,000	3.75	50.37
PM-14	Paper Machine No. 14	100,000	15.54	31.89
PM-15	Paper Machine No. 15	100,400	11.27	31.92

[1] This is a closed process, and is not expected to have visible emissions.

OAC 252:100-25 (Visible Emissions and Particulates) [Applicable]

No discharge of greater than 20% opacity is allowed except for short-term occurrences that consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. Boilers No. 1, 3, 4, and 5 (B-1, B-3, B-4 and B-5) are not subject to Subchapter 25 since they are subject to an opacity limitation in NSPS Subpart D and Db. Equipment subject to a Subpart Y opacity limitation at the Coal Preparation Plant (EUG 3) is not subject to Subchapter 25. Other combustion units are fired with natural gas and are therefore not likely to exceed this standard.

Continuous monitoring of opacity (COM) is required for fossil fuel-fired steam generators in accordance with 40 CFR Part 51, Appendix P and any fuel-burning equipment with a design heat input value of 250 MMBTU/hr or more, that does not burn gaseous fuel exclusively, and that was not in being on or before July 1, 1972, or that is modified after July 1, 1972. These requirements do not apply to sources that are subject to a NSPS promulgated in 40 CFR Part 60. The boilers at this facility are subject to 40 CFR Part 60 Subpart D and Db and are not subject to this rule.

OAC 252:100-29 (Fugitive Dust) [Applicable]

No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originated in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or to interfere with the maintenance of air quality standards. Fugitive dust emissions caused by coal and fly ash handling and storage are minimized by use of fabric filters, closed systems, and other measures. This permit requires reasonable precautions to be taken to minimize fugitive dust which include, but are not limited to, those actions set forth in OAC 252:100-29-3(1) through (6).

OAC 252:100-31 (Sulfur Compounds) [Applicable]

Part 2 limits the ambient air concentration of hydrogen sulfide (H_2S) emissions from any facility to 0.2 ppmv (24-hour average) at standard conditions which is equivalent to 283 ug/m^3. Fuel-burning equipment fired with pipeline natural gas will not have the potential to exceed the H_2S

ambient air concentration limit. Coal and diesel fuel, with negligible H_2S, should also not have the potential to exceed the H_2S ambient air concentration limit. This facility is not a Kraft pulp mill and will not have significant H_2S emissions.
Part 5 limits sulfur dioxide emissions from new fuel-burning equipment (constructed after July 1, 1972). The limits, based on heat input, are 0.2 lbs/MMBTU for gaseous fuels, 0.8 lbs/MMBTU for liquid fuels, and 1.2 lbs/MMBTU for solid fuels. The averaging time for the emission limits is 3 hours unless a solid fuel sampling and analysis method is used to determine emission compliance. In that case the averaging time is 24 hours. Specific conditions in the permit limiting the fuel sulfur content to 0.5 grains/100scf for natural gas and the emissions to 1.2 lbs-SO_2/MMBTU for coal will ensure compliance with the limits. These fuel sulfur contents are documented by the vendors who supply the fuel. The emergency generator engine fired with diesel fuel is subject to a fuel sulfur limit of 15 ppmw under NESHAP Subpart ZZZZ which is in compliance with this subchapter.
Part 5 also requires any fuel-burning equipment with design heat input values of 250 MMBTU/hr or more to install, calibrate, maintain, and operate a continuous SO_2 emissions monitoring system in accordance with 40 CFR Part 60, Appendix B, and 40 CFR Part 51, Appendix P, except where a solid or liquid fuel sampling and analysis method is used to determine SO_2 emission compliance. The sulfur content of solid or liquid fuels as burned are required to be determined in accordance with methods previously approved by the Director or in accordance with Method 19 of 40 CFR Part 60, Appendix A. Records are required to be maintained of all measurements in accordance with the applicable requirements of OAC 252:100-43-7, including compliance status records and excess emissions measurements. This facility uses solid fuel sampling to determine compliance with the SO_2 emission limits and maintains the appropriate records.

OAC 252:100-33 (Nitrogen Oxides) [Applicable]
This subchapter limits new gas-fired, liquid-fired, and solid fossil fuel-burning equipment with rated heat input greater than or equal to 50 MMBTU/HR to emissions of 0.20, 0.30, and 0.70 respectively, lbs of NO_X per MMBTU, three-hour average. The Boilers No. 1, 3, 4 and 5 (B-1, B-3, B-4, and, B-5) exceed the 50 MMBTU/HR threshold and are subject to these standards. Paper Machine No. 15 (PM-15) has a total heat input rating, all burners combined, of 50 MMBTU/HR and is also subject. Testing requirements in the specific conditions for Boilers No. 1, 3, and 4 (B-1, B-3 and B-4) will demonstrate ongoing compliance with these limits. Boiler No. 5 (B-5) is equipped with a CEMS. At this time there are no testing or ongoing compliance monitoring requirements for Paper Machine No. 15 (PM-15). Compliance is documented by the use of natural gas fuel and the AP-42 emissions factor for NO_X.

OAC 252:100-35 (Carbon Monoxide) [Not Applicable]
This subchapter affects gray iron cupolas, blast furnaces, basic oxygen furnaces, petroleum catalytic cracking units, and petroleum catalytic reforming units. There are no affected sources.

OAC 252:100-37 (Volatile Organic Compounds) [Part 3 and Part 7 Applicable]
Part 3 requires storage tanks constructed after December 28, 1974, with a capacity of 400 gallons or more and storing a VOC with a vapor pressure greater than 1.5 psia to be equipped with a permanent submerged fill pipe or with an organic vapor recovery system. The two underground 10,000-gallon gasoline tanks installed under Permit No. 75-053-C no longer remain. One aboveground 1,000-gallon gasoline tank is existing at the facility. This tank is equipped with a submerged fill pipe.

Part 5 limits the VOC content of coating used in coating lines or operations. This facility will not normally conduct coating or painting operations except for routine maintenance of the facility and equipment, which is not an affected operation.
Part 7 requires fuel-burning equipment to be operated and maintained so as to minimize VOC emissions. Based on manufacturer's data and good engineering practice, the equipment must not be overloaded and temperature and available air must be sufficient to provide essentially complete combustion. All fuel-burning equipment at this facility including the boilers and the paper machine drying hoods are designed to provide essentially complete combustion of organic materials.

OAC 252:100-42 (Toxic Air Contaminants (TAC)) [Applicable]
This subchapter regulates TAC that are emitted into the ambient air in areas of concern (AOC). Any work practice, material substitution, or control equipment required by the Department prior to June 11, 2004, to control a TAC, shall be retained, unless a modification is approved by the Director. Since no AOC has been designated there are no specific requirements for this facility at this time.

OAC 252:100-43 (Testing, Monitoring, and Recordkeeping) [Applicable]
This subchapter provides general requirements for testing, monitoring and recordkeeping and applies to any testing, monitoring or recordkeeping activity conducted at any stationary source. To determine compliance with emissions limitations or standards, the Air Quality Director may require the owner or operator of any source in the state of Oklahoma to install, maintain and operate monitoring equipment or to conduct tests, including stack tests, of the air contaminant source. All required testing must be conducted by methods approved by the Air Quality Director and under the direction of qualified personnel. A notice-of-intent to test and a testing protocol shall be submitted to Air Quality at least 30 days prior to any EPA Reference Method stack tests. Emissions and other data required to demonstrate compliance with any federal or state emission limit or standard, or any requirement set forth in a valid permit shall be recorded, maintained, and submitted as required by this subchapter, an applicable rule, or permit requirement. Data from any required testing or monitoring not conducted in accordance with the provisions of this subchapter shall be considered invalid. Nothing shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

Each emissions unit must be evaluated for periodic testing in accordance with the Periodic Testing Standardization guidance issued December 1, 2011, on a pollutant by pollutant basis. The frequency of the periodic testing requirement is based on the quantity of the pollutant emitted. Periodic testing requirements are not required for an emission unit that is subject to an applicable requirement that already requires periodic testing, continuous emission monitoring (CEM), or predictive emission monitoring (PEMS). For this facility, the boilers are the main emission units with PM_{10}, NO_X, SO_2, and CO emissions greater than 100 TPY and were evaluated for periodic testing requirements for those pollutant that have the potential to exceed 100 TPY.

Periodic Testing Review

EU	Pollutant	TPY	Current Monitoring	Periodic Testing
B-1 – Nat. Gas	NO_X	135	Every 5 Years	YES[1]
	CO	110	None	NO[2]
B-3 – Coal	NO_X	1,708	Every Year	YES[1]
	SO_2	2,928	Fuel Lot Sampling	NO[3]
	PM_{10}	114	Every 5 Years	YES[1]
B-4 – Coal	NO_X	1,708	Every Year	YES[1]
	SO_2	2,928	Fuel Lot Sampling	NO[3]
	PM_{10}	114	Every 5 Years	YES[1]
B-4 – Nat. Gas	NO_X	455	Every 2 Years	YES[1]
	CO	201	None	NO[4]
B-5 – Nat. Gas	NO_X	182	Part 60 CEMS	N/A[5]

[1] – These units were previously required to conduct periodic testing as indicated under Permit No. 2010-278-TVR (M-5).
[2] – Not subject to CO emission limit. Therefore, periodic testing is not warranted.
[3] – Subject to Fuel Lot Sampling.
[4] – Not normally fired with natural gas. Therefore, periodic testing is not warranted.
[5] – Subject to CEM

VOC emissions from the pulping process and the usage of solvents for the paper machines are each greater than 100 TPY but these processes were not evaluated for periodic testing.

The following Oklahoma Air Pollution Control Rules are not applicable to this facility:

OAC 252:100-7	Permits for Minor Facilities	not in source category
OAC 252:100-11	Alternative Emissions Reduction	not requested
OAC 252:100-17	Incinerators	not type of emission unit
OAC 252:100-23	Cotton Gins	not type of emission unit
OAC 252:100-24	Grain Elevators	not in source category
OAC 252:100-35	Carbon Monoxide	not in source category
OAC 252:100-39	Nonattainment Areas	not in area category
OAC 252:100-47	Landfills	not in source category

SECTION XI. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]

This facility is a major stationary source since it is one of the listed sources and has emissions of greater than 100 TPY of a regulated NSR pollutant. The facility was issued Construction Permit No. 99-113-C (M-3) (PSD) for a Mill Process Improvement Project on March 27, 2006, which went through a full PSD evaluation including BACT, modeling, and public review. The request of

new emission factors for the paper machines requires BACT and modeling to be re-evaluated. The re-evaluation was addressed in Sections VII & VIII. Future emission increases must be evaluated against the threshold levels of CO - 100 TPY, NO_X - 40 TPY, SO_2 - 40 TPY, VOC - 40 TPY, PM - 25 TPY, PM_{10} - 15 TPY, and Lead - 0.6 TPY.

NSPS, 40 CFR Part 60 [Subparts D, Db and Y Applicable]

Subpart D – Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971 (§§60.40-60.46), affects each fossil-fuel-fired steam generating unit more than 73 megawatts heat input rate (250 million BTU per hour). Boilers No. 1, 3, 4, and 5 (B-1, B-3, B-4 and B-5) are all rated above this threshold and are therefore affected facilities. §60.42, §60.43, & §60.44 – contain standards for particulate matter, sulfur dioxide, and nitrogen oxides, respectively. The standard for particulate matter is 0.10 lbs/MMBTU from fossil fuel or fossil fuel and wood residue with no greater than 20% opacity except for one six-minute period per hour of not more than 27% opacity. The standard for SO_2 is 0.8 lbs/MMBTU from liquid fossil fuels and 1.2 lbs/MMBTU from solid fossil fuels. The standard for NO_X is 0.2 lbs/MMBTU from gaseous fossil fuel, 0.30 lbs/MMBTU from liquid fossil fuels, and 0.7 lbs/MMBTU from solid fossil fuels.

Pursuant to §60.40b(j), any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to subpart D (Standards of Performance for Fossil-Fuel-Fired Steam Generators, §60.40). Therefore, Boiler No. 5 (B-5) is not subject to this subpart.

Boilers No. 3 and 4 (B-3 and B-4) are permitted to burn coal. Boilers No. 1, 3, and 4 (B-1, B-3 and B-4) are permitted to burn natural gas as a fuel. At this time, Boiler No. 3 (B-3) burns natural gas only for igniter purposes. Initial compliance testing for coal combustion was performed for Boilers No. 3 and 4 (B-3 and B-4). Initial compliance testing for NO_X was performed for Boiler No. 1 (B-1) in June 1980. Boiler No. 1 (B-1) meets the exemption from emissions monitoring of §60.45(b)(1) through the use of only natural gas fuel and fuel sampling and as such is not required to have COMS for opacity or CEMS for SO_2 monitoring. It is however, subject to the PM and opacity standards. Boilers No. 3 and 4 (B-3 and B-4) can burn either natural gas or coal and utilize COMS for opacity monitoring but for SO_2 monitoring they meet the exemption from emissions monitoring of §60.45(b)(2) through fuel sampling for units that do not use post-combustion control technology to reduce emissions of SO_2 and as such are not required to have CEMS.

