Facility Name: **Appling County Pellets**
City: Baxley
County: Appling
AIRS #: 04-13-001-00032 Application #: TV- 406527

Date SIP Application Received: n/a
Date Title V Application Received: July 5, 2019, February 3, 2020 and July 8, 2021
Permit No: 2499-001-0032-V-02-1

Program	Review Engineers	Review Managers
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Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

I. Facility Description

A. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Description
2499-001-0032-V-02-0	March 27, 2019	Initial Title V Permit

B. Regulatory Status

1. PSD/NSR/RACT

The facility is a synthetic minor source under PSD. The PM emission limit for the WESP/RTO exhaust is based on the April 2020 source test on the Dryer WESP/RTO exhaust stack at Archer Forest Products facility. Actual PM emissions from the facility have been estimated to be 25.7 tons/year (a fraction of the PSD major source limit).

Emissions from the facility were estimated using emission factors from the January 2021 source tests for the dryer for VOC and HAPs. The May 2019 source test on the dryer was used to estimate CO and NOx emissions from the facility for a dryer throughput of 175,000 tpy. The January 17, 2021 source test on the Appling County Pellet dryer established a VOC emission factor of 0.137 lb/ODT (per WPP1) for the Dryer. The VOC emissions from pellet cooler baghouse was based on the January 2021 source tests on the facility pellet cooler baghouse. The railcar loading silo emission factors were used for the Pellet handling and storage (PHS) emission factors for the VOC and HAPs emissions from the Pellet handling and storage operation. VOC emission factor of 0.003 lb/ODT was used for storage and handling emission estimation. The total VOC emissions from the facility is projected below 250 tons per year based on a production capacity of 175,000 oven dried tons per year @ 11 % moisture drying capacity and a pellet production capacity of 300,000 tpy. The facility wide VOC emissions are below 250 tons per year and hence it is considered a minor source for PSD applicability purposes. Facility wide VOC (WPP1) emissions were estimated at 138.8 tpy.

Carbon monoxide emissions from the dryer was tested in 2019 resulting in CO emission factor of 0.53 lb/ODT. At the production limit of 175,000 ODT tons/year the worst case CO emissions are projected to be 46.2 ton/year with RTO controls on the wood dryer CO emissions.

2. Title V Major Source Status by Pollutant

Table 2: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	yes			✓
PM_{10}	yes			✓
$PM_{2.5}$	yes			✓
SO_2	yes			✓
VOC	yes	✓		
NO_x	yes			✓
CO	yes			✓
Individual HAP	yes			✓
Total HAPs	yes			✓

II. Proposed Modification

A. Description of Modification

The Permittee has proposed to control PM emissions from the Heat Source/Wood dryer and Pellet mills using a Wet ESP (WESP) and control CO, VOC and HAP emissions from the Wood Dryer and Pellet Mill using a RTO. The Permittee has proposed a Drying limit of 175,000 tpy for the Wood Dryer and 350,000 tpy for the pellet mill, pellet cooler and the pellet handling and storage system.

B. Emissions Change

No significant emission increases are expected from the pellet mill due to the proposed change (installation and operation of the WESP and RTO to control the burner/dryer and pellet mill PM, CO, VOC, and HAP emissions). Potential emissions of VOC are capped at 249 tpy, less than the PSD major source threshold of 250 tpy. Potential Emissions of single and total HAPs will continue to be below 10/25 tons per year HAPs major source limit.

Note that increase in VOC and NOx emission is due to increase in the throughput from the dryer, hammermill, pellet mill, pellet cooler and the pellet handling and storage operations from the current levels.

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Table 3: Emissions Change Due to Modification

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)
PM	yes	(89)	0
PM_{10}	yes	(89)	0
$PM_{2.5}$	yes	(89)	0
SO_2	yes	0.32	0.32
VOC	yes	(136.1)	0
NO_x	yes	49	49
CO	yes	(164)	0
Individual HAP Methanol	yes	(6.2)	0
Total HAPs	yes	(17.3)	0

Note the significant PM, PM_{10} and $PM_{2.5}$ emission decrease due to operation of the WetESP and emission decrease of CO, VOC and HAPs due RTO.

