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Subject: Westervelt Thomasville - Facility No. 102-S014 - Construction Permit Application
Attachments: Westervelt Thomasville - PSD Construction Application (2026 0504).pdf

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On behalf of Westervelt, Trinity Consultants is submitting the enclosed construction permit application for the proposed construction of a new sawmill and kiln. As discussed during the meeting on April 15, 2026, Westervelt intends to install a second sawmill and fourth kiln as part of this project. Construction of the sawmill is anticipated to begin as early as September 2026, with kiln construction to follow in January 2027.

In addition to this electronic submittal, Trinity will also be providing three hard-copy binders of the complete application to ADEM for review.

The enclosed application includes a comprehensive narrative describing the existing facility, the proposed project, emission calculation methodologies, and the applicable regulatory reviews and assessments. Several supporting appendices are also included, as summarized below:

- ▶ Appendix A includes an area map and simplified process flow diagram;
- ▶ Appendix B includes detailed emissions calculations;
- ▶ Appendix C includes the applicable Best Available Control Technology BACT/Lowest Achievable Emission Reduction (LAER) Clearinghouse (RBLC) database tables;
- ▶ Appendix D includes the detailed BACT control cost calculations;
- ▶ Appendix E contains the relevant ADEM forms; and
- ▶ Appendix F contains the required ozone analysis for triggering PSD for VOC.

Trinity respectfully requests ADEM's review of the enclosed application. Please do not hesitate to contact us should you have any questions or require additional information. Trinity and Westervelt appreciate ADEM's time and consideration of this application.

Thank you

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**PREVENTION OF SIGNIFICANT
DETERIORATION CONSTRUCTION PERMIT
APPLICATION**
Facility No. 102-S014



Westervelt / Thomasville, Alabama

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Project 260101.0028



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1. EXECUTIVE SUMMARY

The Westervelt Company Inc. (Westervelt) owns and operates a lumber mill in Thomasville, Clarke County, Alabama (Thomasville Mill). The Thomasville Mill is located at 700 North Clarke Industrial Road, Thomasville, Alabama and is a major source under both the Title V operating permit program and the Prevention of Significant Deterioration (PSD) permitting program. The facility currently operates under Major Source Operating Permit (MSOP) No. 102-S014 issued by the Alabama Department of Environmental Management (ADEM) on February 14, 2024, with an effective date of February 14, 2024, and an expiration date of February 13, 2029.

Westervelt proposes the construction of a new sawmill (Sawmill No. 2), direct-fired natural gas burner (Kiln No. 4 Gas Burner), and a continuous drying kiln (Continuous Kiln No. 4) to increase the production efficiency and overall board production capacity of the Thomasville Mill. The proposed project will constitute a major modification to an existing PSD major source; therefore, this application includes a PSD evaluation. The Thomasville Mill will not modify any existing units for this proposed project. Project-related emissions increases will exceed PSD Significant Emission Rate (SER) thresholds for Volatile Organic Compounds (VOC) only. Westervelt anticipates project construction to commence in September 2026.

The application package contains the necessary emissions analyses, regulatory review, control analyses, PSD permit air quality assessments, and required ADEM application forms for the proposed project.

1.1 Proposed Project Description

Westervelt proposes the installation of a new Sawmill (Sawmill No. 2), a continuous dry kiln (Continuous Kiln No. 4), and a natural gas-fired kiln burner (Kiln No. 4 Gas Burner). The proposed project will result in an increase in overall board throughput at the facility, which will result in associated emissions increases from certain existing units. No physical modifications to existing units are proposed as part of this project.

The proposed Sawmill No. 2 will operate parallel in process flow to the existing Sawmill No. 1. Sawmill No. 2 will have a maximum design capacity of approximately thirty (30) thousand board feet per hour (MBF/hr); however, the unit is only expected to operate at an average rate of approximately fourteen (14) MBF/hr. The expected increase in log processing and board throughput from the proposed project will also increase throughput at the existing debarker, chipper, and planer mill. The production increase will result in additional byproduct generation and the associated emissions from byproduct material handling and transfer operations.

The proposed project will increase the overall green lumber production at the site. This production increase will add throughput to the newly proposed Continuous Kiln No.4 and the existing three (3) kilns throughput capacity will not change as a result of the proposed project. Continuous Kiln No. 4 will be identical to the existing kilns at the site, will have a maximum annual lumber drying capacity of 116,800 MBF/yr, and will be powered by the proposed Kiln No. 4 Gas Burner. The proposed burner will be identical to the existing natural gas-fired direct burners currently in operation at the facility (BRN1–BRN3) and will have a maximum heat input capacity of forty-five (45) million British thermal units per hour (MMBtu/hr). The increase in dried rough lumber resulting from the proposed project will be finished through the existing planer mill, resulting in an associated increase in emissions from that unit. Overall site-wide vehicle traffic is also expected to increase as a result of the proposed project.

There will be no physical changes to the existing debarker, chipper, planer mill, material handling equipment, or on-site roadways as part of the proposed project. However, based on the increased production associated with the proposed project, Westervelt does anticipate associated throughput increases for the debarker, chipper, material transfer operations, planer mill, and roadways. Therefore, these units have been included in the PSD applicability and emissions analysis as associated units.

1.2 Permitting and Regulatory Requirements

The Thomasville Mill is located in Clarke County, which is currently designated as “attainment” or “unclassifiable” for all criteria pollutant’s National Ambient Air Quality Standard (NAAQS).¹ Therefore, the facility is not subject to Nonattainment New Source Review (NNSR) and is potentially subject to PSD permitting only, which is discussed in Section 4.1 of this application.

Lumber mills are not on the list of 28 named source categories. Therefore, the PSD major source threshold is 250 tons per year (tpy) of a criteria air pollutant. The Thomasville Mill is a major source with respect to the PSD program as the potential emissions of VOC for the facility exceed the PSD major source thresholds. Accordingly, the proposed project emission increases are compared to the PSD Significant Emission Rates (SERs) to determine if the proposed project triggers PSD permitting. The proposed project will result in emissions exceeding the PSD SER for VOC as detailed in Table 1-1. Therefore, PSD review is required for VOC. Additional information on the project emission increase calculations can be found in Section 3.

Table 1-1. Project PSD Emissions Increase Evaluation

Pollutant	PTE of New Units ¹		Associated Units Emissions Increases ^{2,3}		Project Emissions Increase ⁴ (tpy)	PSD Major Modification Thresholds (tpy)	Percent of Threshold (%)	PSD Permitting Triggered? (Yes/No)
	Point Source (tpy)	Fugitive (tpy)	Point Source (tpy)	Fugitive (tpy)				
Filterable PM	1.13	3.52	1.34	4.85	2.46	25	10%	No
Total PM ₁₀	2.75	1.27	1.34	2.44	4.09	15	27%	No
Total PM _{2.5}	2.75	0.39	0.48	0.14	3.23	10	32%	No
NO _x	9.66	--	--	--	9.66	40	24%	No
CO	16.23	--	--	--	16.23	100	16%	No
SO ₂	0.12	--	--	--	0.12	40	0%	No
VOC	233.60	--	--	--	233.60	40	584%	Yes
GHG	23,079.90	--	--	--	23,079.90	75,000	31%	No
Lead	9.66E-05	--	--	--	9.66E-05	0.6	0%	No

Westervelt is submitting this construction permit application in accordance with all federal and state requirements. An application for modifying the Thomasville Mill’s Title V permit will be submitted within 12 months of commencing operation of the proposed new equipment included in this application. The proposed project will potentially be subject to New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), and Alabama’s Administrative Code, Division 3 Air Pollution Control Program (ADEM Admin. Code R.). Applicability of these programs are discussed in Section 4 of this application.

¹ 40 CFR 81.301.

1.3 BACT Determination

Westervelt performed a Best Available Control Technology (BACT) analysis for each of the PSD-regulated pollutants that exceeded their SERs (VOC), following the “top-down” approach suggested by the United States Environmental Protection Agency (U.S. EPA). The top-down process begins by identifying all potential control technologies for the pollutant in question and determining if those control options are feasible for the process in question. The approach then involves ranking all potentially relevant control technologies in descending order of control effectiveness. The most stringent or “top” control option is BACT unless the applicant demonstrates, and the permitting authority in its informed opinion agrees, that energy, environmental, and/or economic impacts justify the conclusion that the most stringent control option does not meet the definition of BACT. In the event the top option is not determined to be BACT, the next most stringent alternative is evaluated in the same manner. This process continues until BACT is selected.

Based on the BACT review, Westervelt proposes the technology and limits presented in Table 1-2 as BACT for the proposed emission units. The detailed BACT analysis is presented in Section 5 of this application.

Table 1-2. Summary of Proposed BACT Limits

Unit	Pollutant	Selected BACT	Emissions / Operating Limit	Compliance Method
Continuous Kiln No. 4	VOC	Proper Maintenance and Operating Practices	4.0 lb/MBF	Recordkeeping

1.4 Application Contents

This permit application is organized as follows:

- ▶ Section 2 contains a description of the facility and the proposed project;
- ▶ Section 3 summarizes emissions calculation methodologies and assesses PSD applicability;
- ▶ Section 4 details the federal and state regulatory applicability analysis for the facility and the proposed project;
- ▶ Section 5 contains the required BACT assessment;
- ▶ Appendix A includes an area map and simplified process flow diagram;
- ▶ Appendix B includes detailed emissions calculations;
- ▶ Appendix C includes the applicable Best Available Control Technology BACT/Lowest Achievable Emission Reduction (LAER) Clearinghouse (RBLC) database tables;
- ▶ Appendix D includes the detailed BACT control cost calculations;
- ▶ Appendix E contains the relevant ADEM forms; and
- ▶ Appendix F contains the required ozone analysis for triggering PSD for VOC.

2. PROPOSED PROJECT DESCRIPTION

Westervelt operates the Thomasville Mill, located in Clarke County, Alabama, for the manufacture of finished planed lumber. The mill is classified under Standard Industrial Classification (SIC) code 2421, Sawmills and Planing Mills. A process flow diagram and general site map for the Thomasville Mill are provided in Appendix A.

As part of the existing operations at the Thomasville Mill, southern yellow pine logs are delivered to the facility by truck and processed into lumber through the sawmill operation. Logs are debarked and cut into rough, green dimensional lumber at the sawmill. Green lumber produced from the sawmill is then sorted, stacked, and dried in one (1) of three (3) existing direct-fired continuous lumber drying kilns (CDK1, CDK2, and CDK3), each equipped with a natural gas-fired burner. Following drying, rough-dried lumber is transferred to the planer mill, where the lumber is surfaced, trimmed, graded, and packaged for storage and shipment off site. Emission-generating operations at the Thomasville Mill include log preparation, sawmill operations, lumber drying kilns, planer mill operations, material handling and transfer activities, and shipping operations. Fugitive emissions are also generated from truck and equipment traffic on paved roadways throughout the facility. Miscellaneous sources include mobile equipment fueled by diesel and gasoline stored in on site tanks and an emergency diesel-fired fire pump engine operated only during emergency events and periodic maintenance or readiness testing.

For this application, Westervelt is proposing the installation of a new sawmill (Sawmill No. 2), a new direct-fired continuous lumber drying kiln (Continuous Kiln No. 4), and a new natural gas-fired kiln burner (Kiln No. 4 Gas Burner). The proposed project is expected to increase overall log throughput and finished lumber production at the facility, which will result in associated increases in emissions from certain existing units. The facility-wide dried lumber production at the Thomasville Mill will be 467,200 MBF/yr following implementation of the proposed project. No physical modifications to existing units are proposed as part of the project. The proposed Sawmill No. 2 will operate parallel in process flow to the existing sawmill (Sawmill No. 1). Sawmill No. 2 will have a maximum design capacity of approximately thirty (30) MBF/hr; however, the unit is expected to operate at an average rate of approximately fourteen (14) MBF/hr. Operation of Sawmill No. 2 is expected to result in an increase in log throughput through the existing log preparation equipment, including the debarker and chipper.

The proposed Sawmill No. 2 will provide additional green lumber production to support operation of the proposed Continuous Kiln No. 4. As a result of the increased dried lumber output from Continuous Kiln No. 4, an associated increase in board feet processed through the existing planer mill is anticipated. In addition, the increase in log throughput associated with operation of Sawmill No. 2 will result in an associated increase in byproduct generation from the debarker and chipper. These increases will result in higher emissions from material handling and transfer operations at the facility.

The proposed project will result in an increase in green lumber production at the facility. The existing three direct-fired continuous kilns (CDK1, CDK2, and CDK3) will continue to operate as currently configured, and none of the existing kilns are expected to experience an increase in overall green lumber throughput as a result of the proposed project. The additional green lumber generated by the proposed project will be processed through the proposed Continuous Kiln No. 4. Continuous Kiln No. 4 will be identical in design and operation to the existing kilns and will have a maximum annual capacity of 116,800 MBF/yr. Continuous Kiln No. 4 will be equipped with the proposed Kiln No. 4 Gas Burner. The proposed burner will be identical to the existing natural gas-fired direct burners (BRN1 through BRN3) currently in operation at the

Thomasville Mill and will have a maximum heat input capacity of forty-five (45) MMBtu/hr. The kiln burner will combust natural gas exclusively.

The increase in dried rough lumber resulting from the proposed project will be finished through the existing planer mill, resulting in an associated increase in emissions from planer mill operations. Overall site-wide vehicle traffic is also expected to increase by approximately fourteen (14) percent as a result of the proposed project. There will be no physical changes to the existing debarker, chipper, planer mill, material handling equipment, or on-site roadways as part of the proposed project. However, based on the increased production associated with the proposed project, Westervelt does anticipate associated throughput increases for the debarker, chipper, material transfer operations, planer mill, and on-site roadways. Therefore, these units have been included in the PSD applicability and emissions analysis as associated units.

3. EMISSION CALCULATION METHODOLOGY

This section addresses the methodology used to quantify the emissions from the proposed project and assesses federal New Source Review (NSR) permitting applicability. Emissions from the proposed project will include carbon monoxide (CO), VOC, nitrogen oxides (NO_x), Sulfur Dioxide (SO₂), Filterable particulate matter (PM), Condensable PM, total PM with an aerodynamic diameter of less than ten (10) microns (Total PM₁₀), total PM with an aerodynamic diameter of less than 2.5 microns (Total PM_{2.5}), greenhouse gases (GHG) in the form of carbon dioxide equivalent (CO₂e), and Hazardous Air Pollutants (HAP). These emissions occur as a result of sawmill processing, combustion of natural gas, drying of lumber, planer mill processing, and ancillary operations such as material handling and haul roads. Detailed emission calculations are presented in Appendix B.

3.1 NSR Permitting Evaluation Methodology

The NSR permitting program requires that a source obtain a permit prior to construction of any project at an industrial facility if the proposed project results in the potential to emit air pollution in excess of certain threshold levels. The NSR program is comprised of two elements: nonattainment NSR (NNSR) and PSD. The NNSR program applies to new construction projects or modifications that result in emission increases of pollutants classified “nonattainment” for the facility area by the National Ambient Air Quality Standards (NAAQS). The PSD program applies to project increases of those pollutants for which the area the facility is located in is classified as “attainment” or “unclassifiable” for the NAAQS. The Thomasville Mill is located in Clarke County, which is presently designated as “attainment” or “unclassifiable” for all criteria pollutants.² As such, PSD permitting is potentially applicable to the proposed project.

As presently permitted, the existing facility is a major PSD source. Accordingly, if the proposed project meets the definition of *major modification*, the full PSD permitting requirements apply.

The following sections discuss the methodology used in the project emissions increase evaluation conducted to assess PSD applicability under the NSR program. For all PSD-regulated pollutants other than CO₂e, PSD permitting is required if the emissions increase of a specific pollutant exceeds that pollutant's PSD SER. For CO₂e, PSD permitting is only required if the emissions increase exceeds the SER for CO₂e and the project is already undergoing PSD permitting for at least one other PSD-regulated pollutant.

3.2 Defining Existing Versus New Emission Units

For purposes of calculating project emissions increases, different calculation methodologies are used for existing and new units; therefore, it is important to clarify whether a source affected by the proposed project is considered new or existing emission units.

40 CFR 52.21(b)(7)(i) and (ii) define new units and existing units, and are incorporated by reference in the Alabama Admin. Code r. 335-3:

(i) A new emissions unit is any emissions unit that is (or will be) newly constructed and that has existed for less than 2 years from the date such emissions unit first operated.

² 40 CFR 81.301

(ii) *An existing emissions unit is any unit that does not meet the requirements in paragraph (b)(7)(i) of this section. A replacement unit, as defined in paragraph (b)(33) of this section, is an existing emissions unit.*

The existing units at the Thomasville Mill have operated for more than two (2) years. As part of the proposed project, new units that will be constructed include Sawmill No. 2, Continuous Kiln No. 4, and Kiln No. 4 Gas Burner. No other units will be classified as a new emissions unit as part of this proposed project application.

3.3 Annual Emission Increase Calculation Methodology

As the Thomasville Mill is classified as a major source for PSD, if the proposed project meets the definition of a *major modification*, then the full PSD permitting requirements apply. *Major modification* is defined by 40 CFR 52.21(b)(2)(i):

“Major Modification” means any physical change in or change in the method of operation of a major stationary source that would result in a significant emission increase ... of a regulated NSR pollutant ... and a significant net emissions increase of that pollutant ...

Certain exemptions to the major modification definition exist that, if applicable, means a project does not require an emission increase assessment. The proposed project does not qualify for any of the established exemptions.

The proposed project emissions have been analyzed using the current NSR Reform methodology to determine if a significant emissions increase will occur. *Net emissions increase* (NEI) is defined by 40 CFR 52.21(b)(3)(i):

“Net Emissions Increase” means, with respect to any regulated NSR pollutant ... the amount by which the sum of the following exceeds zero:

(a) *The increase in emissions ... as calculated pursuant to paragraph (a)(2)(iv) [for existing units, calculated by actual-to-projected actual³ or actual-to-potential; for new units, calculated by actual-to-potential]⁴*

(b) *Any other increases or decreases in actual emissions...that are contemporaneous with the particular change and are otherwise creditable. Baseline emissions for calculating increases and decreases...shall be determined as provided...*

The first step (1) is commonly referred to as the “project emission increases” as it has historically accounted only for emissions related to the proposed project itself. If the emission increases estimated per step (1) exceed the major modification thresholds, then the applicant may move to step (2), commonly referred to

³ 40 CFR 52.21(a)(2)(iv)(c), Actual-to-projected-actual applicability test for projects that only involve existing emissions units, states: *A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions ... and the baseline actual emissions ... equals or exceeds the significant amount for that pollutant ...*

⁴ 40 CFR 52.21(a)(2)(iv)(d), Actual-to-potential test for projects that only involve construction of new emissions units, states: *A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit ... and the baseline actual emissions ... equals or exceeds the significant amount for that pollutant ...*

as the 5-year netting analysis. The netting analysis includes all projects for which an emissions increase or decrease (e.g., equipment shutdown) occurred. If the resulting net emission increases exceed the major modification threshold, then NSR permitting is required. Westervelt has evaluated the project emissions increase for the proposed project (i.e., Step 1) using the methodologies outlined in the following sections. An evaluation of the net emissions increase (i.e., Step 2) was not conducted as the facility has no other emissions increases or decreases during the contemporaneous period for the proposed project.

While the prior quotations only reference three components of the NEI calculation (actual, projected actual, and potential emissions), there are actually five calculated components, with the additional components being (1) a subset of the definition for *projected actual* and (2) additional associated emission unit increases:

- ▶ Potential emissions
- ▶ Baseline actual emissions
- ▶ Projected actual emissions
- ▶ “Could have accommodated” emissions exclusion (commonly called the demand growth exclusion)
- ▶ Additional associated emission unit increases

3.3.1 Potential Emissions

Potential emissions are defined by 40 CFR 52.21(b)(4) where the potential to emit:

...means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable...

This calculation methodology was used to determine potential emissions for all new emissions units included in the proposed project.

3.3.2 Baseline Actual Emissions

Baseline actual emissions are defined in ADEM Admin Code r. 335-3-14-.04(2)(uu)2:

For an existing emission unit (other than an electric utility steam generating unit), baseline actual emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the date the owner or operator begins actual construction of the project, or the date a complete permit application is received by the Division...

Because no existing emissions units associated with the proposed project are classified as modified units, baseline actual emissions were neither calculated nor used for the purposes of the NSR analysis.

3.3.3 Projected Actual Emissions

Projected actual emissions are defined by ADEM Admin Code r. 335-3-14-.04(2)(nn)1:

“Projected actual emissions” means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (12-month

period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source.

Accordingly, because no existing emissions units associated with the proposed project are classified as modified units, projected actual emissions were neither calculated nor used for the purposes of the NSR analysis.

3.3.4 Could Have Accommodated Emissions

An exclusion, per ADEM Admin Code r. 335-3-14-.04(2)(nn)2(iii), is included in the definition of projected actual emissions and is a value that is subtracted from the projected actual emissions for existing emission units:

May exclude, in calculating any increase in emissions that results from the particular project, [1] that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions under subparagraph (7)(a)2.(i) of this rule and that is also [2] unrelated to the particular project, including any [3] increased utilization due to product demand growth (the increase in emissions that may be excluded under this subparagraph shall hereinafter be referred to as "demand growth emissions")... [emphasis added, numbers 1, 2, 3 added]

As projected actual emissions were not calculated as part of the proposed project, no emissions that could have been accommodated by existing units were considered as part of the NSR analysis.

3.3.5 Additional Associated Emission Unit Increases

In addition to the emission increases from new or modified units, existing units that may see associated emission increases from the proposed project must be included in the assessment of total project emission increases. Westervelt has accounted for the possibility of associated emission increases from the existing debarker, chipper, planer mill, material handling and transfer operations, and on-site haul roads.

3.4 Net Emission Increase Evaluation

The following sections summarize the methods used to estimate the emissions increases from the proposed project. Detailed emission calculations are presented in Appendix B.

3.4.1 Potential Emissions

As discussed in Section 3.3.1 and consistent with the definition of potential emissions in 40 CFR 52.21(b)(4), potential emissions for each new emissions unit included in the proposed project were calculated assuming operation at maximum design capacity and continuous operation, unless otherwise limited. Unit-specific calculation methodologies were selected based on the physical and operational characteristics of each new emissions unit and are consistent with established regulatory guidance, applicable emission factor sources, and Best Available Control Technology (BACT) limits previously approved for similar operations at the Thomasville Mill.

The calculation methodologies described in Sections 3.4.1.1 through 3.4.1.3 address the new emissions units proposed as part of the project, including Sawmill No. 2, the Kiln No. 4 natural gas-fired burner

(BRN4), and Direct-Fired Continuous Kiln No. 4 (CDK4). Each subsection describes the basis for estimating potential emissions, including throughput or heat input assumptions, emission factor selection, applicable control efficiencies, and the equations used to calculate annual and hourly emission rates. Supporting calculations and detailed assumptions for each new emissions unit are provided in Appendix B.

3.4.1.1 Sawmill No. 2

Potential fugitive particulate matter emissions from the proposed Sawmill No. 2 were calculated based on material throughput and emission factors expressed in pounds per ton of material processed. Sawmill No. 2 will operate fully enclosed and will be similar in operation to the existing Sawmill No. 1 at the Thomasville Mill.

Emission factors for filterable PM and PM₁₀ were obtained from the U.S. EPA Factor Information Retrieval (WebFIRE) database for applicable sawing and sawdust handling source classifications. PM_{2.5} emissions were calculated using size fraction ratios from EPA's PMCALC database. All emission factors are consistent with the BACT limits established for the existing sawmill during the 2019 PSD permitting action.

A control efficiency of 90% was applied to fugitive PM emissions to account for fully enclosed operation of the sawmill. Annual potential emissions were calculated by applying the emission factors, control efficiency, and annual throughput, and converting to tons per year. Hourly emission rates were derived assuming continuous operation at 8,760 hours per year. Supporting calculations and emission factors are provided in Appendix B (Tables B-7 and B-8).

3.4.1.2 Kiln No. 4 Natural Gas Burner (BRN4)

Potential emissions from the proposed Kiln No. 4 natural gas-fired burner (BRN4) were calculated based on the maximum heat input capacity and continuous operation. The burner will have a maximum heat input of 45 MMBtu/hr and will combust natural gas exclusively. BRN4 is identical in design and operation to the existing kiln burners (BRN1 through BRN3) currently permitted at the facility.

Maximum annual fuel usage was calculated using the higher heating value of natural gas and 8,760 hours of operation per year. Criteria pollutant emission factors were obtained from U.S. EPA AP-42, Section 1.4, Natural Gas Combustion, Tables 1.4-1 and 1.4-2, using factors applicable to small boilers with low-NO_x controls. Greenhouse gas emission factors for CO₂, CH₄, and N₂O were taken from 40 CFR Part 98, Subpart C, and CO₂e emissions were calculated using the global warming potentials in 40 CFR Part 98, Subpart A.

Potential emissions were calculated by multiplying applicable emission factors by the hourly and annual fuel input rates and converting to tons per year, as appropriate. HAP emissions were calculated using AP-42 Section 1.4 HAP emission factors and summed to determine total HAP emissions. Supporting calculations and emission factor documentation are provided in Appendix B (Tables B-1 through B-3).

3.4.1.3 Direct-Fired Continuous Kiln No. 4 (CDK4)

Potential emissions from the proposed Direct-Fired Continuous Kiln No. 4 (CDK4) were calculated based on maximum lumber drying capacity and emission factors expressed in pounds of pollutant per thousand board feet of lumber dried (lb/MBF). CDK4 will be identical in design and operation to the existing kilns (CDK1 through CDK3) and will have a maximum capacity of approximately 13.33 MBF/hr, or 116,800 MBF/yr assuming continuous operation.

Emission factors for VOC, filterable PM, PM₁₀, and PM_{2.5} were selected to be consistent with the BACT limits established for the existing kilns during the site's 2019 PSD permitting action. Hazardous air pollutant emission factors for formaldehyde, methanol, and acetaldehyde were based on State of Georgia EPD recommended factors approved by EPA Region 4, while emission factors for acrolein and phenol were based on a PSD permit application for a comparable lumber facility.

Potential emissions were calculated by multiplying the applicable emission factors by the hourly and annual lumber production rates and converting to tons per year. All emission factors, calculations, and supporting references for CDK4 are provided in Appendix B (Tables B-4 through B-6).

3.4.2 Additional Associated Emission Unit Increases

As discussed in Section 3.3.5, existing units may experience increased utilization as a result of the proposed project; therefore, the potential emission increases for those associated units have been evaluated. As previously discussed, no physical or operational modifications to existing emissions units or supporting infrastructure are proposed as part of the project; however, operation of the new units is expected to result in increased throughput, material handling, and site activity at the Thomasville Mill.

The calculation methodologies described in Sections 3.4.2.1 through 3.4.2.4 address associated emission increases from existing units that are indirectly impacted by the proposed project, including the debarker and chipper, material handling and transfer operations, the planer mill, and on-site roadways. Associated emission increases were quantified based on incremental increases in material throughput, exhaust flow, or vehicle activity attributable to operation of the proposed project, using established emission factors, applicable control efficiencies, and assumptions consistent with BACT limits approved during the facility's 2019 PSD permitting action.

Each subsection describes the basis for estimating the associated increase in activity for each unit, the emission factor sources utilized, and the equations applied to calculate associated annual and hourly emission rates. Detailed supporting calculations, assumptions, and references for all associated emission units are provided in Appendix B.

3.4.2.1 Debarker and Chipper

Operation of Sawmill No. 2 will result in an increase in log throughput through the existing debarker and chipper. No physical modifications to the debarker or chipper are proposed as part of the project.

Associated particulate matter emission increases were calculated based on the incremental increase in log throughput attributed to operation of the proposed project. Log throughput increases were estimated using the maximum lumber production rate of Continuous Kiln No. 4 and the permitted lumber recovery rate. Throughput increases are expressed in tons of logs processed per year.

Emission factors for filterable PM and PM₁₀ were obtained from the U.S. EPA Factor Information Retrieval (WebFIRE) database for log debarking and chipping operations and are consistent with the BACT limits established during the site's 2019 PSD permitting action. A control efficiency of 70% was applied to account for partial enclosure of the debarking and chipping operations.

Associated emissions were calculated by applying the emission factors and control efficiency to the estimated throughput increase and converting to tons per year. Hourly emission rates were derived assuming continuous operation at 8,760 hours per year. Supporting calculations and references are provided in Appendix B (Tables B-13 and B-14).

3.4.2.2 Material Handling and Transfer

Operation of Sawmill No. 2 will result in an increase in log throughput through the existing debarker and chipper, which will in turn increase the generation of wood byproducts, including chips, sawdust, shavings, and bark. These byproducts are transferred and managed through existing material handling and transfer systems at the facility. No physical modifications to material handling or transfer equipment are proposed as part of the project.

Associated particulate matter emission increases from material handling and transfer operations were calculated based on the incremental increase in byproduct generation attributable to operation of the proposed project. Increases in byproduct quantities were estimated using the projected increase in log throughput and established byproduct yield factors. Throughput increases are expressed in oven-dry tons per year for each byproduct stream.

Emission factors for filterable PM, PM₁₀, and PM_{2.5} were obtained from U.S. EPA Region 10 guidance for dry material transfer operations. All conveyors are covered, with the exception of a drag chain conveyor used for bark handling. The selected emission factors and assumptions are consistent with the BACT limits established during the site's 2019 PSD permitting action.

Associated emissions were calculated by applying the applicable emission factors to the estimated byproduct throughput increases, accounting for the applicable material transfer points, and converting the results to tons per year assuming continuous operation at 8,760 hours per year. Supporting calculations, assumptions, and references are provided in Appendix B (Tables B-15 and B-16).

3.4.2.3 Planer Mill

Operation of Sawmill No. 2 and Continuous Kiln No. 4 will result in an increase in the amount of dried lumber processed through the existing planer mill. No physical modifications to the planer mill or its control equipment are proposed as part of the project.

Associated particulate matter emission increases from the planer mill were calculated based on the incremental increase in dried lumber throughput attributed to the proposed project. The increase in planer mill throughput was assumed to be equivalent to the maximum production capacity of Continuous Kiln No. 4. The associated increase in exhaust flow rate was estimated by proportionally scaling the permitted baghouse exhaust flow based on the ratio of future to existing dried lumber production.

The planer mill is controlled by a cyclofilter baghouse. Filterable PM, PM₁₀, and PM_{2.5} emissions were calculated using vendor-provided outlet loading rates and the estimated incremental exhaust flow rate. These loading rates and control assumptions are consistent with the BACT limits established for the planer mill during the site's 2019 PSD permitting action.

Associated emissions were calculated by applying the loading rates to the incremental exhaust flow rate and converting to tons per year assuming continuous operation at 8,760 hours per year. Supporting calculations and assumptions are provided in Appendix B (Tables B-11 and B-12).

3.4.2.4 Roadways

Operation of the proposed project is expected to result in an increase in truck and mobile equipment traffic on the existing on-site roadways. No physical modifications to the site roadways are proposed as part of the project.

Associated fugitive particulate matter emission increases from road traffic were calculated based on the incremental increase in vehicle miles traveled (VMT) attributable to the proposed project. VMT increases were estimated using the additional number of trips required to transport logs, lumber, and byproducts associated with the operation of Sawmill No. 2 and Continuous Kiln No. 4.

Fugitive emissions from paved and unpaved roadways were calculated using the U.S. EPA AP-42 equations for paved roads (Section 13.2.1) and unpaved roads (Section 13.2.2), incorporating site-specific silt loading, vehicle weight, precipitation, and travel distance assumptions.^{5,6} An 85% control efficiency was applied for paved roads and a 70% control efficiency for unpaved roads to account for speed limits and good work practices implemented at the facility.

Associated roadway emissions were calculated by applying the applicable emission factors to the estimated VMT increase and converting to tons per year. Supporting calculations and assumptions are provided in Appendix B (Tables B-9 and B-10).

3.4.3 NSR Emissions Increase Summary

Table 3-1 shows the total emissions increase of the proposed project compared to the NSR major modification thresholds. Detailed emission calculations can be found in Appendix B of this application report.

Table 3-1. Project Emissions Increase

Pollutant	PTE of New Units ¹		Associated Units Emissions Increases ^{2,3}		Project Emissions Increase ⁴ (tpy)	PSD Major Modification Thresholds (tpy)	Percent of Threshold (%)	PSD Permitting Triggered? (Yes/No)
	Point Source (tpy)	Fugitive (tpy)	Point Source (tpy)	Fugitive (tpy)				
Filterable PM	1.13	3.52	1.34	4.85	2.46	25	10%	No
Total PM ₁₀	2.75	1.27	1.34	2.44	4.09	15	27%	No
Total PM _{2.5}	2.75	0.39	0.48	0.14	3.23	10	32%	No
NO _x	9.66	--	--	--	9.66	40	24%	No
CO	16.23	--	--	--	16.23	100	16%	No
SO ₂	0.12	--	--	--	0.12	40	0%	No
VOC	233.60	--	--	--	233.60	40	584%	Yes
GHG	23,079.90	--	--	--	23,079.90	75,000	31%	No
Lead	9.66E-05	--	--	--	9.66E-05	0.6	0%	No

⁵ U.S. EPA AP-42, Section 13.2.1, *Paved Roads*, January 2011.

⁶ U.S. EPA AP-42, Section 13.2.2, *Unpaved Roads*, November 2006.

4. REGULATORY REVIEW APPLICABILITY

The Thomasville Mill and the proposed project will be subject to certain federal and state air regulations. This section of the application summarizes the air permitting requirements and key air quality regulations that will apply to the Thomasville Mill under both federal and state permitting programs. Applicability to NSR, Title V, New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), ADEM Admin. Code r., and other potentially applicable regulations are addressed in the sections below.

4.1 New Source Review Applicability

The NSR permitting program generally requires a source to obtain a permit and undertake other obligations prior to construction of any project at an industrial facility if that proposed project results in an emissions increase in excess of certain pollutant threshold levels. ADEM administers its major NSR permitting program through ADEM Admin. Code R. 335-3-14-.04 Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting], which establishes preconstruction, construction, and operation requirements for new and modified sources.

The NSR program is comprised of two elements: Nonattainment NSR and PSD. NNSR pertains to facilities in nonattainment areas, and PSD is the governing program for all other facilities. The NNSR program potentially applies to new construction or modifications that result in emission increases of a particular pollutant for which the area where the facility is located is classified as “nonattainment” for that pollutant. The PSD program applies to project increases of those pollutants for which the area the facility is located in is classified as “attainment” or “unclassifiable.” The Thomasville Mill is located in Clarke County, which has been designated by the U.S. EPA as “attainment” or “unclassifiable” for all criteria pollutants. Therefore, the facility is not subject to NNSR permitting requirements. However, new construction or modifications that result in emissions increases are potentially subject to PSD permitting requirements.