If the owner or operator demonstrates during the performance test that emissions of nitrogen oxides are less than 70 percent of the applicable standards in §60.44, a continuous monitoring system for measuring nitrogen oxides emissions is not required. If an owner or operator does not install any continuous monitoring systems for sulfur oxides and nitrogen oxides, a continuous monitoring system for measuring either oxygen or carbon dioxide is not required. This exemption was met for Boilers No. 1, 3, and 4 (B-1, B-3 and B-4). Boiler No. 4 (B-4) was tested for NO_X emissions while firing natural gas on April 6, 2018 and was in compliance with the standard. The permit incorporates all applicable requirements of this subpart.

Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 (§§60.40a - 60.49a), affects each electric utility steam generating unit that is capable of combusting more than 73 megawatts (250 million BTU/hour) heat input of fossil fuel (either alone or in combination with any other fuel) and for which construction or modification is commenced after September 18, 1978. *Electric utility steam generating unit* means any steam electric generating unit that is constructed for the purpose of

supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam distribution system for the purpose of providing steam to a steam-electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the affected facility.

Boiler No. 1 (B-1) was constructed prior to the applicability date of this subpart (September 18, 1978). Boilers No. 3, 4, and 5 (B-3, B-4 and B-5) were constructed in 1978, 1981 and 2016 respectively, but do not meet the definition of *electric utility steam generating unit*. The boilers are therefore not subject to the requirements of this subpart.

Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, affects each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million BTU/hr).

Boiler No. 5 (B-5) is subject to this subpart. Boiler No. 5 (B-5) fires only natural gas and has no standards for PM or opacity. It meets the exemption from the SO_2 standard under §60.42b(k)(2) by firing only gaseous fuel with potential SO_2 emissions of 0.32 lb/MMBTU or less. Pursuant to §60.46b(e)(1), the first 30-days of CEMS readings for Boiler No. 5 (B-5), taken from June 19, 2017 through July 18, 2017, demonstrated that the 30-day rolling average NO_X emissions (as NO_2) were 0.026 lbs/MMBTU, which is in compliance with the Subpart Db standard of 0.1 lbs/MMBTU for low heat release rate boilers. The permit incorporates all applicable requirements of this subpart.

Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (§§60.40c - 60.48c), affects each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989, and that has a maximum design heat input capacity of 29 MW (100 MMBTU/hr) or less, but greater than or equal to 2.9 MW (10 MMBTU/hr). Boilers B-1, B-3 and B-4 were constructed prior to the effective date and are rated at greater than 100 MMBTU/hr. Boiler B-5 was constructed after June 9, 1989, but is rated at more than 100 MMBTU/hr. The boilers are therefore not subject to the requirements of this subpart.

Subpart Y - "Standards of Performance for Coal Preparation Plants," are applicable to any of the following affected facilities in coal preparation plants which process more than 181 Mg (200 tons) per day that commenced construction or modification after October 24, 1974, and on or before May 27, 2009: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems. After May 27, 2009, affected facilities includes: open storage piles.

Coal preparation and processing plant means any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry cleaning, and thermal drying. The coal preparation and processing plant does not have thermal dryers, pneumatic coal-cleaning equipment, or coal transfer and loading systems. All other facilities in the coal preparation plant (coal processing and conveying equipment), except the coal pile, are subject to this rule. The coal storage pile was an existing source prior to May 27, 2009, and has not been modified or reconstructed.

Coal storage system means any facility used to store coal except for open storage piles. In a document titled Analysis Regarding Regulatory Status of Fugitive Emissions From Coal

Unloading at Preparation Plants, dated October 3, 1997, from the EPA to Congresswoman Barbara Cubin, it was noted that "if coal is unloaded for storage, then the unloading activity is not an affected facility under NSPS Subpart Y. The coal must be directly unloaded into receiving equipment, such as a hopper to be subject to the provisions of NSPS Subpart Y." Cited as key phrases in the definition of *Coal processing and conveying equipment* were "equipment used to convey coal to ---------- machinery" and "but is not limited to" (page iii). The second phrase only supports the case of applicability where coal is directly unloaded into receiving equipment. (This is until May 27, 2009, when the regulation was modified to incorporate open storage piles)

For this facility, where coal is unloaded to a coal pile, the first phrase supports the non-applicability of the rule. Therefore, the coal pile and preceding unloading/conveying equipment are not affected facilities as long as they are not modified or reconstructed after May 27, 2009.

However, it was also concluded "fugitive emissions from coal dumping at the site of a coal preparation plant must be counted in determining whether a coal preparation plant is a major source subject to the Title V permitting requirements (cover letter). Whether a facility has been regulated as an affected facility does not determine whether fugitive emissions from that facility are to be counted in determining whether the source as a whole is major under TV. Rather, if the facility is part of a source that falls within a source category which has been listed pursuant to section 302(j) of the Act, then all fugitive emissions of any regulated air pollutant from that facility are to be included in determining whether that source is a major stationary source under Section 302 or part D of Title I of the Act and accordingly required to obtain a Title V permit" (page iv).

Coal processing and conveying equipment means any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and conveyor belts. Therefore, all processes described here are subject to this rule. The permit incorporates all applicable requirements.

Subpart IIII, Stationary Compression Ignition Internal Combustion Engines, affects stationary compression ignition (CI) internal combustion engines (ICE) based on power and displacement ratings, depending on date of construction, beginning with those constructed after July 11, 2005. Stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are manufactured after April 1, 2006 and are not fire pump engines, or are manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006 and stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005 are subject to this subpart.

DG-1 and DG-2 were removed. The 240-horsepower Cummins N-855-F, diesel fire pump was manufactured and constructed prior to the threshold dates and is therefore not affected under this subpart.

Subpart JJJJ, Stationary Spark Ignition Internal Combustion Engines (SI ICE) promulgates emission standards for all new SI engines ordered after June 12, 2006, and all SI engines modified or reconstructed after June 12, 2006, regardless of size. The specific emission standards (either in g/hp-hr or as a concentration limit) vary based on engine class, engine power rating, lean-burn or rich-burn, fuel type, duty (emergency or non-emergency), and numerous manufacture dates. Engine manufacturers are required to certify engines to meet the emission standards and may voluntarily certify other engines. An initial notification is required only for owners and operators

of engines greater than 500 horsepower that are non-certified. There are no SI engines at this facility.

NESHAP, 40 CFR Part 61 [Potentially Subpart M Applicable]
There are no emissions of any of the regulated pollutants: arsenic, asbestos, benzene, beryllium, coke oven emissions, mercury, radionuclides, or vinyl chloride except for small amounts of mercury from the boilers which are covered by NSPS Subpart D.
Subpart M – National Emission Standards for Asbestos. The facility may be subject to certain regulations pertaining to the construction, demolition, and disposal of asbestos-containing materials.

NESHAP, 40 CFR Part 63 [Subparts KK, JJJJ, ZZZZ, and DDDDD Applicable]
Subpart S – National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry, affects both new and existing processes that produce pulp, paper, or paperboard located at a major source that use: (1) Kraft, soda, or semi-chemical pulping processes using wood; (2) Mechanical pulping processes using wood; or (3) Any process using secondary or non-wood fibers. Equipment listed in § 63.444(a) are required to be enclosed and vented into a closed-vent system and routed to a control device. Georgia-Pacific uses secondary wood (recycled paper) fiber and is an affected facility. However, as a result of the processes and bleaching chemicals used in producing the secondary fiber pulp, the facility is not subject to any of the standards in the subpart.
Subpart KK - National Emission Standards for the Printing and Publishing Industry, applies to each new and existing facility that is a major source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, at which publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses are operated and area sources as outlined in §63.820(a)(2). For product and packaging, affected sources include all of the product and packaging rotogravure or wide-web flexographic printing presses at a facility plus any other equipment at that facility which the owner or operator chooses to include in accordance with paragraph §63.821(a)(3) of this section, except proof presses, and any product and packaging rotogravure or wide-web flexographic press which is used primarily for coating, laminating, or other operations which the owner or operator chooses to exclude under certain provisions listed in this section. The owner or operator of product and packaging rotogravure, or wide-web flexographic printing presses may also elect to include in that affected source stand-alone coating equipment subject to certain provisions listed in this section. The following lists the affected sources:

EU ID	Description	Manufacturer/Model No.	Construction Date
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/Model No. 7416	1993
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	June, 2005

Each product and packaging rotogravure or wide-web flexographic printing affected source at a facility that is a major source of HAP, as defined in 40 CFR 63.2, that applies no more than 400 kg per month, for every month, of organic HAP on product and packaging rotogravure or wide-web flexographic printing presses, on and after the applicable compliance date as specified in §63.826 of this subpart is subject only to the recordkeeping requirements of §63.829(e) and reporting requirements of §63.830(b)(1) of this subpart. The owner or operator is required to maintain records of the total volume and organic HAP content of each material applied on product

and packaging rotogravure or wide-web flexographic printing presses during each month for five years, and upon request, submit them to the Administrator. All applicable requirements have been incorporated into the permit.

Subpart MM - National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills, applies to each kraft, soda, sulfite, or stand-alone semichemical pulp mill that is a major source of hazardous air pollutants (HAP) emissions as defined in §63.2. The affected sources are: (1) Each existing chemical recovery system (as defined in §63.861) located at a kraft or soda pulp mill; (2) Each new nondirect contact evaporator (NDCE) recovery furnace and associated smelt dissolving tank(s) located at a kraft or soda pulp mill; (3) Each new direct contact evaporator (DCE) recovery furnace system (as defined in §63.861) and associated smelt dissolving tank(s) located at a kraft or soda pulp mill; (4) Each new lime kiln located at a kraft or soda pulp mill; (5) Each new or existing sulfite combustion unit located at a sulfite pulp mill, except such existing units at Weyerhaeuser Paper Company's Cosmopolis, Washington facility (Emission Unit no. AP–10); (6) Each new or existing semichemical combustion unit located at a stand-alone semichemical pulp mill; and (7) The requirements of the alternative standard in §63.862(d) apply to the hog fuel dryer at Weyerhaeuser Paper Company's Cosmopolis, Washington facility (Emission Unit no. HD 14). The Muskogee facility does not include any of the affected operations.

Subpart JJJJ - National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating, applies to each new and existing paper and other web coating operations at facilities that are major sources of HAP, as defined in §63.2, at which web coating lines are operated. Certain requirements apply to all who are subject to this subpart; others depend on the means used to comply with an emission standard.

Per EPA guidance, product and packaging rotogravures and wide-web flexographic presses included as affected sources under subpart KK are not covered by this rule. However, G-P has continuous gluing operations that are not subject to KK but that are subject to this rule.

Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines (RICE). This subpart affects existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions. For stationary RICE with a site rating of less than or equal to 500-hp located at a major source of HAP emissions, it is existing if you commenced construction or reconstruction before June 12, 2006.

The 240-horsepower Cummins N-855-F, diesel fire pump engine is an existing affected source located at a major source and is subject to the work practices specified in §63.6602 Table 2c including periodic oil changes, inspection of engine components and minimizing engine idle time and startup time. All applicable requirements have been incorporated into the permit.

§63.6604(b) – contains diesel fuel requirements for existing emergency CI stationary RICE with a site rating of more than 100-hp and a displacement of less than 30 liters per cylinder if it operates for the purposes specified in § 63.6640(f)(4)(ii) (non-emergency situations to supply power to another entity). The diesel fuel would have to meet the requirements in 40 CFR §1090.305 for nonroad diesel fuel. The emergency engine is not used to supply power in non-emergency situations.

§63.6640(a) & (f) contains requirements to demonstrate continuous compliance with other requirements in Table 2c according to methods specified in Table 6 and operating requirements for emergency engines.

§63.6655(a)(2), (4), & (5) requires keeping records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring

equipment; records of all required maintenance performed on the air pollution control and monitoring equipment; and records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.
§63.6655(d) requires records specified in Table 6 (operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or develop and follow maintenance plan for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions).
§63.6655(e) requires records of the maintenance to demonstrate that the engine and after-treatment control device (if any) was operated and maintained according to the owner's maintenance plan.
§63.6655(f) requires records of the hours of operation of the engine that is recorded through the non-resettable hour meter, 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.
Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, establishes emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from at major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards. Boilers No. 1, 3, and 4 (B-1, B-3, and B-4) are existing sources and must comply with the requirements by January 31, 2016. Boiler No. 5 (B-5) is a new source and must comply with the requirements upon actual start-up. By letter dated March 18, 2015, DEQ granted the facility a one-year extension of the compliance date set forth in 40 CFR §63.7495(b). Accordingly, the facility's compliance date for all requirements is January 31, 2017.

A boiler or process heater is new or reconstructed if construction or reconstruction of the boiler or process heater commenced on or after June 4, 2010.

Unit(s) designed to burn gas 1 subcategory includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory must conduct tune-ups as a work practice for all regulated emissions under Subpart DDDDD as indicated:

Heat Input Capacity	**Tune-up**
≤ 5 MMBTU/HR	Every 5 years
> 5 MMBTU/HR < 10 MMBTU/HR	Every 2 years
> 10 MMBTU/HR Without O_2 Trim System	Annually
> 10 MMBTU/HR With O_2 Trim System	Every 5 years
Limited Use	Every 5 years

Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through 13 of Subpart DDDDD, or the operating limits in Table 4 of Subpart DDDDD.