C. PSD/NSR Applicability

The facility is a synthetic minor source under PSD for VOC. The facility is a minor source of HAP emissions. The facility will continue to be a PSD synthetic minor source after the proposed addition of a WESP and RTO for controlling the heat source/dryer and the pellet mill PM, VOC, CO, and HAP emissions. The increase in emissions from the proposed change does not make this facility a PSD major source or this modification a significant modification under PSD. The increase in actual NOx emissions from the proposed modification is not a major modification under the PSD rules since the facility is a PSD minor source for NOx emissions. Therefore, a New Source Review (NSR) for the proposed modification is not applicable since the facility continues to be a minor source for PSD after the proposed change.

III. Facility Wide Requirements

A. Emission and Operating Caps:

There is no change to existing emission caps due to the proposed permit change. The dryer capacity will be limited to 175,000 oven dried tons per year at 11% moisture and the facility will be restricted to processing no more than 50 percent softwood mix by weight. The production from the pellet mills, pellet coolers and the storage and handling system will be limited to 350,000 tons per year. Potential VOC emissions are limited to 249 tons per year for PSD avoidance. NOx and CO potential emissions are well below the PSD major source threshold and there is no need to cap NOx and CO emissions to 249 tons per year.

B. Applicable Rules and Regulations

Not applicable.

C. Permit Conditions

Condition 2.1.1 caps/limits facilitywide VOC emissions to 249 tons/year for PSD avoidance.

Condition 2.1.2 limits individual and total HAP emissions to 10 tpy and 25 tpy respectively for major source MACT avoidance.

Condition 2.1.3 limits the dryer throughput to 175,000 Oven dry tons (ODT)/year for major source MACT avoidance.

Condition 2.1.4 limits the throughputs of the dry hammermill (DHM), pellet mills (PM01-PM10), pellet cooler (PC01), and pellet handling/storage (PHS) to 350,000 tons/year for major source MACT avoidance.

Condition 2.1.5 limits the greenwood fraction processed in the dryer (DRY) to 50% during any consecutive 30 day period for major source MACT avoidance.

IV. Regulated Equipment Requirements

A. Brief Process Description

Green wood and dry material are trucked to the facility and stored. Green wood first passes through the green hammermill (GHM) prior to the dryer (DRY). Process heat is provided by a 65 (MMBtu/hr) bark burner (BUR). Dryer output is conveyed to two (1) dry hammermills (DHM1, DHM2), combined with dry material, and processed through ten pellet mills (PM1 – PM10) and one of two (2) pellet coolers (PC1, PC2). Various pellet handling and storage (PHS) operations take place prior to shipping. Emissions from the bark burner (BUR), dryer (DRY), and pellet mills (PM1 – PM10) vents through the WESP and RTO. Dry hammermills (DHM1, DHM2) emissions are controlled by a bin vent (BV) while pellet cooler (PC1, PC2) emissions are controlled with a baghouse (BGH).

B. Equipment List for the Process

Emission Units		Applicable Requirements/Standards	Air Pollution Control Devices	
ID No.	Description		ID No.	Description
GHM	Green Hammermill	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	N/A	N/A
BUR	65 MMBtu/hr Heat Source - GTS Reciprocating Grate Furnace	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(g)(2)	WESP RTO	Wet Electrostatic Precipitator Regenerative Thermal Oxidizer
DRY	Rotary Wood Dryer rated at 20 oven dried tons (ODT) per hour @ 11% moisture	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)		

DHM1, DHM2	Dry Hammermills rated 20 ODT per hour each @ 11% moisture	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	BV	Bin Vent
PM1-PM10	Ten (10) Pellet Mills	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	WESP RTO	Wet Electrostatic Precipitator Regenerative Thermal Oxidizer
PC1, PC2	Two (2) Pellet Coolers rated at 20 ODT per hour each @ 5% moisture	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	BGH	Baghouse
PHS	Pellet Handling and Storage System	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	NA	NA