The PSD program only regulates emissions from “major” stationary sources of regulated air pollutants. A stationary source is considered PSD major if potential emissions of any regulated pollutant exceed the major source thresholds. Lumber mills are not on the “list of 28” operations which are subject to a 100 tpy PSD major source threshold; therefore, the major source threshold for all criteria pollutants for PSD is 250 tpy and 100,000 tpy for CO₂e. The Thomasville Mill is a major source with respect to the PSD program as the potential emissions of VOC, CO, NO_x, and CO₂e exceed the PSD major source threshold.

Accordingly, the proposed project emission increases must be evaluated against the PSD SERs for all PSD regulated pollutants to determine if the project triggers PSD permitting. The project emissions increase from the facility for each PSD regulated pollutant compared to the respective SERs are shown in Table 3-1. The proposed project will trigger PSD permitting requirements for VOC only. As such, a VOC BACT analysis is included in this application along with an ozone analysis (as VOC is a precursor to ozone formation).

4.2 Title V Operating Permits

40 CFR 70 establishes the federal Title V operating permit program. Alabama has incorporated the provisions of this federal program in its state regulation, Rule 335-3-16, Major Source Operating Permits. This regulation requires that all new and existing Title V major sources of air emissions obtain federally approved state-administered operating permits. A major source as defined under the Title V program is a facility that has the potential to emit either more than 100 tpy for any criteria pollutant, more than 10 tpy

for any single HAP, or more than 25 tpy for all HAP.⁷ Potential emissions from the Thomasville Mill exceed the major source threshold for several pollutants. Therefore, the Thomasville Mill is a Title V Major Source.

The proposed project will not impact applicability to Title V. Westervelt will submit an application to incorporate these changes into the existing MSOP within 12 months of initial operation of the proposed new equipment.

4.3 New Source Performance Standards

NSPS, located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the proposed project. Rules that are specific to certain source categories are not discussed in this regulatory review.

4.3.1 40 CFR 60 Subpart A – General Provisions

All affected sources subject to source-specific NSPS are subject to the general provisions of NSPS Subpart A unless specifically excluded by the source-specific NSPS. Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable. The proposed project will not impact applicability to any NSPS that the Thomasville Mill is already subject to (e.g., NSPS Subpart Db, NSPS Subpart I111) and will not add any new NSPS applicability. Therefore, Westervelt will continue to comply with applicable provisions of Subpart A.

4.3.2 40 CFR 60 Subpart Dc – Small Industrial-Commercial Steam Generating Units

NSPS Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units, applies to steam generating units rated between 10 and 100 MMBtu/hr constructed, modified, or reconstructed after June 9, 1989. The term “steam generating unit” is defined under this regulation as shown below:

“Steam generating unit means a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart.”⁸

The proposed new lumber kiln will operate with a direct-fired natural gas burner. Additionally, the burner will not generate steam, because the combustion gases from the fuel directly contact the lumber during the drying process. Therefore, Subpart Dc is not applicable to the proposed new kiln burner (BRN4).

⁷ Per 335-3-16-.01(1)(q)3, a source cannot be considered a major Title V source based solely on the emissions of greenhouse gases.

⁸ 40 CFR 60.41c.

4.3.3 Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. The applicability of a particular NSPS to the proposed project can be readily ascertained based on the industrial source category covered. All other NSPS, besides Subpart A, are categorically not applicable to the proposed project at the Thomasville Mill.

4.4 National Emission Standards for Hazardous Air Pollutants

NESHAP, located in 40 CFR 61 and 40 CFR 63, have been promulgated for source categories that emit HAP to the atmosphere. A facility that is a major source of HAP is defined as having potential emissions of greater than 25 tpy of total HAP and/or 10 tpy of individual HAP. Facilities with a potential to emit HAP at an amount less than that which is defined as a major source are otherwise considered an area source. The NESHAP allowable emissions limits are most often established on the basis of a maximum achievable control technology (MACT) determination for the particular major source. The NESHAP applies to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The Thomasville Mill is currently classified as a major source of HAP emissions, and this will remain the same following the proposed project. The determination of applicability to NESHAP requirements for the proposed project is detailed in the following sections. Rules that are specific to certain source categories are not discussed in this regulatory review.

4.4.1 CFR 63 Subpart A – General Provisions

40 CFR 63 Subpart A, *General Provisions*, contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP in 40 CFR 63, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source-specific NESHAP. The proposed project will not impact applicability to any NESHAP that the Thomasville Mill is already subject to (e.g., NESHAP Subpart DDDD) and will not add any new NESHAP applicability. Therefore, Westervelt will continue to comply with applicable provisions of Subpart A.

4.4.2 40 CFR 63 Subpart DDDD – Plywood and Composite Wood Products

NESHAP Subpart DDDD regulates HAP emissions from plywood and composite wood products (PCWP) manufacturing facilities that are major HAP sources. The PCWP MACT was initially finalized by U.S. EPA on July 30, 2004, and was reissued and amended after reconsideration on February 16, 2006. The rule was partially vacated and remanded by the D.C. Circuit Court of Appeals in June 2007, which led to the rule being finalized in October 2007.

Lumber kilns are process units within the existing “affected source” under the PCWP MACT, defined in 40 CFR 63.2232(b) as

The collection of dryers, refiners, blenders, formers, presses, board coolers, and other process units associated with the manufacturing of plywood and composite wood products. The affected source includes, but is not limited to, green end operations, refining, drying operations (including any combustion unit exhaust stream routinely used to direct fire process unit(s)), resin preparation, blending and forming operations, pressing and board cooling operations, and miscellaneous finishing operations (such as sanding, sawing, patching, edge sealing, and other finishing operations not subject to other national emission standards for hazardous air pollutants (NESHAP)). The affected source also includes onsite storage and preparation of raw materials used in the manufacture of

plywood and/or composite wood products, such as resins; onsite wastewater treatment operations specifically associated with plywood and composite wood products manufacturing; and miscellaneous coating operations (40 CFR 63.2292). The affected source includes lumber kilns at PCWP manufacturing facilities and at any other kind of facility.

However, based on 40 CFR 63.2252, for process units not subject to the compliance options or work practice requirements specified in 40 CFR 63.2240 (including, but not limited to, lumber kilns), the facility is not required to comply with the compliance options; work practice requirements; performance testing; monitoring; startup, shutdown, and malfunction (SSM) plans; and recordkeeping or reporting requirements of Subpart DDDD, or any other requirements in NESHAP Subpart A, General Provisions, except for the initial notification requirements in 40 CFR 63.9(b).

The existing site lumber kilns are already subject to the initial notification requirements of Subpart DDDD. The proposed project will not seek to modify any of the existing site kilns and applicability to Subpart DDDD will not be impacted. However, construction of Direct-Fired Continuous Kiln No. 4 will require submission of an initial notification pursuant to 40 CFR 63.9(b). This application should satisfy the initial notification requirement that Kiln No. 4 will become subject to Subpart DDDD upon startup. Additional notifications will be provided to ADEM once construction is completed that will authorize initial operation. Westervelt will continue to comply with any applicable provisions of Subpart DDDD for all kilns.

4.4.3 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters

NESHAP Subpart DDDDD, *National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* (Major Source Boiler MACT) regulates boilers and process heaters as major sources of HAP. The kilns do not meet the definition of a boiler or process heater. A process heater is defined in 40 CFR 63.7575, as

... an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. A device combusting solid waste, as defined in §241.3 of this chapter, is not a process heater unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Process heaters do not include units used for comfort heat or space heat, food preparation for on-site consumption, or autoclaves. Waste heat process heaters are excluded from this definition.

The existing continuous lumber kilns are all direct fired, as the combustion gases from the fuel will directly contact the lumber during the drying process. Additionally, the proposed Direct-Fired Continuous Kiln No. 4 will be identical to the three existing continuous lumber kilns. Therefore, the existing and new lumber kilns are not considered process heaters, and Boiler MACT is not applicable.

4.4.4 40 CFR 63 Subpart JJJJJ – Industrial, Commercial, and Institutional Boilers at Area Sources

The Thomasville Mill is a major source of HAP. Furthermore, even if the mill were an area source of HAP, the kiln burners are direct-heating units and do not meet the rule's definition of a boiler or process heater. Therefore, this rule does not apply.

4.4.5 Non-Applicability of All Other NESHAP

NESHAP are developed for particular industrial source categories. The applicability of a particular NESHAP to the Thomasville Mill can be readily ascertained based on the industrial source category covered. All other NESHAP are categorically not applicable to the Thomasville Mill.

4.5 State Regulatory Requirements

In addition to federal air regulations, the ADEM Admin. Code R. 335-3, updated October 13, 2025, establishes regulations applicable for the Thomasville Mill. ADEM rules potentially applicable to the Thomasville Mill are detailed in the following sections.

4.5.1 ADEM Admin. Code r. 335-3-4-.01 – Visible Emissions

ADEM Admin. Code r. 335-3-4-.01 restricts visible emissions from any source of particulate emissions to 20 percent with no more than one 6-minute period of up to 40 percent opacity per 60-minute period. This regulation also details monitoring requirements and work practice standards. All existing emission units at the Thomasville Mill are already subject to this rule and currently comply with the applicable requirements. In addition, the proposed emission units will also be subject to this rule. Westervelt will continue to comply with the applicable requirements.

4.5.2 ADEM Admin. Code r. 335-3-4-.02 – Fugitive Dust and Fugitive Emissions

ADEM Admin. Code r. 335-3-4-.02 requires the Permittee to take reasonable precautions to minimize fugitive dust and fugitive emissions from sources such as roadways. Most of the haul road traffic at Thomasville is paved and reasonable precautions are taken to minimize fugitive dust. Westervelt will continue to employ good operational practices, such as minimizing speed limit, to minimize fugitive dust.

4.5.3 ADEM Admin. Code r. 335-3-4-.03 – PM from Fuel Burning Equipment

ADEM Admin. Code r. 335-3-4-.03 regulates PM emissions from fuel burning equipment. Per 335-3-1-.02(ee), fuel burning equipment is defined as:

...any equipment, device, or contrivance and all appurtenances thereto, including ducts, breechings, fuel-feeding equipment, ash removal equipment, combustion controls, stacks, and chimney, used primarily, but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion.

Although the continuous lumber drying kilns, both existing and proposed, are fuel-burning units, the units do not serve as indirect heating equipment. Therefore, the kilns are not subject to this rule.

4.5.4 ADEM Admin. Code r. 335-3-4-.04 – PM from Process Industries

This regulation limits particulate emissions from manufacturing processes in Class I and Class II Counties. The Thomasville Mill is in Clarke County which is classified as a Class II County. However, pursuant to ADEM Admin. Code r. 335-3-4-.04(5), new sources shall be subject to the same requirements for facilities located in Class I counties. As such, the maximum allowable PM emissions for units at the mill are determined using the following equations:

$$E = 3.59 P^{0.62}, \text{ where } P < 30 \text{ tons/hr}$$

$$E = 17.31 P^{0.16}, \text{ where } P \geq 30 \text{ tons/hr}$$

where:

E = allowable particulate emissions [lb/hr]

P = process weight rate [tons/hr]

This regulation applies to all process emission sources at the mill that do not have a unit-specific filterable PM emission limit. Westervelt currently demonstrates compliance with this regulation and will continue to do so with the new units as part of the proposed project.

4.5.5 ADEM Admin. Code r. 335-3-6-.01 through .53 – VOC Emissions

Chapter 335-3-6, Sections .01 through .53 addresses the control of organic emissions from specific manufacturing processes, including bulk gasoline terminals, surface coating, and coke by-product recovery plants. The Thomasville Mill does not operate any of the manufacturing processes included in 335-3-6, and therefore is not applicable to any emission limits or VOC standards set forth in ADEM Admin. Code r. 335-3-6.

4.5.6 ADEM Admin. Code r. 335-3-6-.04 – Fixed-Roof Petroleum Liquid Storage Vessels

Chapter 335-3-6-.04 addresses the control of organic emissions from petroleum liquid storage vessels. The rule applies to fixed roof storage tanks with capacities greater than 150,000 liters (40,000 gallons) containing a petroleum liquid whose true vapor pressure is greater than 10.5 kPa (1.52 psia). All of the petroleum liquid storage tanks at the Thomasville Mill have storage capacities much smaller than 40,000 gallons. Therefore, this rule does not apply to the Thomasville Mill or the proposed project.

4.5.7 ADEM Admin. Code r. 335-3-10 – Standards of Performance for New Stationary Sources

ADEM Admin. Code r. 335-3-10 incorporates Federal Regulations of 40 CFR Part 60. As discussed in Section 4.3, the proposed project will not impact applicability to any NSPS.

4.5.8 ADEM Admin. Code r. 335-3-11 – National Emission Standards for Hazardous Air Pollutants

ADEM Admin. Code r. 335-3-11 incorporates Federal Regulations of 40 CFR Parts 61 and 63 by reference. The facility is subject to NESHAP Subpart DDDD as detailed in Section 4.4.2.

4.5.9 ADEM Admin. Code r. 335-3-14-.04 – PSD Permitting

The Thomasville Mill is an existing major PSD source and Westervelt has evaluated PSD permitting applicability for the proposed project construction as detailed in Section 4.1. The project will trigger PSD permitting requirements for VOC only.

4.5.10 ADEM Admin. Code r. 335-3-16. – Major Source Operating Permit

The Thomasville Mill is an existing major stationary source and Title V applicability will remain the same following the project as detailed in Section 4.2

4.5.11 Non-Applicability of Other ADEM Air Regulations

A thorough examination of the ADEM Admin. Code r. applicability to the proposed project reveals many state regulations that do not apply and do not impose additional requirements on operations. Such rules include those specific to a particular type of industrial operation which are not related to the proposed project.

5. BACT ANALYSIS METHODOLOGY

This section discusses the regulatory basis for BACT, the approach used in completing the BACT analyses, and the BACT analyses for proposed project at the Thomasville Mill. Based on the BACT review, Westervelt has determined that the technology and limits presented are BACT for the proposed emission unit.

Table 5-1. Summary of Proposed BACT Limits

Unit	Pollutant	Selected BACT	Emissions / Operating Limit	Compliance Method
Continuous Kiln No. 4	VOC	Proper Maintenance and Operating Practices	4.0 lb/MBF	Recordkeeping

5.1 BACT Requirements

The BACT requirement applies to each new emission unit from which there is emissions increase of pollutants subject to PSD review. Westervelt has determined that the proposed project is subject to PSD permitting for VOC, and thus, is subject to BACT for this pollutant.

The following emission unit type and pollutant were considered in the BACT analysis and detailed discussions of each source type are included in the sections below:

- Direct-Fired Continuous Kiln No. 4 (and associated burner): VOC

5.2 BACT Definition

For new major stationary sources, the requirement to conduct a BACT analysis is set forth in ADEM Admin Code r. 335-3-14-.04(9)(b):⁹

(9) Control Technology Review.

(b) A new major stationary source shall apply BACT for each regulated NSR pollutant that it would have the potential to emit in significant amounts.

BACT is defined in ADEM Admin Code r. 335-3-14-.04(2)(l)] as:

*Best Available Control Technology (BACT) shall mean 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***

⁹ ADEM has been delegated authority by U.S. EPA to implement this federal permitting program.

combustion techniques for control of such pollutant. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR 60 and 61.

[primary BACT definition]

If the Director determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such standards shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means which achieve equivalent results.

[allowance for secondary BACT standard under certain conditions]

The key areas of this definition are addressed in the sections below.

5.2.1 Emission Limitation

BACT is “an emission limitation,” not an emission reduction rate or a specific technology. BACT is determined on a case-by-case basis and therefore does not require the installation of any specific control device. While BACT is prefaced upon the application of technologies reflecting the maximum reduction rate achievable, the final result of BACT is an emission limit. Typically when quantifiable and measurable, this limit would be expressed as an emission rate limit of a pollutant (e.g., lb/ton, ppm, or lb/MBF).¹⁰ It should be noted that the secondary BACT definition identifies that in cases where the implementation of an emission limitation is deemed infeasible, a design, equipment, work practice, operational standard or combination of may be prescribed as a BACT standard.

5.2.2 Each Air Pollutant

In ADEM Admin Code r. 335-3-14-.04(2)(ww), ADEM clarifies:

(ww) “Regulated NSR pollutant,” for purposes of this Rule, shall mean the following:

1. Any pollutant for which a national ambient air quality standard has been promulgated and any constituents or precursors for such pollutants identified by the Administrator of EPA (e.g., volatile organic compounds and NO_x are precursors for ozone);

5.2.3 Achievable

BACT is to be set at the lowest value that is achievable. However, there is an important distinction between emission rates achieved at a specific time on a specific unit, and an emission limitation that a unit must be able to meet continuously over its operating life.

¹⁰ Emission limits can be broadly differentiated as “rate-based” or “mass-based.”

As discussed by the DC Circuit Court of Appeals,

In National Lime Ass'n v. EPA, 627 F.2d 416, 431 n.46 (D.C. Cir. 1980), we said that where a statute requires that a standard be "achievable," it must be achievable "under most adverse circumstances which can reasonably be expected to recur."¹¹

U.S. EPA has reached similar conclusions in prior determinations for PSD permits.

Agency guidance and our prior decisions recognize a distinction between, on the one hand, measured 'emissions rates,' which are necessarily data obtained from a particular facility at a specific time, and on the other hand, the 'emissions limitation' determined to be BACT and set forth in the permit, which the facility is required to continuously meet throughout the facility's life. Stated simply, if there is uncontrollable fluctuation or variability in the measured emission rate, then the lowest measured emission rate will necessarily be more stringent than the "emissions limitation" that is "achievable" for that pollution control method over the life of the facility. Accordingly, because the "emissions limitation" is applicable for the facility's life, it is wholly appropriate for the permit issuer to consider, as part of the BACT analysis, the extent to which the available data demonstrate whether the emissions rate at issue has been achieved by other facilities over a long term.¹²

Thus, BACT must be set at the lowest feasible emission rate recognizing that the emission unit must be in compliance with that limit for the lifetime of the unit on a continuous basis. While viewing individual unit performance can be instructive in evaluating what BACT might be, any actual performance data must be viewed carefully, as rarely will the data be adequate to truly assess the performance that a unit will achieve during its entire operating life. While statistical variability of actual performance can be used to infer what is "achievable," such testing requires a detailed test plan akin to what terms in U.S. EPA use to develop MACT standards over several years and is far beyond what is reasonable to expect of an individual source. In contrast to limited snapshots of actual performance data, emission limits from similar sources can reasonably be used to infer what is "achievable."¹³

5.2.4 Floor

Emissions [shall not] exceed the emissions allowed by any applicable standard under 40 CFR 60 and 61.

The least stringent emission rate allowable for BACT is any applicable limit under either New Source Performance Standards (NSPS – Part 60) or National Emission Standards for Hazardous Air Pollutants (NESHAP – Parts 61 and 63).¹⁴ State SIP limitations must also be considered when determining the floor. The continuous kiln undergoing BACT are not subject to any NSPS or NESHAP emission limits for VOC. While a NESHAP exists that regulates HAP emissions from PCWP sources, lumber kilns are not subject to any numerical HAP limitations or work practice standards that could be considered BACT for VOC.

¹¹ As quoted in *Sierra Club v. U.S. EPA* (97-1686).

¹² U.S. EPA Environmental Appeals Board decision, *In re: Newmont Nevada Energy Investment L.L.C. PSD Appeal No. 05-04*, decided December 21, 2005. *Environmental Administrative Decisions*, Volume 12, Page 442.

¹³ Emission limits must be used with care in assessing what is "achievable." Limits established for facilities which were never built must be viewed with care, as they have never been demonstrated and that company never took a significant liability in having to meet that limit. Likewise, permitted units which have not yet commenced construction must also be viewed with special care for similar reasons.

¹⁴ While not specified as the BACT floor, NESHAP under 40 CFR 63 sometimes regulate NSR pollutants as a surrogate for non-NSR pollutants.

5.3 BACT “Top-Down” Approach

The primary document referenced for the traditional “top-down” BACT methodology is U.S. EPA’s 1990 *NSR Workshop Manual (Draft), Prevention of Significant Deterioration and Nonattainment New Source Review Permitting*.¹⁵ The following sections present the top-down BACT analysis for each pollutant for which this project triggers PSD and is specific to each emission unit, unless otherwise specified. The five steps in such an evaluation can be summarized as follows:

- ▶ **Step 1.** Identify all possible control technologies;
- ▶ **Step 2.** Eliminate technically infeasible control options;
- ▶ **Step 3.** Rank technically feasible control technologies based upon emission reduction potential;
- ▶ **Step 4.** Evaluate ranked control technologies based on energy, environmental, and/or economic considerations; and
- ▶ **Step 5.** Select BACT.

This process is typically conducted on a unit-by-unit, pollutant-by-pollutant basis. While the top-down BACT analysis is a procedural approach suggested by U.S. EPA policy, this approach is not specifically mandated as a statutory requirement of the BACT determination. BACT for the proposed project has been evaluated via this “top-down” approach.

5.3.1 Identification of Potential Control Technologies (Step 1)

Available control technologies with practical potential for application to the emission unit are identified in this section. The application of demonstrated control technologies in other similar source categories to the emission unit in question can also be considered. While identified technologies may be eliminated in subsequent steps in the analysis based on technical and economic infeasibility or environmental, energy, economic or other impacts, control technologies with potential application to the emission unit under review are identified in this step. Under Step 1 of a criteria pollutant BACT analysis, the following resources are typically consulted when identifying potential technologies:

1. U.S. EPA’s RBLC database.
2. Determinations of BACT by regulatory agencies for other similar sources or air permits and permit files from federal or state agencies.
3. Engineering experience with similar control applications.
4. Information provided by air pollution control equipment vendors with significant market share in the industry.
5. Review of literature from industrial technical or trade organizations.

Trinity performed searches of the RBLC database in April 2026 to identify the emission control technologies and emission levels that were determined by permitting authorities as BACT within the past ten years of emission sources comparable to the proposed project. The following categories were searched:

- ▶ Permit Data between 01/01/2016 and 04/22/2026.
- ▶ Process Type:
 - Wood Lumber Kilns (RBLC Code 30.800)
- ▶ Process Keywords: Kilns (for VOC)
- ▶ Results are from USA.

¹⁵ U.S. EPA, October 1990. <https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf>.

Appendix C presents summary tables of relevant BACT determinations for the proposed kiln.

5.3.2 Elimination of Technically Infeasible Control Options (Step 2)

After the available control technologies have been identified, each technology is evaluated with respect to its technical feasibility in controlling emissions from the source in question. The first question in determining whether or not a technology is feasible is if it is demonstrated. If so, it is feasible. Whether or not a control technology is demonstrated is considered to be a relatively straightforward determination.

5.3.2.1 Demonstrated Technology

Demonstrated means that it has been installed and operated successfully elsewhere on a similar facility. If the control technology has been installed and operated successfully on the type of source under review, it is demonstrated and it is technically feasible.¹⁶

5.3.2.2 Emerging and Undemonstrated Technology

An undemonstrated technology is only technically feasible if it is “available” and “applicable.” A control technology or process is only considered available if it has reached the licensing and commercial sales phase of development and is “commercially available.”¹⁷ Control technologies in the R&D and pilot scale phases are not considered available. Based on U.S. EPA guidance, an available control technology is presumed to be applicable if it has been permitted or actually implemented by a similar source. Decisions about technical feasibility of a control option consider the physical or chemical properties of the emissions stream in comparison to emissions streams from similar sources successfully implementing the control alternative. The NSR Manual explains the concept of applicability as follows: “An available technology is “applicable” if it can reasonably be installed and operated on the source type under consideration.”¹⁸ Applicability of a technology is determined by technical judgment and consideration of the use of the technology on similar sources as described in the NSR Manual.

5.3.3 Rank of Remaining Control Technologies (Step 3)

All remaining technically feasible control options are ranked based on their overall control effectiveness for the pollutant of interest.

5.3.4 Evaluation of Most Stringent Control Technologies (Step 4)

After identifying and ranking available and technically feasible control technologies, the economic, environmental, and energy impacts are evaluated to select the best control option. If adverse collateral impacts do not disqualify the top-ranked option from consideration it is selected as the basis for the BACT limit. Alternatively, in the judgment of the permitting agency, if unreasonable adverse economic, environmental, or energy impacts are associated with the top control option, the next most stringent option is evaluated. This process continues until a control technology is identified.

Economic analyses were performed to compare total costs (capital and annual) for potential control technologies. Capital costs include the initial cost of the components intrinsic to the complete control system. Annual operating costs include the financial requirements to operate the control system on an annual basis and include overhead, maintenance, outages, raw materials, and utilities.

¹⁶ NSR Workshop Manual (Draft), Prevention of Significant Deterioration and Nonattainment New Source Review Permitting, page B.17.

¹⁷ Ibid, page B.18.

¹⁸ Ibid, page B.18.

The capital cost estimating technique used is based on a factored method of determining direct and indirect installation costs. That is, installation costs are expressed as a function of known equipment costs. This method is consistent with the latest U.S. EPA OAQPS guidance manual on estimating control technology costs.¹⁹

Total Purchased Equipment Cost represents the delivered cost of the control equipment, auxiliary equipment, and instrumentation. Auxiliary equipment consists of all the structural, mechanical, and electrical components required for the efficient operation of the device. Auxiliary equipment costs are estimated as a straight percentage of the equipment cost. Direct installation costs consist of the direct expenditures for materials and labor for site preparation, foundations, structural steel, erection, piping, electrical, painting and facilities. Indirect installation costs include engineering and supervision of contractors, construction and field expenses, construction fees, and contingencies. Other indirect costs include equipment startup, performance testing, working capital, and interest during construction.

Annual costs are comprised of direct and indirect operating costs. Direct annual costs include labor, maintenance, replacement parts, raw materials, utilities, and waste disposal. Indirect operating costs include plant overhead, taxes, insurance, general administration, and capital charges. Replacement part costs, such as the cost of a replacement catalyst, were included where applicable, while raw material costs were estimated based upon the unit cost and annual consumption. With the exception of overhead, indirect operating costs were calculated as a percentage of the total capital costs. The indirect capital costs were based on the capital recovery factor (CRF) defined as:

$$CRF = \frac{i(1+i)^n}{(1+i)^n - 1}$$

where i is the annual interest rate and n is the equipment life in years.

The equipment life is based on the normal life of the control equipment and varies on an equipment type basis. The same interest applies to all control equipment cost calculations. For this analysis, an interest rate of 7% was used based on information provided in the most recent OAQPS Control Cost Manual.²⁰ Detailed BACT cost calculations are included in Appendix D of this report.

5.3.5 Selection of BACT (Step 5)

In the final step, the BACT emission limit is determined for each emission unit under review based on evaluations from the previous step.

Although the first four steps of the top-down BACT process involve technical and economic evaluations of potential control options (i.e., defining the appropriate technology), the selection of BACT in the fifth step involves an evaluation of emission rates achievable with the selected control technology. BACT 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 or operating standard can be imposed.

¹⁹ U.S. EPA, *OAQPS Control Cost Manual*, 6th edition, EPA 452/B-02-001, July 2002.

[EPA Air Pollution Control Cost Manual](#) Note that updates sections of the manual relate to NO_x controls and are not utilized herein. For more details on the updating of the control cost manual see <https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution>

²⁰ U.S. EPA, *OAQPS Control Cost Manual*, 6th edition, Section 2, Chapter 1, page 1-52.
[EPA Air Pollution Control Cost Manual](#)

5.4 Defining the Source

To assist in meeting the BACT limit, the source must consider production processes or available methods, systems or techniques, as long as those considerations do not redefine the source. Westervelt is proposing to install three new units. However, only the proposed kiln is a source of VOC. None of the other modified emission units emit VOC, and therefore they are excluded from further analysis.

The BACT selections are based on these design constraints, and any potential control methods that would require Westervelt to redefine the source have been explained as such and were not considered further.

6. LUMBER DRYING KILNS VOC ASSESSMENT

This section contains a review of pollutant formation, possible control technologies, and the ranking and selection of such controls with associated emission limits, for proposed BACT on VOC emissions from the continuous lumber drying kiln. The following sections contain details on what would be considered the “top down” BACT review, as well as the likely control technology and emission limits that would need to be selected for VOC.

6.1 Identification of Potential Control Technologies – Lumber Drying Kilns (Step 1)

Candidate control options identified from the RBLC search, and the literature review include those classified as pollution reduction techniques. VOC reduction options include:

- ▶ Adsorption
- ▶ Biofiltration
- ▶ Condensation
- ▶ Thermal Oxidation
- ▶ Wet Scrubbing
- ▶ Proper Maintenance and Operating Practices

These control technologies are briefly described in the following sections.

6.2 Technically Infeasible VOC Controls – Lumber Drying Kiln (Step 2)

After the identification of control options, the second step in the BACT assessment is to eliminate any technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits. The following sections evaluate the feasibility of the above-mentioned control technologies for reducing VOC emissions from the proposed continuous kiln. Note that, based on a review of both batch and continuous lumber drying kilns in the U.S. EPA's RBLC database, a control device has never been applied to a lumber drying kiln.

6.2.1 Adsorption

The kiln exhaust contains the water vapor that has evaporated from the lumber as it is dried and will have a relative humidity over 100%. At high moisture contents, the water molecules and hydrocarbons in the exhaust stream will compete with each other for active adsorption sites, reducing the efficiency of the adsorption system. This control device is, therefore, deemed technically infeasible.

6.2.2 Biofiltration

The microorganisms used in biofiltration cannot survive at temperatures exceeding 105 °F; however, the temperature of the exhaust stream from the kiln will be approximately 145 °F. Furthermore, the primary constituent of the VOC in the exhaust stream is terpenes, which are highly viscous and would cause the biofilter to easily foul. Because of the nature of the long-chained hydrocarbons in the exhaust stream, a biofilter with a reasonable footprint/retention time, will have a reduced control efficiency relative to a unit treating streams with large concentrations of methanol or formaldehyde. The microorganisms require a

much longer retention time/size of a unit in order to provide an increased efficiency. For example, engineering firms have previously noted that to increase control efficiency an additional 5% at these removal levels would essentially require a biofilter twice as large. This control device is therefore deemed technically infeasible.

6.2.3 Condensation

Condensation requires that the exhaust stream be cooled to a low enough temperature for the vapor pressure to be lower than the VOC concentration. The primary constituent of the VOC in the exhaust stream from the lumber kiln is terpenes, which would require the temperature of the exhaust stream to be lowered to well below 0 °F in order to have a low enough vapor pressure to use condensation. Temperatures this low would cause the water vapor in the stream to freeze, and the ice would clog the unit. As such, condensation is not a technically feasible control technology.

6.2.4 Thermal Oxidation

The high moisture content and low exit temperature of the exhaust stream would make an RTO technically infeasible. While regenerative catalytic oxidizers (CatOx) can operate at lower temperatures than the RTO, the exit temperature of the exhaust stream from the kiln is still too low for this option to be feasible. Furthermore, particulate matter and other contaminants in the exhaust stream would cause a loss of catalytic activity. Also, the low temperature of the exhaust stream precludes the system from using a CatOx system for VOC control.

Based on the reasons stated above and the fact that there was no lumber drying kiln, batch or continuous, in the RBLC database or the air permit file review that utilized thermal oxidation, Westervelt may eliminate thermal oxidation from consideration based on technical infeasibility. However, Westervelt is, for conservatism, further considering an RTO in the future steps for the BACT determination to determine what the economic and environmental impact from the use of an RTO would be in the situation that it is technically feasible with this type of unit (a point which Westervelt does not concede).

6.2.5 Wet Scrubbing

While some VOCs that will be present in the exhaust stream are highly soluble in water, other VOCs, most notably α -pinene, are only very slightly soluble in water due to the lower Henry's Law constant as described in Perry's Chemical Engineer's Handbook. Lower Henry's Law constant VOCs would require much longer residence time within a scrubber packed column and would eliminate this as a technically viable solution for the constant stream that would need to be handled by a continuous kiln.

6.2.6 Proper Maintenance and Operating Practices

Proper maintenance and operating practices of the kiln is a technically feasible option for minimizing the VOC emissions from the kiln and will be considered further in the future steps for BACT determination.

6.3 Summary and Ranking of Remaining VOC Controls – Lumber Drying Kilns (Step 3)

Of the control technologies available for VOC emissions, the options technically feasible for each unit are shown in Table 6-1. As discussed in Step 2, Westervelt does not concede that the use of an RTO on a lumber drying kiln is technically feasible; however, this control option is being evaluated in this and the future steps of the BACT determination for conservatism.

Table 6-1. Remaining VOC Control Technologies

Rank	Control Technology	Potential Control Efficiency (%)
1	RTO	98%
2	Proper Maintenance and Operating Practices	Base Case

6.4 Evaluation of Most Stringent VOC Controls – Lumber Drying Kilns (Step 4)

The fourth of the five steps in the top-down BACT assessment procedure is to evaluate the most effective control and document the results. This has been performed for the remaining control technologies on the basis of economic, energy, and environmental considerations, and is described herein.

6.4.1 Regenerative Thermal Oxidation

Even if the use of an RTO was technically feasible on a lumber drying kiln, the cost of using an RTO exceeds the benefit of the VOC reduction it offers. The current cost of controlling VOC with an RTO is estimated at approximately \$18,126 per ton of VOC removed for the natural gas kilns. This high cost for VOC control is largely due to the high moisture content of the kiln exhaust stream and low exhaust temperature, as heating water vapor in the exhaust stream to RTO operating temperatures significantly increases the natural gas heating requirement. There would also be associated energy and environmental impacts resultant from use of natural gas, including additional pollutant emissions such as NO_x from natural gas combustion.

6.4.2 Proper Maintenance and Operating Practices

The only remaining technology is proper maintenance and operating practices of the kiln, a logical option since a properly maintained and operated kiln can effectively minimize VOC formation. This control option is considered BACT for VOC for the continuous kilns.

6.5 Selection of VOC BACT – Lumber Drying Kilns (Step 5)

Based on steps 1 through 4 of the BACT analysis, Westervelt has determined that proper maintenance and good operating practices are the only controls technically and economically feasible for the proposed continuous lumber drying kiln. All other potential control technologies were eliminated in earlier steps of the process. Therefore, Westervelt proposes the emission rate of 4.0 lb Total VOC (as terpene + methanol + formaldehyde)/MBF as BACT, calculated from the equation described below.

$$Total\ VOC = VOC\ as\ C \times 1.225 + (1 - 0.65) \times Methanol + Formaldehyde$$

The basis for the VOC factor is adjusted per EPA protocol from the traditional VOC as carbon to a total mass VOC basis. In order to comply with BACT, Westervelt will develop an operating and maintenance plan for the new continuous kiln.