Limited-use boilers and process heaters must complete a tune-up every 5 years as specified in § 63.7540. They are not subject to the emission limits in Tables 1 and 2 or 11 through 13 of Subpart DDDD, the annual tune-up, or the energy assessment requirements in Table 3 of Subpart DDDDD, or the operating limits in Table 4 of Subpart DDDDD. Limited-use boiler or process heater means any boiler or process heater that has a federally enforceable average annual capacity factor of no more than 10 percent.

Waste heat boilers are excluded from the definition of boiler. Waste heat boiler means a device that recovers normally unused energy (i.e., hot exhaust gas) and converts it to usable heat. Waste heat boilers are also referred to as heat recovery steam generators. Waste heat boilers are heat exchangers generating steam from incoming hot exhaust gas from an industrial (e.g., thermal oxidizer, kiln, furnace) or power (e.g., combustion turbine, engine) equipment. Duct burners are sometimes used to increase the temperature of the incoming hot exhaust gas. The 90 MMBTU/HR duct burners associated with the waste heat boilers are not subject to this subpart.

Existing boilers and process heaters located at a major source facility, not including limited use units must have a one-time energy assessment performed by a qualified energy assessor.

The boilers and process heaters subject to this subpart are shown in the table below.

EU ID	Manufacturer/Model	Boiler Rating MMBTU/HR	Fuel Type	Control	Construct Date
B-1	Zurn	310	Natural Gas	None	1975
B-3	Combustion Engineering	557.11	Coal/ Natural Gas	Baghouse Filter	1978
B-4	Riley	557.11	Coal/Natural Gas	Baghouse Filter	1981
B-5	Rentech	415	Natural Gas	None	2016

Boilers No. 1 and 5 (B-1 and B-5) have heat input capacities greater than 10 MMBTU/hr and are not equipped with continuous oxygen trim systems and so, per §63.7540(a)(10), each must complete a tune-up initially and annually. Boilers No. 1 and 5 (B-1 and B-5) only burn gas 1 fuels subcategory and are therefore not subject to the emission or operating limits in this subpart.

Boilers No. 3 and 4 (B-3 and B-4) burn both natural gas and coal. Boilers No. 3 and 4 (B-3 and B-4) must comply with the emission limits outlined in Table 2 and the operating limits outlined in Table 4 of the subpart. In addition Boilers No. 3 and 4 (B-3 and B-4) must complete a one-time energy assessment as per §63.7510(e) and other work practice standards as outlined in Table 3 of the subpart..

All applicable requirements have been incorporated into the permit.

CAM, 40 CFR Part 64 [Not Applicable]

This part applies to any pollutant-specific emission unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses “large emissions units,” or any application that addresses “large emissions units” as a significant modification to an operating permit, or for any application for renewal of an operating permit, if it meets all of the following criteria.

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, prior to the control device, of the applicable regulated air pollutant of 100 TPY or HAP greater than 10/25 TPY.

All sources served by the regenerative thermal oxidizer have been removed, as well as the thermal oxidizer itself. Pursuant to §64.2(b)(1)(i), "Exempt emission limitations or standards", the requirements of this part do not apply to emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act. Boilers B-3, and B-4 became exempt from CAM for PM and HAP upon the compliance date NESHAP Subpart DDDDD. By letter dated March 18, 2015, DEQ granted the facility a one-year extension of the compliance date set forth in 40 CFR §63.7495(b). Accordingly, the facility's compliance date was January 31, 2017. B-5 is subject Subpart Db and is therefore also not subject to CAM. Potential PM emissions from the paper machines are less than 100 TPY.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Not Applicable]
The emissions units subject to this determination do not process or store more than the threshold quantity of any regulated substance (Section 112r of the Clean Air Act 1990 Amendments). More information on this federal program is available on the web page: www.epa.gov/rmp.

Stratospheric Ozone Protection, 40 CFR Part 82 [Subpart F Applicable]
These standards require phase out of Class I & II substances, reductions of emissions of Class I & II substances to the lowest achievable level in all use sectors, and banning use of nonessential products containing ozone-depleting substances (Subparts A & C); control servicing of motor vehicle air conditioners (Subpart B); require Federal agencies to adopt procurement regulations which meet phase out requirements and which maximize the substitution of safe alternatives to Class I and Class II substances (Subpart D); require warning labels on products made with or containing Class I or II substances (Subpart E); maximize the use of recycling and recovery upon disposal (Subpart F); require producers to identify substitutes for ozone-depleting compounds under the Significant New Alternatives Program (Subpart G); and reduce the emissions of halons (Subpart H).
Subpart A applies to any person that produces, transforms, destroys, imports or exports a controlled substance or imports or exports a controlled product. It identifies ozone-depleting substances and divides them into two classes. Class I controlled substances are divided into seven groups; the chemicals typically used by the manufacturing industry include carbon tetrachloride (Class I, Group IV) and methyl chloroform (Class I, Group V). A complete phase-out of production of Class I substances is required by January 1, 2000 (January 1, 2002, for methyl chloroform). Class II chemicals, which are hydrochlorofluorocarbons (HCFCs), are generally seen as interim substitutes for Class I CFCs. Class II substances consist of 33 HCFCs. A complete phase-out of Class II substances, scheduled in phases starting by 2002, is required by January 1, 2030. The facility does not conduct any of the affected processes and is therefore not subject to this rule.
Subpart F applies to any person servicing, maintaining, or repairing appliances. This subpart also applies to persons disposing of appliances, including small appliances and motor vehicle air conditioners. In addition, this subpart applies to refrigerant reclaimers, technician certifying programs, appliance owners and operators, manufacturers of appliances, manufacturers of

recycling and recovery equipment, approved recycling and recovery equipment testing organizations, persons selling class I or class II refrigerants or offering class I or class II refrigerants for sale, and persons purchasing class I or class II refrigerants. The purpose of this subpart is to reduce emissions of class I and class II refrigerants and their substitutes to the lowest achievable level by maximizing the recapture and recycling of such refrigerants during the service, maintenance, repair, and disposal of appliances and restricting the sale of refrigerants consisting in whole or in part of a class I and class II ODS in accordance with Title VI of the Clean Air Act.

The facility performs maintenance that involves recycling and recovery of refrigerants.

Standard Conditions included in the permit address required work practices to be used during the maintenance, service, repair, or disposal of appliances, leak repair requirements, standards for recycling and recovery equipment, technician certification, and recordkeeping requirements. Additional applicable requirements are found in the rule.

SECTION XII. COMPLIANCE

The Specific Conditions of this permit contain various testing, monitoring, recordkeeping, and reporting requirements in order to document on-going compliance with emission limits. The specific method used to document compliance was based on the type of emission unit, the type of process equipment, the specific pollutants emitted, and the amount of permitted emissions taking into account other regulatory requirements that an emission unit may be subject to.

In addition to the permitting requirements, the following periodic inspections have been conducted since issuance of the last Part 70 operating permit (Permit No. 2010-278-TVR (M-5), issued on December 4, 2018).

Inspection Type	Date	Summary
Full Compliance Evaluation	1/29/2019	No areas of non-compliance found. A potential violation regarding Paper Machine 13 method of solvent change was noted. However, the following FCE ID 8937, dated 5/8/20, concluded that no further action is necessary.
Full Compliance Evaluation	4/13/2020	No areas of non-compliance found.
Full Compliance Evaluation	3/31/2021	No area of non-compliance found.
Full Compliance Evaluation	6/28/2023	No area of non-compliance found.

There have been no enforcement cases opened since issuance of the last Part 70 operating permit (Permit No. 2010-278-TVR (M-5), issued on December 4, 2018).

Fees Paid

The $5,000 fee for a construction permit modification was received on August 29, 2022.

SECTION XIII. TIER CLASSIFICATION, PUBLIC, AND EPA REVIEW

Tier Classification

This application has been classified as **Tier II** based on the request for a significant modification of a major source Construction Permit. The Applicant has chosen to follow the traditional NSR review process.

The applicant has submitted an affidavit that they are not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that the applicant owns the land.

Public Review

The applicant published a "Notice of Filing a Tier II Application" in *The Muskogee Phoenix,* a weekly newspaper in the City of Muskogee, on August 11, 2022. The notice stated that the application was available for public review at the Muskogee Public Library, located at 801 W. Okmulgee Ave., Muskogee, OK 74401, or at the Air Quality Division's main office at 707 N. Robinson, Suite 4100, Oklahoma City, OK 73101.

The applicant published the "Notice of Tier II Draft Permit" as a legal notice in the same newspaper on October 27, 2023. The notice stated that the draft permit was available for public review for a 30-day period at the Muskogee Public Library, located at 801 W. Okmulgee Ave., Muskogee, OK 74401, or at the Air Quality Division's main office in Oklahoma City. The notice also stated that the draft permit was also available for public review on the Air Quality section of the DEQ web page at https://www.deq.ok.gov. No comments were received from the public.

State Review

This site is not within 50 miles of the Oklahoma border. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ Web page: www.deq.ok.gov.

Tribal Review

Tribal Nations were notified of the draft permit. No comments were received from the Tribal Nations.

SECTION XIV. SUMMARY

The applicant has demonstrated the ability to comply with the requirements of the applicable Air Quality rules and regulations. Ambient air quality standards are not threatened at this site. There are no active Air Quality compliance and enforcement issues concerning this facility. Issuance of the construction permit is recommended.

Scott A. Thompson
Executive Director

OKLAHOMA Environmental Quality

Kevin Stitt
Governor

John York
Georgia-Pacific Muskogee, LLC
4901 Chandler Road
Muskogee, OK 74403-4909

SUBJECT: Construction Permit No. **2010-278-C (M-11) PSD**
Georgia-Pacific Muskogee, LLC – Muskogee Mill
Facility ID: 643
Section 33-34, Township 15N, Range 19E, Muskogee County, OK

Dear Mr. York:

Enclosed is the permit authorizing construction of the facility. Please note that this permit is issued subject to standard and specific conditions, which are attached. These conditions must be carefully followed since they define the limits of the permit and will be confirmed by periodic inspections.

Also note that you are required to annually submit an emission inventory for this facility. An emission inventory must be completed on approved AQD forms and submitted (hardcopy or electronically) every year by April 1st. Any questions concerning the form or submittal process should be referred to the Emission Inventory Staff at 405-702-4100.

Thank you for your cooperation in this matter. If we may be of further service, please contact Jian Yue at jian.yue@deq.ok.gov or by phone at (405) 702-4205.

Sincerely,

Phillip Fielder

Phillip Fielder, P.E.
Chief Engineer
AIR QUALITY DIVISION

PART 70 PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Permit No. 2010-278-C (M-11) PSD

GEORGIA-PACIFIC CONSUMER OPERATIONS, LLC,

having complied with the requirements of the law, is hereby granted permission to construct the Muskogee Mill located at 4901 Chandler Road, Muskogee, Oklahoma, Muskogee County, having the legal description of Section 33-34, Township 15N, Range 19 E, subject to standard conditions dated June 21, 2016 and specific conditions, both attached.

In the absence of construction commencement, this permit shall expire 18 months from the issuance date, except as authorized under Section VIII of the Standard Conditions.

12-5-2023

Kendal Stegmann, Division Director **Date**

Air Quality Division

PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

Georgia-Pacific Consumer Operations, LLC **Permit No. 2010-278-C (M-11) PSD**
Muskogee Mill

The permittee is authorized to construct in conformity with the specifications in the application to operate received on May 26, 2022. The Evaluation Memorandum dated November 28, 2023, explains the derivation of applicable permit requirements and the estimates of emissions, however, it does not contain operating limitations or permit requirements. Commencing construction and continuing operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emission and emissions limitations.
[OAC 252:100-8-6(a)(1)], [Permit No. PSD-OK-404]

Where two or more emission limits with different bases are given for a single emission point and pollutant, the source shall not exceed any limit at any time.

EUG 1 – Boilers

Table 1 – Boilers

EU ID	Manufacturer/Model	Fuel Type	Control	Construct Date
B-1	Zurn	Natural Gas	None	1975
B-3	Combustion Engineering	Coal	Baghouse Filter	1978
B-4	Riley	Coal/Natural Gas	Baghouse Filter	1981
B-5	Rentech	Natural Gas	None	2016

Boiler No. 5 (B-5) is subject to the following emissions limits.

Table 2 – Boiler No. 5 (B-5) Emission Limits

EU ID	Pollutant	Emissions (lb/hr)	Emissions (TPY)
B-5, 415-MMBTU/HR Boiler No. 5	PM	3.1	14
	NO_X	83*	182**
	SO_2	0.2	1
	VOC	2.2	9.8
	CO	20	90

* OAC 252:100-33 limit based on 0.2 lb/MMBTU, three-hour average. The NSPS Subpart Db limit is 0.1 lb/MMBTU and 41.5 lb/hr, 30-day rolling average, for low heat release rate boiler.
** NSPS Subpart Db limit of 0.1 lb/MMBTU.