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

C. Equipment & Rule Applicability

Rules and Regulations Assessment: The Bark Burner/Dryer is subject to Georgia Rule (e) for PM emissions. Opacity from the WESP/RTO stack is limited to 40% by Georgia Rule (b). The sulfur content of the fuel burned in the bark burner and RTO are limited to 2.5% by Weight per Georgia Rule (g)2. Wood bark and sawdust burned in the Heat Source have low sulfur content and should easily comply with the 2.5 wt.% limit of Rule (g)2. RTO is fired with natural gas/propane which has extremely low sulfur content.

Georgia Rule 391-3-1-.02(2)(e) - "Particulate Emission from Manufacturing Processes," where the following equations are used to calculate the allowable rate of emission:

$E = 4.1P^{0.67}$; for process input weight rate up to and including 30 tons per hour

$E = 55P^{0.11} - 40$; for process input weight rate above 30 tons per hour

Where:
E = Emission rate in pounds per hour
P = Process input weight rate in tons per hour.

This rule applies to emissions from the pellet furnish dryer, dry hammermills, pellet mills, and the pellet coolers.

The facility is subject to Georgia Rule (n), which governs fugitive dust emissions from pelleting operations. It requires the facility to take the steps necessary to minimize fugitive dust and limits the VE of fugitive dust to 20 percent opacity.

Bark Burner (BUR)

The 65 MMBtu/hr bark burner, which supplies heat directly to the wood dryer, does not meet the definition of “fuel-burning equipment” according to the Georgia Rules for Air Quality Control. Therefore, the emissions from this unit are not subject to Georgia Rule 391-3-1-.02(2)(d) - "Fuel

Burning Equipment." Hot gases from the heat source/bark burner goes to the dryer and exhaust out of the dryer before entering the WESP and RTO.

The bark burner (BUR) is subject to Georgia Rule 391-3-1-.02(2)(g) - "Sulfur Dioxide." Since the heat source burns wood waste, the sulfur content will always be much less than 2.5 weight percent with no controls; therefore, no monitoring is needed. The bark burner is also subject to the 40 percent opacity limit of GA Rule (b).

The wood dryer, the hammer mills, the pellet mills, and the pellet coolers are subject to GA Rules (b) for opacity and Georgia Rule (e) for PM emissions. Since the PM emissions are controlled using WetESP (WESP), Bin vent filter (BV) and Baghouse (BGH), the Bark burner/Dryer, Hammermills, Pellet mills and Pellet coolers are expected to comply with Georgia Rule (e) for PM emissions.

D. Permit Conditions

Condition 3.2.1 requires the WetESP and RTO to be operated whenever, the Burner/Dryer and Pellet Mills operate.

Condition 3.2.2 requires the Bin Vent (BV) and the baghouse (BGH) to be operated whenever the Dry Hammermills (DHM1, DHM2) and the Pellet Coolers (PC1, PC2) operate.

Condition 3.2.3 require to Permittee to maintain an average RTO bed temperature of 1500°F or the temperature established during the most recent destruction efficiency test and performance tests.

Existing Conditions 3.4.1, 3.4.2 and 3.4.4 were amended by updating the source IDs that are subject to various GA rules.
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Condition 3.4.3 limits the fuel sulfur content to 2.5 wt.% per Georgia Rule (g)2.

Condition 3.4.4 requires the permittee to take steps to minimize fugitive emissions from the facility.

Condition 3.4.5 requires Permittee to minimize fugitive emissions opacity to less than 20% limit per Georgia Rule (n)2.

There is no change to existing Conditions 3.5.1 and 3.5.2.

Condition 3.5.3 requires operation of all controls whenever the associated emission source is operated.

V. Testing Requirements (with Associated Record Keeping and Reporting)

There is no change to existing conditions in Section 4.1- The General Testing Requirements section.