Appendix C contains the RBLC search results with listed emission factors in lb VOC per MBF. Of the factors listed, there is limited data and references available on how the VOC factor was derived and the appropriate

basis of the factor. Additionally, many of the emission factors listed are for batch kilns, as continuous kilns are still an emerging technology.

7. ADDITIONAL IMPACTS ANALYSIS

In addition to the analyses described earlier, PSD regulations also require three additional impacts analyses: 1) a growth analysis, 2) a soil and vegetation analysis, and 3) a visibility analysis. PSD applications also require Class I area reviews to determine if any long-range modeling must be conducted. Each of these requirements are addressed below.

7.1 Growth Analysis

The purpose of the growth analysis is to quantify project associated growth; that is, to predict how much new growth is likely to occur in order to support the source or modification under review, and then to estimate the air quality impacts from this growth. The facility will not require a significant increase in workforce and thus no significant population growth is expected as a result of the proposed project. Given the lack of population growth, there will not be any appreciable expansion in infrastructure associated with the project either. The increase in pollutant emissions associated with the new facility and their potential impact on the environment was addressed in analyses discussed elsewhere in this report.

7.2 Soil and Vegetation Analysis

The EPA developed the secondary NAAQS to protect certain air quality related values (i.e., soil and vegetation) that may not be sufficiently protected by the primary NAAQS. The project only triggers PSD for VOC emissions and there is no quantitative modeling standards associated with those. However, VOCs are regulated ozone precursors and there are NAAQS standards associated with ozone. Thomasville, AL, where the Thomasville Mill is located, is in attainment with respect to ozone²¹ and as described in Appendix F, the proposed project would have an insignificant impact on new ozone formation. As such, the project would not be expected to have any harmful effects on the soil and vegetation in the area.

7.3 Visibility Analysis

The proposed project does not trigger PSD review for any visibility-affecting pollutants and as such, the proposed project will not have any visibility impact on airports, state forests and parks, scenic vistas, areas of special historic interest, or any other sensitive areas.

7.4 Class I Requirements

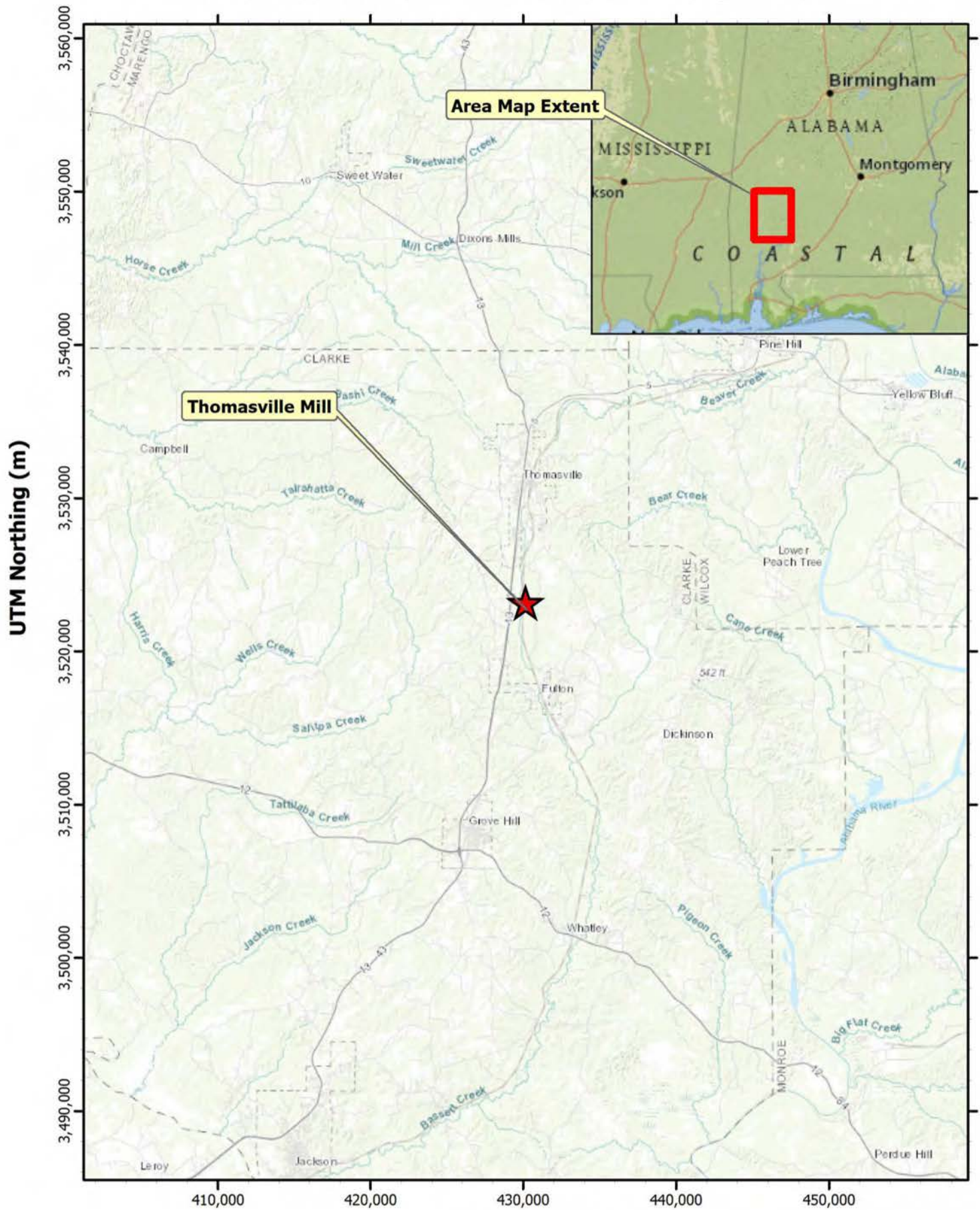
The proposed project does not trigger PSD review for any visibility-affecting pollutants or pollutants that contribute to acidic deposition, and as such no Class I Air Quality Related Values (AQRV) analyses are required for this project. Since there are no AQRV considerations, an FLM notification letter is not required either. In addition to AQRV review, PSD applications also just review Class I increment at any Class I area within 100 km. The closest Class I area is Breton Wilderness Area, and it is 226 km to the SW. Further the proposed project does not trigger PSD review for any increment-affecting pollutants. Therefore, no Class I increment evaluation is required for this project.

²¹ https://www3.epa.gov/airquality/urbanair/sipstatus/reports/al_areabypoll.html#ozone-8hr_2008

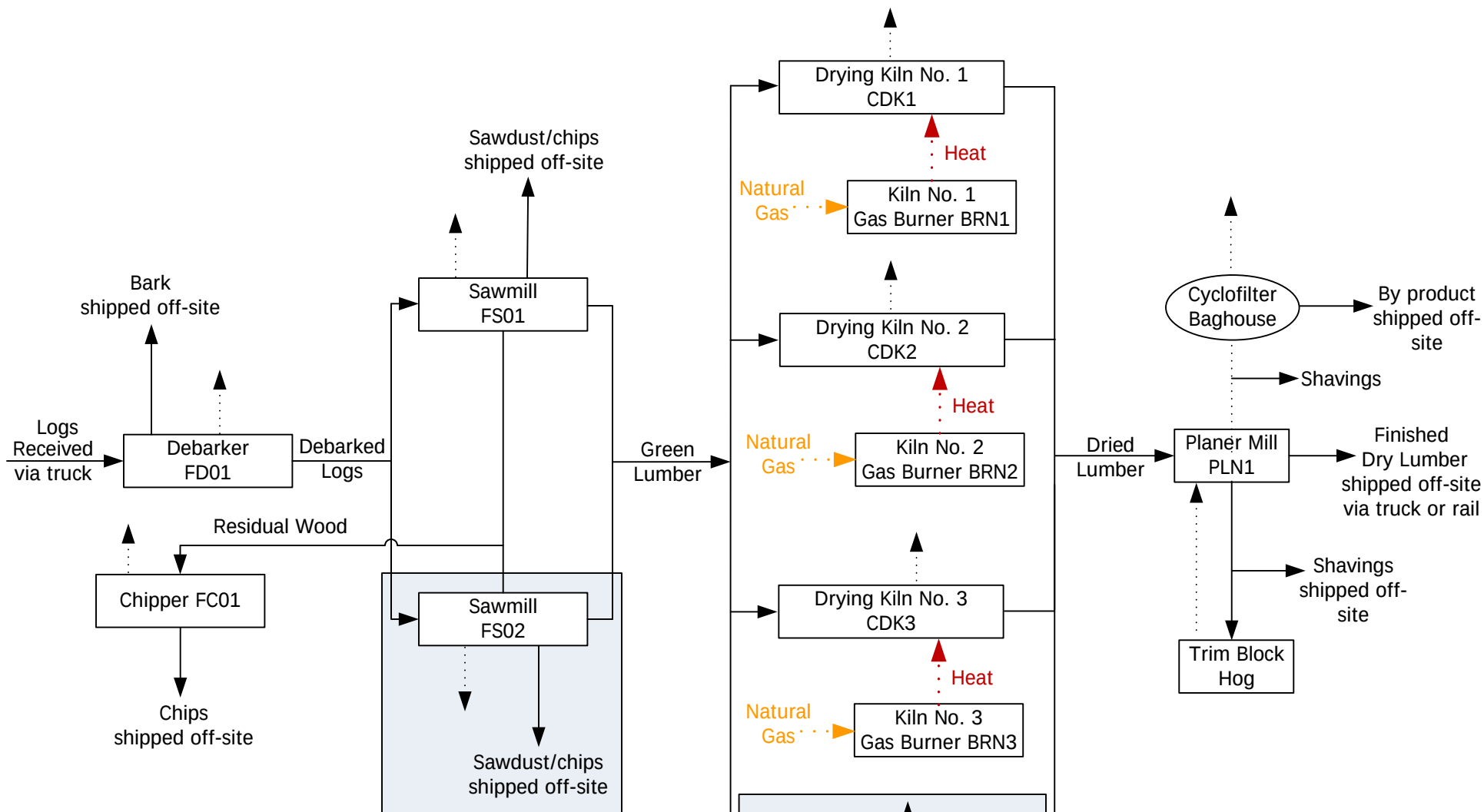
APPENDIX A. AREA MAP AND PROCESS DIAGRAM

Figure A-1. Area Map

Westervelt Thomasville - Thomasville, Clarke County, Alabama



UTM Easting (m)
All Coordinates shown in UTM Coordinates,
Zone 16, NAD 83 Datum



Legend

- Proposed Equipment
- Process/Process Equipment
- Material Flow
- Emissions
- Fuel
- Heat

The Westervelt Company
Thomasville, Alabama

Figure A-2
Process Flow Diagram

Trinity
Consultants

260101.0028
May 2026

APPENDIX B. DETAILED EMISSIONS CALCULATIONS

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-1. BRN4 Direct-Fired Natural Gas Burner Operating Parameters

Operating Parameter	Value	Unit
Max Hourly Heat Input	45	MMBtu/hr
Natural Gas HHV ¹	1,020	MMBtu/MMscf
Annual Operation	8,760	hr/yr
Max Hourly Gas Throughput ²	0.044	MMscf/hr/burner
Max Annual Gas Throughput ³	386.5	MMscf/yr/burner

1. Average higher heating value from AP-42 Section 1.4.

2. Calculated as Heat Input (MMBtu/hr) / HHV (MMBtu/MMscf)

3. Calculated as Heat Input (MMBtu/hr) / HHV (MMBtu/MMscf) x Annual Operation (hr/yr)

Table B-2. Potential BRN4 Direct-Fired Natural Gas Burner Criteria & GHG Emissions

Pollutant ¹	Emission Factor ²⁻⁴ (lb/MMscf)	BRN4 ⁵	
		Hourly Emissions (lb/hr)	Annual Emissions (tpy)
<i>Criteria Pollutants</i>			
Filterable PM	1.90	8.38E-02	0.37
Filterable PM ₁₀	1.90	8.38E-02	0.37
Filterable PM _{2.5}	1.90	8.38E-02	0.37
Condensable PM	5.70	0.25	1.10
Total PM	7.60	0.34	1.47
Total PM ₁₀	7.60	0.34	1.47
Total PM _{2.5}	7.60	0.34	1.47
NO _x	50.00	2.21	9.66
CO	84.00	3.71	16.23
VOC	5.50	--	--
SO ₂	0.60	2.65E-02	0.12
Lead	5.00E-04	2.21E-05	9.66E-05
<i>Greenhouse Gases</i>			
CO ₂	119,317	5,264	23,056
CH ₄	2.25	0.10	0.43
N ₂ O	0.22	9.92E-03	4.35E-02
CO ₂ e	119,439	5,269	23,080

1. Emissions of VOC are included in Table B-5 for kiln drying emissions.

2. Emission factors per AP-42, Section 1.4 Natural Gas Combustion, Tables 1.4-1 and 1.4-2.

3. The NO_x and CO emission factors are for small boilers (less than 100 MMBtu/hr) with Low NO_x control.

4. Per 40 CFR Part 98, Subpart C, Tables C-1 and C-2. The CO₂, CH₄, and N₂O emission factors are the default factors for natural gas combustion. The default factors provided are in units of kg/MMBtu. The factors have been converted to lb/MMscf using a standard kg-to-lb conversion factor and by multiplying by the HHV for natural gas.

5. The CO₂e factor is calculated based on the emission factors for CO₂, CH₄, and N₂O and the global warming potential (GWP) for each pollutant per 40 CFR 98, Subpart A, Table A-1:

CO ₂	1
CH ₄	28
N ₂ O	265

Potential Emissions (lb/hr) = Emission Factor (lb/MMscf) x Hourly Fuel Input Capacity (MMscf/hr)

Potential Emissions (tpy) = Emission Factor (lb/MMscf) x Annual Fuel Input Capacity (MMscf/yr) / 2,000 lbs/ton

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-3. BRN4 Direct-Fired Natural Gas Burner Speciated HAP Potential Emissions

Pollutant¹	HAP? (Y/N)	Emission Factor² (lb/MMscf)	Potential Emissions³ BRN4 (lb/hr) (tpy)	
2-Methylnaphthalene	Y	2.40E-05	1.06E-06	4.64E-06
3-Methylchloranthrene	Y	1.80E-06	7.94E-08	3.48E-07
7,12-Dimethylbenz(a)anthracene	Y	1.60E-05	7.06E-07	3.09E-06
Acenaphthene	Y	1.80E-06	7.94E-08	3.48E-07
Acenaphthylene	Y	1.80E-06	7.94E-08	3.48E-07
Anthracene	Y	2.40E-06	1.06E-07	4.64E-07
Benz(a)anthracene	Y	1.80E-06	7.94E-08	3.48E-07
Benzene	Y	2.10E-03	9.26E-05	4.06E-04
Benzo(a)pyrene	Y	1.20E-06	5.29E-08	2.32E-07
Benzo(b)fluoranthene	Y	1.80E-06	7.94E-08	3.48E-07
Benzo(g,h,i)perylene	Y	1.20E-06	5.29E-08	2.32E-07
Benzo(k)fluoranthene	Y	1.80E-06	7.94E-08	3.48E-07
Butane	N	2.10	0.09	0.41
Chrysene	Y	1.80E-06	7.94E-08	3.48E-07
Dibenzo(a,h)anthracene	Y	1.20E-06	5.29E-08	2.32E-07
Dichlorobenzene	Y	1.20E-03	5.29E-05	2.32E-04
Ethane	N	3.10	0.14	0.60
Fluoranthene	Y	3.00E-06	1.32E-07	5.80E-07
Fluorene	Y	2.80E-06	1.24E-07	5.41E-07
Formaldehyde	Y	7.50E-02	--	--
Hexane	Y	1.80	7.94E-02	0.35
Indeno(1,2,3-cd)pyrene	Y	1.80E-06	7.94E-08	3.48E-07
Naphthalene	Y	6.10E-04	2.69E-05	1.18E-04
Pentane	N	2.60	0.11	0.50
Phenanthrene	Y	1.70E-05	7.50E-07	3.29E-06
Propane	N	1.60	7.06E-02	0.31
Pyrene	Y	5.00E-06	2.21E-07	9.66E-07
Toluene	Y	3.40E-03	1.50E-04	6.57E-04
Arsenic	Y	2.00E-04	8.82E-06	3.86E-05
Barium	N	4.40E-03	1.94E-04	8.50E-04
Beryllium	Y	1.20E-05	5.29E-07	2.32E-06
Cadmium	Y	1.10E-03	4.85E-05	2.13E-04
Chromium	Y	1.40E-03	6.18E-05	2.71E-04
Cobalt	Y	8.40E-05	3.71E-06	1.62E-05
Copper	N	8.50E-04	3.75E-05	1.64E-04
Manganese	Y	3.80E-04	1.68E-05	7.34E-05
Mercury	Y	2.60E-04	1.15E-05	5.02E-05
Molybdenum	N	1.10E-03	4.85E-05	2.13E-04
Nickle	Y	2.10E-03	9.26E-05	4.06E-04
Selenium	Y	2.40E-05	1.06E-06	4.64E-06
Vanadium	N	2.30E-03	1.01E-04	4.44E-04
Zinc	N	2.90E-02	1.28E-03	5.60E-03
HAP Total (tpy): Max Individual HAP:			0.35 Hexane	

1. Emissions of formaldehyde are included in Table B-6 with kiln drying emissions.

2. Emission factors per AP-42, Section 1.4 Natural Gas Combustion, Tables 1.4-3 and 1.4-4.

3. Potential Emissions (lb/hr) = Emission Factor (lb/MMscf) x Hourly Fuel Input Capacity (MMscf/hr)

Potential Emissions (tpy) = Emission Factor (lb/MMscf) x Annual Fuel Input Capacity (MMscf/yr) / 2,000 lbs/ton

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-4. CDK4 Kiln Operating Parameters

Operating Parameter	Value	Unit
Max Hourly CDK4 Capacity	13.33	MBF/hr
Max Annual CDK4 Capacity	116,800	MBF/yr
Annual Operation	8,760	hr/yr

Table B-5. CDK4 Potential Criteria Pollutant Emissions (Wood Drying Emissions)

Pollutant	Emission Factor ¹ (lb/MBF)	CDK4 ²	
		Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Filterable PM	1.30E-02	0.17	0.76
Filterable PM ₁₀	1.30E-02	0.17	0.76
Filterable PM _{2.5}	1.30E-02	0.17	0.76
Condensable PM	9.00E-03	0.12	0.53
Total PM	2.20E-02	0.29	1.28
Total PM ₁₀	2.20E-02	0.29	1.28
Total PM _{2.5}	2.20E-02	0.29	1.28
VOC	4.00	53.3	233.6

1. Factors are consistent with the BACT limits for CDK1-CDK3 taken in 2019 when the site was originally permitted. VOC BACT limit on CDK1-CDK3 is Proviso 25 of Permit X002. Total PM₁₀ and Total PM_{2.5} BACT limits per Proviso 26 and Proviso 27 of Permit X002, respectively.

2. Potential Emissions (lb/hr) = Emission Factor (lb/MBF) x Hourly Fuel Input Capacity (MBF/hr)

Potential Emissions (tpy) = Emission Factor (lb/MBF) x Annual Fuel Input Capacity (MBF/yr) / 2,000 lbs/ton

Table B-6. CDK4 Potential HAP Emissions (Wood Drying Emissions)

Pollutant	Emission Factor ¹ (lb/MBF)	CDK4 ²	
		Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Acetaldehyde	4.50E-02	0.60	2.63
Acrolein	7.50E-03	0.10	0.44
Formaldehyde	3.86E-02	0.51	2.25
Methanol	0.16	2.15	9.40
Phenol	1.00E-02	0.13	0.58
HAP Total (tpy):		15.31	
Max Individual HAP:		Methanol	

1. Emission factors for formaldehyde, methanol, and acetaldehyde are recommended by the State of GA (EPD) for all direct-fired kilns and have been approved by EPA Region 4. Emission factors for acrolein and phenol are from the recent PSD permit application submitted for the Rex Lumber Mill (ADEM Facility No. 210-S006) in Troy, AL. These factors are also consistent with factors previously established for the other site kilns

2. Potential Emissions (lb/hr) = Emission Factor (lb/MBF) x Hourly Fuel Input Capacity (MBF/hr)

Potential Emissions (tpy) = Emission Factor (lb/MBF) x Annual Fuel Input Capacity (MBF/yr) / 2,000 lbs/ton

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-7. Sawmill No. 2 Operating Parameters

Source	Throughput (tpy)
Saw Dust	70,373

Table B-8. Potential Emissions for Sawmill No. 2

Emission Source	EUID	Annual Hours of Operation	Pollutant	Emission Factor (lb/ton)¹	Control Efficiency² (%)	Potential Emissions (lb/hr)³	(tpy)⁴
Sawmill No. 2	FS02	8,760	Filterable PM ¹	1.000	90%	0.80	3.52
			Filterable PM ₁₀ ¹	0.360	90%	0.29	1.27
			Filterable PM _{2.5} ⁵	0.110	90%	0.09	0.39

1. EPA Factor Information Retrieval (WebFIRE) database, updated 9/7/2016 for SCC Code 30700803 for sawdust pile handling. Factors are consistent with the BACT limits taken in 2019 on Sawmill No. 1 when the site was originally permitted.

2. The sawmill is fully enclosed. Based on guidance by the Texas Commission on Environmental Quality (TCEQ) entitled "Rock Crushing Plants" (Feb. 2002), a control efficiency of 90% should be applied for work performed fully enclosed."

3. Potential Annual Emissions (lb/hr) = Potential Annual Emissions (tpy) * 2,000 (lb/ton) / Annual Hours of Operation (hr/yr)

4. Potential Annual Emissions (tpy) = Emission factor (lb/ton) × [1 - Control Efficiency (%)] × Potential Throughput (ton/yr) / 2,000 (lb/ton)

5. Filterable PM_{2.5} ratio of PM per EPA PMCALC database sawdust handling. Factor is consistent with the BACT limit taken in 2019 on Sawmill No. 1 when the site was originally permitted.

Table B-9. Inputs for Associated Emissions Increases from Road Travel

Source	Number of Trucks Per Year	Truck Weight Empty (tons)	Truck Weight Loaded (tons)	Average Weight (W) (tons)	Distance Traveled per Round Trip				Vehicle Miles Traveled			
					Paved Roads (ft)	Unpaved Roads (ft)	Events Per Year (Days)	Number of Trucks Per Day	Paved Roads (VMT/day) (VMT/yr)	Unpaved Roads (VMT/day) (VMT/yr)		
Log Truck	5,000	15	43	29.0	5,200	--	365	13.70	13.49	4924.34	--	--
Lumber Truck	1,522	14	40	27.0	6,400	--	365	4.17	5.05	1844.61	--	--
Bark Truck	398	14	43	28.5	4,600	--	365	1.09	0.95	347.00	--	--
Chip Truck	1,859	14	43	28.5	4,000	--	365	5.09	3.86	1408.06	--	--
Shavings Truck	578	16	36	26.0	4,000	--	365	1.58	1.20	437.50	--	--
Sawdust Truck	398	14	43	28.5	4,000	--	365	1.09	0.83	301.72	--	--
Large Forklift	8	29	49	39.2	--	--	365	0.02	18	6,720	--	--
Small Forklift	15	11	19	14.5	--	--	365	0.04	17	6,048	--	--
Bobcat	2	2	3	2.7	--	--	365	0.00	2.3	840	2.3	840

Table B-10. Associated Fugitive Emissions Increases from Road Travel

Source	EUID	Emission Factor ^{1,2} (lb/VMT)			Associated Fugitive Emissions Increases ³					
		PM	PM ₁₀	PM _{2.5}	Filterable PM (lb/hr)	Filterable PM ₁₀ (lb/hr)	Filterable PM _{2.5} (lb/hr)	Filterable PM (tpy)	Filterable PM ₁₀ (tpy)	Filterable PM _{2.5} (tpy)
Unpaved Road Travel	FT01									
Bobcat		0.26	4.98E-02	4.98E-03	2.51E-02	4.77E-03	4.77E-04	1.06E-02	2.00E-03	2.00E-04
Paved Road Travel										
Log Truck		2.87E-02	5.74E-03	1.41E-03	1.61E-02	3.23E-03	7.93E-04	7.07E-02	1.41E-02	3.47E-03
Lumber Truck		2.67E-02	5.34E-03	1.31E-03	5.62E-03	1.12E-03	2.76E-04	2.46E-02	4.93E-03	1.21E-03
Bark Truck		2.82E-02	5.64E-03	1.39E-03	1.12E-03	2.24E-04	5.49E-05	4.90E-03	9.79E-04	2.40E-04
Chip Truck		2.82E-02	5.64E-03	1.39E-03	4.54E-03	9.07E-04	2.23E-04	1.99E-02	3.97E-03	9.75E-04
Shavings Truck		2.57E-02	5.14E-03	1.26E-03	1.28E-03	2.57E-04	6.30E-05	5.62E-03	1.12E-03	2.76E-04
Sawdust Truck		2.82E-02	5.64E-03	1.39E-03	9.72E-04	1.94E-04	4.77E-05	4.26E-03	8.51E-04	2.09E-04
Large Forklift		3.91E-02	7.81E-03	1.92E-03	3.00E-02	5.99E-03	1.47E-03	0.13	2.62E-02	6.44E-03
Small Forklift		1.42E-02	2.83E-03	6.95E-04	9.78E-03	1.96E-03	4.80E-04	4.28E-02	8.57E-03	2.10E-03
Bobcat	2.53E-03	5.05E-04	1.24E-04	2.42E-04	4.84E-05	1.19E-05	1.06E-03	2.12E-04	5.21E-05	
Total Road Emissions					0.09	0.02	0.00	0.32	0.06	0.02

1. Unpaved Roads Emission Factor (lb/VMT) = $[k (s/12)^a \times (W/3)^b] \times (100\% - \% \text{ control efficiency})$, per AP-42 Section 13.2.2, Unpaved Roads (Nov. 2006), Equation 1a, with variables defined as follows:
- PM - k (lb/VMT) = 4.9 Particle size multiplier for PM per AP-42, Table 13.2.2-2
- PM₁₀ - k (lb/VMT) = 1.5 Particle size multiplier for PM₁₀ per AP-42, Table 13.2.2-2
- PM_{2.5} - k (lb/VMT) = 0.15 Particle size multiplier for PM_{2.5} per AP-42, Table 13.2.2-2
- PM - a = 0.7 Empirical constant for PM per AP-42, Table 13.2.2-2
- PM₁₀ and PM_{2.5} - a = 0.9 Empirical constant for PM₁₀ and PM_{2.5} per AP-42, Table 13.2.2-2
- b = 0.45 Empirical constant for industrial roads per AP-42, Table 13.2.2-2
- s (%) = 1.1 Surface silt content based on testing at Georgia-Pacific Warrenton Lumber Mill referenced in application submitted by Georgia-Pacific Wood Products LLC (Talladega Sawmill) to ADEM in September 2017.
- % control efficiency = 70.0 Control applied for reducing speed limit and good work practices
- P = 115 No. days with rainfall greater than 0.01 inch, Per AP-42, Figure 13.2.2-1
2. Paved Roads Emission Factor (lb/VMT) = $[k (sL)^{0.91} \times (W)^{1.02}] \times (100\% - \% \text{ control efficiency})$, per AP-42 Section 13.2.1, Paved Roads (Jan. 2011), Equation 1, with variables defined as follows:
- PM - k (lb/VMT) = 0.011 Particle size multiplier for PM per AP-42, Table 13.2.1-1
- PM₁₀ - k (lb/VMT) = 0.0022 Particle size multiplier for PM₁₀ per AP-42, Table 13.2.1-1
- PM_{2.5} - k (lb/VMT) = 0.00054 Particle size multiplier for PM_{2.5} per AP-42, Table 13.2.1-1
- sL (g/m²) = 0.53 Road surface average silt loading from Georgia-Pacific Wood Products LLC - Warrenton Lumber Facility PSD Air Permit Application No. 237752 submitted to Georgia EPD in April 2018.
- W = Average weight (in tons) of the vehicle traveling the road
- % control efficiency = 85.0 Control applied for reducing speed limit and good work practices
3. Associated emissions increases calculated as appropriate emission factor multiplied by vehicle miles traveled per time period.

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-11. Planer Mill Operating Parameters

Operating Parameter	Value	Unit
Hourly Capacity Increase	13.33	MBF/hr
Annual Capacity Increase ¹	116,800	MBF/yr
Associated BH Flow Increase ²	25,433	acfm
Annual Operation	8,760	hr/yr

1. Annual capacity increase for the planer assumed equivalent to Kiln 4 capacity.

2. Estimated increase using the ratio of the existing-to-future dried lumber production multiplied by the baghouse flow capacity.

Existing Lumber Capacity =	350,400	MBF/yr
Projected Lumber Capacity =	467,200	MBF/yr
Potential Baghouse Flow =	76,300	acfm

Table B-12. Planer Mill Associated Emissions Increases¹

EP ID	Emission Unit	Control Device	Exit Temp (°F)	Exhaust Flow Rate ²		PM ₁₀ Loading Rate ³ (gr/dscf)	PM _{2.5} Loading Rate ³ (gr/dscf)	Total PM ^{4,5}		Total PM ₁₀ ^{4,5}		Total PM _{2.5} ^{4,5}	
				(acfm)	(scfm)			(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PLN1	Planer Mill	Baghouse	68	25,433	25,417	0.0014	0.0005	0.31	1.34	0.31	1.34	0.11	0.48

1. Westervelt operates a Trim Block Hog, but the exhaust is routed to the Planer Mill baghouse. Therefore, emissions from the hogger are included in this table.

2. Exhaust flow rate (acfm) has been ratioed proportionately to the increase in production resulting from the addition of Kiln 4 and Sawmill No. 2. Exhaust flow converted to scfm assuming ambient exhaust temperatures at 1 atm.

3. Guarantees provided by cyclofilter vendor.

4. Associated PM Emissions (lb/hr) = Exhaust Grain Loading Rate (gr./dscf) x Exhaust Air Flow Rate (dscf/min) x (60 min/hr) x (lb/7,000 gr.)

5. Associated PM Emissions (tpy) = Associated Hourly Emissions (lb/hr) x Annual Operation (hr/yr) / 2,000 (lb/ton)

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-13. Debarking & Chipping Operating Parameters

Source	Throughput (tpy)
Debarking ¹	508,080

1. Estimated increase using dried lumber production of Kiln 4 multiplied by log recovery rate.

Kiln 4 Lumber Capacity = 116,800 MBF/yr
Recovery Rate = 4.35 tons of log/MBF

Table B-14. Associated Emissions Increases for Debarking and Chipper

Emission Source	EUID	Annual Hours of Operation	Pollutant	Emission Factor (lb/ton) ¹	Control Efficiency ² (%)	Associated Emission Increases (lb/hr) ³	(tpy) ⁴
Debarking	FD01	8,760	Filterable PM ¹	2.00E-02	70%	0.35	1.52
			Filterable PM ₁₀ ¹	1.10E-02	70%	0.19	0.84
			Filterable PM _{2.5} ⁵	4.60E-05	0%	0.00	0.01
Chipper	FC01	8,760	Filterable PM ¹	2.00E-02	70%	0.35	1.52
			Filterable PM ₁₀ ¹	1.10E-02	70%	0.19	0.84
			Filterable PM _{2.5} ⁵	4.60E-05	0%	0.00	0.01

1. Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. Per the EPA Factor Information Retrieval (WebFIRE) database, updated 9/7/2016 for SCC Code 3-07-008-01, Log Debarking. Factors are consistent with the BACT limits taken in 2019 when the site was originally permitted.

2. A 70% control efficiency was assumed for debarking and chipper as there will be a partial enclosure of the individual building.

3. Associated Emissions (lb/hr) = Associated Annual Emissions (tpy) * 2,000 (lb/ton) / Annual Hours of Operation (hr/yr)

4. Associated Emissions (tpy) = Emission factor (lb/ton) × [1 - Control Efficiency (%)] × Associated Throughput Increase (ton/yr) / 2,000 (lb/ton)

5. Based on information presented at the 2015 NCASI Southern Regional Meeting. The factor for drum debarkers listed is 4.6E-05 lb/ton log processed. No additional control applied in the calculation. Factors are consistent with the BACT limits taken in 2019 when the site was originally permitted.

**Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill**

Table B-15. Sawmill and Debarking Operating Parameters

Emission Source	Existing Capacity (ODT/yr)	Future Capacity ¹ (ODT/yr)	Associated Increase ² (ODT/yr)	Moisture Content (%)
Chip	275,000	366,667	91,667	75
Sawdust	93,830	125,107	31,277	50
Shavings	59,400	79,200	19,800	15
Bark	64,900	86,533	21,633	45

1. Future capacities are derived by applying the anticipated byproduct yield percentage to projected log processing capacity.

2. Associated Increase (ODT/yr) = Future Capacity (ODT/yr) - Existing Capacity (ODT/yr)

Table B-16. Associated Emissions Increases for Material Transfer Sources

Material	EUID	Annual Hours of Operation	Emission Factors ^{1,2} (lb/ton)			No. of Transfer Point	Associated Hourly Emissions Increases ³ (lb/hr)			Associated Annual Emissions Increases ⁴ (tpy)		
			Filterable PM	Filterable PM ₁₀	Filterable PM _{2.5}		Filterable PM	Filterable PM ₁₀	Filterable PM _{2.5}	Filterable PM	Filterable PM ₁₀	Filterable PM _{2.5}
Chip	FMH1	8,760	1.50E-03	7.00E-04	1.00E-04	16	0.25	0.12	0.02	1.10	0.51	0.07
Sawdust		8,760	1.50E-03	7.00E-04	1.00E-04	10	0.05	0.02	3.57E-03	0.23	0.11	0.02
Shavings		8,760	1.50E-03	7.00E-04	1.00E-04	5	0.02	0.01	1.13E-03	0.07	0.03	4.95E-03
Bark		8,760	1.50E-03	7.00E-04	1.00E-04	5	0.02	0.01	1.23E-03	0.08	0.04	0.01
			Total				0.34	0.16	0.02	1.49	0.70	0.10

1. Emission factors per USEPA Region 10. The factors conservatively assume that all material conveyed is dry. All conveyors are covered, mechanical conveyors, except for one drag chain conveyor for bark. Factors are consistent with the BACT limits taken in 2019 when the site was originally permitted.

2. The emission factors are for filterable PM/PM₁₀/PM_{2.5}. Condensable PM is negligible for this process; therefore, Filterable PM/PM₁₀/PM_{2.5} equal Total PM/PM₁₀/PM_{2.5}.