A. Boilers No. 1, 3, and 4 (B-1, B-3, and B-4). [40 CFR Part 60, Subpart D]
Boilers No. 1, 3, and 4 (B-1, B-3, and B-4) are subject to 40 CFR Part 60 Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which

Construction is Commenced After August 17, 1971. The permittee shall comply with all applicable requirements including, but not limited to the following:

§60.41 Definitions.
§60.42 Standard for particulate matter (PM).
§60.43 Standard for sulfur dioxide (SO_2).
§60.44 Standard for nitrogen oxides (NO_X).
§60.45 Emissions and fuel monitoring.
§60.46 Test methods and procedures.

B. Compliance with the emission limits specified in this permit shall be demonstrated by the initial testing requirements of 40 CFR Part 60 Subpart D, upon the first firing of each fuel. These requirements have been met for firing natural gas in Boilers No. 1 and 4 (B-1 and B-4) for firing coal in Boilers No. 3 and 4 (B-3 and B-4).

i. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within sixty (60) days after the complete testing.

[General Conditions, Permit No. PSD-OK-404]

C. Boiler No. 5 (B-5). [40 CFR Part 60, Subpart Db]

Boiler No. 5 (B-5) is subject to 40 CFR Part 60 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, steam generating units that commenced construction, modification, or reconstruction after June 19, 1984, and that have a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million BTU/hr). The permittee shall comply with all applicable requirements including, but not limited to the following.

§60.40b Applicability and delegation of authority.
§60.41b Definitions.
§60.42b Standard for sulfur dioxide (SO_2).
§60.43b Standard for particulate matter (PM).
§60.44b Standard for nitrogen oxides (NO_X).
§60.45b Compliance and performance test methods and procedures for sulfur dioxide.
§60.46b Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.
§60.47b Emission monitoring for sulfur dioxide.
§60.48b Emission monitoring for particulate matter and nitrogen oxides.
§60.49b Reporting and recordkeeping requirements.

D. Boilers No. 1, 3, 4, and 5 (B-1, B-3, B-4, and B-5). [40 CFR Part 63, Subpart DDDDD] [Permit No. 99-113-C (M-4) PSD]

The facility shall comply with all applicable requirements of 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters including, but not limited to the following.

§63.7480 What is the purpose of this subpart?

Table 11 to Subpart DDDDD of Part 63—Toxic Equivalency Factors for Dioxins/Furans

E. Boilers No. 1, 3, 4, and 5 (B-1, B-3, B-4, and B-5).
Total SO_2 emissions from Boilers No. 1, 3, 4, and 5 (B-1, B-3, B-4 and B-5) shall not exceed 36,460 pounds per day. Compliance with this limit shall be demonstrated by the use of coal having a maximum sulfur content (expressed as SO_2) not exceeding 1.2 lb/MMBTU as determined by the use of the applicable test methods that will satisfy the fuel monitoring requirements of NSPS Subpart D or other test methods as approved by DEQ and the use of pipeline natural gas having 0.5 grains/100 scf or less total sulfur. The facility may use coal and natural gas sampling and analytical data obtained from the supplier. Sampling and analysis frequency for coal shall be no less than each train load shipped to the facility. Sampling and analysis frequency for natural gas shall be no less than once per calendar year.

F. Additional limitations for Boilers No. 1 and 4, B-1 and B-4

i. Boiler No. 1 (B-1). [OAC 252:100-8-6(a)], [40 CFR Part 51, Appendix Y]
Permittee shall implement the requirements of this permit condition within five (5) years of EPA's approval of DEQ's Regional Haze SIP submitted in 2010. Emissions of NO_X from Boiler No. 1 (B-1) shall be limited to no more than 744 lbs/day on a 30-day rolling average. Initial compliance with this limit was demonstrated by initial stack testing. Continuous compliance shall be demonstrated by monitoring fuel consumption at least daily using the existing fuel meter and calculating a 30-day rolling average.

ii. Boiler No. 4 (B-4). [Permit No. PSD-OK-404]
Compliance with the emission limits of this condition shall be demonstrated by test methods and procedures as set forth in 40 CFR Part 60 Appendix A; Method 7, Method 10, and Method 9. Initial testing requirements have been met for firing coal and natural gas. Ongoing compliance with the emission limits of this condition shall be demonstrated by compliance with Specific Conditions No. 3.C., D., and F.

Table 3 – Boiler No. 4 (B-4) Additional Emission Limits [Permit No. PSD-OK-404]

EU ID	Fuels	NO_X	CO	SO_2	PM	VOC	Opacity
B-4	Coal (lb/hr)	389.98	32.37	668.53	55.71	9.71	10%
	Coal (lb/MMBTU)	0.7	0.06	1.2	0.10	0.017	
	Natural Gas (lb/hr)	111.4	46.8	0.4	2.8	3.3	No Visible Emissions
	Natural Gas (lb/MMBTU)	0.2	0.084	0.001	0.005	0.006	

G. Additional limitations for Boiler **B-1**. [40 CFR Part 51, Appendix Y]
The permittee shall implement the requirements of this permit specific condition within five (5) years of EPA's approval of DEQ's Regional Haze SIP submitted in 2010. Emissions of NO_X from Boiler B-1 shall be limited to no more than 744 lbs/day on a 30-day rolling average. Initial compliance with this limit was demonstrated by initial stack testing. Continuous compliance shall be demonstrated by monitoring fuel consumption at least daily using the existing fuel meter and calculating a 30-day rolling average.

H. OAC 252:100 Emission limitations.

i. Emissions of SO_2 from combustion of natural gas or other gaseous fuel in fuel-burning equipment shall not exceed 0.2 lb/MMBTU heat input (86 ng/J). [OAC 252:100-31-25(1)(A)]

ii. Emissions of SO_2 from combustion of solid fuel in fuel-burning equipment shall not exceed 1.2 lb/MMBTU heat input (520 ng/J). [OAC 252:100-31-25(1)(C)]

iii. When different types of fuels are burned simultaneously in any combination, emissions of SO_2 shall not exceed the applicable limit determined by proration in accordance with OAC 252:100-31-25(1)(D).

iv. The averaging time for the emission limits set in OAC 252:100-31-25(1) is three (3) hours unless a solid fuel sampling and analysis method is used to determine emission compliance. In that case the averaging time is 24 hours.

v. The sulfur content of solid or liquid fuels as burned shall be determined in accordance with methods previously approved by the Director or in accordance with Method 19 of 40 CFR Part 60, Appendix A. [OAC 252:100-31-25(1)(B)]

vi. The owner or operator shall maintain records of all measurements required in (A) and (B) of this subsection in accordance with the applicable requirements of OAC 252:100-43-7, including compliance status records and excess emissions measurements. [OAC 252:100-31-25(1)(C)]

vii. Emissions of nitrogen oxides (calculated as nitrogen dioxide) from any new gas-fired fuel-burning equipment shall not exceed 0.20 lb/MMBTU (86 ng/J) heat input, three-hour average. [OAC 252:100-33-2(a)(1)]

viii. Emissions of nitrogen oxides (calculated as nitrogen dioxide) from any new solid fossil fuel-burning equipment shall not exceed 0.70 lb/MMBTU (300 ng/J) heat input, three-hour average. [OAC 252:100-33-2(a)(1)]

ix. When different types of fuels are burned simultaneously in any combination, the NOx standard (calculated as nitrogen dioxide in lb/MMBTU heat input, three-hour average) for the fuel-burning equipment shall be determined by proration in accordance with OAC 252:100-33-2(a)(4).

x. The emission of particulate matter from any new or existing directly fired fuel-burning unit shall not exceed the limits specified in Appendix G. [OAC 252:100-19-12]

EUG 2 – Combustion Sources Not Subject to NSPS or NESHAP

Table 4 – Combustion Sources Not Subject to NSPS or NESHAP

EU ID	Manufacturer/Model	Fuels	Construct Date	Burner Replace
PM-11	Kinedizer LE	Natural Gas/Propane	1975	2024
PM-12	Oven-Pak II EB6	Natural Gas/Propane	1975	2017

Table 4 – Combustion Sources Not Subject to NSPS or NESHAP				
EU ID	**Manufacturer/Model**	**Fuels**	**Construct Date**	**Burner Replace**
PM-13	Oven-Pak EB6 Model 400	Natural Gas/Propane	1979	2002
PM-14	Combustifume	Natural Gas	1981	2015
PM-15	LV-85	Natural Gas	1992	NA

NA – Not applicable

Table 5 - All Paper Machines OAC 252:100-25 & 31 Standards		
Fuel	**Opacity**	**SO_2 (lbs/MMBTU)**
Natural Gas	20/60	0.20

Table 6 – Paper Machines No. 11 and 15 (PM-11 & PM-15) OAC 252:100-33 Standards	
Fuel	**NO_X (lbs/MMBTU)**
Natural Gas	0.20

I. Additional limitations for Paper Machine No. 15 (PM-15).[Permit No. 91-127-O (M-1)]

Table 7 – Paper Machine No. 15 (PM-15) Additional Emission Limits		
EU ID	**NO_X (TPY)**	**CO (TPY)**
PM-15	26.28	18.40

i. Compliance for Table 7 is demonstrated by calculating emissions using fuel consumption and emission factors from AP-42 (7/98), Table 1.4-1.

EUG 3 – Coal Preparation Plant

Table 8 – Coal Preparation Plant			
EU ID, Description	**Manufacturer/Model**	**Construct Date**	**Subject to 40 CFR Part 60 Subpart Y**
Railcar Unloading	FEECO	1991, est.	No
Radial Stacker	FEECO	1991, est.	No
FS-1, Coal Pile	Open Pile	1975	No
Grizzly Feeder	FEECO / Fairfield	1991, est.	Yes
Coal Sizer/Crusher	Gundlach / Model#56-DA-1294	1977, est.	Yes
Conveyor	Manufactured on-site by Fort Howard	1977, est.	Yes
B-3, Coal Bunkers	CE	1978, est.	Yes
B-3, Coal Feeders	Stock Equipment Co. / Gravimetric Feeder	1978, est.	Yes
B-3, Pulverizers	CE / Bowl Mill 533ARB	1978, est.	Yes
B-4, Coal Bunkers	Riley	1981, est.	Yes

Table 8 – Coal Preparation Plant			
EU ID, Description	**Manufacturer/Model**	**Construct Date**	**Subject to 40 CFR Part 60 Subpart Y**
B-4, Coal Feeders	Merrick / Coalometer	1981, est.	Yes
B-4, Pulverizers	Riley / 556 Hammer Mill	2016	Yes

J. Coal Preparation Plant, EUG 3. [40 CFR Part 60 Subpart Y]

i. The facility shall comply with all applicable requirements of 40 CFR Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants, including but not limited to the following.
§60.250 Applicability and designation of affected facility.
§60.251 Definitions.
§60.254 Standards for coal processing and conveying equipment, coal storage systems, transfer and loading systems, and open storage piles.
§60.255 Performance tests and other compliance requirements.
§60.256 Continuous monitoring requirements.
§60.257 Test methods and procedures.
§60.258 Reporting and recordkeeping.

ii. The initial performance testing requirements to demonstrate compliance with the opacity standards were completed and the standards were met.

EUG 4 - Pulp Processing Units (Subpart S Affected/No Applicable Standards)

K. Pulp Processing Units, EUG 4

i. These units are affected facilities under 40 CFR Part 63, Subpart S, National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry. No standards in the subpart currently apply to the facility.

ii. The permittee shall not conduct kraft, soda, sulfite, or semi-chemical pulping processes using wood.

iii. The facility shall not use chlorine or chlorine dioxide to bleach pulp. The use of these bleaching agents shall make the facility subject to the standards of 40 CFR Part 63, Subpart S and require submittal of an application for a permit modification.

iv. The facility is subject to the emissions limitations and standards specified in EUG 6 of this permit.

EUG 5 –Flexographic Printing (Subpart KK)

Table 10 – Flexographic Printing			
EU ID	**EU Name**	**Manufacturer/Model**	**Construct Date**
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/ Model No. 7416	1993
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	2005

L. Flexographic Paper Printers (FP-1 and FP-8). [40 CFR 63 Subpart KK]

i. The facility shall comply with all applicable requirements of Subpart KK - National Emission Standards for the Printing and Publishing Industry including, but not limited to the following.
§63.820 Applicability.
§63.821 Designation of affected sources.
§63.822 Definitions.
§63.829 Recordkeeping requirements.
§63.830 Reporting requirements.

ii. The application of organic HAP on product and packaging rotogravure or wide-web flexographic printing presses is limited to no more than 400 kg per month, for every month.

iii. The Flexographic Paper Printers (FP-1 and FP-8) are subject to only the recordkeeping requirements of §63.829(e) and reporting requirements of §63.830(b)(1) of this subpart. The owner or operator is required to maintain records of the total volume and organic HAP content of each material applied on product and packaging rotogravure or wide-web flexographic printing presses during each month, to maintain these records for five years, and upon request, submit them to the Administrator.