Condition 4.2.1 requires testing of the burner/dryer and pellet mill PM emissions at WESP/RTO outlet, Hammermill and Pellet cooler total PM emissions (filterable + condensible)will also be tested within 120 days after the startup and operation of the WESP and RTO to demonstrate compliance with the PM emission limits in Condition 3.4.1. Subsequent performance tests are required every 48 months.

Condition 4.2.2 requires testing of the Burner/Wood Dryer WetESP/RTO stack for NOx and CO emissions by June 30, 2023. The operating parameters for the WESP/RTO are required to be monitored and recorded during the testing. Subsequent tests shall be once every 48 months.

Condition 4.2.3 requires testing of bark burner (BUR), dryer (DRY), dry hammermills (DHM1, 2), and pellet coolers (PC1, PC2) total particulate matter (TPM), volatile organic compounds (VOC), formaldehyde, acetaldehyde, and methanol emissions by June 30, 2023. EPA OTM-26 shall be used to test for VOC and HAP emissions. The testing is to be conducted while the sources are operating at the maximum rated capacity. All process, operational and control parameters are to be monitored and recorded during the testing and shall be submitted with the source test report to the EPD. Subsequent tests shall be once every 48 months.

Condition 4.2.4 states that when any of the tested emission factors are greater than the emission factors in Section 6.2 conditions, the permittee shall submit a permit application within 120 days after testing requesting use of the new emission factors or explaining why the tested emission factors are not representative normal emissions.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

There is no change to Condition 5.1.1.

Condition 5.2.1 requires the permittee to monitor the dryer production rate, dry hammermills rates and the pellet cooler production rate, and record the same for each hour of operation.

Condition 5.2.2 requires monitoring of the secondary voltage and current and the water flow to the WetESP, and the average RTO bed temperature continuously. These are the WetESP and RTO monitoring parameters.

Condition 5.2.3 gives the equation for calculating the WetESP power from the secondary voltage and current.

Condition 5.2.4 requires calculation of the three-hour averages of WetESP power.

Condition 5.2.5 requires maintenance of the RTO temperature to ensure efficient destruction of CO, VOC and HAPs from the dryer and pellet mill exhaust. This condition requires calculation of hourly and three hourly rolling average RTO bed temperature using data from Condition 5.2.2.

Condition 5.2.6 requires monitoring of the Dry Hammermills Bin Vent (BV) and the Pellet Coolers baghouse (BGH) pressure drop data continuously and requires recording of the pressure drops at least daily.

Condition 5.2.7 requires development and implementation of a preventive maintenance program for the Pellet Coolers baghouse (BGH) and specifies weekly checks of key operational parameters.

Condition 5.2.8 requires the permittee to perform weekly Operation & Maintenance checks on the Dry Hammermills Bin Vent (BV).

Condition 5.2.9 requires daily VE checks of the process stacks for the Burner/Dryer, Dry Hammermills, Pellet Coolers.

Condition 5.2.10 requires daily VE checks of all fugitive emission sources at the facility.

Condition 5.2.11 states that Burner/Dryer and Pellet mills are subject to CAM (compliance assurance monitoring) for PM and VOC emissions. The Dry Hammermills and the Pellet Coolers are subject to CAM for PM emissions.

Condition 5.2.12 identifies the WESP secondary power as the CAM indicator that is monitored for PM emissions from the Dryer and the Pellet mills.

Condition 5.2.13 identifies the Visible Emission and the Pressure drop as the CAM indicators for PM emissions from the dry Hammermills and the Pellet Coolers.

Condition 5.2.14 identifies the RTO combustion temperature at the CAM indicator for VOC emissions from the dryer and the pellet mills.

VII. Other Record Keeping and Reporting Requirements

There is no change to existing conditions 6.1.1 to 6.1.6.

The dryer production limits are updated in the exceedance condition 6.1.7.b. Exceedance of the Pellet mills/Coolers and Storage and Handling production limit was also added. RTO temperature, WetESP total power, the bin vent and the baghouse pressure drop excursions conditions were added in Condition 6.1.7.c.