3. Associated Emissions (lb/hr) = Associated Annual Emissions (tpy) × 2,000 lb/ton / Annual Hours of Operation (hr/yr)

4. Associated Emissions (tpy) = Emission Factor (lb/ton) × Associated Throughput Increase (ton/year) × Number of Transfer Points / 2,000 lb/ton

Appendix B - Project Emissions Calculations and NSR Analysis
The Westervelt Company - Thomasville Mill

Table B-17. Project Emissions Increase & NSR Applicability Assessment

Pollutant	PTE of New Units ¹		Associated Units Emissions Increases ^{2,3}		Project Emissions Increase ⁴ (tpy)	PSD Major Modification Thresholds (tpy)	Percent of Threshold (%)	PSD Permitting Triggered? (Yes/No)
	Point Source (tpy)	Fugitive (tpy)	Point Source (tpy)	Fugitive (tpy)				
Filterable PM	1.13	3.52	1.34	4.85	2.46	25	10%	No
Total PM ₁₀	2.75	1.27	1.34	2.44	4.09	15	27%	No
Total PM _{2.5}	2.75	0.39	0.48	0.14	3.23	10	32%	No
NO _x	9.66	--	--	--	9.66	40	24%	No
CO	16.23	--	--	--	16.23	100	16%	No
SO ₂	0.12	--	--	--	0.12	40	0%	No
VOC	233.60	--	--	--	233.60	40	584%	Yes
GHG	23,079.90	--	--	--	23,079.90	75,000	31%	No
Lead	9.66E-05	--	--	--	9.66E-05	0.6	0%	No

1. The new units at the Thomasville Facility will consist of a direct-fired kiln (CDK4), natural gas burner (BRN4), and sawmill (Sawmill No. 2). Both the direct-fired kiln and natural gas burner are considered point sources. The sawmill is a fugitive source of emissions. Although fugitive emissions have been included and documented in this analysis, fugitives are excluded from the NSR applicability assessment with respect to the definition of major modification. Therefore, the applicability assessment evaluates project point-source emissions against the SERs.

2. Westervelt is anticipating an increase in actual throughput through the Planer Mill, Debarker, Chipper, and Material Transfer as a result of this project. The Planer Mill is considered a point source. The Debarker, Chipper, and Material Transfer are all fugitive source of emissions.

3. An increase in road traffic is expected, roadway emissions are considered fugitive and are incorporated in the associated units fugitive emissions.

4. Project emissions increases include point-source emissions only.

APPENDIX C. RBLC DATABASE TABLES

Appendix C - RBLC Database Tables
Westervelt - Thomasville Mill

Table C-1. RBLC Search Results for Continuous Wood Drying Kilns - VOC Assessment

State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Units	Control Method Description	Emission Limit 1 Limit Unit	Emission Limit 2 Limit Unit
AL	4/30/2025	100,000 MBF/yr Continuous Direct-Fired Lumber Dry Kiln (DK-1) with 29.8 MMBtu/hr Wood-Fired Burner (PSD)	Wood	100000	MBF/yr	Proper Operation & Maintenance	4.8 LB/MBF AS WPP1	--
AL	6/8/2017	11.4 MBF/HR CONTINUOUS DIRECT-FIRED LUMBER DRY KILN, 40 MMBTU/HR NATURAL GAS BURNER with 4 MMBTU/HR NATURAL GAS CONDENSATE EVAPORATOR	Natural Gas	11.4	MBF/hr	BACT DETERMINED AS PROPER KILN OPERATION AND MAINTENANCE PRACTICES	4 LB/MBF	--
AL	8/30/2016	THREE CONTINUOUS DIRECT-FIRED LUMBER DRY KILNS, CDK-4/X023A, CDK-5/X023B, CDK-6/X023C	Wood-Sawdust	385	MMBF/YR	OPERATING AND MAINTENANCE PRACTICES	4.7 LB/MBF AS WPP1	--
AL	5/26/2016	115,000 MBF/YR CDK D (ES-006) WITH 35 MMBTU/HR WOOD-FIRED AND 7 MMBTU/HR NG-FIRED BURNERS	Wood-Sawdust	115	MMBF/YR	OPERATING AND MAINTANCE PRACTICES	5.49 LB/MBF AS WPP1 VOC	--
AL	5/26/2016	115,000 MBF/YR CDK E (ES-009) WITH 35 MMBTU/HR WOOD-FIRED AND 7 MMBTU/HR NG-FIRED BURNERS	Wood-Sawdust	115	MMBF/YR	MEASURE LUMBER MOISTURE CONTENT OPERATING AND MAINTENANCE PRACTICES LUMBER MOISTURE CONTENT MEASUREMENT	5.49 LB/MBF AS WPP1 VOC	--
AR	11/4/2024	Continuous Direct Fired Kilns	Natural Gas	45	MMBtu/hr	Proper Kiln Design and Operation	4.09 LB/MBF	--
FL	7/14/2016	Direct-fired continuous lumber drying Kiln No. 5	Sawdust	110000	MBF/YR	Lumber moisture used as proxy for VOC emissions -- product that is over dried likely means more VOC driven off and emitted	3.5 LB/MBF	--
FL	4/11/2017	Direct-Fired Batch Lumber Drying Kiln No. 5	Waste wood	50000	MMBF/YR	Minimization of over-drying	3.5 LB/MBF	--
LA	10/4/2018	GRP0003 Lumber kilns (AK1)		300	MMBF/YR	properly design and operation	4.2 LB/MBF	300 MMBF/YR
LA	10/2/2019	Continuous Lumber Drying Kilns A and B (01-19 and 02-19)	Wood residuals	15.97	MBF/hr	Proper Kiln Design and Good Operating Practices	4.33 LB/MBF	--
LA	4/12/2022	Lumber Drying Kilns (K-1, K-2, K-3, K-4)	Natural Gas	61.6	MBF/hr	Proper maintenance and Operation	3.8 LB/MBF	--
LA	6/27/2023	Continuous Lumber Drying Kiln A, B, and C	Wood Residuals	30	MBF/hr	Good combustion practices, which include proper temperature and process management, drying to appropriate moisture content, and following the vendor recommended kiln maintenance schedule.	4.33 LB/MBF	--
LA	10/31/2022	Lumber Drying Continuous Dry Kilns (EQT0002, EQT0003, EQT0004)	Natural Gas	45	MMbtu/hr (each)	Proper kiln maintenance and operation	4.38 LB/MBF	--
SC	2/6/2018	Lumber Drying Kiln 7	Natural Gas	80	MMBF/YR	Volatile Organic Compounds (VOC) best available control technology for the continuous lumber drying kiln, KLN7, is work practice standards. VOC emissions are based on an emissions factor of 4.2 lb VOC/1000 bd-ft (as terpene + methanol + formaldehyde).	4.2 LB/MBF	--
SC	9/6/2018	Lumber Drying Kiln 7	Sawdust	110	MMBF/YR	Volatile Organic Compounds (VOC) Best Available Control Technology (BACT) for the continuous lumber drying kiln, KLN7, is work practice standards. VOC emissions are based on an emission factor of 5.82 lb VOC/1000 bd-ft (as terpene + methanol + formaldehyde)	5.82 LB/MBF	--
SC	9/24/2020	Kiln K3	Gasified Sawdust/Planner Shavings	58.2	MMBF/YR	Work Practice Standards	5.824 LB/MBF	--
SC	9/24/2020	Kiln K7	Gasified Sawdust/Planner Shavings	80	MMBF/YR	Work Practice Standards	5.824 LB/MBF	--
TX	6/15/2018	Kilns (EPNs CK01 and CK02)		25	MBF/KILN	Proper design and operation	3.38 LB/MBF	--
TX	3/20/2019	Direct-Fired Wood Drying Kiln No. 3	wood	14.88	MBF	proper operation and maintenance of the kiln	4.24 LB/MBF	--
TX	11/26/2019	Lumber Kilns		188000	MBF/KILN	Proper design and operating practices	5.49 LB/MBF	--

APPENDIX D. DETAILED BACT COST CONTROL CALCULATIONS

**Appendix D - Detailed BACT Cost Calculations
Westervelt - Thomasville Mill**

Table D-1. Emission Units Subject to BACT

Unit	Max. Production Capacity
CDK4	116.8 MMBF/yr

Table D-2. Potential Control Scenario Summary

Emission Unit	Pollutant	Control Basis	Current Potential Emissions ¹	Capture Efficiency ²	Total Controlled Emissions Through the Stacks ³
CDK4	VOC	RTO	4.00 lb/MBF	80.0%	0.064 lb/MBF

1. The VOC emission factor is consistent with BACT limits taken at Westervelt Thomasville and is a State of Georgia recommended emission factor, and has been approved by EPA Region 4.

2. Per meeting with ADEM, Westervelt, and Trinity Consultants on May 29, 2018, ADEM recommended an 80/20 split for emissions from vents versus fugitive. This is also consistent with applications submitted in AL (e.g., Canfor).

3. Total Controlled Emissions Through Stack (lb/MBF) = Current Potential Emissions (lb/MBF) * Capture Efficiency * (1- Equivalent Reduction, 98%). Reduction efficiency based on EPA Air Pollution Control Cost Manual, Section 3.2, Chapter 2 Incinerators and Oxidizers (November 2017).

Table D-3. Cost Summary

Emission Unit	Pollutant	Technology	Control Efficiency ¹ (%)	Baseline Emissions (tpy)	Capture Efficiency ² (%)	Pollutant Removed (tpy)	Operating Cost (\$/ton removed)
CDK4	VOC	RTO	98%	233.6	80.0%	183.1	\$ 18,126

1. Control efficiency based on EPA Air Pollution Control Cost Manual, Section 3.2, Chapter 2 Incinerators and Oxidizers (November 2017).

2. Per meeting with ADEM, Westervelt, and Trinity Consultants on May 29, 2018, ADEM recommended an 80/20 split for emissions from vents versus fugitive. This is also consistent with applications submitted in AL (e.g., Canfor).

**Appendix D - Detailed BACT Cost Calculations
Westervelt - Thomasville Mill**

Table D-4. Cost Analysis Supporting Information for RTO

Parameter	CDK4	Units	Note(s)
Maximum Production Capacity	116.8	MMBF/yr	
Uncontrolled Stack Inlet Emissions (VOC)	186.9	tpy	1
Removal Efficiency	98	%	2
VOC Removed	183.1	tpy	3
Control Equip. Outlet Temperature	1,450	° F	4
Airflow	32,000	acfm	5
Airflow Capture Efficiency	50	%	6
Exhaust Temperature	215	° F	5
Air Moisture Content	13.6	%	7
Exhaust Gas Flow Rate	35,667	scfm	8
Specific Heat of Dry Air	6.85	Btu/lb-mole·°F	9
Specific Heat of Water	17.99	Btu/lb-mole·°F	9
Pressure Drop	19	inches of H ₂ O	10
Fan Motor Efficiency	90	%	11
Fan Electricity Usage	39.5	kW-hr	12
Energy Required From Fuel	57.48	MMBtu/hr	13
Natural Gas Heat Capacity	1,020	MMBtu/MMscf	14
Operating Labor Cost	26.7	\$/hr	15
Maintenance Labor Cost	27.3	\$/hr	15
Electricity Cost	0.07	\$/kW-hr	15
Natural Gas Cost	3.8	\$/1,000 scf	15
RTO Equipment Life	20	years	16
Interest Rate	4.25	%	16
2002 \$ (Average)	179.9	n/a	17
2015 \$ (Average)	237.0	n/a	17
2026 \$ (March)	330.2	n/a	17

- Potential inlet emissions based on maximum capacity, potential emissions, and capture efficiency.
- Per OAQPS Manual, Section 3.2, Chapter 2, page 2-11 (November 2017).
- VOC Removed (tpy) = Removal Efficiency (%) × Uncontrolled Stack Inlet Emissions (tpy).
- Based on average operating temperature (1,400 ° F - 1,500 ° F) in EPA Fact Sheet: <http://www.epa.gov/ttn/catc/dir1/fregen.pdf>
- Each kiln will have two stacks. Each stack has flow rate of 16,000 acfm.
- Engineering estimate based on North Carolina Department of Environment and Natural Resources Air Permit Review for Weyerhaeuser's Plymouth facility's continuous kiln construction application, which estimated a 50% capture efficiency for emissions from a continuous lumber kiln.
- Values based on stack test performed on Bibler Brothers Lumber Company continuous lumber kiln in Russellville, AR on March 12, 2009.
- Calculated based on fuel F-factor of 11,936 Btu/CF, and accounting for 18.86 percent oxygen based on information from Bibler Brothers Lumber Company March 12, 2009 stack test result and multiplied by the capture efficiency of 50%.
- Standard value.
- Based on example problem in OAQPS Manual, Section 3.2, Chapter 2, page 2-50 (November 2017).
- Per OAQPS Manual, Section 3.2, Chapter 2, page 2-49, fan efficiencies vary from 40 to 80 percent (Green, 1999) while motor efficiencies are usually 90 percent. 90% is conservatively chosen. (November 2017).
- Per OAQPS Manual, Section 3.2, Chapter 2, Section 2.5.2.1 Page 2-49 (November 2017).
- Estimated as Exhaust Gas Flow Rate, scfm * 60, min/hr * Density (Air), 0.0026 lb-mole/scf * Specific Heat (Btu/lb-mole·°F) * (Outlet Temp - Exhaust Temp, °F) / 10⁶, based on the sensible heat integral, $Q = m C_p (T_1 - T_2)$, where Q is the heat required, m is the mass flow rate of the air, C_p is the specific heat of air, T₁ is the outlet temperature of the RTO, and T₂ is the exhaust temperature from the equipment. Also incorporates energy required to heat water vapor.
- Average natural gas heating value per AP-42 Section 1.4 *Natural Gas Combustion* (July 1998).
- Based on OAQPS, Section 2, Chapter 3, page 2-52 Table 2.12 (November 2017). Cost is expressed in 2015 value.
- Based on example problem in OAQPS Manual, Section 3.2, Chapter 2, page 2-52 (November 2017).
- Values based on U.S. Historical Consumer Price Index: https://www.bls.gov/regions/mid-atlantic/data/consumerpriceindexhistorical_us_table.htm

**Appendix D - Detailed BACT Cost Calculations
Westervelt - Thomasville Mill**

Table D-5. Capital Cost Analysis for RTO for VOC Control

Capital Cost	CDK4	OAQPS Notation¹
<i>Purchased Equipment Costs</i>		
Total Equipment Cost ²	2,291,357	A
Instrumentation	229,136	$0.10 \times A$
Sales Tax	68,741	$0.03 \times A$
Freight	114,568	$0.05 \times A$
<i>Total Purchased Equipment Costs</i>	<i>2,703,801</i>	<i>$B = 1.18 \times A$</i>
<i>Direct Installation Costs</i>		
Foundations and Supports	216,304	$0.08 \times B$
Handling and Erection	378,532	$0.14 \times B$
Electrical	108,152	$0.04 \times B$
Piping	54,076	$0.02 \times B$
Insulation	27,038	$0.01 \times B$
Painting	27,038	$0.01 \times B$
Site Preparation & Buildings	-	-
Additional duct work ³	-	-
<i>Total Direct Installation Costs</i>	<i>811,140</i>	<i>$C = 0.30 \times B$</i>
<i>Total Direct Costs</i>	<i>3,514,942</i>	<i>$DC = B+C$</i>
<i>Indirect Installation Costs</i>		
Engineering	270,380	$0.10 \times B$
Construction and Field Expense	135,190	$0.05 \times B$
Contractor Fees	270,380	$0.10 \times B$
Start-up	54,076	$0.02 \times B$
Performance Test	27,038	$0.01 \times B$
<i>Total Indirect Installation Costs</i>	<i>757,064</i>	<i>$IC = 0.31 \times B$</i>
Process Contingencies	427,201	$C = 0.1(DC+IC)$
Total Capital Investment (\$)	4,699,207	TCI = DC+IC+C

1. U.S. EPA OAQPS Manual, Section 3.2, Chapter 2, pages 2-47 to 2-49, Tables 2.10 and 2.11 (November 2017).

2. Capital Costs are based the EPA CATC Regenerative Incinerator Fact Sheet (EPA-452/F-03-021) average \$/scfm capital cost, scaled from 2002 \$ to 2026 \$.

Minimum regenerative thermal oxidizer cost	35	2002 dollars/scfm
Conversion from 2002 to March 2026 dollars	1.84	March 2026 dollars per 2002 dollar
Minimum regenerative incinerator cost	64.24	March 2026 dollars/scfm

3. Additional duct work will be required to round two stacks on each kiln into on single RTO. However, for conservatism, it is assumed that no cost for additional duct work.

**Appendix D - Detailed BACT Cost Calculations
Westervelt - Thomasville Mill**

Table D-6. Operating Cost Analysis for RTO for VOC control

Operating Cost	CDK4	OAQPS Notation ¹
<i>Direct Annual Costs</i>		
Operating Labor (0.5 hr, per 8-hr shift) ³	20,366	E
Supervisory Labor	3,055	$F = 0.15 \times E$
Maintenance Labor (0.5 hr, per 8-hr shift)	20,786	G
Maintenance Materials	20,786	$H = G$
Electricity ³	33,232	I
Natural Gas ³	2,641,104	J
<i>Total Direct Annual Costs</i>	<i>2,739,329</i>	$DAC = E + F + G + H + I + J$
<i>Indirect Annual Costs</i>		
Overhead	38,996	$K = 0.60 \times (E + F + G + H)$
Administrative Charges	93,984	$L = 0.02 \times TCI$
Property Tax	46,992	$M = 0.01 \times TCI$
Insurance	46,992	$N = 0.01 \times TCI$
Capital Recovery ²	353,380	$CFR \times TCI$
<i>Total Indirect Annual Costs</i>	<i>580,344</i>	$IDAC = K + L + M + N + O$
Total Annual Cost (\$)	3,319,673	$TAC = DAC + IDAC$
Pollutant Removed (tpy)	183.1	
Cost per ton of Pollutant Removed (\$)	18,126	$\$/ton = TAC / Pollutant\ Removed$

1. U.S. EPA OAQPS Manual, Section 3.2, Chapter 2, page 2-52, Tables 2.12 (November 2017).

2. The capital recovery cost factor, CRF, is a function of the equipment life (typically, 20 years) and the opportunity cost of the capital (i.e., interest rate). For a 20-year equipment life and a 4.25% interest rate, $CRF = 0.0752$.

3. Direct annual cost based on 2015 dollar.

Conversion from 2015 to March 2026 dollars

1.39

March 2026 dollars per 2015 dollar

APPENDIX E. ADEM APPLICATION FORMS

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION FORM 103

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Facility Number

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CONSTRUCTION/OPERATING PERMIT APPLICATION FACILITY IDENTIFICATION FORM

1. Name of Facility or Organization: Westervelt Lumber Thomasville, LLC

Plant Name Thomasville Mill

Facility Physical Location Address

Street & Number: 700 North Clarke Industrial Road

City: Thomasville

County: Clarke

Zip: 36784

Facility Mailing Address (If different from above)

Mailing Contact: Brett Sprayberry

Address or PO Box: 1400 Jack Warner Pkwy NE

City: Tuscaloosa

State: AL

Zip: 35404

Facility Billing Address

2. Billing Contact: Brett Sprayberry

Street & Number: 1400 Jack Warner Pkwy NE

City: Tuscaloosa

State: AL

Zip: 35404

Telephone Number: 205-562-5485

E-mail Address: bsprayberry@westervelt.com

Responsible Official's Business Mailing Address

3. Responsible Official: Brett Sprayberry

Title: Engineering Manager

Street & Number: 1400 Jack Warner Pkwy NE

City: Tuscaloosa

State: AL

Zip: 35404

Telephone Number: 205-562-5485

E-mail Address: bsprayberry@westervelt.com

RO under delegated authority? ☒ Yes ☐ No (if "yes", provide appropriate documentation)

Plant Contact Information

4. Plant Contact: Brett Sprayberry

Title: Engineering Manager

Telephone Number: 205-562-5485

E-mail Address: bsprayberry@westervelt.com

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Location Coordinates:				
UTM:	430.163	E-W	3,523.224	N-S
Latitude/Longitude:	31.84257	LAT	-87.73810	LONG

6. Permit application is being made to obtain the following type permit:

- ☒ Air permit
☐ Major source operating permit
☐ Synthetic minor source operating permit

7. Permit application is made for:

- ☐ Existing source (initial application)
☐ Existing source (permit renewal)
☒ Modification
☐ New source (to be constructed)
☐ Change of ownership
☐ Other (specify) _____

Date construction/modification to begin: Sep-26 to be completed: TBD

8. Indicate the number of each of the following forms attached and made a part of this application (if a form does not apply to your operation, indicate "N/A" in the space provided). Multiple forms may be used as required.

N/A ADEM 104 INDIRECT HEATING EQUIPMENT
5 ADEM 105 MANUFACTURING OR PROCESSING OPERATION
N/A ADEM 106 REFUSE HANDLING, DISPOSAL, AND INCINERATION
N/A ADEM 107 STATIONARY INTERNAL COMBUSTION ENGINES
N/A ADEM 108 LOADING, STORAGE & DISPENSING LIQUID & GASEOUS ORGANIC COMPOUNDS
N/A ADEM 109 VOLATILE ORGANIC COMPOUND SURFACE COATING EMISSION SOURCES
1 ADEM 110 AIR POLLUTION CONTROL DEVICE
N/A ADEM 112 SOLVENT METAL CLEANING
N/A ADEM 437 COMPLIANCE SCHEDULE
N/A ADEM 438 CONTINUOUS EMISSION MONITORS

9. General nature of business: (describe and list appropriate standard industrial classification (SIC) and North American Industry Classification System (NAICS) (www.naics.com) code(s)):

SIC Code 2421 - Sawmill

NAICS Code 321113 - Sawmills

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

10. Summarize each pollutant emitted and the potential facility-wide annual emission rate for the pollutant. Indicate those pollutants for which the facility is major.

Regulated pollutant	Potential Emissions* (tons/year)	Major source? yes/no
Filterable PM	37.9	☐ Yes ☒ No
Total PM10	28.3	☐ Yes ☒ No
Total PM2.5	14.1	☐ Yes ☒ No
NOX	39.1	☐ Yes ☒ No
CO	65.4	☐ Yes ☒ No
VOC	934.6	☒ Yes ☐ No
SO2	0.46	☐ Yes ☒ No
Lead	3.86E-04	☐ Yes ☒ No
CO2e	92,408	☐ Yes ☒ No
Total HAP	62.6	☒ Yes ☐ No
Max Individual HAP	37.6	☒ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No

*Potential emissions are either the maximum allowed by the regulations or by permit, or, if there is no regulatory limit, it is the emissions that occur from continuous operation at maximum capacity.

11. Provide a scaled map which contains clearly marked emission points, building locations, property boundaries, and directions (North, etc.). Labeling of emission points should be consistent across all forms.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Continuous Kiln No. 4 and Sawmill No. 2

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
CDK4	VOC	Work Practice Standards	PCWP MACT	Recordkeeping	☒	☐
	HAP	Work Practice Standards	PCWP MACT	Recordkeeping	☒	☐
	VE	20% Opacity	ADEM Admin Code	Visual Observations / Records / Reports	☒	☐
	VOC	4.0 lb/MBF	PSD	Good Operating Practices	☒	☐
	PM	21.0 lb/hr	Adem Admin Code	Process Weight Rule Equation	☒	☐
FS02	VE	20% Opacity	ADEM Admin Code	Visual Observations / Records / Reports	☒	☐
	Fugitive	Work Practice Standards	ADEM Admin Code	Visual Observations / Records / Reports	☒	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐

¹ PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

² Attach compliance plan

³ Attach compliance schedule (ADEM Form-437)

⁴ Fugitive emissions must be included as separate entries

Westervelt - Thomasville Mill

Appendix E - ADEM Application Forms

13. For those applying for a major source operating permit, list all insignificant activities and the basis for listing them as such (i.e., less than the insignificant activity thresholds or on the list of insignificant activities). Attach any documentation needed, such as calculations. No unit subject to an NSPS, NESHAP or MACT standard can be listed as insignificant.

[illegible]

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

14. List and explain any facility-wide exemptions from applicable requirements the facility is claiming:

- a. N/A
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____
- i. _____

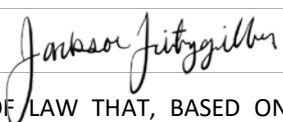
15. List below other attachments that are a part of this application(all supporting engineering calculations must be appended):

- a. Application Narrative
- b. Appendix A - Area Map and Process Flow Diagram
- c. Appendix B - Detailed Emissions Calculations
- d. Appendix C - RBLC Database Tables
- e. Appendix D - Detailed BACT Cost Control Calculations
- f. Appendix E - ADEM Application Forms
- g. Appendix F - Ozone MERPS Assessment and Additional Impact Analysis
- h. _____
- i. _____

Name of person preparing application: Jackson Fitzgibbon

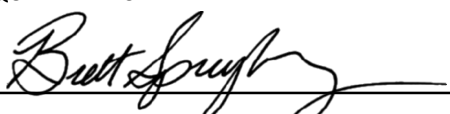
Company of preparer: Trinity Consultants

Phone 205-973-0661 Email: jackson.fitzgibbon@trinityconsultants.com

Signature:  Date: 5/4/2026

I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND

I ALSO CERTIFY THAT THE SOURCE WILL CONTINUE TO COMPLY WITH APPLICABLE REQUIREMENTS FOR WHICH IT IS IN COMPLIANCE, AND THAT THE SOURCE WILL, IN A TIMELY MANNER, MEET ALL APPLICABLE REQUIREMENTS THAT WILL BECOME EFFECTIVE DURING THE PERMIT TERM AND SUBMIT A DETAILED SCHEDULE, IF NEEDED FOR MEETING THE REQUIREMENTS.

	<u>Engineering Manager</u>	<u>5/4/2026</u>
SIGNATURE OF RESPONSIBLE OFFICIAL	TITLE	DATE

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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1. Name of facility or organization: Westervelt Lumber Thomasville, LLC - Thomasville Mill
2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: _____

Continuous direct-fired lumber Kiln No. 4 with production capacity of 116,800 MBF/yr with one natural gas direct-fired burner (45 MMBtu/hr).

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Lumber Kiln

Source Classification Code(s): 30700611

Equipment manufacturer's information

Make: Deltech Model: 220

Rated process capacity (manufacturer's or designer's guaranteed maximum): 116.8 MMBF/yr

Manufactured date: N/A

Proposed installation date: Jan-27

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any): N/A

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Green Lumber	13.33 MBF/hr	13.33 MBF/hr	116,800 MBF/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): 45 MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas	1,020	Btu/ft ³	N/A	N/A	N/A	N/A
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Dried Wood	116,800	MBF/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions: BACT for Kiln 4 has been identified as proper maintenance and operating practices. Please see section 5 and 6 of application narrative.

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

Emission limits requested for VOC as follows:

VOC = 4.0 lb/MBF

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached)

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (feet)	GEP Stack Height (feet)	Base Elevation (feet)	Inside Diameter for Round Opening (feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp (°F)
			E-W (km)	N-S (km)	LAT	LONG								
CDK4_S1C		☐	TBD	TBD	TBD	TBD	36		TBD	2.67		59.68	20,000	145
CDK4_S2C		☐	TBD	TBD	TBD	TBD	36		TBD	2.67		59.68	20,000	145
		☐												
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensable. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
CDK4 (Kiln 4)	☐	Filterable PM	0.17	0.76			EF from other site kilns	21.0
CDK4 (Kiln 4)	☐	Condensable PM	0.12	0.53			EF from other site kilns	
CDK4 (Kiln 4)	☐	Total PM10	0.29	1.28			EF from other site kilns	
CDK4 (Kiln 4)	☐	Total PM2.5	0.29	1.28			EF from other site kilns	
CDK4 (Kiln 4)	☐	VOC	53.3	233.6			Requested BACT Limit	4.0 lb/MBF (BACT)
CDK4 (Kiln 4)	☐	HAP	3.49	15.31			Approved kiln factor by EPD and EPA Region 4.	
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13. On a separate sheet, provide a flow diagram to:
- (1) Illustrate input of raw materials,
 - (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
 - (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

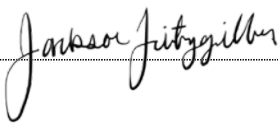
☐ Yes ☒ No

List storage piles or other facility (if any):

Type of Material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Jackson Fitzgibbon

Company of preparer Trinity Consultants

Signature:  Date: 5/4/2026

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Westervelt Lumber Thomasville, LLC - Thomasville Mill
2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: _____

Sawmill converts logs into dimensional lumber through sawing, grading, and trimming.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Sawmill No. 2

Source Classification Code(s): 30700802; 30700804

Equipment manufacturer's information

Make: Custom Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 262,800 MBF/yr

Manufactured date: TBD

Proposed installation date: Sep-26

Original installation date (if existing): N/A

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any): _____

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Logs	61.3	130.5	1,143,180

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Sawdust	70,373	ton/yr
Green Lumber	262,800	MBF/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

N/A

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached)

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (feet)	GEP Stack Height (feet)	Base Elevation (feet)	Inside Diameter for Round Opening (feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp (°F)
			E-W (km)	N-S (km)	LAT	LONG								
FSO2	Fugitives	☐	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
FS02	☒	Filterable PM	8.0	35.2	0.80	3.52	EPA WebFIRE Database	
FS02	☒	Filterable PM10	2.9	12.7	0.29	1.27	EPA WebFIRE Database	
FS02	☒	Filterable PM2.5	0.9	3.87	0.09	0.39	EF from Sawmill No. 1	
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13. On a separate sheet, provide a flow diagram to:
- (1) Illustrate input of raw materials,
 - (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
 - (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of Material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application:

Jackson Fitzgibbon

Company of preparer

Trinity Consultants

Signature:



Date:

5/4/2026

ADEM

Three tens rods minus one ten rod equals two tens rods.

Page 1 of 5

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Logs	464,000	464,000	2,032,320

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Bark	86,533	ODT/yr
Chip	366,667	ODT/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

Existing limits are separately for each unit in the process (i.e., chipping, FC01 and debarking, FD01) and are as follows:

PM = 0.02 lb/ ton, PM₁₀ = 0.011 lb/ton, PM_{2.5} = 0.000046 lb/ton

Westervelt is not requesting any changes to these existing limits.

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached)

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (feet)	GEP Stack Height (feet)	Base Elevation (feet)	Inside Diameter for Round Opening (feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp (°F)
			E-W (km)	N-S (km)	LAT	LONG								
FD01	Fugitive	☐	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FC01	Fugitive	☐	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensable. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
FD01	☒	Filterable PM	4.64	20.3	1.39	6.10	SMS Limit	0.02 lb/ton SMS
FD01	☒	Filterable PM10	2.55	11.2	0.77	3.35	BACT Limit	0.011 lb/ton BACT
FD01	☒	Filterable PM2.5	0.01	0.05	N/A	N/A	BACT Limit	0.000046 lb/tonBACT
FC01	☒	Filterable PM	4.64	20.3	1.39	6.10	SMS Limit	0.02 lb/ton SMS
FC01	☒	Filterable PM10	2.55	11.2	0.77	3.35	BACT Limit	0.011 lb/ton BACT
FC01	☒	Filterable PM2.5	0.01	0.05	N/A	N/A	BACT Limit	0.000046 lb/tonBACT
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13. On a separate sheet, provide a flow diagram to:
- (1) Illustrate input of raw materials,
 - (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
 - (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of Material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Jackson Fitzgibbon

Company of preparer Trinity Consultants

Signature:  Date: 5/4/2026

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Westervelt Lumber Thomasville, LLC - Thomasville Mill
2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: _____

Material transfer includes the transfer and loading of chips, bark, shavings, and sawdust.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Material Transfer

Source Classification Code(s): 30704005

Equipment manufacturer's information

Make: Various Model: Various

Rated process capacity (manufacturer's or designer's guaranteed maximum): Varies by material see section 5

Manufactured date: 2021

Proposed installation date: N/A

Original installation date (if existing): 2021

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any): N/A

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Chip	83,714	83,714	366,667
Sawdust	28,563	28,563	125,107
Shavings	18,082	18,082	79,200
Bark	19,756	19,756	86,533

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Chip	366,667	ODT/yr
Sawdust	125,107	ODT/yr
Shavings	79,200	ODT/yr
Bark	86,533	ODT/yr

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

Existing limits are as follows:

PM = 0.0015 lb/ ton, PM₁₀ = 0.0007 lb/ton, PM_{2.5} = 0.0001 lb/ton

Westervelt is not requesting any changes to these existing limits.

10. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (if "yes", ADEM Form 110 must be completed and attached)

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (feet)	GEP Stack Height (feet)	Base Elevation (feet)	Inside Diameter for Round Opening (feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp (°F)
			E-W (km)	N-S (km)	LAT	LONG								
FMT01	Fugitive	☐	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.
 ** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensible. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
FMT01	☒	Filterable PM	1.36	5.96			SMS Limit	0.0015 lb/ton SMS
FMT01	☒	Filterable PM10	0.63	2.78			BACT Limit	0.0007 lb/ton BACT
FMT01	☒	Filterable PM2.5	0.09	0.40			BACT Limit	0.0001 lb/ton BACT
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13. On a separate sheet, provide a flow diagram to:
- (1) Illustrate input of raw materials,
 - (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
 - (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of Material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

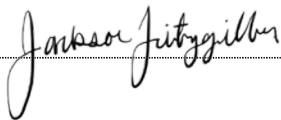
Name of person preparing application:

Jackson Fitzgibbon

Company of preparer

Trinity Consultants

Signature:



Date:

5/4/2026

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

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Do not write in this space

1. Name of facility or organization: Westervelt Lumber Thomasville, LLC - Thomasville Mill
2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number: _____

After Kiln drying and cooling, lumber is further processed in the planer mill. Rough surface lumber is mechanically smoothed into finished products and then graded, trimmed, and stacked in the planer mill.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Planer Mill

Source Classification Code(s): 30700710

Equipment manufacturer's information

Make: Custom Model: Custom

Rated process capacity (manufacturer's or designer's guaranteed maximum): 467,200 MBF/yr

Manufactured date: 2021

Proposed installation date: N/A

Original installation date (if existing): 2021

Reconstruction/Modification date (if applicable): N/A

4. Normal schedule of operation:

Hours per day: 24 Days per week: 7 Weeks per year: 52

Peak production season (if any): N/A

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Dried Lumber	53.33 MBF/hr	53.33 MBF/hr	467,200 MBF/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Finished Lumber	467,200	MBF/yr
Planer Shavings	79,200	(ODT/yr)

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

Existing limits are as follows:

PM = 0.92 lb/ ton, PM₁₀ = 0.92 lb/ton, PM_{2.5} = 0.33 lb/ton

Westervelt is not requesting any changes to these existing limits.