EUG 6 – VOC Emissions Not Covered by an NSPS or NESHAP

Table 11 – VOC Emissions Not Covered by an NSPS or NESHAP

EU ID	EU Name	Manufacturer/Model	Construct Date
PP-1	Pulp Processing Units	All components listed under EUG 4	1975-1992
PM-11	Paper Machine No. 11	KMW	1975
PM-12	Paper Machine No. 12	KMW	1975
PM-13	Paper Machine No. 13	KMW	1979
PM-14	Paper Machine No. 14	Beloit	1981
PM-15	Paper Machine No. 15	Beloit	1992
	Paper Machine Additives	NA	
SC-1	Solvent Cleaning PM-11, PM-12, PM-13, PM-14	NA	1975
PM-15	Solvent Cleaning PM-15	NA	
FP-1	Flexographic Paper Printer	Flexo 31-008 – PCMC/ Model No. 7416	1993
FP-8	Flexographic Paper Printer	Bretting, 4-color, 78-inch wide	2005

M. Paper Machine Additives and Solvent Cleaning for PM-11, PM-12, PM-13, PM-14, and PM-15, SC-1. [Permit No. 99-113-C (M-4) PSD]

i. Emissions from Paper Machine Additives and Solvent Cleaning (SC-1) for Paper Machines, PM-11, PM-12, PM-13, PM-14, and PM-15 are emissions from VOC-containing paper enhancement chemicals, including dyes, softness aids, and biocides, and cleaner material. Emissions of VOCs from the use of Paper Machine Additives and Solvent Cleaning shall not exceed 882.52TPY, 12-month rolling cumulative, based on the permittee's fiscal month accounting basis.
ii. Emissions shall be calculated based on the total VOC content of each additive or cleaner material used and a 100% release factor.

N. Flexographic Paper Printers, FP-1 and FP-8.
[Permit Nos. 83-062-O (PSD), 99-113-TV & 99-113-C (M-4) PSD]

i. Total emissions of VOCs from the Flexographic Paper Printers (FP-1 and FP-8**)** is limited to 82.48 TPY, rolling 12-month cumulative. Emissions calculations shall be based on mass balance, considering the VOC content of the inks.

O. Pulp Processing Units (PP-1). [Permit No. 99-113-C (M-4) PSD]

i. Total combined VOC emissions from the pulp processing systems shall not exceed 127 TPY.
ii. Compliance with the VOC limits for emissions from the pulping systems shall be based on the total combined finished pulp stock, 12-month rolling cumulative, using the permittee's fiscal month accounting basis, and the emission factor of 0.45 lbs/ton finished pulp stock.

EUG 7 – Non-Combustion PM Sources Not Subject to NSPS or NESHAP

Table 12 - Non-Combustion PM Sources Not Subject to NSPS or NESHAP

EU ID	EU Name	Manufacturer/Model	Construct Date
PM-11	Paper Machine No. 11	KMW	1975
PM-12	Paper Machine No. 12	KMW	1975
PM-13	Paper Machine No. 13	KMW	1979
PM-14	Paper Machine No. 14	Beloit	1981
PM-15	Paper Machine No. 15	Beloit	1992 additional particulate control installed 11/2014

Table 13 – Paper Machine Emission Limits

EU ID	EU Name	Control	Production MDT/yr	PM_{10} BACT Limits			$PM_{2.5}$ BACT Limits		
				lb/MDT	lb/hr	TPY	lb/MDT	lb/hr	TPY
PM-11	Paper Machine No. 11	None	74,000	0.409	3.50	15.12	0.255	2.19	9.45
PM-12	Paper Machine No. 12	None	100,000	0.167	1.93	8.36	0.124	1.43	6.18
PM-13	Paper Machine No. 13	None	80,000	0.220	2.04	8.81	0.163	1.51	6.51

Table 13 – Paper Machine Emission Limits									
EU ID	**EU Name**	**Control**	**Production MDT/yr**	**PM_{10} BACT Limits**			**$PM_{2.5}$ BACT Limits**		
				lb/MDT	**lb/hr**	**TPY**	**lb/MDT**	**lb/hr**	**TPY**
PM-14	Paper Machine No. 14	None	100,000	0.383	4.43	19.13	0.257	2.97	12.83
PM-15	Building Vents	None*	104,000	0.327	3.93	16.99	0.229	2.76	11.91

* The PM-15 reel section scrubber and the PM-15 winder section scrubber were not installed as air quality control devices to meet a limit or standard.

N. Paper Machines No. 11, 12, 13, 14, and 15 (PM-11, PM-12, PM-13, PM-14, and PM-15).

i. Compliance with the above BACT limit shall be ensured by:
-Good operating practices for the paper machines including routine cleaning of the paper machine and paper machine area.
-Good combustion practices consist of properly maintaining the dryer burners.
-Compliance with production rates listed in the above table, based on a 12-month rolling cumulative basis, using the permittee's fiscal month accounting basis.

EUG 8 - Emergency Engine

Table 14 – Emergency Engine	
EU ID	**EU Name**
DFP-1	240-horsepower Cummins N-855-F, diesel fire pump

O. Emergency Engine (DFP-1). [40 CFR Part 63 Subpart ZZZZ]

i. The combustion engine (DFP-1) is affected under 40 CFR Part 63, Subpart ZZZZ. The engine (DFP-1) is only subject to Work Practice requirements and fuel limits.

ii. The permittee shall comply with all applicable requirements of the NESHAP (40 CFR Part 63) for Stationary Reciprocating Internal Combustion Engines (RICE), Subpart ZZZZ, for each affected engine including but not limited to the following.
[40 CFR Part 63 Subpart ZZZZ]

§63.6580 What is the purpose of subpart ZZZZ?
§63.6585 Am I subject to this subpart?
§63.6590 What parts of my plant does this subpart cover?
§63.6595 When do I have to comply with this subpart?
§63.6602 What emission limitations and other requirements must I meet if I own or operate an existing stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions?
§63.6604 What fuel requirements must I meet if I own or operate a stationary CI RICE?
§63.6605 What are my general requirements for complying with this subpart?
§63.6612 By what date must I conduct the initial performance tests or other initial compliance demonstrations if I own or operate an existing stationary RICE with a

site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing stationary RICE located at an area source of HAP emissions?
§63.6625 What are my monitoring, installation, collection, operation, and maintenance requirements?
§63.6630 How do I demonstrate initial compliance with the emission limitations, operating limitations, and other requirements?
§63.6635 How do I monitor and collect data to demonstrate continuous compliance?
§63.6640 How do I demonstrate continuous compliance with the emission limitations, operating limitations, and other requirements?
§63.6655 What records must I keep?
§63.6660 In what form and how long must I keep my records?
§63.6665 What parts of the General Provisions apply to me?
§63.6670 Who implements and enforces this subpart?
§63.6675 What definitions apply to this subpart?

2. Testing requirements. [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]

A. Periodic testing requirements for Boilers No. 1, 3 and 4 (B-1, B-3 and B-4). [OAC 252:100-43]

Boilers having continuous emissions monitoring (CEMS) systems for a pollutant shall not be required to perform stack testing for that pollutant under this permit condition other than required RATA testing.

i. NO_X Testing. Any NO_X testing done within 365 days prior to issuance of this permit that is done in accordance with EPA approved methods will be accepted as the first annual test. Testing done to satisfy a federal rule such as NESHAP DDDDD will satisfy this requirement. A written report will be furnished to AQD for any completed performance testing.

Table 16 – NO_X Testing Requirements [OAC 252:100-43]

EU ID	Fuel Type	NO_X Testing Requirements
B-1	Natural Gas	Once every 5 years
B-3	Coal	Once every year
B-4	Coal	Once every year
	Natural Gas	Once every 2 years
B-5	Natural Gas	None (1)

(1) – Boiler B-5 is equipped with CEMS, and is not required to perform NO_X stack testing under this permit condition.

ii. PM_{10} Testing. Any PM_{10} testing done within 365 days prior to issuance of the permit that is done in accordance with EPA approved methods will be accepted as meeting this requirement for this permit. A written report will be furnished to AQD for any completed performance testing.

Table 17 – PM_{10} Testing Requirements [OAC 252:100-43]		
EU ID	**Fuel Type**	**PM_{10} Testing Requirements**
B-1	Natural Gas	None
B-3	Coal	Once every 5 years or during the term of the permit
B-4	Coal	Once every 5 years or during the term of the permit
	Natural Gas	None
B-5	Natural Gas	None

iii. Testing shall be conducted while the unit is being operated under representative conditions. A sampling protocol and notification of testing date(s), including proposed frequency proration, shall be submitted at least 30 days in advance of commencement of testing. Testing shall be conducted using the most recent EPA approved reference methods.

3. Monitoring Requirements. [OAC 252:100-31 & 100-43], [40 CFR Part 60 Subpart D], [40 CFR Part 63 Subpart DDDDD], [Permits No. 75-053-C&O, 77-076-C&O, 79-021-C&O, 81-066-C&O, 81-081-C&O, 83-062-O (PSD) and 91-127-O (M-1)], [EPA Letters dated April 9 and May 7, 1987], [Specific and General Conditions, Permit No. PSD-OK-404]

Continuous monitors. Infrequent, short durations of downtime due to malfunction, weather related outages, etc. shall not constitute a permit deviation as long as the total duration does not exceed 5% of the six-month monitoring period. This also includes process monitors such as baghouse pressure drop, ESP status, opacity, oxygen concentration, etc., and CEMS and COMS.

Fuel Standards. Fuel standards to ensure continued compliance with the applicable permit limit are taken from the applicable permit and/or the permit application as submitted by the applicant to meet compliance with applicable air quality standards at the time of permit issuance. Fuel-burning equipment fired on natural gas shall be fired with pipeline natural gas having 0.5 grains/100 scf or less total sulfur.

A. Boilers No. 1 and 5 (B-1 and B-5).

i. Boilers No. 1 and 5 (B-1 and B-5) shall be fired with only natural gas.

B. Paper Machines No. 11, 12, 13, 14, and 15, PM-11, PM-12, PM-13, PM-14 and PM-15.

i. Paper Machines No. 14 and 15 (PM-14 and PM-15) shall burn only pipeline natural gas.
ii. The use of propane as backup fuel is authorized for Paper Machines No. 11, 12, and 13 (PM-11, PM-12, and PM-13).

Fuel Sampling & Analyses.

C. Boilers No. 3 and 4 (B-3 and B-4).

i. Coal shall be sampled and analyzed to provide a gross sample representative of the fuel consumed during a boiler operating day.
ii. Coal shall be analyzed for sulfur and ash content and gross calorific value using the most recent ASTM methods. Coal shall be analyzed on a dry basis using the most recent ASTM method for moisture analysis.
iii. Either the fuel supplier's certification or analyses shall be accepted by AQD. Additional testing and/or monitoring to confirm the accuracy of any data from the fuel supplier may be required at the discretion of AQD.
iv. These data may be used, at the discretion of the permitting authority, to determine violations of the emission limitations. Records of the test results of each sample shall be made available for inspection by the permitting authority for at least five years.

Continuous Opacity Monitoring.

D. Boilers No. 3 and 4 (B-3 and B-4). [Permit No. 77-076-C], [40 CFR Part 60 Subpart D] [EPA Letters dated April 9 and May 7, 1987], [Specific and General Conditions, Permit No. PSD-OK-404]

i. The permittee is required to have installed, and to maintain and operate a continuous opacity monitoring system as required by §60.45, for Boilers No. 3 and 4 (B-3 and B-4) for the firing of coal. Boilers No. 1 and 5 (B-1 and B-5) fire only natural gas and are not required to install opacity monitoring. As allowed by 60.45(b)(7), Boilers No. 1 and 5 (B-1 and B-5) are also exempted from periodic visual opacity monitoring requirements.

E. Coal Preparation Plant (EUG 3) & Coal Pile (FS-1). [OAC 252:100-25-3, 29, & 43] The permittee shall utilize all wet suppression equipment, e.g., "spray-bars", on the conveyors preceding the coal-pile whenever necessary to meet the opacity standards of OAC 252:100-25 while coal is being unloaded and/or transferred to the coal-pile. A visual inspection of the wet suppression equipment shall be completed at least once monthly. Quarterly, the permittee shall conduct, during the daylight hours, the following test for each specified emission point associated with unloading, e.g., drop-point from the train, associated conveyors, and coal-pile radial stacker.

i. The permittee shall conduct an EPA Method 9 visual observation of emissions from the railcar unloading and the radial stacker. In no case shall the observation period for the Method 9 be less than six minutes in duration.
(1) When two consecutive quarterly Method 9 observations show less than 20% opacity, the frequency may be reduced to semi-annual Method 9 observations. Likewise, when two semi-annual Method 9 observations show less than 20% opacity, the frequency may be reduced to annual Method 9 observations. Upon

any determination of opacity greater than 20%, the Method 9 observation frequency shall revert to quarterly.

(2) If opacity is greater than 20% for any observation point using the Method 9, then the permittee shall take immediate corrective actions to reduce the opacity. Following implementation of corrective actions, a Method 9 observation shall be conducted at the affected emission point(s) to document whether the corrective actions were successful. If the Method 9 observation(s) following implementation of corrective actions is(are) still greater than 20% opacity, then for each affected emission point, the permittee shall conduct an additional Method 9 observation during the same 60-minute period and, if possible before nightfall, two additional Method 9 observation(s), for the next two hours in accordance with 40 CFR Part 60, Appendix A, Method 9; except that if any of the additional Method 9 observations 60% opacity, the Method 9 testing may be terminated and the owner or operator shall comply with the provisions of OAC 252:100-9 for excess emissions during start-up, shutdown, and malfunction of air pollution control equipment. In no case shall the observation period for the Method 9 be less than six minutes in duration.