Condition 6.2.1 requires the Permittee to maintain production data for the Dryer, Dry Hammermills, Pellet mills, Pellet Coolers and the Pellet handling and storage operations in monthly and 12 month rolling total formats.

Condition 6.2.2 requires the Permittee to calculate NOx and CO emissions from the Burner/Dryer and the RTO using production data from Condition 6.2.1, the equation and the source test based emission factors in this condition. NOx and CO emission factors were based on the May 2019 source tests prior to the installation of WetESP and RTO controls on the Burner/Dryer. The CO emission factors from these source tests would be extremely conservative estimates. With RTO at 50% reduction in CO emissions is expected.

Condition 6.2.3 requires reporting of any monthly NOx or CO emission in excess of 20.7 tpy.

Condition 6.2.4 requires calculation of the 12 month rolling total NOx and CO emissions from the facility any month, using the monthly emissions from Condition 6.2.2.

Condition 6.2.5 requires reporting of any rolling 12 month total NOx or CO emissions exceeding 250 tpy.

Condition 6.2.6 requires calculation of monthly PM/PM_{10} emissions from the facility using the production data in Condition 6.2.1, equation and the Total PM emission factors in this condition.

For the Burner/Dryer the Archer Forest Product emission factor with WetESP/RTO controls was used. For the Hammermills Bin Vent, and the Pellet Coolers Baghouse the 2019 source test emission factors were used.

Condition 6.2.7 requires reporting of any monthly PM emission in excess of 20.7 tpy.

Condition 6.2.8 requires calculation of the 12 month rolling total PM emissions from the facility during any month using the monthly emissions data from Condition 6.2.6.

Condition 6.2.9 requires reporting of any rolling 12 month total PM emissions exceeding 250 tpy.

Condition 6.2.10 requires calculation of monthly VOC emissions from the facility using production data from Condition 6.2.1, equations and emission factors in this condition. The VOC emission factors used in this condition are from the January 2021 source tests.

Condition 6.2.11 requires the Permittee to calculate VOC emission using EPA OTM-26.

Condition 6.2.12 requires reporting of any monthly VOC emission (calculated in Condition 6.2.10) in excess of 20.7 tpy.

Condition 6.2.13 requires calculation of the 12 month rolling total VOC emissions from the facility during any month using the monthly emissions data from Condition 6.2.10.

Condition 6.2.14 requires reporting of any rolling 12 month total VOC emissions exceeding 250 tpy, any month calculated per Condition 6.2.13. This report shall include steps the Permittee shall take to come into compliance with the VOC emission limit in Condition 2.1.1.

Condition 6.2.15 requires the Permittee to calculate monthly individual and total HAP emissions consisting of Formaldehyde, Acetaldehyde and Methanol emissions using production data from Condition 6.2.1, equation and emission factors in this Condition. For the WetESP/RTO emissions Other HAP emission is also calculated and includes Acrolein and HCl emissions. The HAP emission factors are based on the January 2021 source tests.

Condition 6.2.16 requires reporting of any monthly HAP emission in excess of 0.83 tons or total HAP emissions in excess of 2.08 tons.

Condition 6.2.17 requires calculation of 12 month rolling total individual and total HAP emissions each month using data from Condition 6.2.15.

Condition 6.2.18 requires reporting of any 12 month rolling total individual HAP emissions in excess of 10 tons and explanation of the Permittee intends to come into compliance with the HAP emission limit of Condition 2.1.2.

Condition 6.2.19 requires reporting of any 12 month rolling total HAP emissions in excess of 25 tons and explanation of the Permittee intends to come into compliance with the HAP emission limit of Condition 2.1.2.

Condition 6.2.20 requires the Permittee to maintain records of the softwood and hardwood processed in the dryer each month to demonstrate compliance with the softwood processing limit in Condition 2.1.5. This condition also requires reporting of exceedance of this softwood processing limit any month and explain how it will come into compliance with the softwood processing limit in Condition 2.1.5.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//