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached)

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

11. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

Emission Point	Emission Point Type	Merged Stack**	Stack											
			UTM Coordinates		Geographic Coordinates		Height Above Grade (feet)	GEP Stack Height (feet)	Base Elevation (feet)	Inside Diameter for Round Opening (feet)	Inside Area if NOT Round Opening (sq. feet)	Gas Exit Velocity (Feet/sec)	Volume of Gas Discharged (ACFM)	Exit Gas Temp (°F)
			E-W (km)	N-S (km)	LAT	LONG								
PLN1	Vertical	☐	430.392	3522.949	31.840	-87.736	60		316.8	5.22		59.42	76,300	68
		☐												
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* Std temperature is 68°F - Std pressure is 29.92" in Hg.

** If this is a merged stack with multiple units using this release point, please provide additional information including which units and any different operating scenarios.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations. Attach calculation worksheets. Fugitive emissions must be included (enter on separate line and check box for Fugitive). Particulate emissions should be speciated to include PM10-filterable, PM2.5-filterable, and PM-condensable. Speciated HAP emissions should also be provided. Attach additional page(s) as necessary.

EMISSION POINT	FUGITIVE Check if fugitive	POLLUTANT	UNCONTROLLED POTENTIAL EMISSIONS		CONTROLLED POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT Provide in lb/hr or specify alternative UOM
			lb/hr	ton/yr	lb/hr	ton/yr		
PLN1	☐	Filterable PM	15.25	66.80	0.92	4.01	SMS Limit	0.92 lb/hr SMS
PLN1	☐	Total PM ₁₀	15.25	66.80	0.92	4.01	BACT Limit	0.92 lb/hr BACT
PLN1	☐	Total PM _{2.5}	5.45	23.86	0.33	1.43	BACT Limit	0.33 lb/hr BACT
	☐							
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13. On a separate sheet, provide a flow diagram to:
- (1) Illustrate input of raw materials,
 - (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
 - (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

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14. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(if "no", a compliance schedule, ADEM Form 437 must be completed and attached.)

15. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

16. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of Material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

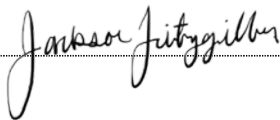
Name of person preparing application:

Jackson Fitzgibbon

Company of preparer

Trinity Consultants

Signature:



Date:

5/4/2026



PERMIT APPLICATION FOR AIR POLLUTION CONTROL DEVICE
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AIR DIVISION

			-					-				
--	--	--	---	--	--	--	--	---	--	--	--	--

Do not write in this space

1. Name of facility or organization Westervelt Lumber Thomasville, LLC - Thomasville Mill

2. Type of pollution control device: (if more than one, check each; however, separate forms are to be submitted for each specific device.)

- | | |
|---|---|
| ☐ Settling chamber | ☐ Electrostatic precipitator |
| ☐ Afterburner | ☒ Baghouse |
| ☐ Cyclone | ☐ Multiclone |
| ☐ Absorber | ☐ Adsorber |
| ☐ Condenser | ☐ Wet Suppression |
| ☐ Thermal Oxidizer | |
| ☐ Wet scrubber (kind): | |
| ☐ Other (describe): | |

3. Control device manufacturer's information:

Name of manufacturer RODRIGUE METAL LTEE - Div. Rodair Model No. Cyclofilter CF-12.5

1. Emission source(s) to which device is installed or is to be installed:

Planer Mill (PLN1)

2. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	Filterable PM	Total PM ₁₀	Total PM _{2.5}
Mass emission Rate (#/hr)			
Uncontrolled.....	15.25	15.25	5.45
Designed.....	0.92	0.92	0.33
Manufacturer's guaranteed.....	0.92	0.92	0.33
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	0.92 lb/hr SMS	0.92 lb/hr BACT	0.33 lb/hr BACT
Manufacturer's guaranteed.....	N/A	N/A	N/A
Removal efficiency (%)			
Designed.....	94%	94%	94%
Manufacturer's guaranteed.....	94%	94%	94%

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68°F, 29.92" hg)	76,252		76,252
(ACFM, existing conditions)	76,300		76,300
Temperature (°F)	68		68
Velocity (ft/sec)	59.42		59.42
Percent moisture			

Pressure drop across device: 0.2-6.0 (inches H₂O)

7. Stack dimensions:

Stack No. & Description: Planer Mill (PLN1) Stack Type: Vertical

Stack UTM Coordinate (E-W) <u>430.3917</u> (km)	Stack UTM Coordinate (N-S) <u>3522.949</u> (km)
Latitude _____ (LAT)	Longitude _____ (LONG)
Height above grade <u>60</u> (ft)	Gas temperature at exit <u>68</u> (°F)
Inside diameter at exit (round) <u>5.22</u> (ft)	Gas velocity <u>59.4</u> (ft/Sec)
Inside area at exit (not round) _____ (ft ²)	Volume of gas discharged <u>76,300</u> (ACFM)
Base Elevation <u>316.8</u> (ft)	GEP Stack Height _____ (ft)

Are sampling ports available? (If "yes", describe. Draw on separate sheet if necessary) ☒ Yes ☐ No :

Is this a merged stack (do multiple units use this release point)? ☐ Yes ☒ No

If yes, provide units:

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

9. Enclosed are:

- | | |
|--|--|
| ☐ Blueprints | ☐ Particle size distribution report |
| ☐ Manufacturer's literature | ☐ Size efficiency- curves |
| ☐ Emissions test of existing installation | ☐ Fan curves |
| ☐ Other _____ | |

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

Visible emissions checks, pressure drop monitoring, annual cleaning and inspections.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

12. By-pass (if any) is to be used and when:

N/A

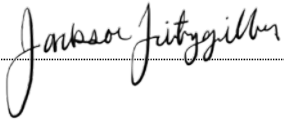
13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume	N/A			
Composition				
Is the waste hazardous?				
Method of disposal				
Final destination				

If collected air pollutants are recycled, describe:

Name of person preparing application: Jackson Fitzgibbon

Company of preparer Trinity Consultants

Signature:  Date: 5/4/2026

APPENDIX F. OZONE MERPS ASSESSMENT AND ADDITIONAL IMPACT ANALYSIS

APPENDIX F. OZONE MERPS ASSESSMENT

A source subject to Prevention of Significant Deterioration (PSD) is required to conduct dispersion modeling in order to determine an operation's impact on air quality. For pollutants emitted in excess of certain thresholds, preliminary dispersion modeling is used to determine if ground-level concentrations will exceed significant impact levels (SILs). If SILs are not exceeded, the modeling demonstration is over. If the SILs are exceeded for any pollutant, a refined modeling analysis is required. In order to avoid a complex photochemical modeling process, the EPA performed photochemical model runs with an array of hypothetical sources in locations across the continental U.S., resulting in MERP precursor emission rates (in tons per year (tpy)) that would result in concentrations equal to PSD SILs. The MERPs guidance provides a framework for calculating concentrations of secondarily formed ozone (O_3), the primary pollutant of concern in this report, that can be used to simplify and streamline the PSD and air quality analysis portion of air permit applications.

Westervelt (Thomasville Mill)'s proposed project is subject to PSD permitting for volatile organic compounds (VOC) as a precursor to O_3 . For this reason, US EPA's Modeled Emission Rates for Precursors (MERPs) was utilized to conduct an ambient air quality analysis for NSLC – a source subject to PSD permitting for VOC. The following analysis demonstrates project emissions will not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) or PSD increments.

To properly conduct the analysis, EPA recommends a two-tiered approach for addressing single source impacts on O_3 . Tier 1 involves the use of appropriate and technically credible relationships between emissions and ambient impacts developed from the modeling studies determined sufficient for evaluating project impacts. Tier 2 involves chemical transport modeling. Tier 1 sufficiently demonstrates no negative impact to the air quality will result because of this project.

Following the steps outlined in US EPA's *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program* dated April 30, 2019, and the supplemental April 30, 2024 memo (Guidance), the following section documents the Thomasville Mill satisfies the compliance demonstration requirements for O_3 under the PSD program. The steps required by the EPA involve:

- ▶ Step 1 – Identify representative hypothetical source, most representative of the facility within the selected Climate Zone.
- ▶ Step 2 – Acquire source characteristics and associated source impact modeling results. Screen the closest hypothetical sources to the project facility.
- ▶ Step 3 - Apply source characteristics and photochemical modeling results from Step 2 to the MERP equation with the appropriate SIL value to assess the project source impacts.

Following the above steps, the contribution of VOCs and nitrogen oxides (NO_x) – the applicable precursors to O_3 involved in this Thomasville Mill project – have been evaluated.

The Thomasville Mill project proposes an increase in emissions of 9.66 tpy and 233.6 tpy of NO_x and VOCs, respectively. Being located just south of Thomasville, AL, there are no unusual circumstances regarding complex terrain, proximity to very large sources of NO_x or VOC, or meteorology.

As EPA recommends NO_x and VOC precursor impacts on 8-hr daily maximum O₃ be considered concurrently to determine if the project source's air quality impact would exceed the O₃ SIL, the project emissions increase is evaluated, and the concentration based impact of the hypothetical source (in ppb) is scaled by the ratio of the project emissions increase (for both NO_x and VOC) to the hypothetical source emissions of NO_x and VOC, and multiplied by the hypothetical source modeled concentration to evaluate an estimated project based impact. If the derived concentration value is less than 1 ppb, it will be less than the O₃ EPA SIL value from modeling guidance.

Based on data evaluated and downloaded from the EPA Qlik website (<https://www.epa.gov/scram/merps-view-qlik>), the following table was created for the hypothetical source of interest (Autauga County), which is a comparable source based on relevant characteristics and setting. The data from EPA Qlik website is represented in Table 1.

Table 1. Hypothetical Precursor, Pollutant, State, County, Emissions, Stack Height, MERP, and Climate Zone Information (Excerpt from EPA's SCRAM website)

Precursor	Pollutant	State	County	Emission (tpy)	Stack Height (m)	Max Concentration (ppb)	Climate Zone
VOC	O ₃	AL	Autauga	500	10	2.01172	Southeast
NO _x	O ₃	AL	Autauga	500	10	0.064137	Southeast

The project stacks are 36 feet (10.97 meters), indicating a stack height of 10 meters is more appropriate than 90 meters. Project emissions are 9.66 tpy NO_x and 233.6 tpy VOC (including both point source and fugitive emissions). As such, the EPA modeled emission rates of 500 tpy for NO_x and 500 tpy VOC are most representative. Due to the similar geographical characteristics of Autauga County and Clarke County, Alabama, the meteorology can also be considered adequately characterized. Moreover, because the Thomasville Mill is in the same region as the hypothetical source, background pollutant concentrations and emissions can be assumed to be reasonably similar.

To account for additive precursor impacts on 8-hr daily maximum O₃, the project impact was calculated using the following equation:

$$\text{Project Impact (ppb)} = \text{tpy NO}_x \text{ from source} / \text{tpy hypothetical source NO}_x \text{ Emission} \times \text{Max Modeled Concentration (ppb)} + \text{tpy VOC from source} / \text{tpy hypothetical source VOC Emission} \times \text{Max Modeled Concentration (ppb)}$$

and calculated as follows:

$$\begin{aligned} &= (9.66 \text{ tpy} / 500 \text{ tpy} \times 2.01172 \text{ ppb}) + (233.6 \text{ tpy} / 500 \text{ tpy} \times 0.064137 \text{ ppb}) \\ &= (0.0389 + 0.0300) \text{ ppb} \\ &= 0.0689 \text{ ppb} \end{aligned}$$

Based on EPA modeling results for this representative hypothetical source, the impact of the project would only be 0.0689 ppb, well less than the EPA SIL of 1 ppb. Further compliance demonstration is not required.

Toole, Olivia B

From: Jackson Fitzgibbon <jackson.fitzgibbon@trinityconsultants.com>
Sent: Monday, August 3, 2026 12:14 PM
To: Toole, Olivia B; Brett Sprayberry
Cc: Cole, Lisa B; Jeremiah Redman; Lance Stripling; Rachel Bauman
Subject: RE: Request for Updated PCWP MACT Monitoring Approach for Proposed Kiln 102-S014
Attachments: Westervelt Thomasville New Kiln PSD Narrative Section 4 - PCWP Additions.pdf; Thomasville Kiln Maintenance and Operating Plan.pdf

Good morning,

On behalf of Westervelt Thomasville, please see the updated monitoring approach for Kiln 4, which incorporates the revised PCWP MACT requirements. Additionally, attached is the revised Section 4 of the current PSD application, reflecting these updates.

Please let us know if you have any questions or comments.

Thank you,

Jackson Fitzgibbon
P 205.973.0661



From: Toole, Olivia B <olivia.toole@adem.alabama.gov>
Sent: Monday, July 20, 2026 12:31 PM
To: Brett Sprayberry <bsprayberry@westervelt.com>
Cc: Cole, Lisa B <LBCole@adem.alabama.gov>; Jeremiah Redman <jredman@trinityconsultants.com>; Lance Stripling <lstripling@westervelt.com>; Jackson Fitzgibbon <jackson.fitzgibbon@trinityconsultants.com>; Rachel Bauman <RBauman@trinityconsultants.com>
Subject: Request for Updated PCWP MACT Monitoring Approach for Proposed Kiln 102-S014

Good afternoon,

Due to the updates to the PCWP MACT that became effective July 6, 2026, the rule now includes updated requirements for kiln maintenance practices, compliance options, and monitoring parameters. Please submit a proposed monitoring approach for the new kiln that reflects the updated PCWP MACT requirements.

Additionally, please submit a revised section 4.4.2, pages 4-3 and 4-4 of the current PSD application to incorporate the updated monitoring and compliance requirements.

If you have any questions, please contact me.

Olivia B. Toole
Chemical Branch

Westervelt Lumber Thomasville, LLC.

Air Permit No. 102-S014-X005

Continuous Dry Kiln No. 4 (CDK 4A-B)

Kiln Maintenance Practices, Compliance Options, and Monitoring Parameters.

Rev. 7/30/26

This document serves as the Operation and Maintenance (O&M) Plan for Continuous Dry Kiln No. 4 (CDK 4A-B), a 116,800 MBF/yr continuous lumber dry kiln with a 45 MMBtu/hr natural gas-fired burner. The plan is prepared to satisfy Unit Specific Proviso 4(a) of ADEM Air Permit No. 102-S014-X005 and the lumber kiln operation and maintenance plan requirements of 40 CFR 63.2241(e)(1) and 40 CFR 63.2253(a) of the National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products (40 CFR 63, Subpart DDDD). Pursuant to Unit Specific Proviso 2(d) of Permit No. 102-S014-X005, CDK 4A-B is restricted to burning natural gas only. This plan applies to CDK 4A-B only.

CDK 4A-B has not yet been constructed; installation is proposed for January 2027. Because construction of the kiln commenced after May 18, 2023, the compliance date for the lumber kiln work practice requirements of 40 CFR 63.2241(d) and (e) is July 6, 2026, or the date of initial startup of CDK 4A-B, whichever is later, in accordance with 40 CFR 63.2233(e)(1) and footnote 2 to Tables 3, 6, and 8 to Subpart DDDD. Because initial startup will occur after July 6, 2026, the applicable compliance date for CDK 4A-B is the date of initial startup of the kiln.

The initial kiln integrity inspection required by 40 CFR 63.2253(a)(3)(i) will be completed by the compliance date. Because the burner will not be in operation before initial startup, the initial burner tune-up will be conducted within 30 calendar days of startup of the burner for the purpose of direct-firing the kiln, in accordance with 40 CFR 63.2241(d)(2). The first semiannual compliance reporting period will begin on the compliance date, in accordance with 40 CFR 63.2281(b)(1). The actual date of initial startup will be recorded in the revision log in Appendix A upon startup.

Operation and Maintenance Plan

The maintenance activities in this section are performed to maintain the integrity of the lumber kiln internal air flow and heat distribution components, including baffles, fans, vents, and temperature sensors, so as to provide as uniform a temperature and air flow as reasonably possible, consistent with 40 CFR 63.2253(a)(1), and to satisfy Unit Specific Proviso 4(a) of Permit No. 102-S014-X005. CDK 4A-B is direct-fired and does not contain steam heating coils.

1. Conduct daily routine maintenance: (Operator Rounds):
 - a. Clean debris from around kiln and pusher tracks.
 - b. Visually inspect the primary air fan, gas train, and gas burner.
 - c. Visually Inspect and Lubricate kiln cart pusher axle bearings as needed.
 - d. Lubricate kiln cart wheels as needed.
2. Conduct weekly inspections of:
 - a. Fan drive systems.
 - b. Cart pusher hydraulic system oil level and hose connections.
3. Conduct monthly routine maintenance:
 - a. Grease pawl manifold on the kiln cart pusher.
 - b. Kiln fan shafts and lubricate as needed.
 - c. Inspect and clean the primary air fan inlet filters on the kiln burner.
4. Conduct quarterly inspections of:
 - a. Plenum hatches, cleaning as necessary.
 - b. All dry bulb temperature monitoring system components for integrity, and all electrical connections for continuity, oxidation, and galvanic corrosion, in accordance with 40 CFR 63.2269(b)(6).
5. Conduct semiannual routine maintenance:
 - a. Inspect fan bearings and lubricate as needed.
 - b. Replace hydraulic filter on kiln cart pusher hydraulic system.
 - c. Inspect baffles and brushes.
 - d. Lubricate primary air fan electric motors on the kiln burner.
 - e. Validate the reading of each dry bulb temperature sensor in accordance with 40 CFR 63.2269(b)(4), using one of the methods identified in the Temperature Monitoring System Quality Assurance section of this plan.
6. Conduct annual routine maintenance, in accordance with Unit Specific Proviso 4(a)(vi):
 - a. Lubricate kiln fan electric motors as needed.
 - b. Lubricate kiln cart pusher hydraulic system electric motors.
 - c. Lubricate kiln vent hinges and linkage as needed.
 - d. Complete inspection of the natural gas train and gas burner system.
 - e. Kiln shutdown for internal cleaning.

Annual Kiln Integrity Inspection (no more than 13 months from previous inspection)

1. Kiln shutdown for internal cleaning
2. Inspect:
 - a. Cart pusher hydraulic system electric motors.
 - b. Baffles

- c. Fan systems
 - d. Doors
 - e. Seals
 - f. Temperature probes
 - g. Vents
 - h. Burner system
 - i. Structural integrity
3. Review the charge optimization practices used during the preceding year, in accordance with 40 CFR 63.2253(a)(3), and revise those practices as necessary to reduce over-drying.
 4. Document the results of the inspection and the charge optimization review, and identify any corrective actions required.

Corrective Actions

1. Corrective actions identified through the annual kiln integrity inspection or the annual review of charge optimization practices shall be initiated within 30 days after the inspection.
2. Corrective actions shall be completed within 180 days following the inspection that identified the need for the corrective action.
3. If a corrective action cannot be completed within 180 days, a written request for an extension shall be submitted to ADEM before the end of the 180-day period, in accordance with 40 CFR 63.2253(a)(3)(ii).
4. Records of all inspections and corrective actions taken shall be maintained as described in the Recordkeeping section of this plan.

Annual Burner Tune-Up (no more than 13 months from previous tune-up)

1. Burner Inspection
2. Cleaning/repair/replacement as needed
3. Flame pattern evaluation and adjustment
4. Combustion air system inspection
5. Fuel delivery system inspection
6. Documentation of findings and corrective actions
7. The tune-up shall be conducted in accordance with the procedures specified in 40 CFR 63.2271(c).
8. If the burner is not operating on the date a tune-up is required, the tune-up shall be conducted within 30 calendar days of startup of the burner for the purpose of direct-firing the kiln, in accordance with 40 CFR 63.2241(d)(2).

Combustion Unit Bypass Stack

CDK 4A-B is not equipped with a combustion unit bypass stack. The exhaust from the natural gas-fired burner serving CDK 4A-B cannot be vented to the atmosphere without first passing through the kiln, and therefore no bypass or abort stack meeting the definition of a combustion unit bypass stack in 40 CFR 63.2292 is present. Accordingly, the bypass stack monitoring requirements of 40 CFR 63.2241(d) and 63.2269(k), and the bypass stack reporting requirement of 40 CFR 63.2281(c)(10), do not apply to CDK 4A-B. If a combustion unit bypass stack is added in the future, this plan will be revised and the required monitoring, recordkeeping, and reporting will be implemented.

Charge Optimization

Lumber packages shall be loaded and aligned to promote uniform airflow through the kiln. Sticker alignment, lumber package spacing, and kiln loading practices shall be maintained in accordance with manufacturer recommendations and facility operating procedures to minimize uneven drying and over-drying.

Charge optimization practices shall be reviewed at least annually in conjunction with the annual kiln integrity inspection, as required by 40 CFR 63.2253(a)(3). The review, and any resulting revisions to loading practices, shall be documented.

Lumber Kiln Work Practices

1. The facility has elected compliance with the Temperature Limit Option pursuant to 40 CFR 63.2241(e)(3)(i).
2. CDK 4A-B shall be operated with a maximum dry bulb temperature limit of 245 °F, which is the limit applicable to continuous direct-fired kilns under 40 CFR 63.2241(e)(3)(i).
3. Unit Specific Proviso 4(a)(viii) of Permit No. 102-S014-X005 establishes an operating temperature range of 220 °F to 280 °F. The 245 °F daily block average limit of 40 CFR 63.2241(e)(3)(i) is more stringent than the 280 °F upper bound of the permit and shall govern operation of CDK 4A-B.
4. Dry bulb temperature shall be continuously monitored and recorded at least once every 15 minutes during the kiln drying cycle in accordance with 40 CFR 63.2269(m) and 63.2270(h)(1). The kiln is equipped with a total of twelve (12) dry bulb temperature monitors, with six (6) monitors located along each track. At any given time, six (6) monitors are used to determine and record the dry bulb temperature of the heated air exiting the lumber. The monitors are located at equal distances from the center of the kiln, immediately upstream of the conditioning chambers, each positioned to determine the dry bulb temperature of the heated air that exits the lumber as required by 40 CFR 63.2269(m)(1).

5. Where multiple dry bulb temperature monitors are positioned to determine the temperature of the heated air exiting the lumber, the monitor readings may be averaged to determine the kiln-wide dry bulb temperature, as permitted by 40 CFR 63.2270(h)(1).
6. Because CDK 4A-B is a continuous kiln, compliance shall be determined on the basis of the daily block average dry bulb temperature calculated in accordance with 40 CFR 63.2270(h)(1)(ii). The daily block average dry bulb temperature shall be maintained below 245 °F.
7. At least 75 percent of the required recorded readings, based on valid data, shall be available to calculate each daily block average, in accordance with 40 CFR 63.2270(f). Data recorded during monitoring malfunctions, associated repairs, out-of-control periods, and required quality assurance or control activities shall not be used in calculating data averages, in accordance with 40 CFR 63.2270(b) and (c). Any period for which the monitoring system is out of control and data are not available for required calculations constitutes a deviation from the monitoring requirements.
8. An internal action level of 240 °F shall be used to provide operating margin below the 245 °F limit. When the running daily average approaches the action level, kiln operations personnel shall evaluate kiln schedule and burner settings and take action as necessary to maintain the daily block average below 245 °F. The action level is an internal operating practice and is not a federally enforceable limit.
9. Consistent with the good operating practices described in the Preliminary Determination for Permit No. 102-S014-X005, a dry bulb temperature exceeding 280 °F will result in kiln shutdown. Records of high temperature shutdown events shall be maintained and reported in the Semiannual Monitoring Report.
10. Periods during which the daily block average dry bulb temperature exceeds 245 °F shall be documented and reported as described in the Reporting section of this plan.

Lumber Moisture Content (Permit Requirement)

The Temperature Limit Option elected under 40 CFR 63.2241(e)(3)(i) does not include a minimum lumber moisture content requirement, and the minimum kiln-dried lumber moisture content limits in Table 11 to Subpart DDDD do not apply to CDK 4A-B. The following requirements are established independently by Unit Specific Proviso 4(a)(ix) of Permit No. 102-S014-X005:

1. Average lumber moisture content shall be maintained greater than 6 percent during each production run to prevent over-drying of lumber.

2. The moisture content of finished lumber shall be automatically measured in the grader infeed system.
3. Occurrences where the average lumber moisture content falls below 6 percent during a production run shall be recorded in the applicable data collection system.
4. Records of average moisture content for each production run with an average below 6 percent shall be maintained in the operating system software and reported in the Semiannual Monitoring Report submitted to the ADEM Air Division.

Temperature Monitoring System Quality Assurance

The dry bulb temperature monitoring system shall be installed, operated, and maintained in accordance with 40 CFR 63.2269(a), (b), and (m) as follows:

1. The continuous parameter monitoring system shall be capable of completing a minimum of one cycle of operation (sampling, analyzing, and recording) for each successive 15-minute period.
2. Monitoring equipment shall be maintained at all times, including maintaining necessary parts for routine repairs of the monitoring equipment.
3. The results of each inspection, calibration, and validation check shall be recorded.
4. Each temperature sensor shall be located in a position that provides a representative temperature.
5. Each temperature sensor shall have a minimum accuracy of 4 °F or 0.75 percent of the temperature value, whichever is larger.
6. If a chart recorder is used, it shall have a sensitivity with minor divisions of not more than 20 °F.
7. Each temperature sensor reading shall be validated at least semiannually using one of the following methods:
 - a. Comparison to a NIST-traceable temperature measurement device, or simulation of a typical operating temperature using a NIST-traceable temperature simulation device. Where a measurement device is used, its sensor shall be placed as close as practicable to the process sensor, both devices shall be subject to the same environmental conditions, and the accuracy of the temperature measured shall be within 2.5 percent of the temperature measured by the NIST-traceable device or 5 °F, whichever is greater.
 - b. Applicable procedures in the thermocouple manufacturer's owner's manual.

- c. Manufacturer certification or re-certification of the electromotive force (electrical properties) of the thermocouple.
 - d. Replacement of the thermocouple with a new certified thermocouple in lieu of validation.
 - e. Permanent installation of a redundant temperature sensor as close as practicable to the process temperature sensor.
8. A validation check shall be conducted any time a sensor exceeds the manufacturer's specified maximum operating temperature range, or a new temperature sensor shall be installed.
9. All monitoring system components and electrical connections shall be inspected at least quarterly as described in the Operation and Maintenance Plan section of this plan.

Recordkeeping

1. The following records shall be maintained at the facility and made readily available for inspection:
 - a. Daily, weekly, monthly, quarterly, semiannual, and annual maintenance and inspection activities described in this plan.
 - b. Annual kiln integrity inspection results and the annual charge optimization review.
 - c. Corrective actions identified, initiated, and completed, including any extension requests.
 - d. Annual burner tune-up records, including findings and corrective actions.
 - e. Recorded dry bulb temperature readings at 15-minute intervals and the resulting daily block average dry bulb temperatures.
 - f. High temperature shutdown events resulting from a dry bulb temperature exceeding 280 °F.
 - g. Average lumber moisture content for each production run with an average below 6 percent.
 - h. Results of each monitoring system inspection, calibration, and validation check.
 - i. Kiln production records, including monthly production and 12-month rolling totals. Within ten (10) days of the end of each calendar month, records of total throughput for the last calendar month shall be recorded and the rolling 12-month total updated, in accordance with Unit Specific Proviso 5(d).
 - j. All revisions to this plan.
2. Records shall be retained in a permanent form suitable and readily available for inspection for at least 5 years from the date of generation of each record, in

accordance with Unit Specific Proviso 5(a) and 40 CFR 63.10(b)(1). Records for the most recent 2 years shall be kept onsite.

Reporting

1. Semiannual compliance reports shall be submitted in accordance with 40 CFR 63.2281(b), covering the periods January 1 through June 30 and July 1 through December 31, and postmarked or delivered no later than July 31 and January 31, respectively. Unit Specific Proviso 5(e) of Permit No. 102-S014-X005 requires the Semiannual Monitoring Report to be submitted no later than 60 days after the end of each semiannual reporting period. The earlier of the two deadlines shall be met unless ADEM has established alternative dates pursuant to 40 CFR 70.6(a)(3)(iii)(A) as provided in 40 CFR 63.2281(b)(5).
2. Each semiannual report shall include:
 - a. The applicable maximum dry bulb temperature limit according to kiln type (245 °F), and any deviations from the daily block average dry bulb temperature limit calculated in accordance with 40 CFR 63.2270(h)(1), as required by 40 CFR 63.2281(c)(11)(ii).
 - b. A description of any updates made to this plan during the reporting period, as required by 40 CFR 63.2253(a)(4) and 63.2281(c)(11)(i).
 - c. The date of the most recent burner tune-up and a summary of corrective actions taken, as required by 40 CFR 63.2281(c)(9).
 - d. Records of high temperature shutdown events and production runs with an average lumber moisture content below 6 percent.
 - e. A certification that all proper operating and maintenance practices were accomplished as required during the reporting period, and if not, the date and reason any required action was not accomplished, in accordance with Unit Specific Proviso 5(e).
 - f. A certification that only natural gas was fired in CDK 4A-B during the reporting period, in accordance with Unit Specific Provisos 2(d) and 5(e).
3. All required reports shall be certified by a responsible official consistent with ADEM Admin. Code r. 335-3-16-.04(9).
4. Deviations from permit requirements, including any exceedance of an applicable limit for this kiln, shall be reported to the ADEM Air Division within 48 hours or 2 working days of the deviation, including the probable cause and any corrective or preventive actions taken, in accordance with General Provisos 10 and Unit Specific Proviso 5(c).
5. Semiannual compliance reports required by Subpart DDDD shall be submitted to the U.S. EPA through the Compliance and Emissions Data Reporting Interface

(CEDRI) via the Central Data Exchange (CDX), using the subpart-specific electronic reporting template, in accordance with 40 CFR 63.2281(h).

6. A copy of this plan, together with a description of the work practice option elected under 40 CFR 63.2241(e)(3) and documentation of the initial burner tune-up, shall be submitted with the Notification of Compliance Status in accordance with Table 6 to Subpart DDDD, Items 9 and 10, and 40 CFR 63.2280(d)(1).

Plan Review and Revision

1. This plan shall be reviewed at least annually in conjunction with the annual kiln integrity inspection.
2. Any change to this plan shall receive prior approval from the ADEM Air Division, in accordance with Unit Specific Proviso 4(b) of Permit No. 102-S014-X005.
3. Any updates made to this plan shall be described in the semiannual compliance report for the period in which the update was made, in accordance with 40 CFR 63.2253(a)(4).
4. ADEM may require modification of this plan, as needed, upon review.
5. All revisions to this plan shall be recorded in the revision log provided in Appendix A.

Plan Approval

Prepared by: Burt Smyth

Title: Environmental Manager

Date: 7/31/26

Approved by: Rod Challa

Title: Complex Manager

Date: 7/31/26

Revision history is maintained in Appendix A to this plan.

Appendix A Revision Log

This revision log records all revisions to the Kiln Maintenance Practices, Compliance Options, and Monitoring Parameters plan for CDK 4A-B. Any change to this plan requires prior approval from the ADEM Air Division under Unit Specific Proviso 4(b) of Permit No. 102-S014-X005. Updates made after the compliance date shall also be described in the semiannual compliance report for the period in which the update was made, in accordance with 40 CFR 63.2253(a)(4) and 63.2281(c)(11)(i).

Rev. No.	Date	Description of Revision	Prepared By	Approved By
0	7/30/26	Initial Issue. Operation and maintenance plan prepared to satisfy Unit Specific Proviso 4(a).		

Initial startup date of CDK 4A-B: _____ (compliance date under 40 CFR 63.2233(e)(1))

4. REGULATORY REVIEW APPLICABILITY

The Thomasville Mill and the proposed project will be subject to certain federal and state air regulations. This section of the application summarizes the air permitting requirements and key air quality regulations that will apply to the Thomasville Mill under both federal and state permitting programs. Applicability to NSR, Title V, New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), ADEM Admin. Code r., and other potentially applicable regulations are addressed in the sections below.

4.1 New Source Review Applicability

The NSR permitting program generally requires a source to obtain a permit and undertake other obligations prior to construction of any project at an industrial facility if that proposed project results in an emissions increase in excess of certain pollutant threshold levels. ADEM administers its major NSR permitting program through ADEM Admin. Code R. 335-3-14-.04 Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting], which establishes preconstruction, construction, and operation requirements for new and modified sources.

The NSR program is comprised of two elements: Nonattainment NSR and PSD. NNSR pertains to facilities in nonattainment areas, and PSD is the governing program for all other facilities. The NNSR program potentially applies to new construction or modifications that result in emission increases of a particular pollutant for which the area where the facility is located is classified as "nonattainment" for that pollutant. The PSD program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable." The Thomasville Mill is located in Clarke County, which has been designated by the U.S. EPA as "attainment" or "unclassifiable" for all criteria pollutants. Therefore, the facility is not subject to NNSR permitting requirements. However, new construction or modifications that result in emissions increases are potentially subject to PSD permitting requirements.

The PSD program only regulates emissions from "major" stationary sources of regulated air pollutants. A stationary source is considered PSD major if potential emissions of any regulated pollutant exceed the major source thresholds. Lumber mills are not on the "list of 28" operations which are subject to a 100 tpy PSD major source threshold; therefore, the major source threshold for all criteria pollutants for PSD is 250 tpy and 100,000 tpy for CO_{2e}. The Thomasville Mill is a major source with respect to the PSD program as the potential emissions of VOC, CO, NO_x, and CO_{2e} exceed the PSD major source threshold.

Accordingly, the proposed project emission increases must be evaluated against the PSD SERs for all PSD regulated pollutants to determine if the project triggers PSD permitting. The project emissions increase from the facility for each PSD regulated pollutant compared to the respective SERs are shown in Table 3-1. The proposed project will trigger PSD permitting requirements for VOC only. As such, a VOC BACT analysis is included in this application along with an ozone analysis (as VOC is a precursor to ozone formation).

4.2 Title V Operating Permits

40 CFR 70 establishes the federal Title V operating permit program. Alabama has incorporated the provisions of this federal program in its state regulation, Rule 335-3-16, Major Source Operating Permits. This regulation requires that all new and existing Title V major sources of air emissions obtain federally approved state-administered operating permits. A major source as defined under the Title V program is a facility that has the potential to emit either more than 100 tpy for any criteria pollutant, more than 10 tpy

for any single HAP, or more than 25 tpy for all HAP.⁷ Potential emissions from the Thomasville Mill exceed the major source threshold for several pollutants. Therefore, the Thomasville Mill is a Title V Major Source.

The proposed project will not impact applicability to Title V. Westervelt will submit an application to incorporate these changes into the existing MSOP within 12 months of initial operation of the proposed new equipment.