(3) Permittee may continue with whatever reduced observation frequencies were achieved prior to issuance of this renewal permit.

Equipment Standards. [OAC 252:100-43]

F. Baghouses – Boilers No. 3 and 4 (B-3 and B-4).
The permittee shall develop and implement an operation and maintenance (O&M) manual for the baghouses. At a minimum the plan shall contain the following provisions.

i. Method for determining and documenting the time the baghouses are operational (e.g., when there is flow through the baghouses) and when the baghouses are bypassed.

ii. Method for determining and documenting good operation that specifically addresses bag leaks. A maximum opacity action level representing "good operating conditions" shall be established using the most appropriate of the following:
(1) the most recent performance test data;
(2) manufacturer's recommendations;
(3) engineering calculations;
(4) operator knowledge; and/or
(5) historical data
The permittee shall record any exceedance outside the established opacity action level and take immediate corrective action to return the affected baghouse to good operating conditions.

iii. Method for determining and documenting good operation that specifically addresses improper bag dust accumulation.

iv. Description of scheduled baghouse maintenance activities.

v. Description of baghouse recordkeeping activities.

G. Paper Machine No. 15, PM-15 - Winder Section Dust Collection and Control System. Permittee shall operate and maintain the Winder Section Dust Collection and Control System scrubber in accordance with the manufacturer's specifications and /or scrubber operating parameters recorded during the initial stack test and shall perform inspections, maintenance and repairs as recommended by the manufacturer or according to a mill-specific maintenance program sufficient to ensure proper operation.
[Permit No. 99-113-C (M-12)]

4. Hours of Operation. [OAC 252:100-8-6(a)(1)]
The facility is authorized to operate 24-hours per day, every day of the year.

5. Emission Controls. [OAC 252:100-8-6(a)(1)], [OAC 252:100-37]

A. Boilers No. 3 and 4 (B-3 and B-4).
The air pollution control devices may be modified or replaced, upon prior approval of the Air Quality Division, provided that it can be demonstrated that the replacement equipment is at least as efficient in controlling emissions as the previous pollution control device.

B. Boilers No. 3 and 4 (B-3 and B-4).
[Permits No. 75-053-C&O, 77-076-C&O, 81-066-C&O, & PSD-OK-404]

i. Emissions from Boiler No. 3 (B-3) shall pass through a baghouse or a control device having equal or lesser emissions prior to discharge to the atmosphere.
ii. BACT for Boiler No. 4 (B-4).
(1) BACT for NO_X emissions shall consist of the use of low NO_X burners to limit emissions to 0.7 lbs/MMBTU.
(2) BACT for PM emissions shall consist of a fabric filter collection system to limit emissions to 0.1 lbs/MMBTU.
(3) BACT for SO_2 shall consist of the use of low sulfur content coal when fired by coal to limit emissions to 1.2 lbs/MMBTU.
(4) BACT for CO and VOCs shall consist of boiler design, efficient equipment operation, and the use of combustion controls shall be utilized to ensure minimization of CO and VOCs and to ensure that emissions do not exceed the limits.

C. Paper Machine No. 14 (PM-14). [Permit No. PSD-OK-404 & 81-066-C&O]
BACT for Paper Machine No. 14 (PM-14) shall consist of the use of low NO_X burners and natural gas for the primary fuel. All other pollutants shall be minimized by proper operation of the unit.

6. A log which lists each emission unit (EU) listed in EUG 4, Pulp Processing Units (PP-1), shall be maintained at the facility. It shall contain adequate information to identify each unit and cross-reference each one to an appropriate identifier such as a serial number or some other identifier. The installation date(s) shall be included for every emissions unit. For EUG 3, Coal

Preparation Plant, only a site drawing which identifies all EUs is required to be maintained at the facility.

7. The permittee shall take reasonable precautions to minimize or prevent pollution including, but not limited to, those actions set forth below: [OAC 252:100-29-2]
   A. The use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, driveways and parking lots or the clearing of land for commercial, industrial, or residential development.
   B. The application of water or suitable chemicals or some other covering on materials stockpiles and other surfaces that can create air-borne dusts under normal conditions.
   C. The installation and use of hoods, fans and dust collectors to enclose and vent the handling of dusty materials or the use of water sprays or other acceptable measures to suppress dust emission during handling. Adequate containment methods shall be employed during sandblasting or other similar operations.
   D. The covering or wetting of open-bodied trucks, trailers, or railroad cars when transporting dusty materials in areas where the general public must have access.
   E. The removal as necessary from paved street and parking surfaces of materials that have a tendency to become airborne.
   F. The planting and maintenance of vegetative ground cover as necessary

8. The continuous gluing operations at the facility are subject to 40 CFR Part 63 Subpart JJJJ. The facility shall comply with all applicable requirements of this including, but not limited to the following. [40 CFR Part 63 Subpart JJJJ]

   § 63.3280 What is in this subpart?
   § 63.3290 Does this subpart apply to me?
   § 63.3300 Which of my emission sources are affected by this subpart?
   § 63.3310 What definitions are used in this subpart?
   § 63.3320 What emission standards must I meet?
   § 63.3321 What operating limits must I meet?
   § 63.3330 When must I comply?
   § 63.3340 What general requirements must I meet to comply with the standards?
   § 63.3350 If I use a control device to comply with the emission standards, what monitoring must I do?
   § 63.3360 What performance tests must I conduct?
   § 63.3370 How do I demonstrate compliance with the emission standards?
   § 63.3400 What notifications and reports must I submit?
   § 63.3410 What records must I keep?
   § 63.3420 What authorities may be delegated to the States?

9. Recordkeeping. The permittee shall maintain records of operations as listed below. These records shall be maintained on-site or at a local field office for at least five years after the date of recording and shall be provided to regulatory personnel upon request.
   [OAC 252:100-8-6(a)(3)(B)]

All EUGs

A. Either a safety data sheet (SDS) or a certified product data sheet, that documents the volatile organic solvent content and the HAP content of each raw material for which VOC emissions are regulated by this permit, including printing inks, cleaning solvents, and paper machine additives.

B. Records required by 40 CFR Part 60 Subparts D, Db and Y and 40 CFR Part 63 Subparts KK, JJJJ, ZZZZ, and DDDDD for affected sources.

EUGs 1, 2, and 3

C. Records of fuel analyses, pollution control monitoring/inspection/maintenance, and continuous monitoring, and Method 9 opacity monitoring required by Specific Condition No. 3 (frequencies for fuel sampling and analyses as required by Specific Condition No. 3). For natural gas, compliance can be shown by the following methods: a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once annually.

EUGs 1 and 2

D. Information necessary to identify the equipment specified in Specific Condition No. 1.

EUGs 6 and 7

E. Throughput (12-month rolling cumulative, based on the permittee's fiscal month accounting basis):
   i. Combined finished pulp stock, all pulp processing, Systems 1 through 5.
   ii. Combined dry finished paper, all paper machines, PM-11 through PM-15.

EUGs 5 & 6

F. Demonstration of compliance for HAP/VOC limitations by the appropriate method specified.

G. Sufficient records to demonstrate the calculations of VOC emissions from the group of paper printers (currently 3) and the solvent cleaning of paper machines (currently 5). These records typically include the basis of a mass-balance analysis; gallons and/or pounds of product used, VOC content of each gallon and/or pound, any associated capture or destruction efficiency, and any other appropriate information.

EUG 1 [Permit No. 81-066-C&O]

H. Records required by Specific Conditions 3.C, D and F. including required data recording, supporting information and documentation.

10. The following records shall be maintained on-site to verify Insignificant Activities. No recordkeeping is required for those operations which qualify as Trivial Activities.
[OAC 252:100-8-6 (a)(3)(B)]

    A. For fuel storage/dispensing equipment operated solely for facility owned vehicles if fuel throughput is not more than 2,175 gallons/day: daily throughput, averaged each time the storage tank is filled.
    B. For fluid storage tanks with a capacity of 10,000 gallons or less and a true vapor pressure less than 1.0 psia: Records of capacity of the tanks and contents.
    C. For fluid storage tanks with a capacity of less than 39,894 gallons and a true vapor pressure less than 1.5 psia: Records of capacity of the tanks and contents.
    D. For non-commercial water washing operations (less than 2,250 barrels/year) and drum crushing operations of empty barrels less than or equal to 55 gallons with less than three percent by volume of residual material: Emissions from products contained in these drums are already accounted for at 100% product usage in other operations, therefore no records will be required.
    E. For activities that have the potential to emit less than 5 TPY (actual) of any criteria pollutant: The type of activity and the amount of emissions from that activity (annual).

11. The Permit Shield (Standard Conditions, Section VI) is extended to the following requirements that have been determined to be inapplicable to this facility. [OAC 252:100-8-6(d)(2)]

    A. OAC 252:100-7 Permits for Minor Facilities
    B. OAC 252:100-11 Alternative Emissions Reduction
    D. OAC 252:100-17 Incinerators
    E. OAC 252:100-23 Cotton Gins
    F. OAC 252:100-24 Particulate Emissions From Grain, Feed, or Seed Operations
    G. OAC 252:100-35 Carbon Monoxide
    H. OAC 252:100-39 Nonattainment Areas
    I. 40 CFR Part 72 Acid Rain

12. Permittee shall submit to Air Quality Division of DEQ, with a copy to the US EPA, Region 6, an Annual Compliance Certification for each twelve (12) month period, no later than 30 days after February 28, 2010 and each 12 month anniversary date thereafter for the duration of this permit. The certification shall include a monthly summary of any noncompliance with the permit or applicable regulations for the past year. Permittee shall also submit to Air Quality Division of DEQ, a Semi-Annual Monitoring and Deviation Report for each six (6) month period, no later than 30 days after August 31, 2009 and February 28, 2010 and each six (6) month anniversary date thereafter for the duration of this permit. The report shall include the results of any required monitoring for each six (6) month monitoring period.
[OAC 252:100-8-6(c)(5)(A), (C) & (D)], [OAC 252:100-43]

13. Road segments designated as paved in the PSD modeling analyses will be repaired or replaced as necessary no later than 3 years after issuance of Construction Permit 2010-278-C M-11 PSD.

14. The permittee shall apply for a modified operating permit within 180 days of issuance of this permit.

MAJOR SOURCE AIR QUALITY PERMIT
STANDARD CONDITIONS
(June 21, 2016)

SECTION I. DUTY TO COMPLY

A. This is a permit to operate / construct this specific facility in accordance with the federal Clean Air Act (42 U.S.C. 7401, et al.) and under the authority of the Oklahoma Clean Air Act and the rules promulgated there under. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

B. The issuing Authority for the permit is the Air Quality Division (AQD) of the Oklahoma Department of Environmental Quality (DEQ). The permit does not relieve the holder of the obligation to comply with other applicable federal, state, or local statutes, regulations, rules, or ordinances. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

C. The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of the Oklahoma Clean Air Act and shall be grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. All terms and conditions are enforceable by the DEQ, by the Environmental Protection Agency (EPA), and by citizens under section 304 of the Federal Clean Air Act (excluding state-only requirements). This permit is valid for operations only at the specific location listed.
[40 C.F.R. §70.6(b), OAC 252:100-8-1.3 and OAC 252:100-8-6(a)(7)(A) and (b)(1)]

D. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in assessing penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continuing operations. [OAC 252:100-8-6(a)(7)(B)]

SECTION II. REPORTING OF DEVIATIONS FROM PERMIT TERMS

A. Any exceedance resulting from an emergency and/or posing an imminent and substantial danger to public health, safety, or the environment shall be reported in accordance with Section XIV (Emergencies). [OAC 252:100-8-6(a)(3)(C)(iii)(I) & (II)]

B. Deviations that result in emissions exceeding those allowed in this permit shall be reported consistent with the requirements of OAC 252:100-9, Excess Emission Reporting Requirements.
[OAC 252:100-8-6(a)(3)(C)(iv)]

C. Every written report submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.
[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION III. MONITORING, TESTING, RECORDKEEPING & REPORTING

A. The permittee shall keep records as specified in this permit. These records, including monitoring data and necessary support information, shall be retained on-site or at a nearby field office for a period of at least five years from the date of the monitoring sample, measurement, report, or application, and shall be made available for inspection by regulatory personnel upon request. Support information includes all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Where appropriate, the permit may specify that records may be maintained in computerized form.

[OAC 252:100-8-6 (a)(3)(B)(ii), OAC 252:100-8-6(c)(1), and OAC 252:100-8-6(c)(2)(B)]

B. Records of required monitoring shall include:

(1) the date, place and time of sampling or measurement;
(2) the date or dates analyses were performed;
(3) the company or entity which performed the analyses;
(4) the analytical techniques or methods used;
(5) the results of such analyses; and
(6) the operating conditions existing at the time of sampling or measurement.