4.3 New Source Performance Standards

NSPS, located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the proposed project. Rules that are specific to certain source categories are not discussed in this regulatory review.

4.3.1 40 CFR 60 Subpart A – General Provisions

All affected sources subject to source-specific NSPS are subject to the general provisions of NSPS Subpart A unless specifically excluded by the source-specific NSPS. Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable. The proposed project will not impact applicability to any NSPS that the Thomasville Mill is already subject to (e.g., NSPS Subpart Db, NSPS Subpart IIII) and will not add any new NSPS applicability. Therefore, Westervelt will continue to comply with applicable provisions of Subpart A.

4.3.2 40 CFR 60 Subpart Dc – Small Industrial-Commercial Steam Generating Units

NSPS Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units, applies to steam generating units rated between 10 and 100 MMBtu/hr constructed, modified, or reconstructed after June 9, 1989. The term "steam generating unit" is defined under this regulation as shown below:

"Steam generating unit means a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart."⁸

The proposed new lumber kiln will operate with a direct-fired natural gas burner. Additionally, the burner will not generate steam, because the combustion gases from the fuel directly contact the lumber during the drying process. Therefore, Subpart Dc is not applicable to the proposed new kiln burner (BRN4).

⁷ Per 335-3-16-.01(1)(q)3, a source cannot be considered a major Title V source based solely on the emissions of greenhouse gases.

⁸ 40 CFR 60.41c.

4.3.3 Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. The applicability of a particular NSPS to the proposed project can be readily ascertained based on the industrial source category covered. All other NSPS, besides Subpart A, are categorically not applicable to the proposed project at the Thomasville Mill.

4.4 National Emission Standards for Hazardous Air Pollutants

NESHAP, located in 40 CFR 61 and 40 CFR 63, have been promulgated for source categories that emit HAP to the atmosphere. A facility that is a major source of HAP is defined as having potential emissions of greater than 25 tpy of total HAP and/or 10 tpy of individual HAP. Facilities with a potential to emit HAP at an amount less than that which is defined as a major source are otherwise considered an area source. The NESHAP allowable emissions limits are most often established on the basis of a maximum achievable control technology (MACT) determination for the particular major source. The NESHAP applies to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The Thomasville Mill is currently classified as a major source of HAP emissions, and this will remain the same following the proposed project. The determination of applicability to NESHAP requirements for the proposed project is detailed in the following sections. Rules that are specific to certain source categories are not discussed in this regulatory review.

4.4.1 CFR 63 Subpart A – General Provisions

40 CFR 63 Subpart A, *General Provisions*, contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP in 40 CFR 63, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source-specific NESHAP. The proposed project will not impact applicability to any NESHAP that the Thomasville Mill is already subject to (e.g., NESHAP Subpart DDDD) and will not add any new NESHAP applicability. Therefore, Westervelt will continue to comply with applicable provisions of Subpart A.

4.4.2 40 CFR 63 Subpart DDDD – Plywood and Composite Wood Products

NESHAP Subpart DDDD regulates HAP emissions from plywood and composite wood products (PCWP) manufacturing facilities that are major HAP sources. The PCWP MACT was initially finalized by U.S. EPA on July 30, 2004, and was reissued and amended after reconsideration on February 16, 2006. The rule was partially vacated and remanded by the D.C. Circuit Court of Appeals in June 2007, which led to the rule being finalized in October 2007. U.S. EPA subsequently amended the rule on August 13, 2020 (85 FR 49434) in conjunction with the residual risk and technology review (RTR) for the source category. Most recently, U.S. EPA published final amendments to Subpart DDDD on July 6, 2026 (91 FR 41410), which established, for the first time, substantive work practice, monitoring, recordkeeping, and reporting requirements applicable to lumber kilns.

Lumber kilns are process units within the existing "affected source" under the PCWP MACT, defined in 40 CFR 63.2232(b) as

The collection of dryers, refiners, blenders, formers, presses, board coolers, and other process units associated with the manufacturing of plywood and composite wood products. The affected source includes, but is not limited to, green end operations, refining, drying operations (including any combustion unit exhaust stream routinely used to direct fire process unit(s)),

resin preparation, blending and forming operations, pressing and board cooling operations, and miscellaneous finishing operations (such as sanding, sawing, patching, edge sealing, and other finishing operations not subject to other national emission standards for hazardous air pollutants (NESHAP)). The affected source also includes onsite storage and preparation of raw materials used in the manufacture of plywood and/or composite wood products, such as resins; onsite wastewater treatment operations specifically associated with plywood and composite wood products manufacturing; and miscellaneous coating operations (40 CFR 63.2292). The affected source includes lumber kilns at PCWP manufacturing facilities and at any other kind of facility.

4.4.2.1 Change in Regulatory Status for Lumber Kilns

Prior to the July 6, 2026 amendments, 40 CFR 63.2252 provided that, for process units not subject to the compliance options or work practice requirements specified in 40 CFR 63.2240 (including, but not limited to, lumber kilns), a facility was not required to comply with the compliance options; work practice requirements; performance testing; monitoring; startup, shutdown, and malfunction (SSM) plans; or the recordkeeping and reporting requirements of Subpart DDDD, or any other requirements of NESHAP Subpart A, General Provisions, except for the initial notification requirements of 40 CFR 63.9(b). The July 6, 2026 amendments removed that provision, and 40 CFR 63.2252 is now reserved. Accordingly, the exemption previously relied upon for lumber kilns is no longer available.

As amended, Subpart DDDD subjects lumber kilns to the following provisions:

- ▶ Work practice requirements for direct-fired combustion units and associated bypass stacks under 40 CFR 63.2241(d) and Table 3, Item 9;
- ▶ Work practice requirements to minimize lumber over-drying under 40 CFR 63.2241(e) and Table 3, Item 10;
- ▶ General lumber kiln requirements, including the lumber kiln operation and maintenance (O&M) plan, under 40 CFR 63.2253;
- ▶ Monitoring installation, operation, and maintenance requirements under 40 CFR 63.2269(k), (m), (n), and (o);
- ▶ Data averaging and continuous compliance requirements under 40 CFR 63.2270(h), (i), and (j) Table 6, Items 9 and 10, and Table 8, Items 9 through 12; and
- ▶ The minimum kiln-dried lumber moisture content limits set forth in Table 11 to Subpart DDDD.

Notably, Subpart DDDD does not establish numerical HAP emission limits or add-on control requirements for lumber kilns. The compliance options and operating requirements of 40 CFR 63.2240 and Tables 1B through 1E remain inapplicable to lumber kilns; compliance is demonstrated exclusively through the work practice, monitoring, recordkeeping, and reporting provisions identified above.

4.4.2.2 Applicability to the Thomasville Mill

The Thomasville Mill currently operates three (3) existing direct-fired continuous lumber drying kilns (CDK1, CDK2, and CDK3), each equipped with a natural gas-fired burner. As part of the proposed project, Westervelt will construct one (1) additional direct-fired continuous lumber drying kiln (Continuous Kiln No. 4) served by the Kiln No. 4 Gas Burner. No physical modifications to the existing kilns are proposed as part of this project. Each of the four (4) kilns meets the definition of a "lumber kiln" in 40 CFR 63.2292 and is

directly fired; therefore, both the combustion unit work practice requirements of 40 CFR 63.2241(d) and the lumber over-drying work practice requirements of 40 CFR 63.2241(e) apply.

4.4.2.3 Compliance Dates

Compliance dates for the requirements promulgated on July 6, 2026 are established by 40 CFR 63.2233(e). Because construction of Continuous Kiln No. 4 will commence after May 18, 2023 (construction is anticipated to begin in September 2026), Westervelt will comply with the applicable lumber kiln requirements for Continuous Kiln No. 4 beginning on July 6, 2026, or upon initial startup of the kiln, whichever is later, in accordance with 40 CFR 63.2233(e)(1) and footnote 2 to Tables 3, 6, and 8. For the three (3) existing continuous kilns (CDK1, CDK2, and CDK3), which were constructed on or before May 18, 2023 and are not being reconstructed as part of this project, the compliance date is July 6, 2029 in accordance with 40 CFR 63.2233(e)(2).

4.4.2.4 Work Practice Standards

40 CFR 63.2241(e)(3) allows an owner or operator to minimize lumber over-drying by complying with one of three work practice options: the temperature limit option under 40 CFR 63.2241(e)(3)(i), the hybrid option under 40 CFR 63.2241(e)(3)(ii), or a site-specific plan under 40 CFR 63.2241(e)(3)(iii). Westervelt will demonstrate compliance with the PCWP MACT regulations by utilizing one of the options noted above, which will be specified in the O&M Plan developed for the site kilns.

4.4.2.5 Lumber Kiln O&M Plan

In accordance with 40 CFR 63.2241(e)(1) and 63.2253(a), Westervelt will develop and maintain onsite an O&M plan for the lumber kilns at the Thomasville Mill. The O&M plan will include procedures for maintaining the integrity of lumber kiln internal air flow and heat distribution components (such as baffles, fans, vents, heating coils, and temperature sensors) so as to provide as uniform a temperature and air flow as reasonably possible, and charge optimization practices to reduce over-drying. Westervelt will inspect lumber kiln integrity and review charge optimization practices at least annually, with the initial inspection completed by the applicable compliance date and each subsequent inspection completed no more than thirteen (13) months after the previous inspection. Corrective actions will be initiated within thirty (30) days after an inspection and completed within one hundred eighty (180) days following the inspection identifying the need for corrective action, and records of inspections and corrective actions will be maintained. Any updates to the O&M plan will be described in the semiannual compliance report in accordance with 40 CFR 63.2253(a)(4).

4.4.2.6 Combustion Unit Tune-Ups and Bypass Stack Monitoring

Because each of the four (4) kilns is direct-fired, Westervelt will conduct an annual tune-up of each combustion unit used to directly fire a lumber kiln in accordance with 40 CFR 63.2241(d) and 63.2271(c). The initial tune-up will be completed by the applicable compliance date specified in 40 CFR 63.2233(e), and each subsequent tune-up will be completed no more than thirteen (13) months after the previous tune-up. If a combustion unit that direct-fires a lumber kiln is not operating on the required date for a tune-up, the tune-up will be conducted within thirty (30) calendar days of startup of the combustion unit for that purpose. To the extent any combustion unit exhaust stream routinely used to direct-fire a lumber kiln can be temporarily vented to the atmosphere without passing through the kiln, Westervelt will continuously monitor an indicator of bypass stack usage, such as flow damper position or temperature, in accordance with 40 CFR 63.2269(k), and will record and report the total duration of bypass stack usage during each semiannual reporting period.

4.4.2.7 Notification, Recordkeeping, and Reporting

The existing site lumber kilns are already subject to the initial notification requirements of Subpart DDDD. The proposed project will not modify any of the existing site kilns. However, construction of Continuous Kiln No. 4 will require submission of an initial notification pursuant to 40 CFR 63.9(b). This application should satisfy the initial notification requirement that Continuous Kiln No. 4 will become subject to Subpart DDDD upon startup. Additional notifications will be provided to ADEM once construction is completed that will authorize initial operation.

Consistent with Table 6, Items 9 and 10, and 40 CFR 63.2280(d)(1), Westervelt will submit a Notification of Compliance Status no later than thirty (30) calendar days following completion of the initial compliance demonstration. The Notification of Compliance Status will include documentation of the initial burner tune-up conducted according to 40 CFR 63.2241(d); identification of the method used to continuously monitor and record the duration of bypass stack usage; the lumber kiln O&M plan developed according to 40 CFR 63.2241(e)(1); and a description of the work practice option Westervelt will comply with under 40 CFR 63.2241(e)(3).

Semiannual compliance reports will be submitted in accordance with 40 CFR 63.2281(b), covering the periods January 1 through June 30 and July 1 through December 31. Westervelt requests that ADEM align the submittal timeline of these reports to be consistent with the other semiannual report monitoring requirements and deadlines established for the Thomasville Mill.

4.4.2.8 Requirements Not Applicable to the Thomasville Mill

The Thomasville Mill is a sawmill and planing mill (SIC 2421) that manufactures finished planed lumber. The facility does not operate PCWP dryers (such as rotary dryers, veneer dryers, or veneer redryers), presses, board coolers, refiners, blenders, formers, stand-alone digesters, fiber washers, log vats, resin tanks, or other resinated material handling process units. Accordingly, the compliance options and operating requirements of 40 CFR 63.2240 and Tables 1B through 1E, and the work practice requirements of 40 CFR 63.2241(f) and (g) and Table 3, Items 1 through 8 and 11 through 14, are not applicable to the Thomasville Mill. Westervelt will comply with all applicable provisions of Subpart DDDD for the existing and proposed lumber kilns as described above.

4.4.3 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters

NESHAP Subpart DDDDD, *National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* (Major Source Boiler MACT) regulates boilers and process heaters as major sources of HAP. The kilns do not meet the definition of a boiler or process heater. A process heater is defined in 40 CFR 63.7575, as

... an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. A device combusting solid waste, as defined in §241.3 of this chapter, is not a process heater unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Process heaters do not include units used for comfort heat or space heat, food preparation for on-site consumption, or autoclaves. Waste heat process heaters are excluded from this definition.

The existing continuous lumber kilns are all direct fired; as the combustion gases from the fuel will directly contact the lumber during the drying process. Additionally, the proposed Direct-Fired Continuous Kiln No. 4 will be identical to the three existing continuous lumber kilns. Therefore, the existing and new lumber kilns are not considered process heaters, and Boiler MACT is not applicable.

4.4.4 40 CFR 63 Subpart JJJJJ – Industrial, Commercial, and Institutional Boilers at Area Sources

The Thomasville Mill is a major source of HAP. Furthermore, even if the mill were an area source of HAP, the kiln burners are direct-heating units and do not meet the rule's definition of a boiler or process heater. Therefore, this rule does not apply.

4.4.5 Non-Applicability of All Other NESHAP

NESHAP are developed for particular industrial source categories. The applicability of a particular NESHAP to the Thomasville Mill can be readily ascertained based on the industrial source category covered. All other NESHAP are categorically not applicable to the Thomasville Mill.

4.5 State Regulatory Requirements

In addition to federal air regulations, the ADEM Admin. Code R. 335-3, updated October 13, 2025, establishes regulations applicable for the Thomasville Mill. ADEM rules potentially applicable to the Thomasville Mill are detailed in the following sections.

4.5.1 ADEM Admin. Code r. 335-3-4-.01 – Visible Emissions

ADEM Admin. Code r. 335-3-4-.01 restricts visible emissions from any source of particulate emissions to 20 percent with no more than one 6-minute period of up to 40 percent opacity per 60-minute period. This regulation also details monitoring requirements and work practice standards. All existing emission units at the Thomasville Mill are already subject to this rule and currently comply with the applicable requirements. In addition, the proposed emission units will also be subject to this rule. Westervelt will continue to comply with the applicable requirements.

4.5.2 ADEM Admin. Code r. 335-3-4-.02 – Fugitive Dust and Fugitive Emissions

ADEM Admin. Code r. 335-3-4-.02 requires the Permittee to take reasonable precautions to minimize fugitive dust and fugitive emissions from sources such as roadways. Most of the haul road traffic at Thomasville is paved and reasonable precautions are taken to minimize fugitive dust. Westervelt will continue to employ good operational practices, such as minimizing speed limit, to minimize fugitive dust.

4.5.3 ADEM Admin. Code r. 335-3-4-.03 – PM from Fuel Burning Equipment

ADEM Admin. Code r. 335-3-4-.03 regulates PM emissions from fuel burning equipment. Per 335-3-1-.02(ee), fuel burning equipment is defined as:

...any equipment, device, or contrivance and all appurtenances thereto, including ducts, breechings, fuel-feeding equipment, ash removal equipment, combustion controls, stacks, and chimney, used primarily, but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion.

Although the continuous lumber drying kilns, both existing and proposed, are fuel-burning units, the units do not serve as indirect heating equipment. Therefore, the kilns are not subject to this rule.

4.5.4 ADEM Admin. Code r. 335-3-4-.04 – PM from Process Industries

This regulation limits particulate emissions from manufacturing processes in Class I and Class II Counties. The Thomasville Mill is in Clarke County which is classified as a Class II County. However, pursuant to ADEM Admin. Code r. 335-3-4-.04(5), new sources shall be subject to the same requirements for facilities located in Class I counties. As such, the maximum allowable PM emissions for units at the mill are determined using the following equations:

$$E = 3.59 P^{0.62}, \text{ where } P < 30 \text{ tons/hr}$$

$$E = 17.31 P^{0.16}, \text{ where } P \geq 30 \text{ tons/hr}$$

where:

E = allowable particulate emissions [lb/hr]

P = process weight rate [tons/hr]

This regulation applies to all process emission sources at the mill that do not have a unit-specific filterable PM emission limit. Westervelt currently demonstrates compliance with this regulation and will continue to do so with the new units as part of the proposed project.

4.5.5 ADEM Admin. Code r. 335-3-6-.01 through .53 – VOC Emissions

Chapter 335-3-6, Sections .01 through .53 addresses the control of organic emissions from specific manufacturing processes, including bulk gasoline terminals, surface coating, and coke by-product recovery plants. The Thomasville Mill does not operate any of the manufacturing processes included in 335-3-6, and therefore is not applicable to any emission limits or VOC standards set forth in ADEM Admin. Code r. 335-3-6.

4.5.6 ADEM Admin. Code r. 335-3-6-.04 – Fixed-Roof Petroleum Liquid Storage Vessels

Chapter 335-3-6-.04 addresses the control of organic emissions from petroleum liquid storage vessels. The rule applies to fixed roof storage tanks with capacities greater than 150,000 liters (40,000 gallons) containing a petroleum liquid whose true vapor pressure is greater than 10.5 kPa (1.52 psia). All of the petroleum liquid storage tanks at the Thomasville Mill have storage capacities much smaller than 40,000 gallons. Therefore, this rule does not apply to the Thomasville Mill or the proposed project.

4.5.7 ADEM Admin. Code r. 335-3-10 – Standards of Performance for New Stationary Sources

ADEM Admin. Code r. 335-3-10 incorporates Federal Regulations of 40 CFR Part 60. As discussed in Section 4.3, the proposed project will not impact applicability to any NSPS.

4.5.8 ADEM Admin. Code r. 335-3-11 – National Emission Standards for Hazardous Air Pollutants

ADEM Admin. Code r. 335-3-11 incorporates Federal Regulations of 40 CFR Parts 61 and 63 by reference. The facility is subject to NESHAP Subpart DDDD as detailed in Section 4.4.2.

4.5.9 ADEM Admin. Code r. 335-3-14-.04 – PSD Permitting

The Thomasville Mill is an existing major PSD source and Westervelt has evaluated PSD permitting applicability for the proposed project construction as detailed in Section 4.1. The project will trigger PSD permitting requirements for VOC only.

4.5.10 ADEM Admin. Code r. 335-3-16. – Major Source Operating Permit

The Thomasville Mill is an existing major stationary source and Title V applicability will remain the same following the project as detailed in Section 4.2

4.5.11 Non-Applicability of Other ADEM Air Regulations

A thorough examination of the ADEM Admin. Code r. applicability to the proposed project reveals many state regulations that do not apply and do not impose additional requirements on operations. Such rules include those specific to a particular type of industrial operation which are not related to the proposed project.

Toole, Olivia B

From: Jackson Fitzgibbon <jackson.fitzgibbon@trinityconsultants.com>
Sent: Monday, June 1, 2026 2:06 PM
To: Toole, Olivia B; Brett Sprayberry
Cc: Cole, Lisa B; Jeremiah Redman
Subject: RE: Westervelt Thomasville - Facility No. 102-S014 - Construction Permit Application
Attachments: 2017 PSD App (NG Fired CDKs).pdf; CDK PM Calcs.pdf; Georgia EPD Lumber Kiln Emission Factors.pdf; Ozone MERPS Analysis (2026 0529).pdf; Planer Mill ADEM Form 105 pg. 2.pdf; Thomasville Kiln Maintenance and Operating Plan_Rev_5-20-26.pdf

Olivia,

Thank you for taking the time to review the Westervelt Thomasville Construction Application and for providing your below comments. On behalf of Westervelt, please see our responses below in blue:

1. The permit package did not include an updated Kiln Operating and Maintenance Plan (OMP) for the proposed kiln. Please submit an updated OMP for the proposed Kiln No. 4.
 - a. Please see attached updated OMP, attachment is named "*Thomasville Kiln Maintenance and Operating Plan_Rev_5-20-26*".
2. Table B-5-CDK4, Potential Criteria Pollutants, states that the factors are consistent with the CDK1-3 BACT limits taken in 2019 when originally permitted. Please also identify the specific source from which the emission factors were derived and submit supplemental information confirming these factors.
 - a. Original BACT limits were based off the Georgia Pacific (GP) Talladega Mill application for natural gas fired CDKs for Filterable and Condensable PM (see page 55 of the attached application or the extracted CDK PM Calcs attachment for reference). These emission factors were also approved at GP's Mill in Warrenton, GA and represents the average factor plus two standard deviations from August 2012 testing at this site. Please see attachment named "*2017 PSD APP (NG Fired CDKs)*" for the full application and attachment named "*CDK PM Calcs*" for the extracted calculation reference. The VOC emission factor is recommended by the State of GA (EPD) for all direct-fired kilns and has been approved by EPA Region 4. Please see attachment named "*Georgia EPD Lumber Kiln Emission Factors*".
3. Please submit supporting documentation identifying the WebFIRE emission factors referenced for the lb/ton emission factors listed in Table B-8 (page 4) for Sawmill No. 2 detailed emission calculations.
 - a. The emission factors shown below were obtained from the EPA WebFIRE database. Although these factors were revoked in 2002, they have been consistently used in previous permitting applications for this facility. Although revoked, these factors are believed to be representative for the sawmill operations. For comparison, the EPA Region 10 document "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country" includes state approved factors for sawing operations of 0.350 lb/ton log for PM, 0.175 lb/ton log for PM10, and 0.0875 lb/ton log for PM2.5. The emission factors currently used for the Thomasville facility exceed these EPA Region 10 values and therefore produce more conservative estimates for particulate emissions.

SCC# 30700803 Details
 Industrial Processes > Pulp and Paper and Wood Products > Sawmill Operations
 > Sawdust Pile Handling
 POLLUTANT# PM, filterable NEI PM-FIL# CAS#
 Primary Control / Secondary Control# : UNCONTROLLED,
 Emission Factor# --- 1.000E0 Lb per Tons Revoked on 01/01/2002
 Sawdust Processed:
 Quality# --- E Emissions Factors Applicability

SCC# 30700803 Details
 Industrial Processes > Pulp and Paper and Wood Products > Sawmill Operations
 > Sawdust Pile Handling
 POLLUTANT# PM10, filterable NEI PM10-FIL# CAS#
 Primary Control / Secondary Control# : UNCONTROLLED,
 Emission Factor# --- 3.600E-1 Lb per Tons Revoked on 01/01/2002
 Sawdust Processed:
 Quality# --- E Emissions Factors Applicability

b.

4. Appendix F, MERPS Assessment and Impact Analysis, page 2, Table 1, lists the maximum concentrations (ppb) as 0.03300 for VOC and 0.0389 for NO_x. Please revise the maximum concentrations for VOC and NO_x in Table 1 to state 2.01172 ppb and 0.064137 ppb.

a. Value has been changed, please attachment named "Ozone MERPS Analysis (2026 0529)".

5. Also, for Planer Mill ADEM Form 105, page 2, item No. 9, the SMS limits are in lb/ton. Should this be lb/hrs?

a. Correct, this has been corrected. Please see attachment named "Planer Mill ADEM Form 105 pg.2".

We greatly appreciate your time and efforts thus far and are happy to provide any additional information as needed.

Thank you,

Jackson Fitzgibbon
 P 205.973.0661



From: Toole, Olivia B <olivia.toole@adem.alabama.gov>

Sent: Wednesday, May 20, 2026 11:33 AM

To: Brett Sprayberry <bsprayberry@westervelt.com>

Cc: Cole, Lisa B <LBCole@adem.alabama.gov>; Jackson Fitzgibbon <jackson.fitzgibbon@trinityconsultants.com>

Subject: RE: Westervelt Thomasville - Facility No. 102-S014 - Construction Permit Application

5. Also, for Planer Mill ADEM Form 105, page 2, item No. 9, the SMS limits are in lb/ton. Should this be lb/hrs?

From: Toole, Olivia B

Sent: Wednesday, May 20, 2026 9:39 AM

To: Brett Sprayberry <bsprayberry@westervelt.com>; Cole, Lisa B <LBCole@adem.alabama.gov>

Cc: 'Jackson Fitzgibbon' <jackson.fitzgibbon@trinityconsultants.com>

Subject: RE: Westervelt Thomasville - Facility No. 102-S014 - Construction Permit Application

Good Morning Brett,

I have listed deficiencies that need to be addressed regarding the recently submitted PSD application. Please forward this information to me and I will add to/ update the PSD application.

1. The permit package did not include an updated Kiln Operating and Maintenance Plan (OMP) for the proposed kiln. Please submit an updated OMP for the proposed Kiln No. 4.
2. Table B-5-CDK4, Potential Criteria Pollutants, states that the factors are consistent with the CDK1-3 BACT limits taken in 2019 when originally permitted. Please also identify the specific source from which the emission factors were derived and submit supplemental information confirming these factors.
3. Please submit supporting documentation identifying the WebFIRE emission factors referenced for the lb/ton emission factors listed in Table B-8 (page 4) for Sawmill No. 2 detailed emission calculations.
4. Appendix F, MERPS Assessment and Impact Analysis, page 2, Table 1, lists the maximum concentrations (ppb) as 0.03300 for VOC and 0.0389 for NO_x. Please revise the maximum concentrations for VOC and NO_x in Table 1 to state 2.01172 ppb and 0.064137 ppb.

Thanks for your assistance,

Olivia B. Toole

From: Jackson Fitzgibbon <Jackson.Fitzgibbon@trinityconsultants.com>

Sent: Monday, May 4, 2026 5:11 PM

To: Toole, Olivia B <olivia.toole@adem.alabama.gov>; Cole, Lisa B <LBCole@adem.alabama.gov>;
mjleach@adem.alabama

Cc: Brett Sprayberry <bsprayberry@westervelt.com>; Keith Dollar <kadollar1502@gmail.com>; Lance Stripling
<lstripling@westervelt.com>; Jeremiah Redman <jredman@trinityconsultants.com>; Brittany Kent
<Brittany.Kent@trinityconsultants.com>

Subject: Westervelt Thomasville - Facility No. 102-S014 - Construction Permit Application

On behalf of Westervelt, Trinity Consultants is submitting the enclosed construction permit application for the proposed construction of a new sawmill and kiln. As discussed during the meeting on April 15, 2026, Westervelt intends to install a second sawmill and fourth kiln as part of this project. Construction of the sawmill is anticipated to begin as early as September 2026, with kiln construction to follow in January 2027.

In addition to this electronic submittal, Trinity will also be providing three hard-copy binders of the complete application to ADEM for review.

The enclosed application includes a comprehensive narrative describing the existing facility, the proposed project, emission calculation methodologies, and the applicable regulatory reviews and assessments. Several supporting appendices are also included, as summarized below:

- Appendix A includes an area map and simplified process flow diagram;

- ▶ Appendix B includes detailed emissions calculations;
- ▶ Appendix C includes the applicable Best Available Control Technology BACT/Lowest Achievable Emission Reduction (LAER) Clearinghouse (RBLC) database tables;
- ▶ Appendix D includes the detailed BACT control cost calculations;
- ▶ Appendix E contains the relevant ADEM forms; and
- ▶ Appendix F contains the required ozone analysis for triggering PSD for VOC.

Trinity respectfully requests ADEM's review of the enclosed application. Please do not hesitate to contact us should you have any questions or require additional information. Trinity and Westervelt appreciate ADEM's time and consideration of this application.

Thank you

Jackson Fitzgibbon

Associate Consultant
Birmingham, AL

P (205) 973-0661

Email: Jackson.fitzgibbon@trinityconsultants.com

10 Inverness Center Pkwy, Ste 130, Birmingham, AL 35242



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Georgia-Pacific Wood Products LLC

PSD PERMIT APPLICATION

**Talladega Sawmill
Talladega, Alabama**

**Submitted to the
Alabama Department of Environmental Management**

September 2017



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1. EXECUTIVE SUMMARY

Georgia-Pacific Wood Products LLC (GP) proposes to construct and operate a sawmill that produces kiln dried dimensional lumber in Talladega, Talladega County, Alabama. The new sawmill will be constructed on the site of GP's existing plywood manufacturing facility, which was permanently shut down in 2016; much of the plywood facility will be demolished to make way for the new sawmill. GP is requesting authorization to construct and operate the Talladega Sawmill through this permit application.

The Talladega Sawmill will be a new major stationary source with respect to Title V and Prevention of Significant Deterioration (PSD) permitting. Based on the potential emissions presented in Table 1.1, the facility is subject to PSD review for volatile organic compounds (VOC) only.

Table 1.1. Summary of Facility-Wide Emissions

Description	Pollutant	Potential Facility-wide Emissions
		tpy
Criteria Pollutants	PM	23.75
	PM ₁₀	14.48
	PM _{2.5}	9.90
	SO ₂	0.41
	VOC	878.87
	CO	40.10
	Lead	2.36E-04
	NO _x	31.19
Hazardous Air Pollutants	Highest Single HAP	40.10
	Total HAP	54.70
Greenhouse Gases	CO ₂ e	56,841.7

The scope of the proposed facility and processes are discussed within Section 2 and Appendix A; emission calculations are addressed in Section 3 and Appendix B. The regulatory applicability of the project is outlined within Section 4 including PSD and other federal regulations along with ADEM regulations. The control technology review and air quality analyses required by PSD regulation and ADEM regulations can be found in Section 5 and 6. Documentation supporting the control technology review is provided in Appendix C. ADEM required forms can be found in Appendix D. A fugitive emission control analysis and proposed monitoring and recordkeeping can be found in Appendix E and Appendix F, respectively.

GP plans to begin construction upon ADEM approval.

2. FACILITY AND PROCESS DESCRIPTION

2.1. FACILITY LOCATION

The Talladega Sawmill will be located at 400 Ironaton Cutoff Road in Talladega, Talladega County, Alabama. The location of the main process area is approximately 587,400.5 East, 3,700,970.1 North (Universal Transverse Mercator coordinates, Zone 16, WGS84). Refer to Appendix A for the Area Map for additional details.

Note that the site of the Talladega Sawmill is the former location of GP's Talladega Plywood Plant which operated under Permit No. 309-S002. The Title V permit for Talladega Plywood was rescinded on July 21, 2016.

2.2. ATTAINMENT STATUS OF AREA

The current Section 107 attainment status designations for areas within the state of Alabama are summarized in 40 CFR 81.301. Talladega County is classified as "better than national standards" for total suspended particulates (TSP, also referred to as PM, and which includes PM₁₀) and for the 1971 sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). Talladega County is designated as "unclassifiable/attainment" for carbon monoxide (CO), the 1-hr nitrogen dioxide (NO₂) standard, the 24-hour and annual PM_{2.5} standards, lead, and ozone (O₃). Talladega County is designated as "cannot be classified or better than national standards" for the annual NO₂ standard. Talladega County has not yet been designated for the 1-hour SO₂ NAAQS.

2.3. PROCESS DESCRIPTION

The Talladega Sawmill will be capable of producing about 329.6 million board feet (MMBf) of rough green lumber per year. The facility will be capable of producing about 320 MMBf kiln dried lumber per year.

2.3.1. Emission Group: Sawmill and Green End Operations

Incoming logs will typically be stored on-site prior to processing. Logs are debarked (LD) and then cut to length within the log bucking process (LB) before being routed through the sawmill (SM). The end product of this process is rough, green dimensional lumber, some of which will be sold without further processing. By-products from this operation include bark, chips, and sawdust which are conveyed and stored in various locations prior to being shipped off site.

Bark from the debarker will be conveyed to the bark hog and then to a bark storage bin before being shipped offsite (BC). Chip conveyance (CC) includes chips from the sawmill to the sawmill chipper/screen, from the chipper to rail car, through the chip cyclone (CHC) to the chip storage bin, or to the chip pile (CP) for storage prior to conveyance to the chip storage bin. The chip cyclone pneumatically conveys chips. Sawdust is conveyed (SDC) from the sawmill and sawmill chipper/screen to the sawdust storage bin. Haul Roads (RD) are utilized for shipments off site.

2.3.2. Emission Group: Continuous Drying Kilns

The rough, green lumber is sorted and stacked before being dried in a continuous lumber drying kiln. Three kilns, direct-fired with natural gas (CDK-1, CDK-2, CDK-3), are proposed at the facility. Two of the three kilns (CDK -1 and CDK-2) will have a maximum capacity 120 MMBf/yr and the third kiln (CDK-3) will have a capacity of 80 MMBf/yr. The two 120 MMBf/yr kilns will each have a 40 MMBtu/hr natural gas-fired burner and the third smaller kiln will have a 30 MMBtu/hr natural gas-fired burner. After drying, the rough lumber will be processed in the planer mill.

2.3.3. Emission Group: Planer Mill and Finished End Operations

The rough, dry lumber will be finished in the planer mill. Planer shavings and planer hog trim are conveyed to the shavings storage bin. A cyclofilter (PM) will be used to pneumatically convey shavings (SC).

2.3.4. Emission Group: Fire Pump Engine

An existing 1984 model, 250 bhp, diesel fired pump engine (FE) is present to provide water in case of emergency.

2.3.5. Emission Group: Large Storage Tanks and Trivial Storage Tanks

The facility will have a 2,000 gallon gasoline tank, 6,000 gallon diesel tank, and a 6,000 gallon lube oil tank (LST) to support operation. There will also be storage tanks on site that are classified as trivial insignificant activities (TST) per ADEM Admin. Code r. 335-3-16.

3. EMISSION CALCULATIONS

The processes involved at the Talladega Sawmill will release various criteria pollutants, non-criteria pollutants, hazardous air pollutants (HAP), and greenhouse gases (GHG) to the atmosphere. The following sections detail the selected emission factors and calculation methodologies for estimating the potential to emit (PTE) for the facility.

3.1. OVERVIEW OF EMISSION FACTORS

To calculate emissions at the facility, GP determined the appropriate emission factors and control device efficiencies to use for each emission source. Emission factors were obtained using various methodologies and sources. These include:

- National Council for Air and Stream Improvement, Inc. (NCASI);
- U.S. EPA's AP-42 Compilation of Air Emission Factors (5th Edition, Revised);
- U.S. EPA's Mandatory Greenhouse Gas Reporting Regulation (40 CFR 98);
- U.S. EPA's PMCALC Database; and
- Test data from testing conducted at similar GP and competitor facilities.

The sources of information for emission factor determination and calculation methodologies are discussed in greater detail in the following sections and in Appendix B.

3.1.1. NCASI Emission Factors

NCASI conducts research and provides technical information to all member companies through a variety of publications, including technical bulletins, special reports, handbooks, and newsletters. The emission factor information presented in the technical bulletins is typically deemed the most accurate available for the wood products industry if representative mill-specific test data or similar GP test data are unavailable.

GP utilized the Technical Bulletin No. 845, *A Comparative Study of VOC Emissions from Small-Scale and Full-Scale Lumber Kilns Drying Southern Pine*, (2002) and *Wood Products Electronic Database*, (2013) to estimate emissions of wood drying pollutants as part of this application.

To estimate the chip pile silt content, GP utilized the NCASI Special Report 15-01 Table 5.20, *Average TSP and Silt Content for Chips*. In addition, the Technical Bulletins No. 424, *Fugitive Dust Emission Factors and Control Methods Important to Forest Products Industry Manufacturing Operation*, (March 1984) Figure 10 was utilized to estimate fugitive pile emissions. GP also utilized information from NCASI July 2014 memo for *PM_{2.5} Emissions from Drum Debarking* in order to speciate PM_{2.5} emissions for debarking.

3.1.2. U.S. EPA AP-42 Emission Factors

Emission factors from U.S. EPA's AP-42 database (5th Edition unless otherwise noted) were utilized for natural gas combustion, no. 2 fuel oil combustion, organic liquid storage, several material handling activities, and fugitive PM emissions from the specified sources:

- Section 1.4, *Natural Gas Combustion*
- Section 3.3, *Gasoline and Diesel Industrial Engines*
- Section 3.4, *Large Stationary Diesel And All Stationary Dual-fuel Engines*
- Section 7.1, *Organic Liquid Storage Tanks*
- Section 13.2.1, *Paved Roads*
- Section 13.2.2, *Unpaved Roads*
- Section 13.2.4, *Aggregate Handling and Storage Piles*

In addition to the current AP-42 factors, emission factors from obsolete sections that are maintained in the FIRE (Factor Information Retrieval Software) were used for sawing and debarking, as these data points remain the best data available for these sources.

3.1.3. Greenhouse Gas Emission Factors

The U.S. EPA Mandatory Greenhouse Gas Reporting Rule, 40 CFR 98, emission factors and global warming potentials (GWP) from Subparts A and C were used to calculate carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) emissions from natural gas and diesel combustion. Tables C-1 and C-2 of Subpart C list default CO₂, CH₄, and N₂O emission factors and high heat values for various fuel types.

3.1.4. U.S. EPA's PMCALC Database Emission Factors

A database from EPA referred to as "PMCALC" provides speciated PM data for reference in emission estimates. Emission ratios obtained from EPA's PMCALC database were used to speciate PM_{2.5} emissions from PM emissions for the Sawmill and Log Bucking and PM₁₀/PM_{2.5} emissions from the PM emissions for the Chip Pile.

3.1.5. Stack Test Data

Emission factors for PM, PM₁₀, PM_{2.5}, and VOC from the kilns are based on testing of similar GP and competitor operations. Stack testing of similar GP operations has also been used to calculate PM₁₀ and PM_{2.5} emissions from the chip cyclone and the condensable PM emissions from the planer mill cyclofilter. Each selected stack testing-based emission factor is explained in detail in the emission calculations included as Appendix B.

3.1.6. Vendor Data

The filterable PM, PM₁₀, and PM_{2.5} potential emission rates for the planer mill cyclofilter have been based on an emissions model provided by the cyclofilter manufacturer. The chip cyclone PM emission factor is based on typical vendor data for green end cyclones. The NO_x emissions factor is based on purchasing a low NO_x burner with a guarantee of no more than 50 ppm.

3.1.7. Silt Test Data

Silt content for PM, PM₁₀, and PM_{2.5} from the paved and unpaved roads is based on the average test results from a similar GP sawmill. The paved and unpaved road silt content used to derive haul road particulate emission factors is explained in detail in the emission calculations included as Appendix B.

4. REGULATORY APPLICABILITY

This section summarizes all federally enforceable and state enforceable air regulations that are potentially applicable to the Talladega Sawmill.

4.1. FEDERAL AIR QUALITY REGULATIONS

The federal regulations potentially applicable to the facility are PSD regulations in 40 CFR 52.21, New Source Performance Standards (NSPS) in 40 CFR 60, National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR 63, and Title V Operating Permit regulations in 40 CFR 70. A discussion of these regulations is provided in the following subsections.

4.1.1. Prevention of Significant Deterioration – 40 CFR 52.21

The federal PSD regulatory program is contained at 40 CFR 52.21 and ADEM has adopted similar rules under 335-3-14-.04 of their Air Pollution Control Regulations. The PSD regulations apply to major modifications at major stationary sources, which are those sources belonging to any one of the 28 source categories listed in the regulations that have the potential to emit more than 100 tons per year of any New Source Review (NSR) regulated pollutant, or any other stationary source which has the potential to emit more than 250 tons per year of any NSR regulated pollutant. As sawmills are not one of the 28 source categories defined in ADEM Admin. Code r. 335-3-14.04(2)(a)(1), the facility is a new major stationary source on the basis that the proposed source has the potential to emit more than 250 tons per year of a NSR regulated pollutant in accordance with ADEM Admin. Code r. 335-3-14.04(2)(a)(1)(i).

The Talladega Sawmill has a potential to emit of 878.9 tpy of VOC (a NSR regulated pollutant). Therefore, the Talladega Sawmill is a new major stationary source and must evaluate if a significant emissions increase will occur for each NSR regulated pollutant.

The Talladega Sawmill is a new source, thus the actual-to-potential test as defined in ADEM Admin Code R. 335-3-14-.04(1)(g) is used to determine if a significant emission increase will occur. The detailed potential to emit emission calculations for each operating unit is found within Appendix B. The baseline actual emissions (BAE) are equal to zero in accordance with ADEM Admin Code R. 335-3-14-.04(2)(uu)(3), since this is the initial construction and operation of the units. The sum of the difference between the PTE and BAE are compared to the significance thresholds as defined in ADEM Admin Code R. 335-3-14-.04(2)(w). The calculated PTE for the new facility compared to the Significant Emission Rate (SER) are shown in the Table 4.1.

Table 4.1. Summary of PSD Significant Emissions Increases (TPY)

Operating Units	NO _x	CO	SO ₂	PM	PM ₁₀	PM _{2.5}	VOC ¹	Lead	CO _{2e}
Sawmill and Green End Operations	--	--	--	19.0	6.0	1.5	--	--	--
Continuous Drying Kilns	29.3	39.7	0.3	3.0	7.1	7.1	878.4	0.0002	56,750
Planer Mill and Finished End Operations	--	--	--	1.7	1.2	1.2	--	--	--
Fire Pump Engine	1.9	0.4	0.1	0.1	0.1	0.1	0.2	--	92
Large Storage Tanks	--	--	--	--	--	--	0.3	--	--
Storage Tanks < 1,000 gallons	--	--	--	--	--	--	0.001	--	--
Total PTE	31.2	40.1	0.4	23.7	14.5	9.9	878.9	0.0002	56,842
Emissions Increases	31.2	40.1	0.4	23.7	14.5	9.9	878.9	0.0002	56,842
PSD SER	40	100	40	25	15	10	40	0.6	75,000
PSD Triggered?	No	No	No	No	No	No	Yes	No	No

A significant emission increase will occur only for VOC. As the Talladega Sawmill is subject to PSD permitting, Section 5 provides a detailed review of the Best Available Control Technology (BACT) for the control of VOC. Section 6 addresses the additional impacts, ozone review, Class I area review, and air toxics screening.

4.1.2. Compliance Assurance Monitoring – 40 CFR 64

EPA's Compliance Assurance Monitoring (CAM) requirements are implemented through Title V operating permits and apply to emissions units that use a control device to achieve compliance with an emissions limit and whose pre-controlled emissions are greater than the major source threshold. Per 40 CFR 64.1, a "control device" is "equipment other than inherent process equipment". "Inherent process equipment" is defined as "equipment that is necessary for the proper or safe functioning of the process, or material recovery equipment that the owner or operator documents is installed and operated primarily for purposes other than compliance with air pollution regulations." The Talladega Sawmill will have a Chip Cyclone (CHC) and Planer Mill Cyclofilter (PM) that operate as inherent process equipment as the primary purpose of the cyclone and cyclofilter are material recovery. Therefore, a CAM plan will not be required.

4.1.3. New Source Performance Standards – 40 CFR 60

NSPS apply to any stationary source for which standards are promulgated and at which any equipment defined as an "affected facility" in the standard is constructed, reconstructed, or modified after the effective date of the applicable standard. NSPS requirements are promulgated under 40 CFR 60 pursuant to Section 111 of the Clean Air Act.

NSPS are developed for particular industrial source categories. There are no NSPS standards that apply specifically to lumber mills. The only potentially applicable NSPS for the facility, are NSPS Subpart IIII and JJJJ for engines. However, the engine at Talladega was manufactured prior to the applicability date of NSPS Subpart IIII for Stationary Compression Ignition Internal Combustion Engines. The engine

¹ VOC emissions are presented as VOC as WPP1 for the continuous drying kilns as described in Appendix B.

design eliminates applicability of NSPS Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines.

NSPS standards are incorporated by reference into ADEM Admin. Code (ADEM Admin. Code 335-3-10).

4.1.4. National Emission Standards for Hazardous Air Pollutants – 40 CFR 63

NESHAP, federal regulations found in Title 40 CFR Parts 61 and 63, are emission standards that apply to major sources of HAPs (facilities that exceed the major source thresholds of 10 tpy of a single HAP and 25 tpy of any combination of HAPs) or specifically designated area sources under Part 63. The Part 63 NESHAP apply to sources in specifically regulated industrial source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Sections 112(g) and 112(j)) where EPA has failed to promulgate a 112(d) standard. The Talladega Sawmill facility is a major source of HAPs.

NESHAP standards are incorporated by reference into ADEM Admin. Code (ADEM Admin. Code 335-3-11).

4.1.4.1. 40 CFR Part 63 Subpart A – General Provisions

All affected sources are subject to the general provisions of Part 63 Subpart A unless specifically excluded by the source specific NESHAP. Subpart A requires initial notification, performance testing, recordkeeping, monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable. If other Part 63 subparts are applicable, the provisions of Subpart A also apply.

4.1.4.2. 40 CFR Part 63 Subpart DDDD – National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products

The Talladega Sawmill is subject to the Plywood and Composite Wood Products (PCWP) Maximum Achievable Control Technology (MACT) standard, 40 CFR 63 Subpart DDDD. This rule applies to any PCWP manufacturing facility which is a major source of HAP emissions. Lumber kilns are within the affected sources under the PCWP MACT pursuant to 40 CFR 63.2232(b), therefore, the lumber kilns are subject to this rule. However, no control requirements are specified by the rule for lumber kilns, only initial notification requirements. Per the allowance of 40 CFR 63.9(b)(1)(iii), this application for approval of construction serves as that initial notification. Per §63.9(b)(4)(v), this allowance requires a notification of the actual date of startup of the source, delivered or postmarked within 15 calendar days after that date. The startup notification will be addressed through ADEM's notification requirements for indicating completion of construction and requesting Authorization to Operate.

4.1.4.3. 40 CFR Part 63 Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion (RICE) Engines

The facility operates a 1984 model year fire pump engine that is considered an "existing emergency stationary RICE" under 40 CFR 63.6590(a)(1)(ii) since it is rated less than 500 hp, is located at a major source of HAP emissions, and was constructed before June 12, 2006. The engine is subject to the compliance requirements of 40 CFR 63 Subpart ZZZZ including use of ultra low sulfur diesel (§63.6604(d)), completing and recording proper operation and maintenance (§63.6625(e)(2),(h),(i),

§63.6605, §63.6655 (d)), installation of a non-resettable hour meter (§63.6625(f)), and recording hours of operation (§63.6640(f), §63.6655(f)).

4.1.4.4. 40 CFR Part 63 Subpart CCCCCC – NESHAP for Gasoline Dispensing Facilities

In accordance with 40 CFR 63.11111(a), dispensing facility located at an area source of HAP ae affected sources. Because the Talladega Sawmill is a major source of HAP emissions, this subpart is not applicable.

4.1.5. Title V Operating Permits – 40 CFR 70

The Talladega Sawmill is subject to the major source operating permit requirements under Title V of the Clean Air Act. This regulation is delegated to Alabama by EPA and ADEM incorporates the Title V regulations into the state regulations in ADEM Admin. Code r. 335-3-16. An application for the operating permit will be submitted as required by ADEM within the first year of permitted units being placed into operation.

4.2. ALABAMA AIR QUALITY REGULATIONS - ADEM ADMIN. CODE 335-3

Alabama has promulgated air pollution control requirements under ADEM Admin. Code r. 335-3. Most of these regulations are part of the Alabama state implementation plan (SIP) for compliance with the Clean Air Act and most SIP regulations are federally enforceable. Generally applicable requirements, such as those pertaining to obtaining air quality permits and malfunction reporting, are not discussed because these requirements are widely recognized as being applicable to significant sources of air pollution. A brief discussion of both applicable and key non-applicable requirements is included in this section.

4.2.1. Visible Emissions

ADEM Admin. Code 335-3-4.01 limits visible emissions from facility sources to 20 percent during one six-minute period in any sixty minute period and 40 percent as an absolute maximum. This generally applicable requirement applies to all point sources at the Talladega Sawmill.

4.2.2. Fugitive Dust

ADEM Admin. Code 335-3-4.02 regulates fugitive dust and stipulates that no person shall cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to, the following:

- (i) 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 or the clearing of land;
- (ii) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stock piles, and other surfaces which can give rise to airborne dusts problems;

- (iii) Installation and use of hoods, fans, and fabric filters (or other suitable control devices) to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

Visible fugitive dust emissions are limited to the lot line of the property on which the emissions originate.

4.2.3. Particulate Emissions from Fuel Burning Equipment

ADEM Admin. Code 335-3-4-.03(1) regulates emissions of PM based on heat input rating of the fuel burning equipment. Per ADEM Admin. Code 332-3-1-.02(ee), "Fuel-Burning Equipment" means *any equipment, device, or contrivance and all appurtenances thereto, including ducts, breeching, fuel-feeding equipment, ash removal equipment, combustion controls, stacks, and chimneys, used primarily, but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion.* The proposed continuous drying kilns (CDKs) will be direct fired and the purpose of the fire pump engine (FE) is to pump water in case of fire. Therefore, the CDKs and FE are not subject to this regulation.

4.2.4. Particulate Emissions from Process Industries - General

ADEM Admin. Code 335-3-4-.04(1) addresses PM emissions from process industries. In accordance with ADEM Admin. Code 335-3-4-.04(5), new sources subject to this rule are subject to the rules and regulations for Class 1 Counties regardless of location. All units that emit PM, except the Emergency Fire Pump Engine (FE), are subject to this generally applicable requirement as follows:

$$E = 3.59P^{0.62} \quad (P < 30 \text{ ton/hr})$$

$$E = 17.31P^{0.16} \quad (P \geq 30 \text{ ton/hr})$$

Where P is the process input weight rate in tons/hr and E is the allowable emission rate in lb/hr. As unrestricted potential to emit emissions calculated in accordance with the Process Weight Rate (PWR) method would cause a significant increase of PM emissions above the PSD SER, estimates of PM from the Talladega Sawmill's general processes are based on industry specific emission factors and are less than that allowed by ADEM's code as demonstrated in Table 4.2. Emission estimates are explained in detail in the emission calculations included as Appendix B.

Table 4.2. Summary of ADEM PWR and Requested Limits (TPY)

Operation	Emission Point Reference No.	Emission Group	PWR PM (lb/hr)	PWR PM (tpy)	Requested PM (lb/hr)	Requested PM (tpy)
Log Processing Debarker	LD	Sawmill and Green End Operations	29.33	128.46	0.66	1.35
Log Bucking	LB		14.75	64.62	9.77	0.91
Sawmill	SM		28.44	124.55	0.84	1.71
Chip Conveyance	CC		35.61	155.98	0.58	1.20
Bark Conveyance	BC		29.33	128.46	0.14	0.28
Chip Pile	CP		14.10	61.74	<0.001	<0.001
Sawdust Conveyance	SDC		28.44	124.55	0.13	0.27
Chip Cyclone	CHC		35.61	155.98	0.69	3.00
Roads	RD		49.04	214.80	5.11	10.23
Continuous Drying Kiln No. 1	CDK-1	Continuous Drying Kilns	32.19	141.01	0.33	1.11
Continuous Drying Kiln No. 2	CDK-2		32.19	141.01	0.33	1.11
Continuous Drying Kiln No. 3	CDK-3		30.12	131.94	0.23	0.76
Planer Mill	PM	Planer Mill and Finish End Operations	15.55	68.12	0.37	1.61
Shavings Conveyance	SC		15.55	68.12	0.02	0.06
Total PTE for PM			390.26	1,709.33	19.21	23.61

4.2.5. Sulfur Dioxide Emissions from Fuel Combustion

ADEM Admin. Code 335-3-5-.01(1) limits SO₂ emissions for Alabama from fuel combustion. The Talladega Sawmill is located in Talladega County, which is considered a Category 2 County. This limits the kiln burners and fire pump engine emissions to 4.0 lb/MMBtu. Estimates of SO₂ from the Talladega Sawmill's fuel burning equipment are based on U.S. EPA's AP-42 emission factors and are less than that allowed by ADEM's code.

4.2.6. Sulfur Dioxide Emissions from Process Industries - General

ADEM Admin. Code 335-3-5-.05 limits SO₂ emissions for Alabama for process industries not listed 335-3-5-.01 through 335-3-5-.04. The Talladega Sawmill will not have any equipment subject to this regulation.

4.2.7. Control of Organic Emissions

No provisions of ADEM Admin. Code 335-3-6 are applicable to the Talladega Sawmill. The facility does not have fixed-roof petroleum liquid storage vessels regulated under ADEM Admin. Code 335-3-6-.04 and .27 which apply to storage vessels with capacities greater than 40,000 gallons. No tanks at the facility are greater than 40,000 gallons; therefore, the regulation does not apply. Gasoline dispensing facilities are regulated under ADEM Admin. Code 335-3-6-.07. In accordance with ADEM Admin. Code

335-3-6-.07(2)(b), this rule does not apply to stationary gasoline storage tanks of less than 3,000 gallons. The gasoline tank operated by the facility is 2,000 gallons; therefore, this regulation does not apply.

4.2.8. Standards for Stationary RICE

No provisions of ADEM Admin. Code 335-3-8 are applicable to the Talladega Sawmill. Stationary reciprocating internal combustion engines are regulated under ADEM Admin. Code 335-3-8-.04. The facility has a single fire pump engine which is not a "large affected engine" as defined in ADEM Admin. Code 335-3-8-.04(2); therefore, this regulation does not apply.

5. BEST AVAILABLE CONTROL TECHNOLOGY

Pursuant to federal PSD regulation 40 CFR 52.21(j) and ADEM Admin. Code r. 335-3-14-.04(9), any new major stationary source subject to PSD review for a NSR regulated pollutant is required to include a Best Available Control Technology (BACT) analysis. As defined under the PSD regulations, ADEM Admin. Code 335-3-14-.04(2), BACT means:

... an emission limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under [the] Act which would be emitted from any proposed major stationary source or major modification which the Administrator, 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. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

A BACT analysis is required for each new emission unit that emits a pollutant that triggers PSD. As VOC is the only NSR regulated pollutant to have emissions exceeding the applicable SER, a BACT analysis is only required the Continuous Drying Kilns (CDK-1, CDK-2, CDK-3), Emergency Fire Pump Engine (FE), and Storage Tanks (LST and TST).

5.1. BACT DETERMINATION FOR CONTINUOUS DRYING KILNS

This analysis is conducted to determine the best available control technology for VOC emissions from the kilns (CDK-1, CDK-2, CDK-3).

5.1.1. Step 1 - Identification of Control Technologies

The first step in the BACT analysis is to identify all available control technologies for each new unit and regulated pollutant required to be evaluated. Potentially applicable emission control technologies were investigated by reviewing U.S. EPA's RACT/BACT/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 GP owned facilities. The RBLC lists control technologies that have been approved as BACT in PSD permits issued by regulatory agencies for numerous process units. Process units in the database are grouped into categories by industry type.

A search of the RBLC database was performed to identify the emission control technologies and emission rates determined by permitting authorities as BACT for the wood products industry, wood lumber drying kilns (Process Code 30.800 in the RBLC). The results of the search indicate that no "add-on" control

technologies have been implemented as part of a PSD or Lowest Achievable Emission Rule (LAER) permitting effort to control VOC emissions from lumber drying kilns regardless of drying method (batch, continuous, direct or indirect-fired). A summary of the RBLC findings is included in Table C-10 in Appendix C.

GP operates numerous lumber drying kilns (batch, continuous, direct or indirect-fired) across the United States. None of these lumber drying kilns at any of GP's manufacturing facilities utilize "add-on" pollution controls to remove VOC emissions. In addition, to the best of GP's knowledge, no lumber kilns operating in the U.S. utilize "add-on" pollution controls to remove VOCs.

While "add-on" controls have not been demonstrated for lumber drying kilns, the following control technologies have been demonstrated to reduce VOC emissions from other industrial processes. The exhaust streams generated by direct-fired CDKs would need to be treated for particulate matter emissions (emitted from the direct-fired sawdust burner into the kiln drying chamber) prior to consideration of thermal and catalytic oxidizers.

- Wet Electrostatic Precipitator (WESP) followed by Thermal Oxidation
- WESP followed by Catalytic Oxidation
- Condensation
- Carbon Adsorption
- Wet Scrubbing
- Biofiltration
- Proper Kiln Design and Operation

A brief description of each of the VOC control technologies listed above is provided in the following sections.

5.1.1.1. Thermal Oxidation with Use of Wet Electrostatic Precipitation

Thermal oxidizers work on the principle of reacting VOCs in an industrial process exhaust gas stream with oxygen in air to form carbon dioxide and water vapor as shown in the following chemical reaction:



This reaction occurs when the exhaust gases from an industrial process are heated to a sufficiently high temperature, typically 1,400-1,600°F with a residence time in the combustion chamber between one-half to one second.

Thermal oxidizers can be designed as conventional thermal units, recuperative units, or regenerative thermal oxidizers (RTOs). A conventional thermal oxidizer does not utilize heat recovery with a heat exchanger. Therefore, the supplemental fuel cost is extremely high and is not suitable for applications with high exhaust gas flow and low VOC concentrations. In a recuperative thermal oxidizer, the VOC-laden inlet gases are preheated by the combustion exhaust gas stream of the oxidizer through the use of a heat exchanger. The heat exchanger will recover as much as 95% of the heat from the exhaust gases and

preheat the combustion air, thereby providing significant fuel savings (to heat up the combustion air with supplemental fuel) compared to a system that does not incorporate a heat exchanger. An RTO consists of at least two separate chambers packed with ceramic media. The VOC-laden gas enters one hot ceramic bed where the gas is heated to the desired combustion temperature. Auxiliary fuel may be required in this stage, depending on the heat content of the VOCs contained in the inlet gas stream. The gas stream is directed through the other ceramic bed, where the heat released from combustion is recovered and stored in the ceramic bed. The process gas flow then is switched so that the inlet gas stream can be preheated by the heat recovered in the ceramic bed. The RTO is operated using an alternating cycle for the two ceramic beds, recovering up to 95% of the thermal energy generated by the combustion process during normal operation. RTOs have the potential to remove more than 99% of VOCs from a gas stream, depending on the specific VOCs present in the gas stream. Based on GP's knowledge of lumber kiln exhaust gases (as lower VOC concentrations result in lower destruction values), it is assumed that an RTO could potentially achieve up to 97% VOC destruction, as long as the exhaust gas stream did not contain contaminants or other materials that might interfere with the operation of the control system.

RTO performance is affected by the quality of filterable particulate matter (PM) and condensable PM (CPM) contained in the exhaust gas stream. Therefore, to avoid interference from PM or CPM contained in the exhaust gas stream, as much PM and CPM as possible should be removed prior to the exhaust gas entering the RTO. The placement of a WESP ahead of an RTO has been used in the oriented strand board (OSB) industry to remove PM and some CPM as well as VOC emissions from rotary driers. WESPs are used instead of dry ESPs when wet, sticky, or flammable PM and CPM is contained in the exhaust gas stream, making it a preferred method of PM and CPM removal prior to the exhaust gases entering an RTO. PM removal efficiencies of the WESP range from 90 - 99+%, depending upon the design of the WESP and the specific characteristics of the PM contained in the exhaust gas stream. WESPs are not usually designed to remove CPM with the same high control efficiencies as PM.

5.1.1.2. Regenerative Catalytic Oxidation with Use of Wet Electrostatic Precipitation

Similar to an RTO, a regenerative catalytic oxidizer (RCO) oxidizes VOCs to carbon dioxide and water vapor using a metallic catalyst. An RCO allows the oxidation of VOCs to take place at a much lower temperature compared to an RTO. Oxidation of VOCs in an RCO usually takes place at temperatures ranging from 500-600°F. This creates the opportunity to reduce fuel expenses and materials of construction costs for the RTO (since the materials of construction will be subject to much lower temperatures, thereby reducing the risk of rapid corrosion or deterioration of the materials of construction). The addition of a combustion air preheater will further reduce the fuel costs. These types of oxidizers are just as capable in removing VOCs from a gas stream. VOC destruction efficiencies have the potential to be 95% or greater, depending on the specific VOC compounds present in the exhaust gas stream. Based on GP's knowledge of the exhaust gases from a lumber kiln (as lower VOC concentrations result in lower destruction values), it is assumed that an RCO would achieve a minimum VOC destruction efficiency of 90%.

PM removal is even more critical for RCOs than RTOs as the catalyst may be blinded by PM build-up, and as a result, may operate at much lower conversion efficiencies, or if the PM build-up is significant, the catalyst may not work at all to remove VOC emissions. Additionally, RCOs are sensitive to poisoning from heavy metals present in the exhaust gas stream. As such, it is necessary to remove PM emissions prior to directing the exhaust gases through the RCO. WESPs have the highest PM control

efficiency for this type of system, compared to wet scrubbers or high efficiency cyclones. WESPs can have PM removal efficiencies of 90-99+%, depending upon the particle size fraction of the PM material being removed from the exhaust gas stream.

5.1.1.3. Condensation

Condensation systems remove VOC emissions by condensing VOCs within the exhaust gas stream by either increasing pressure or lowering the temperature of the exhaust gases. The condensed VOCs are then destroyed in a separate combustion device or the materials are recovered for sale. Condensation requires that the exhaust stream be cooled to a temperature low enough such that the vapor pressure of the exhaust gases are lower than the VOC concentration of the exhaust gases.

5.1.1.4. Carbon Adsorption

Carbon adsorption systems can potentially be used to remove VOCs from exhaust gas streams. The core component of a carbon adsorption system is an activated carbon bed contained in a steel vessel. The VOC-laden exhaust gases pass through the carbon bed where the VOC is adsorbed on the activated carbon. The cleaned gas is discharged to the atmosphere. The spent carbon is regenerated either at an on-site regeneration facility or by an off-site activated carbon supplier. One method used to regenerate spent activated carbon is by using steam to displace adsorbed organic compounds at high temperatures.²

The VOC removal efficiency is dependent upon the absorption capacity for each of the specific organic compounds that make-up the exhaust gas stream. The adsorption capacity for a particular contaminant represents the amount of the contaminant that can be adsorbed on a unit weight of activated carbon consumed at the conditions present in the application. Typical adsorption capacities for moderately adsorbed compounds range from 5 to 30% of the weight of the carbon. In the adsorption process, molecules of a contaminated gas stream are attracted to and accumulate on the surface of the activated carbon. Carbon is a commonly used adsorbent due to its very large surface area. While most organic compounds will adsorb on activated carbon to some degree, the adsorption process is most effective on higher molecular weight and high boiling point compounds. Compounds having a molecular weight over 50 and a boiling point greater than 50°C are good candidates for adsorption.

5.1.1.5. Wet Scrubbing

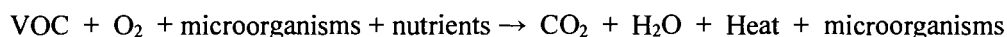
Scrubbing of VOCs contained in an exhaust gas stream is usually accomplished in a packed column (or other type of column) where the VOCs are absorbed by countercurrent flow of a scrubbing liquid. Scrubbing liquids include water, a caustic solution, or another liquid media that will interact to remove the VOC compounds. Wet scrubbing is most effective for water soluble VOC compounds, such as alcohols. Removal efficiencies for hydrophilic VOCs (VOCs that mix, dissolve or are wetted by water) can exceed 90%, depending upon the specific chemical compounds that make-up the VOCs within the exhaust gas stream. The VOC compounds to be scrubbed from the exhaust gas stream must be soluble in the absorbing liquid and even then, for any given absorbent liquid, only VOCs that are soluble in the scrubbing liquid can be removed.

² Shepard, Austin. Activated Carbon Adsorption for Treatment of VOC Emissions. Presented at 13th Annual EnviroExpo, Boston Massachusetts- May 2001. <http://www.carbtrol.com/voc.pdf>.

5.1.1.6. Biofiltration

Biofiltration is a technology where a VOC-laden exhaust stream is directed through a biologically active media. Biofiltration uses microorganisms to break down organic compounds into carbon dioxide, water, and salts. When the biofilter is built, the microorganisms are already on the material that is used as a filter bed. The filter bed material normally used is peat, soil, or compost, but granulated activated carbon and polystyrene can also be used. The choice of filter bed material is very important because it has to supply the nutrients for the microorganisms, support biological growth, and have good sorption capacity.

The biological process is oxidation by microorganisms and can be written as follows:



The microorganisms live in a thin layer of moisture, or the “biofilm”, which is built around the particles of the filter material. The contaminated gas stream is diffused through the biofilter and adsorbed onto the biofilm. The biofilm is where the oxidation process actually takes place. The VOCs contained in the exhaust gas stream are not permanently transferred to the filter bed material.

Temperature, oxygen level, and pH of the exhaust gas stream affect the level of VOC removal. Microorganisms work best when the temperature is between 85 and 105°F. Gas stream temperatures well above 105°F will kill the bacteria contained in the filter media and thereby negate its effectiveness. Also, since most of the biological degradations are aerobic in nature, the oxygen level is very important in the biofiltration process. In fact, oxygen is not used directly in the gaseous form, but the microorganisms use the oxygen present in the dissolved form in the biofilm. The microorganisms are most efficient at neutral pH values (pH around 7). Thus, the pH level of the contaminated gas stream must be maintained at a neutral level.

Biofilters are most effective in removing water soluble VOC compounds and have demonstrated removal efficiencies for individual hydrophilic compounds such as methanol and formaldehyde that exceed 90%. Vendors claim that this technology has the capability to remove approximately 50-70% of the total VOC emitted from a gas stream (comprised of VOC compounds with varying degrees of water solubility) when used under favorable operating conditions of low temperature, readily available oxygen, and neutral pH conditions. Based on GP's familiarity with the operation of biofiltration units on other process units within the Building Products Industry, the control efficiency is likely much lower than the vendor claims. Stack test data for the Board Press at the Weyerhaeuser Oriented Strand Board facility in Elkin, NC, indicates that the biofilter only achieves approximately 15 percent control of total VOCs. Stack test data for the Board Press at GP's Particleboard facility in Thomson, GA, indicates that the biofilter only achieves approximately 10 percent control of total VOCs (February 12, 2009). The aforementioned control efficiencies are based on total VOC presented on a carbon basis.

5.1.1.7. Proper Kiln Design and Operation

The naturally-occurring VOCs in lumber are driven-off from the heat used to dry the lumber within the kiln. Lumber is dried to specific moisture content for quality control purposes. Proper design and operation of the lumber kilns prevents over drying of the lumber that may release additional VOCs to the atmosphere. As a result, proper operation of the kilns will minimize VOC emissions to the atmosphere.

5.1.2. Step 2 - Technical Feasibility Analysis

The second step in the BACT assessment is the elimination of any technically infeasible control technologies discussed in Step 1. Each control technology presented in Step 1 is considered and those that are clearly technically infeasible are eliminated. If a control technology has been installed and operated successfully on a similar emission source, then it is assumed to have been demonstrated in practice and is considered technically feasible. If a control technology has not been demonstrated on a similar source, then the applicant must determine if the technology is applicable to the emission source under consideration. A control technology is eliminated from further 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.

To the best of GP's knowledge, no control technologies for the removal of VOC emissions have been applied to, or demonstrated for lumber kilns (batch or continuous), or upon exhaust gas streams with a similar characteristics to the exhaust gases from lumber kilns. There are a number of inherent difficulties in designing a technically feasible control system for a lumber kiln. Because no emission control technologies have been applied to lumber kilns, actual operational and maintenance problems are not fully understood. Basic technical challenges identified with controlling lumber kilns with the use of several potential control technologies, are categorized as follows:

- Exhaust gas collection, and
- Collection and treatment of condensate.

Sections 5.1.2.1 and 5.1.2.2 address the technical challenges listed above and how these challenges affect the ability of applying emission controls to lumber kilns. Sections 5.1.2.3 – 5.1.2.8 provide detailed discussions for each control technology with regards to technical challenges to control VOC emissions from the lumber kilns.

5.1.2.1. Exhaust Gas Collection

Drying within continuous lumber kilns is facilitated by combustion air from a natural gas-fired burner mixed with circulating air in a blend chamber. A centrifugal blower forces the heated air through a duct into a plenum that distributes the air to circulating fans inside of the kiln. The heated air transfers moisture from the lumber to the air that is circulated throughout the kiln. Heated air from the process is directed through openings at both ends of the kiln. The doorway openings at the ends of continuous kilns must remain open at all times to facilitate the continuous loading and unloading of lumber. The process exhaust air (including products of combustion from the direct-fired burner and VOCs from lumber drying) are vented through these openings and through one or more powered vent exhaust stacks located just inside of and above the doorway openings of the continuous kiln. Powered exhaust vents are a technology that Georgia-Pacific has employed on continuous kilns. This technology results in an estimated 80% of the exhaust air being directed through the powered vent exhaust stacks, and the remaining 20% exhausted through the doorway openings of the kiln.