[OAC 252:100-8-6(a)(3)(B)(i)]

C. No later than 30 days after each six (6) month period, after the date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to AQD a report of the results of any required monitoring. All instances of deviations from permit requirements since the previous report shall be clearly identified in the report. Submission of these periodic reports will satisfy any reporting requirement of Paragraph E below that is duplicative of the periodic reports, if so noted on the submitted report. [OAC 252:100-8-6(a)(3)(C)(i) and (ii)]

D. If any testing shows emissions in excess of limitations specified in this permit, the owner or operator shall comply with the provisions of Section II (Reporting Of Deviations From Permit Terms) of these standard conditions. [OAC 252:100-8-6(a)(3)(C)(iii)]

E. In addition to any monitoring, recordkeeping or reporting requirement specified in this permit, monitoring and reporting may be required under the provisions of OAC 252:100-43, Testing, Monitoring, and Recordkeeping, or as required by any provision of the Federal Clean Air Act or Oklahoma Clean Air Act. [OAC 252:100-43]

F. Any Annual Certification of Compliance, Semi Annual Monitoring and Deviation Report, Excess Emission Report, and Annual Emission Inventory submitted in accordance with this permit shall be certified by a responsible official. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

[OAC 252:100-8-5(f), OAC 252:100-8-6(a)(3)(C)(iv), OAC 252:100-8-6(c)(1), OAC 252:100-9-7(e), and OAC 252:100-5-2.1(f)]

G. Any owner or operator subject to the provisions of New Source Performance Standards ("NSPS") under 40 CFR Part 60 or National Emission Standards for Hazardous Air Pollutants ("NESHAPs") under 40 CFR Parts 61 and 63 shall maintain a file of all measurements and other information required by the applicable general provisions and subpart(s). These records shall be maintained in a permanent file suitable for inspection, shall be retained for a period of at least five years as required by Paragraph A of this Section, and shall include records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility, any malfunction of the air pollution control equipment; and any periods during which a continuous monitoring system or monitoring device is inoperative.

[40 C.F.R. §§60.7 and 63.10, 40 CFR Parts 61, Subpart A, and OAC 252:100, Appendix Q]

H. The permittee of a facility that is operating subject to a schedule of compliance shall submit to the DEQ a progress report at least semi-annually. The progress reports shall contain dates for achieving the activities, milestones or compliance required in the schedule of compliance and the dates when such activities, milestones or compliance was achieved. The progress reports shall also contain an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted. [OAC 252:100-8-6(c)(4)]

I. All testing must be conducted under the direction of qualified personnel by methods approved by the Division Director. All tests shall be made and the results calculated in accordance with standard test procedures. The use of alternative test procedures must be approved by EPA. When a portable analyzer is used to measure emissions it shall be setup, calibrated, and operated in accordance with the manufacturer's instructions and in accordance with a protocol meeting the requirements of the "AQD Portable Analyzer Guidance" document or an equivalent method approved by Air Quality. [OAC 252:100-8-6(a)(3)(A)(iv), and OAC 252:100-43]

J. The reporting of total particulate matter emissions as required in Part 7 of OAC 252:100-8 (Permits for Part 70 Sources), OAC 252:100-19 (Control of Emission of Particulate Matter), and OAC 252:100-5 (Emission Inventory), shall be conducted in accordance with applicable testing or calculation procedures, modified to include back-half condensables, for the concentration of particulate matter less than 10 microns in diameter (PM_{10}). NSPS may allow reporting of only particulate matter emissions caught in the filter (obtained using Reference Method 5).

K. The permittee shall submit to the AQD a copy of all reports submitted to the EPA as required by 40 C.F.R. Part 60, 61, and 63, for all equipment constructed or operated under this permit subject to such standards. [OAC 252:100-8-6(c)(1) and OAC 252:100, Appendix Q]

SECTION IV. COMPLIANCE CERTIFICATIONS

A. No later than 30 days after each anniversary date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to the AQD, with a copy to the US EPA, Region 6, a certification of compliance with the terms and conditions of this permit and of any other applicable requirements which have become effective since the issuance of this permit.

[OAC 252:100-8-6(c)(5)(A), and (D)]

B. The compliance certification shall describe the operating permit term or condition that is the basis of the certification; the current compliance status; whether compliance was continuous or

intermittent; the methods used for determining compliance, currently and over the reporting period. The compliance certification shall also include such other facts as the permitting authority may require to determine the compliance status of the source. [OAC 252:100-8-6(c)(5)(C)(i)-(v)]

C. The compliance certification shall contain a certification by a responsible official as to the results of the required monitoring. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete." [OAC 252:100-8-5(f) and OAC 252:100-8-6(c)(1)]

D. Any facility reporting noncompliance shall submit a schedule of compliance for emissions units or stationary sources that are not in compliance with all applicable requirements. This schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the emissions unit or stationary source is in noncompliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the emissions unit or stationary source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based, except that a compliance plan shall not be required for any noncompliance condition which is corrected within 24 hours of discovery.
[OAC 252:100-8-5(e)(8)(B) and OAC 252:100-8-6(c)(3)]

SECTION V. REQUIREMENTS THAT BECOME APPLICABLE DURING THE PERMIT TERM

The permittee shall comply with any additional requirements that become effective during the permit term and that are applicable to the facility. Compliance with all new requirements shall be certified in the next annual certification. [OAC 252:100-8-6(c)(6)]

SECTION VI. PERMIT SHIELD

A. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC 252:100-8) shall be deemed compliance with the applicable requirements identified and included in this permit. [OAC 252:100-8-6(d)(1)]

B. Those requirements that are applicable are listed in the Standard Conditions and the Specific Conditions of this permit. Those requirements that the applicant requested be determined as not applicable are summarized in the Specific Conditions of this permit. [OAC 252:100-8-6(d)(2)]

SECTION VII. ANNUAL EMISSIONS INVENTORY & FEE PAYMENT

The permittee shall file with the AQD an annual emission inventory and shall pay annual fees based on emissions inventories. The methods used to calculate emissions for inventory purposes shall be based on the best available information accepted by AQD.
[OAC 252:100-5-2.1, OAC 252:100-5-2.2, and OAC 252:100-8-6(a)(8)]

SECTION VIII. TERM OF PERMIT

A. Unless specified otherwise, the term of an operating permit shall be five years from the date of issuance. [OAC 252:100-8-6(a)(2)(A)]

B. A source's right to operate shall terminate upon the expiration of its permit unless a timely and complete renewal application has been submitted at least 180 days before the date of expiration. [OAC 252:100-8-7.1(d)(1)]

C. A duly issued construction permit or authorization to construct or modify will terminate and become null and void (unless extended as provided in OAC 252:100-8-1.4(b)) if the construction is not commenced within 18 months after the date the permit or authorization was issued, or if work is suspended for more than 18 months after it is commenced. [OAC 252:100-8-1.4(a)]

D. The recipient of a construction permit shall apply for a permit to operate (or modified operating permit) within 180 days following the first day of operation. [OAC 252:100-8-4(b)(5)]

SECTION IX. SEVERABILITY

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
[OAC 252:100-8-6 (a)(6)]

SECTION X. PROPERTY RIGHTS

A. This permit does not convey any property rights of any sort, or any exclusive privilege.
[OAC 252:100-8-6(a)(7)(D)]

B. This permit shall not be considered in any manner affecting the title of the premises upon which the equipment is located and does not release the permittee from any liability for damage to persons or property caused by or resulting from the maintenance or operation of the equipment for which the permit is issued. [OAC 252:100-8-6(c)(6)]

SECTION XI. DUTY TO PROVIDE INFORMATION

A. The permittee shall furnish to the DEQ, upon receipt of a written request and within sixty (60) days of the request unless the DEQ specifies another time period, any information that the DEQ may request to determine whether cause exists for modifying, reopening, revoking, reissuing,

terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit.
[OAC 252:100-8-6(a)(7)(E)]

B. The permittee may make a claim of confidentiality for any information or records submitted pursuant to 27A O.S. § 2-5-105(18). Confidential information shall be clearly labeled as such and shall be separable from the main body of the document such as in an attachment.
[OAC 252:100-8-6(a)(7)(E)]

C. Notification to the AQD of the sale or transfer of ownership of this facility is required and shall be made in writing within thirty (30) days after such sale or transfer.
[Oklahoma Clean Air Act, 27A O.S. § 2-5-112(G)]

SECTION XII. REOPENING, MODIFICATION & REVOCATION

A. The permit may be modified, revoked, reopened and reissued, or terminated for cause. Except as provided for minor permit modifications, the filing of a request by the permittee for a permit modification, revocation and reissuance, termination, notification of planned changes, or anticipated noncompliance does not stay any permit condition.
[OAC 252:100-8-6(a)(7)(C) and OAC 252:100-8-7.2(b)]

B. The DEQ will reopen and revise or revoke this permit prior to the expiration date in the following circumstances: [OAC 252:100-8-7.3 and OAC 252:100-8-7.4(a)(2)]

(1) Additional requirements under the Clean Air Act become applicable to a major source category three or more years prior to the expiration date of this permit. No such reopening is required if the effective date of the requirement is later than the expiration date of this permit.
(2) The DEQ or the EPA determines that this permit contains a material mistake or that the permit must be revised or revoked to assure compliance with the applicable requirements.
(3) The DEQ or the EPA determines that inaccurate information was used in establishing the emission standards, limitations, or other conditions of this permit. The DEQ may revoke and not reissue this permit if it determines that the permittee has submitted false or misleading information to the DEQ.
(4) DEQ determines that the permit should be amended under the discretionary reopening provisions of OAC 252:100-8-7.3(b).

C. The permit may be reopened for cause by EPA, pursuant to the provisions of OAC 100-8-7.3(d). [OAC 100-8-7.3(d)]

D. The permittee shall notify AQD before making changes other than those described in Section XVIII (Operational Flexibility), those qualifying for administrative permit amendments, or those defined as an Insignificant Activity (Section XVI) or Trivial Activity (Section XVII). The notification should include any changes which may alter the status of a “grandfathered source,” as defined under AQD rules. Such changes may require a permit modification.
[OAC 252:100-8-7.2(b) and OAC 252:100-5-1.1]

E. Activities that will result in air emissions that exceed the trivial/insignificant levels and that are not specifically approved by this permit are prohibited. [OAC 252:100-8-6(c)(6)]

SECTION XIII. INSPECTION & ENTRY

A. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized regulatory officials to perform the following (subject to the permittee's right to seek confidential treatment pursuant to 27A O.S. Supp. 1998, § 2-5-105(17) for confidential information submitted to or obtained by the DEQ under this section):

(1) enter upon the permittee's premises during reasonable/normal working hours where a source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
(2) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
(3) inspect, at reasonable times and using reasonable safety practices, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
(4) as authorized by the Oklahoma Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit.

[OAC 252:100-8-6(c)(2)]

SECTION XIV. EMERGENCIES

A. Any exceedance resulting from an emergency shall be reported to AQD promptly but no later than 4:30 p.m. on the next working day after the permittee first becomes aware of the exceedance. This notice shall contain a description of the emergency, the probable cause of the exceedance, any steps taken to mitigate emissions, and corrective actions taken.

[OAC 252:100-8-6 (a)(3)(C)(iii)(I) and (IV)]

B. Any exceedance that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to AQD as soon as is practicable; but under no circumstance shall notification be more than 24 hours after the exceedance. [OAC 252:100-8-6(a)(3)(C)(iii)(II)]

C. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. [OAC 252:100-8-2]

D. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that: [OAC 252:100-8-6 (e)(2)]

(1) an emergency occurred and the permittee can identify the cause or causes of the emergency;

(2) the permitted facility was at the time being properly operated;
(3) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit.

E. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof. [OAC 252:100-8-6(e)(3)]

F. Every written report or document submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.
[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION XV. RISK MANAGEMENT PLAN

The permittee, if subject to the provision of Section 112(r) of the Clean Air Act, shall develop and register with the appropriate agency a risk management plan by June 20, 1999, or the applicable effective date. [OAC 252:100-8-6(a)(4)]

SECTION XVI. INSIGNIFICANT ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate individual emissions units that are either on the list in Appendix I to OAC Title 252, Chapter 100, or whose actual calendar year emissions do not exceed any of the limits below. Any activity to which a State or Federal applicable requirement applies is not insignificant even if it meets the criteria below or is included on the insignificant activities list.

(1) 5 tons per year of any one criteria pollutant.
(2) 2 tons per year for any one hazardous air pollutant (HAP) or 5 tons per year for an aggregate of two or more HAP's, or 20 percent of any threshold less than 10 tons per year for single HAP that the EPA may establish by rule.
[OAC 252:100-8-2 and OAC 252:100, Appendix I]

SECTION XVII. TRIVIAL ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate any individual or combination of air emissions units that are considered inconsequential and are on the list in Appendix J. Any activity to which a State or Federal applicable requirement applies is not trivial even if included on the trivial activities list.
[OAC 252:100-8-2 and OAC 252:100, Appendix J]

SECTION XVIII. OPERATIONAL FLEXIBILITY

A. A facility may implement any operating scenario allowed for in its Part 70 permit without the need for any permit revision or any notification to the DEQ (unless specified otherwise in the permit). When an operating scenario is changed, the permittee shall record in a log at the facility the scenario under which it is operating. [OAC 252:100-8-6(a)(10) and (f)(1)]

B. The permittee may make changes within the facility that:

(1) result in no net emissions increases,
(2) are not modifications under any provision of Title I of the federal Clean Air Act, and
(3) do not cause any hourly or annual permitted emission rate of any existing emissions unit to be exceeded;

provided that the facility provides the EPA and the DEQ with written notification as required below in advance of the proposed changes, which shall be a minimum of seven (7) days, or twenty four (24) hours for emergencies as defined in OAC 252:100-8-6 (e). The permittee, the DEQ, and the EPA shall attach each such notice to their copy of the permit. For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield provided by this permit does not apply to any change made pursuant to this paragraph. [OAC 252:100-8-6(f)(2)]

SECTION XIX. OTHER APPLICABLE & STATE-ONLY REQUIREMENTS

A. The following applicable requirements and state-only requirements apply to the facility unless elsewhere covered by a more restrictive requirement:

(1) Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in the Open Burning Subchapter. [OAC 252:100-13]

(2) No particulate emissions from any fuel-burning equipment with a rated heat input of 10 MMBTU/HR or less shall exceed 0.6 lb/MMBTU. [OAC 252:100-19]

(3) For all emissions units not subject to an opacity limit promulgated under 40 C.F.R., Part 60, NSPS, no discharge of greater than 20% opacity is allowed except for: [OAC 252:100-25]

(a) Short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity;
(b) Smoke resulting from fires covered by the exceptions outlined in OAC 252:100-13-7;
(c) An emission, where the presence of uncombined water is the only reason for failure to meet the requirements of OAC 252:100-25-3(a); or
(d) Smoke generated due to a malfunction in a facility, when the source of the fuel producing the smoke is not under the direct and immediate control of the facility and the immediate constriction of the fuel flow at the facility would produce a hazard to life and/or property.

(4) No visible fugitive dust emissions shall be discharged beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of

adjacent properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. [OAC 252:100-29]

(5) No sulfur oxide emissions from new gas-fired fuel-burning equipment shall exceed 0.2 lb/MMBTU. No existing source shall exceed the listed ambient air standards for sulfur dioxide. [OAC 252:100-31]

(6) Volatile Organic Compound (VOC) storage tanks built after December 28, 1974, and with a capacity of 400 gallons or more storing a liquid with a vapor pressure of 1.5 psia or greater under actual conditions shall be equipped with a permanent submerged fill pipe or with a vapor-recovery system. [OAC 252:100-37-15(b)]

(7) All fuel-burning equipment shall at all times be properly operated and maintained in a manner that will minimize emissions of VOCs. [OAC 252:100-37-36]

SECTION XX. STRATOSPHERIC OZONE PROTECTION

A. The permittee shall comply with the following standards for production and consumption of ozone-depleting substances: [40 CFR 82, Subpart A]

(1) Persons producing, importing, or placing an order for production or importation of certain class I and class II substances, HCFC-22, or HCFC-141b shall be subject to the requirements of §82.4;
(2) Producers, importers, exporters, purchasers, and persons who transform or destroy certain class I and class II substances, HCFC-22, or HCFC-141b are subject to the recordkeeping requirements at §82.13; and
(3) Class I substances (listed at Appendix A to Subpart A) include certain CFCs, Halons, HBFCs, carbon tetrachloride, trichloroethane (methyl chloroform), and bromomethane (Methyl Bromide). Class II substances (listed at Appendix B to Subpart A) include HCFCs.

B. If the permittee performs a service on motor (fleet) vehicles when this service involves an ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all applicable requirements. Note: The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant. [40 CFR 82, Subpart B]

C. The permittee shall comply with the following standards for recycling and emissions reduction except as provided for MVACs in Subpart B: [40 CFR 82, Subpart F]

(1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to § 82.156;
(2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to § 82.158;
(3) Persons performing maintenance, service, repair, or disposal of appliances must be

certified by an approved technician certification program pursuant to § 82.161;
(4) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record-keeping requirements pursuant to § 82.166;
(5) Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to § 82.158; and
(6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to § 82.166.

SECTION XXI. TITLE V APPROVAL LANGUAGE

A. DEQ wishes to reduce the time and work associated with permit review and, wherever it is not inconsistent with Federal requirements, to provide for incorporation of requirements established through construction permitting into the Source's Title V permit without causing redundant review. Requirements from construction permits may be incorporated into the Title V permit through the administrative amendment process set forth in OAC 252:100-8-7.2(a) only if the following procedures are followed:

(1) The construction permit goes out for a 30-day public notice and comment using the procedures set forth in 40 C.F.R. § 70.7(h)(1). This public notice shall include notice to the public that this permit is subject to EPA review, EPA objection, and petition to EPA, as provided by 40 C.F.R. § 70.8; that the requirements of the construction permit will be incorporated into the Title V permit through the administrative amendment process; that the public will not receive another opportunity to provide comments when the requirements are incorporated into the Title V permit; and that EPA review, EPA objection, and petitions to EPA will not be available to the public when requirements from the construction permit are incorporated into the Title V permit.
(2) A copy of the construction permit application is sent to EPA, as provided by 40 CFR § 70.8(a)(1).
(3) A copy of the draft construction permit is sent to any affected State, as provided by 40 C.F.R. § 70.8(b).
(4) A copy of the proposed construction permit is sent to EPA for a 45-day review period as provided by 40 C.F.R.§ 70.8(a) and (c).
(5) The DEQ complies with 40 C.F.R. § 70.8(c) upon the written receipt within the 45-day comment period of any EPA objection to the construction permit. The DEQ shall not issue the permit until EPA's objections are resolved to the satisfaction of EPA.
(6) The DEQ complies with 40 C.F.R. § 70.8(d).
(7) A copy of the final construction permit is sent to EPA as provided by 40 CFR § 70.8(a).
(8) The DEQ shall not issue the proposed construction permit until any affected State and EPA have had an opportunity to review the proposed permit, as provided by these permit conditions.
(9) Any requirements of the construction permit may be reopened for cause after incorporation into the Title V permit by the administrative amendment process, by DEQ as provided in OAC 252:100-8-7.3(a), (b), and (c), and by EPA as provided in 40 C.F.R. § 70.7(f) and (g).

(10) The DEQ shall not issue the administrative permit amendment if performance tests fail to demonstrate that the source is operating in substantial compliance with all permit requirements.

B. To the extent that these conditions are not followed, the Title V permit must go through the Title V review process.

SECTION XXII. CREDIBLE EVIDENCE

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any provision of the Oklahoma implementation plan, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [OAC 252:100-43-6]

Department of Environmental Quality (DEQ)
Air Quality Division (AQD)
Acronym List
9-10-21

ACFM	Actual Cubic Feet per Minute
AD	Applicability Determination
AFRC	Air-to-Fuel Ratio Controller
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BAE	Baseline Actual Emissions
BBL	Barrel(s)
BHP	Brake Horsepower (bhp)
BTU	British thermal unit (BTU)
C&E	Compliance and Enforcement
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS	Chemical Abstract Service
CAAA	Clean Air Act Amendments
CC	Catalytic Converter
CCR	Continuous Catalyst Regeneration
CD	Consent Decree
CEM	Continuous Emission Monitor
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
CI	Compression Ignition
CNG	Compressed Natural Gas
CO	Carbon Monoxide or Consent Order
COA	Capable of Accommodating
COM	Continuous Opacity Monitor
D	Day
DEF	Diesel Exhaust Fluid
DG	Demand Growth
DSCF	Dry Standard (At Standard Conditions) Cubic Foot (Feet)
EGU	Electric Generating Unit
EI	Emissions Inventory
EPA	Environmental Protection Agency
ESP	Electrostatic Precipitator
EUG	Emissions Unit Group
EUSGU	Electric Utility Steam Generating Unit
FCE	Full Compliance Evaluation
FCCU	Fluid Catalytic Cracking Unit
FIP	Federal Implementation Plan
FR	Federal Register
GACT	Generally Achievable Control Technology
GAL	Gallon (gal)
GDF	Gasoline Dispensing Facility
GEP	Good Engineering Practice
GHG	Greenhouse Gases
GR	Grain(s) (gr)
H_2CO	Formaldehyde
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutants
HC	Hydrocarbon
HCFC	Hydrochlorofluorocarbon
HFR	Horizontal Fixed Roof
HON	Hazardous Organic NESHAP
HP	Horsepower (hp)
HR	Hour (hr)
I&M	Inspection and Maintenance
IBR	Incorporation by Reference
ICE	Internal Combustion Engine
LAER	Lowest Achievable Emission Rate
LB	Pound(s) [Mass] (lb, lbs, lbm)
LB/HR	Pound(s) per Hour (lb/hr)
LDAR	Leak Detection and Repair
LNG	Liquefied Natural Gas
LT	Long Ton(s) (metric)
M	Thousand (Roman Numeral)
MAAC	Maximum Acceptable Ambient Concentration
MACT	Maximum Achievable Control Technology
MM	Prefix used for Million (Thousand-Thousand)
MMBTU	Million British Thermal Units (MMBTU)
MMBTU/HR	Million British Thermal Units per Hour (MMBTU/hr)
MMSCF	Million Standard Cubic Feet (MMscf)
MMSCFD	Million Standard Cubic Feet per Day
MSDS	Material Safety Data Sheet
MWC	Municipal Waste Combustor
MWe	Megawatt Electrical
NA	Nonattainment
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NH_3	Ammonia
NMHC	Non-methane Hydrocarbon
NGL	Natural Gas Liquids
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NOI	Notice of Intent
NSCR	Non-Selective Catalytic Reduction

NSPS	New Source Performance Standards
NSR	New Source Review
O_3	Ozone
O&G	Oil and Gas
O&M	Operation and Maintenance
O&NG	Oil and Natural Gas
OAC	Oklahoma Administrative Code
OC	Oxidation Catalyst
PAH	Polycyclic Aromatic Hydrocarbons
PAE	Projected Actual Emissions
PAL	Plant-wide Applicability Limit
Pb	Lead
PBR	Permit by Rule
PCB	Polychlorinated Biphenyls
PCE	Partial Compliance Evaluation
PEA	Portable Emissions Analyzer
PFAS	Per- and Polyfluoroalkyl Substance
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter <= 2.5 Micrometers
PM_{10}	Particulate Matter with an Aerodynamic Diameter <= 10 Micrometers
POM	Particulate Organic Matter or Polycyclic Organic Matter
ppb	Parts per Billion
ppm	Parts per Million
ppmv	Parts per Million Volume
ppmvd	Parts per Million Dry Volume
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
psia	Pounds per Square Inch Absolute
psig	Pounds per Square Inch Gage
RACT	Reasonably Available Control Technology
RATA	Relative Accuracy Test Audit
RAP	Regulated Air Pollutant or Reclaimed Asphalt Pavement
RFG	Refinery Fuel Gas
RICE	Reciprocating Internal Combustion Engine
RO	Responsible Official
ROAT	Regional Office at Tulsa
RVP	Reid Vapor Pressure
SCC	Source Classification Code
SCF	Standard Cubic Foot
SCFD	Standard Cubic Feet per Day
SCFM	Standard Cubic Feet per Minute
SCR	Selective Catalytic Reduction
SER	Significant Emission Rate
SI	Spark Ignition
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SNCR	Selective Non-Catalytic Reduction
SO_2	Sulfur Dioxide
SOx	Sulfur Oxides
SOP	Standard Operating Procedure
SRU	Sulfur Recovery Unit
T	Tons
TAC	Toxic Air Contaminant
TEG	Triethylene Glycol
THC	Total Hydrocarbons
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulates
TV	Title V of the Federal Clean Air Act
$\mu g/m^3$	Micrograms per Cubic Meter
US EPA	U. S. Environmental Protection Agency
VFR	Vertical Fixed Roof
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
VRT	Vapor Recovery Tower
VRU	Vapor Recovery Unit
YR	Year
2SLB	2-Stroke Lean Burn
4SLB	4-Stroke Lean Burn
4SRB	4-Stroke Rich Burn

From: Jian Yue
To: John.York@gapac.com
Cc: DEQ AQD APU
Subject: Issued Permit
Date: Tuesday, December 5, 2023 9:35:42 AM
Attachments: 2010-278-C(M-11) PSD Revised.pdf

John,

We found out that Permit Number in Specific Conditions missed “PSD” and have made the change and resigned. Please see attached.

Company: Georgia-Pacific Muskogee, LLC
Permit No.: 2010-278-C (M-11) PSD
Facility: Muskogee Mill
Facility ID: 643

The attached documents are official communication from DEQ. You will not receive hard copies. If you have any questions about these permit actions, please contact me at the phone number listed below. We continuously evaluate how we can better serve you. To that end we would appreciate feedback through the linked survey. You are welcome to provide specific permit information to aid us in follow-up or respond anonymously.
https://forms.office.com/g/bTfAQ3jiLr

Thanks

Jian Yue
AQD
DEQ
405-702-4205