5.1.2.2. Collection and Treatment of Condensation

The process air both within and exhausted from the kiln has a relative humidity of 100%. While the drying section within the kiln may reach temperatures up to 250°F, the temperature of the exhaust gases

from both of the doorway openings on both ends of the kiln, as well as the exhaust stacks, is typically between 110°F and 150°F. If the temperature of the process exhaust gas stream is not maintained, the exhaust gases will cool as they flow from the exhaust stack through the ductwork to a selected VOC control device. As the temperature of the process exhaust gas is reduced, water and VOC constituents from the process air will condense and be deposited on the inside of the ductwork. Condensation of material inside of the walls of the ductwork poses several problems including the quantity generated, the weight of the water buildup, and the buildup of “stickies” from the condensation of VOC-containing compounds. The lumber enters the kiln with a moisture content of approximately 48% and is dried to a moisture content of approximately 13%. An estimated 0.23 gallons of water per board foot is removed from southern yellow pine during the drying process³. For kilns that processes 320,000 thousand board feet per year (MBF/yr), a total of 73.6 million gallons of water per year will be removed. The weight of the condensate generated could cause the exhaust ductwork to collapse without extensive design and support and a drainage system to capture and discharge the condensate to a wastewater treatment system. Handling, treating and discharging this quantity of condensate is considered technically infeasible for many of the lumber kilns GP operates for several reasons. First, all of the facilities are designated as zero wastewater discharge facilities. Secondly, most do not have an onsite wastewater treatment facility to treat the condensate or access to a publicly-owned treatment works to treat the condensate.

In addition to the quantity and weight of condensate buildup in the exhaust ductwork, kiln condensate is very “sticky” due to the presence of resinous compounds in the exhaust gases, and points of condensation will, over time, build-up and could cause severe blockages and malfunctions of dampers and ductwork connections. The quantity of “stickies” that might build-up is unknown, but severe control system malfunctions are likely as well as a large amount of time and labor expended to clean out the build-up of sticky material, based on previous and current experience within our wood products facilities. Also, stickies are very flammable and would require a robust fire detection and suppression system within the ductwork to prevent fires and/or explosions that could be caused by a spark from the direct fired kiln.

To avoid generating a large quantity of condensate (containing both water and stickies), that would otherwise be considered technically infeasible to manage, GP proposes to heat the process air exiting the kiln exhaust stacks to a temperature above the point of condensation. Based on previous experience with condensation within GP plywood, OSB and particleboard capture and control systems, GP concludes the process air captured from the kiln exhaust stacks would need to be heated to a minimum of 200°F in order to capture and treat VOCs in the exhaust gas stream and without any condensation taking place.

5.1.2.3. Wet Electrostatic Precipitator (WESP) followed by Thermal Oxidation

As previously mentioned, RTO performance can be affected by PM contained in the exhaust gas stream. Therefore, PM emissions must be removed from the exhaust gas stream prior to entering the RTO. PM emissions from the lumber drying process could lead to ceramic bed fouling, performance degradation or even fires as the PM becomes entrained on the ceramic media bed. Depending on the design of the ceramic media contained in the bed, PM buildup could lead to plugging or blocked airflow of the bed resulting in an increase in the pressure drop across the bed. This in turn will require the exhaust fan to work harder and consume more energy to overcome the pressure drop. Fouling of the ceramic media bed with PM reduces the effectiveness of the ceramic media’s ability to transfer heat. At the same time, the

³ (USDA Agricultural Handbook AH-188: Dry Kiln Operator's Manual)
http://www.fpl.fs.fed.us/products/publications/several_pubs.php?grouping_id=101&header_id=p

buildup of PM presents a serious fire hazard (especially in the presence of “stickies” generated by heating the wood).

To minimize the PM build-up on the ceramic media bed, WESPs placed ahead of the RTO is one method currently being used in several GP OSB facilities to control VOC and PM emissions from rotary dryers. GP has determined through experience at other facilities that ceramic media bed fouling is still an issue, even with a WESP situated ahead of the RTO on a direct fired dryer. The bed fouling can lead to a reduced life span of the ceramic media that required complete replacement of the media more frequently than expected. While ceramic media bed fouling over the life of an RTO does not render the operation of a WESP/RTO control system technically infeasible, it does add to the operating cost of the control system unit, which will be addressed under Step 4 of this BACT analysis.

5.1.2.4. Wet Electrostatic Precipitation & Catalytic Oxidation

PM removal is even more critical for RCOs than RTOs as the catalyst may be blinded by the build-up of PM. RCOs are also sensitive to poisoning by heavy metals that may be contained in the exhaust gas stream. As such, PM removal is necessary in order to prevent blinding of the catalyst inside of the RCO. Blinding of the catalyst occurs when PM coats the catalyst, thereby preventing the coated sections of the catalyst from oxidizing the VOCs contained in the exhaust gas stream. The RCO catalyst is also sensitive to poisoning with exhaust gas streams that contain silicon, phosphorous, arsenic, and many other heavy metals. While the build-up of PM on the catalyst may be reversed by burning away the PM, metallic poisoning requires replacement of the catalyst as the metals become chemically bound to the active surface which reduces the total surface area capable of promoting oxidation. GP has placed RCO media baskets within OSB control systems including a system utilizing a WESP and RTO. After a three month period of operation, the sample baskets were removed and analyzed. The control systems not utilizing a WESP were blinded or poisoned by PM build-up to the point that the exhaust gases were unable to come into intimate contact with the catalyst. Catalyst removed from the OSB dryer employing a WESP showed some blinding and significant poisoning. Discussions with the catalyst vendor indicated that catalytic oxidation using an RCO is not a viable control technology for this type of exhaust gas stream due to the PM, metals, and acidic content of the exhaust gases, even with the use of a WESP. Based on this analysis, this control technology is considered technically infeasible and will not be discussed any further.

5.1.2.5. Condensation

Condensation requires that the exhaust stream be cooled to a temperature low enough such that the vapor pressure of the exhaust gases are lower than the VOC concentration of the exhaust gases. The primary constituent of the VOC in the exhaust gas stream from the lumber kilns is terpenes, which would require the temperature of the exhaust stream to be lowered to well below 32°F in order to have a vapor pressure low enough to use condensation. A temperature of 32°F would cause the water vapor in the stream to freeze, and the resulting ice particles would clog the condensation unit. As such, condensation is not technically feasible to control VOC emissions from a lumber kiln.

5.1.2.6. Carbon Adsorption

Carbon adsorption systems work on the principle that VOCs within the exhaust gases condense on the surface of the adsorbent, which is usually activated carbon. Once the activated carbon surface has adsorbed all the VOCs possible, the VOC is desorbed, usually with steam, to regenerate the activated carbon. Humidity within an exhaust gas has a noticeable effect on the absorption of VOCs using

activated carbon, as the water vapor will condense on the adsorbent in addition to the VOC. One study reported desorbing of VOC from the carbon as water displaced the VOC⁴. The presence of water in exhaust gases will decrease the ability of VOCs to be absorbed. As previously mentioned, exhaust gases from lumber drying kilns have a relative humidity of 100%; therefore the humidity of the exhaust gas will compete with VOC adsorption and greatly reduce the VOC control efficiency of the unit.

Although some VOCs can be desorbed with the use of a chemical treatment, terpenes, the primary VOC constituent in kiln exhaust gases, must be thermally desorbed. As a result, the temperature necessary for desorption are excessively high and would likely damage any commercially-available adsorption media.⁵ The adsorption capacity of an activated carbon system is higher with lower exhaust gas temperatures since desorption takes place near the boiling point of the VOC within the exhaust gas. As previously mentioned, GP proposes to heat the exhaust gas above 200°F to prevent any condensation of the exhaust gas stream taking place in the ductwork. This temperature is above the boiling point for some of the VOC components within the exhaust gas (e.g. formaldehyde and methanol). Therefore, VOC control is expected to be greatly reduced at this high exhaust temperature. It is also likely that the “stickies” contained in the kiln exhaust gas stream would plug the activated carbon bed with a build-up of condensable PM. Based on all of these reasons, this control technology is considered technically infeasible and will not be discussed further.

5.1.2.7. Wet Scrubbing

Wet scrubbing is most effective for exhaust gas streams that contain water soluble VOC compounds, such as methanol. However, the primary VOC constituents of kiln exhaust gases, pinenes and terpenes, are not water soluble. Therefore, these constituents would not be easily adsorbed in a wet scrubber, and the VOC removal efficiency would be quite low, on the order of 10-20%. In addition, the viscous nature of the “stickies” within the exhaust gas will easily plug the scrubber absorption media. Therefore, this control technology is considered technically infeasible and will not be discussed further.

5.1.2.8. Biofiltration

To the best of our knowledge, no vendor has designed a biofiltration system to remove VOC emissions from an exhaust gas stream with characteristics similar to those from a lumber kiln. As previously discussed, to prevent condensation and the buildup of “stickies” inside of the exhaust ductwork between the kiln and control equipment, GP believes it would be necessary to heat the kiln exhaust gases to temperatures above that which condensation would occur, or above 200°F. Exhaust gas stream temperatures well above 105°F would kill the bacteria contained in the filter media of the biofilter and thereby render the system ineffective.

As previously mentioned, the primary constituents in the exhaust gas are pinenes and terpenes, which are insoluble in water. The biofilter will be ineffective at breaking down pinenes and terpenes. Additionally, due to the highly viscous nature (“sticky”) of these compounds, VOCs are expected to build-up within the biofilter bed, plugging the media, and reducing its effectiveness.

⁴ U.S. EPA, “Technical Bulletin - Choosing an adsorption System for VOC”, EPA 456/F-99-004, May 1999
<http://www.epa.gov/ttn/catc/dir1/fadsorb.pdf>

⁵ Georgia EPD, “Prevention of Significant Air Quality Deterioration Review of the Langdale Forest Products Co. Valdosta, Georgia (Lowndes County).” Preliminary Determination, Permit Application No. 18039 October 7, 2008.
<http://www.georgiaair.org/airpermit/downloads/permits/18500009/psd18039/1850009pd.pdf>

GP has looked at biofiltration in depth with a vendor that utilizes newer technology compared to the traditional control systems that utilize bioactive media such as soil, peat or compost. However, the company has not yet constructed a commercial system, or even a pilot plant, that had demonstrated effective removal of VOCs from lumber kiln exhaust gases, or anything similar. The use of biofiltration to remove VOCs from a lumber kiln exhaust gas stream is therefore deemed technically infeasible and will not be discussed further.

5.1.3. Step 3 - Ranking of Control Technologies by Control Efficiency

Although the technical feasibility of capturing and transporting kiln exhaust gases to a pollution control system is questionable for the reasons outlined in Sections 5.1.2.1 and 5.1.2.2, GP is considering the use of a WESP followed by an RTO in more detail to assure that all possible control technologies have been thoroughly examined as part of this BACT analysis. A summary of the VOC control efficiencies of the remaining technically feasible control technologies, ranked in order of control effectiveness, is presented below.

- WESP/RTO = 95⁶%
- Work Practices = base case, no additional reduction

5.1.4. Step 4 – Cost Effectiveness Evaluation of Control Technologies

The fourth step in the top-down BACT assessment procedure is to evaluate the cost effectiveness of the control technologies that were not eliminated in Step 2 and document the results.

5.1.4.1. Economic Costs

The control technologies considered in the analysis result in significant capital and operating costs. It is also likely that the costs included in this BACT analysis are underestimated due to difficulty of accurately estimating a system that has not been demonstrated in practice. Unknown maintenance, operational, and engineering problems due to the unique characteristics of lumber kiln exhaust gases could result in higher costs than those presented in this step of the BACT analysis.

Based on engineering estimates, the cost estimate analysis assumes the Talladega Sawmill would install two WESP followed by an RTO (one WESP/RTO to control CDK-1 and the other WESP/RTO to control CDK-2 and CDK-3). The cost of controlling VOC emissions with a WESP followed by an RTO is estimated at approximately \$12,303 per ton of VOC as carbon (C) (\$9,591 per ton of VOC as WPP1) removed from CDK-1 and \$12,142 per ton of VOC as C (\$9,466 per ton of VOC as WPP1) from CDK-2 and CDK-3 based on the results shown in the detailed cost effectiveness spreadsheet provided in Appendix C.⁷ This cost effectiveness value is largely due to the cost of heating the lumber kiln exhaust air to a temperature of approximately 200°F to prevent condensation and the formation of “stickies” in the exhaust ductwork exiting the kiln, leading into the control system. Based on the high cost effectiveness

⁶ Higher RTO VOC control values have been demonstrated for some applications, but high control is not expected for low concentration high flow applications like those at the CDKs.

⁷ Note that the cost per ton was calculated based on both an as carbon basis and WPP1 basis. The as carbon basis was used for comparison to the other RBLC entries which typically use as carbon. In addition, GP has received guidance from other states to calculate cost per ton on an as carbon basis.

value for removing VOCs from the lumber kilns using a WESP followed by an RTO, GP does not believe it is economically feasible to use this control technology.

5.1.4.2. Environmental Impacts

There are energy and environmental impacts associated with the use and combustion of natural gas in the RTO. The combustion of natural gas as an RTO fuel would create additional NO_x, CO, and CO₂ emissions. The generation of these emissions simply to reduce VOC emissions may result in a net negative environmental effect.

The reduction of VOC emissions from a lumber kiln, and the very small quantities of HAPs and toxic air pollutants (TAPs), would have a negligible impact on air quality in the vicinity of the facility. Under the PSD program, VOCs are regulated to prevent significant deterioration of air quality due to ozone formation. Ozone is formed in the atmosphere due to atmospheric chemical reactions of NO_x and VOCs that are oxidized in the presence of sunlight excessive concentrations of ozone in the lower atmosphere can be injurious to human health and damage vegetation. The facility is located in a lightly populated and developed area of Alabama and ambient concentrations of ozone in this area are in attainment with the NAAQS for this pollutant. Moreover, it should also be noted that VOC emissions from the lumber kilns are small compared to the biogenic (naturally occurring) VOC emissions generated by the forested areas in the vicinity of the facility and, consequently, any reduction of VOC emissions from the lumber kilns will have a negligible effect upon ozone formation and ozone concentrations in the area.

The southeast is NO_x limited with respect to ozone formation. Therefore, small increases in NO_x (i.e., generated from natural gas combustion of an RTO) could result in increased ozone, while relatively larger increases in VOC will likely not result in ozone increases.

5.1.4.3. Energy Impacts

The control technologies require energy to operate fans to move the exhaust gases through a significant amount of ductwork, requiring significant electricity for a WESP/RTO control system. The indirect heated ducting and the RTO also require the use of supplemental fuel to heat the ductwork and maintain the appropriate combustion temperature within the RTO.

5.1.4.4. Proper Kiln Design and Operation

The only economically cost effective control technology for removing VOC emissions from a continuous lumber kiln is the use of "proper design and operating practices". Since this control option is the top remaining BACT control technology, after showing that other "add-on" control systems were not technically or economically feasible, a cost effectiveness evaluation is not required.

5.1.5. Step 5 - Select BACT

Results of the top-down BACT analysis indicate that there are no demonstrated control techniques in practice, numerous technical challenges, and no cost-effective add-on control technologies for removing VOC emissions from lumber drying kilns and, consequently, the BACT proposed for the lumber kilns is "no control" with the use of "proper design and operating practices" as BACT. GP proposes a VOC emission limit of 5.49 lb/MBf as WPP1 as BACT. This BACT limit applies during all operating conditions as there are no significant changes to the VOC emissions generated by the kilns during startup and shutdown compared to normal operation.

The proposed BACT work practices for the continuous lumber kilns consist of (1) proper kiln maintenance and (2) minimizing over-drying while meeting the relevant lumber moisture specifications.

Limiting over-drying has a direct impact on the minimization of VOC emissions. The VOCs emitted from southern pine lumber drying consist of approximately 80-90% terpenes and pinenes which are native compounds in the wood. Emissions of these compounds are largely proportional to the amount of moisture removed from the lumber as it is dried inside the kilns.

GP proposes to demonstrate compliance with these work practices by measuring the moisture content of the kiln dried lumber. Due to seasonal variability of wood moisture content and drying times, GP proposes a rolling 12-month average for comparison to the established moisture content target. In addition to monitoring moisture content, following a preventative maintenance plan will assist in minimizing VOC emissions. Proper maintenance of kiln equipment ensures optimal drying conditions which minimizes the possibility of over-drying. Due to the relatively new nature of continuous kilns, best performance and maintenance parameters may need to be updated as experience is gained through kiln operation, thus GP proposes to develop and implement an operating and maintenance plan within 180 days of start-up of the continuous kiln. The development of site specific plans for proper kiln operation and maintenance is consistent with recent BACT determinations in EPA Region 4.

5.2. BACT DETERMINATION FOR EMERGENCY FIRE PUMP ENGINE

This analysis is being conducted to determine the best available control technology for VOC emissions. An emergency fire pump engine (FE) is proposed for the Talladega Sawmill. Combustion of ultra-low sulfur diesel (ULSD) in the units will result in emissions of VOC. The engine will be subject to the requirements of NESHAP Subpart ZZZZ.

5.2.1. Step 1 - Identification of Control Technologies

A RBLC search was completed for small (<500 bhp) internal combustion engines (process type 17.21 – fuel oil). The search was further refined to exclude entries without sufficient information to determine a VOC limit. Additionally, the search was refined to exclude engine sizes outside of the range set by 40 CFR 60 Subpart IIII for engines with the same emission limitations (≥ 130 bkW and ≤ 560 bkW). The results of this search are included in Table C-11 in Appendix C. The emission limits in the database were converted into lb/hp-hr for comparison purposes. All units indicate no control or good design and/or combustions practices for VOC. Though not historically used for BACT, a list of possible control technologies for an engine is provided below.

- Diesel Oxidation Catalyst
- Good Combustion Practices and Maintenance

5.2.2. Step 2 - Technical Feasibility Analysis

Reduction of non-methane hydrocarbon or VOC emissions from engines can be achieved from add on control such as exhaust treatment catalyst or through good combustion practices and proper maintenance. These options have variable control efficiency depending on engine size, design, and age.

5.2.3. Step 3 - Ranking of Control Technologies by Control Efficiency

All add on control and good combustion practices control technologies are technically feasible. Engine control technologies are primarily directed at limiting NO_x and CO emissions, since they are the primary pollutants emitted. As a result, there is little information on the control efficiency of VOC for each technology. However, there is information on the control efficiency of petroleum hydrocarbon (HC)⁸, which can be used as a surrogate control of VOC. The level of control for HCs is expected to be greater than the actual control of total VOCs. A summary of the VOC control efficiencies of the technically feasible control technologies, ranked in order of HC control effectiveness, is presented below.

- Diesel Oxidation Catalyst = 40-75% of HC
- Good Combustion Practices and Maintenance = base case, no additional reduction

5.2.4. Step 4 – Cost Effectiveness Evaluation of Control Technologies

The engine is for emergency use only; the use of the engine and resulting potential emissions of 0.2 tpy (based on 500 hrs/yr operation). The actual use of the engine will be well below potential as the engine is only used in the event of a fire (and periodic testing for unit readiness). GP does not believe that the cost per ton of VOC emission reduction through any of the above add on control technologies for this engine are economically feasible.

5.2.5. Step 5 - Select BACT

Results of the top-down BACT analysis indicate that there are no cost-effective add-on control technologies for removing VOC emission from an emergency fire pump engine, and consequently, the BACT proposed for the emergency fire pump engine is “no control” with the use of “good combustion practices including proper engine maintenance and operation” as BACT. There are no applicable NSPS or NESHAP limits on VOC emissions for a 1984 model year emergency fire pump engine. NESHAP Subpart ZZZZ contains total hydrocarbon (THC) limits for some engines, however these limits only apply to non-emergency engines and are not applicable to emergency engines. NSPS Subpart IIII contains some hydrocarbon (HC) or HC + NO_x limits, but pre-2006 model engines are not subject to NSPS Subpart IIII. Therefore, GP proposes an emission limit of 0.00251 lb/hp-hr TOC. This BACT limit applies during all operating conditions as there are no significant changes to the VOC emissions generated by the engine during startup and shutdown compared to normal operation. (Note that the given the engine is a 1984 model year, the emission limit is expected to be achievable based on the emission factors within AP-42 Section 3.3 Gasoline And Diesel Industrial Engines, Table 3.3-1).

5.3. BACT DETERMINATION FOR PETROLEUM PRODUCT STORAGE TANKS

This analysis is being conducted to determine the best available control technology for VOC emissions. GP will have diesel and oil storage tanks with capacities ranging from 250 gallons to 6,000 gallons (LST-

⁸ U.S. EPA, “Technical Bulletin - Diesel Oxidation Catalyst General Information”, <https://www.epa.gov/sites/production/files/2016-03/documents/420f10029.pdf>

2, LST-3, and TST). Emissions result from evaporative loss of the stored liquid and from changes in the liquid level.

5.3.1. Step 1 - Identification of Control Technologies

A RBLC search was completed for tanks (process type 42.005 – petroleum liquid storage in fixed roof tanks). The results of this search are included in Table C-12 in Appendix C. General control of tank emission of VOC is provided below.

- Vapor collection and add on control
- Submerged fill/bottom loading
- Tank color

5.3.2. Step 2 - Technical Feasibility Analysis

All options listed above are technically feasible for the reduction of VOC off the petroleum product storage tanks. The add-on controls (such as carbon adsorption, RTO, RCO, condensation, biofiltration, and scrubbing) would require collection of the vapors through vapor recovery. Vapor recovery captures the organic vapors generated or displaced. Submerged fill and tank color are process equipment design parameters.

5.3.3. Step 3 - Ranking of Control Technologies by Control Efficiency

The color of a tank color can impact the solar absorption to various degrees and its actual control of VOCs depending on many factors. A summary of the VOC control efficiencies of the technically feasible control technologies, ranked in order of HC control effectiveness, is presented below.

- Vapor collection and add on control = 99%
- Submerged fill/bottom loading = 40%
- Tank color = Varies

5.3.4. Step 4 – Cost Effectiveness Evaluation of Control Technologies

The tanks are located throughout the facility and vapor collection with add on control would require a significant amount of ductwork in addition to the add on control system. In addition, as many add on controls require adverse energy use and generate other pollutants by their operation, control equipment does not support the possible reduction of VOC emissions, which are currently less than 0.01 tpy. GP does not believe that the cost per ton of VOC emission reduction through any vapor recover with add on control, or submerged fill/bottom loading technologies are economically feasible.

5.3.5. Step 5 - Select BACT

As the only remaining reduction option, GP proposes using tank color as BACT for VOC from storage tanks, ensuring all tanks storing organic liquids are light in color. The emission limit proposed for these tanks include this control factor, therefore BACT is proposed as the calculated hourly potential emissions.

5.4. BACT DETERMINATION FOR GASOLINE STORAGE TANK

This analysis is being conducted to determine the best available control technology for VOC emissions. GP will have a gasoline tank (LST-1) with capacity of 1,000 gallons. Emissions result from evaporative loss of the stored liquid and from changes in the liquid level.

5.4.1. Step 1 - Identification of Control Technologies

A RBLC search was completed for tanks (process type 42.005 – petroleum liquid storage in fixed roof tanks). The results of this search are included in Table C-12 in Appendix C. General control of tank emission of VOC is provided below.

- Vapor collection and add on control
- Submerged fill/bottom loading
- Tank color

5.4.2. Step 2 - Technical Feasibility Analysis

All options listed above are technically feasible for the reduction of VOC off the petroleum product storage tanks. The add-on controls (such as carbon adsorption, RTO, RCO, condensation, biofiltration, and scrubbing) would require collection of the vapors through vapor recovery. Vapor recovery captures the organic vapors generated or displaced. Submerged fill and tank color are process equipment design parameters.

5.4.3. Step 3 - Ranking of Control Technologies by Control Efficiency

The color of a tank color can impact the solar absorption to various degrees and its actual control of VOCs depending on many factors. A summary of the VOC control efficiencies of the technically feasible control technologies, ranked in order of HC control effectiveness, is presented below.

- Vapor collection and add on control = 99%
- Submerged fill/bottom loading = 40%
- Tank color = Varies

5.4.4. Step 4 – Cost Effectiveness Evaluation of Control Technologies

Many add on controls require adverse energy use and generate other pollutants by the operation of control equipment do not support the possible reduction of VOC emissions, which are currently less than 0.32 tpy. GP does not believe that the cost per ton of VOC emission reduction through any vapor recover with add on control are economically feasible. The ranked cost effectiveness of each remaining control technology, is presented below.

- Submerged fill/bottom loading
- Tank color

5.4.5. Step 5 - Select BACT

GP proposes to use submerged fill/bottom loading as BACT for VOC from the gasoline storage tank. GP proposes an emission limit of 21.2 lb/hr.

6. ADDITIONAL IMPACTS, OZONE REVIEW, AND CLASS I AREA REVIEW

6.1. ADDITIONAL IMPACTS

An additional impacts analysis is required under the PSD requirements at ADEM Admin Code r. 335-3-14-.04(14) to evaluate the effects of economic growth and the effect on soils, vegetation, and visibility from regulated compounds emitted in significant quantities from a new or modified major stationary source.

6.1.1. Growth Analysis

The growth analysis evaluates the impact associated with the project on the general commercial, residential, and industrial growth within the project vicinity. PSD requires an assessment of the secondary impacts from applicable projects. Although the Talladega Sawmill will generate jobs, the work force will likely be no greater than the workforce associated with the GP plywood plant which stopped operations in 2008. There will also be some long-term growth (i.e., general commercial, residential, industrial or other secondary growth in the area) expected as a result of the proposed Talladega Sawmill. However, the growth in the area is expected to be gradual. Therefore, no analysis of secondary impacts from associated growth is warranted for this project.

6.1.2. Soils and Vegetation

The PSD regulations require an evaluation of the impact of project emissions on soils and vegetation. The analysis is required only for those pollutants for which PSD review is triggered. According to *A Screening Procedure for the Impacts of Air Pollution on Plants, Soils and Animals*⁹, the relevant pollutants for soils and vegetation are NO₂, SO₂, and CO. The project triggers PSD review for VOC only and does not have a significant net emissions increase of NO₂, SO₂, or CO. Therefore, a soils and vegetation analysis is not necessary because no significant impacts are expected.

6.1.3. Class II Area Visibility

The PSD regulations require an evaluation of the impact of project emissions on visibility in Class II areas. The analysis is required only for those pollutants for which PSD review is triggered. The relevant pollutants for visibility are PM, NO_x, and SO₂. The project triggers PSD review for VOC only and does not have a significant net emissions increase of PM, NO_x, and SO₂. Therefore, a visibility analysis is not necessary because no significant impacts are expected.

6.2. OZONE AIR QUALITY REVIEW

An application for a PSD permit must include an analysis of the ambient air quality in the vicinity of the proposed project for each compound for which the project is subject to PSD review. Because the proposed project triggers PSD review for VOC, an ambient impact analysis for ozone is required. In addition, as the emissions of VOC exceed the monitoring *de minimis* level of 100 tpy, an evaluation is

⁹ U.S. EPA, "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils and Animals," December 12, 1980.

required to determine if representative ozone data are available in lieu of pre-construction ozone monitoring. Existing air quality may be used in lieu of pre-constructing monitoring if:

- The data are representative of the proposed facility's impact areas;
- The data are of similar quality as would be obtained if the applicant monitored according to the PSD requirements; and
- The data are current; that is, the data have been collected during the two-year period preceding the permit application, provided the data are still representative of current conditions.

The closest ozone monitor relative to the Talladega Sawmill is approximately 28 miles away, located at 201 Ashville Road in Leeds, Alabama (AQS ID 01-073-1010) as shown in Figure 6-1. Given the proximity to the Talladega Sawmill and the regional nature of background ozone, the Leeds monitor provides a representative indication of ozone concentrations in the vicinity of the Talladega facility. The monitor is operated by ADEM and their *State of Alabama Ambient Air Monitoring 2017 Consolidated Network Review*¹⁰ describes the Leeds monitor as a high population exposure monitor that is currently active and began sampling in 2001. The data is considered of good quality and is suitable for comparison to the O₃ NAAQS. The availability of current, representative monitored ozone data that are of good quality and were collected appropriately precludes the need for additional pre-construction ambient ozone monitoring for the project.

¹⁰ ADEM, *State of Alabama Ambient Air Monitoring 2017 Consolidated Network Review*.
<http://www.adem.state.al.us/programs/air/airquality/2017AmbientAirPlan.pdf>

Figure 6-1. Location of Ozone Monitor relative to the Talladega Sawmill



GP reviewed the current and historical design values¹¹ for the Leeds monitor, which represents the 3-year average of the 4th highest daily 8-hour concentration, relative to the 2015 ozone NAAQS of 70 parts per billion (ppb). Table 6-1 summarizes these values and demonstrates that the monitor has measured ambient ozone concentrations in attainment with the ozone NAAQS and also indicated a downward trend and improved ozone air quality over the last ten or more years.

¹¹ EPA tabulated design values, <https://www.epa.gov/air-trends/air-quality-design-values>.

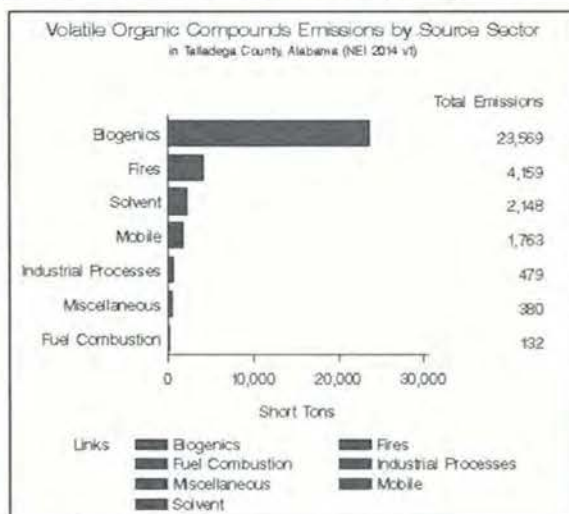
Table 6-1. Summary of Leeds-Talladega Area Ozone Design Values, 2007-2016

	AQS ID: 01-073-1010 Leeds, AL (201 Ashville Road)
Design Value	(ppb)
2005-2007	75
2006-2008	76
2007-2009	72
2008-2010	69
2009-2011	71
2010-2012	76
2011-2013	74
2012-2014	69
2013-2015	63
2014-2016	64

Ozone is formed by the reaction of sunlight on air containing VOC and NO_x. In the southeastern United States, ozone formation is limited by NO_x emissions due to high amounts of biogenic VOC in the atmosphere. The Talladega Sawmill is located in Talladega County. As noted, the proposed project will have an insignificant increase in NO_x, but the project will have a significant PSD increase in VOC emissions. VOC emissions by source sector in Talladega County were compiled from the U.S. EPA Air Emission Sources database.¹² Figure 6-2 summarizes these emissions and shows that the Talladega Sawmill will increase VOC emissions (878.9 tons) in Talladega County by approximately 2.7% compared to the existing inventory (32,630 tons), a relatively insignificant amount. Because ozone formation is NO_x limited in the southeast, the increase in VOC emissions from the proposed project is not expected to significantly affect ozone concentrations in the vicinity of or downwind of the Talladega Sawmill.

¹² <https://www.epa.gov/air-emissions-inventories/where-you-live>.

Figure 6-2. Summary of Ozone Precursor Emissions (VOC) in Talladega County, Alabama



In December 2016, a final revision to the U.S. EPA's Appendix W, *Guideline on Air Quality Models*, was signed providing more specific guidance for assessing the impacts of an individual source on ozone. As part of the more specific guidance, the U.S. EPA is currently finalizing a two-tiered demonstration approach for addressing individual source impacts on ozone. The first tier involves use of technically credible relationships between precursor emissions and a source's impacts while the second tier involves application of more sophisticated case-specific chemical transport models. The U. S. EPA has recently issued draft guidance providing recommendations on air quality modeling and related technical analyses to satisfy compliance demonstration requirements for ozone for permit-related assessments under the PSD program; *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program* (December 02, 2016) and Errata Memo (February 23, 2017). The draft guidance provides a Tier 1 demonstration tool for ozone (and PM_{2.5}) referred to as Modeled Emission Rates for Precursors (MERPs). The MERPs are screening thresholds for precursor emissions, where VOC and NO_x screening values are provided for ozone, that are expected to result in an insignificant increase in ambient ozone relative to the NAAQS; i.e., an impact less than the 8-hour ozone significant impact level (SIL) of 1 ppb. The MERP values were derived based on modeling conducted by U.S. EPA for locations across the U.S. For this project, since PSD analysis is only applicable to VOC, only a comparison against VOC MERPs was conducted.

Table 7.1 of the guidance, as updated in the Errata Memo, provides the "Most Conservative (Lowest) Illustrative MERP Values (tons per year) by Precursor, Pollutant and Region". MERP values are provided for VOC for the central, eastern and western U.S. For the eastern U.S., the VOC value for evaluating 8-hour ozone impacts is 1,159 tpy. To determine if an individual source would exceed the critical air quality threshold, the emissions increase is calculated as a percent of the lowest MERP for each precursor requiring analysis and summed. Using the equation prescribed for this determination of additive secondary impacts on 8-hour daily maximum ozone (see below), the emission increase of 878.9 tpy VOC equates to less than 100 percent and thus shows the critical air quality threshold will not be exceeded and the project would be presumed to have an insignificant impact on ozone concentrations.

$$(878.9 \text{ tpy VOC} / 1,159 \text{ tpy VOC 8-hr daily maximum ozone MERP}) = 0.758 = 0.758 \times 100\% = 76\%$$

Because the significant net emissions increase in VOC emissions from the project is small relative to the existing background emissions inventory, along with emissions being below the critical air quality threshold per the draft U.S. EPA MERP guidance, ozone concentrations in the vicinity of the Talladega Sawmill are not expected to be significantly affected by the proposed project.

6.3. CLASS I AREA IMPACTS

Class I areas are areas of particular value from a natural, scenic, recreational, and/or historical perspective. PSD permitting regulations afford Class I areas additional protection against adverse impacts on PSD increments and air quality related values (e.g., visibility and deposition). U.S. EPA and Federal Land Manager guidance generally requires that sources located within 300 km of one or more Class I areas evaluate whether PSD Class I increments and certain air quality related values be adversely affected. There are five Class I areas located within 300 km of the Talladega Sawmill with approximate distances listed below.

Sipsey Wilderness Area	160 km
Cohotta Wilderness Area	210 km
Joyce Kilmer-Slickrock Wilderness	286 km
Great Smoky Mountains National Park	300 km

The proposed project would cause a significant net emissions increase only of VOC, which is not a visibility- or deposition-affecting pollutant and for which there are no Class I PSD Increment. For this reason and because the project would not cause significant increases of NO_x, SO₂, or PM that may affect visibility or deposition and for which PSD Class I Increments have been established, Class I area impact analyses are not required.

APPENDIX A

FACILITY MAP AND PROCESS FLOW DIAGRAM



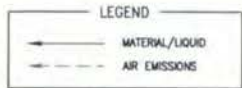
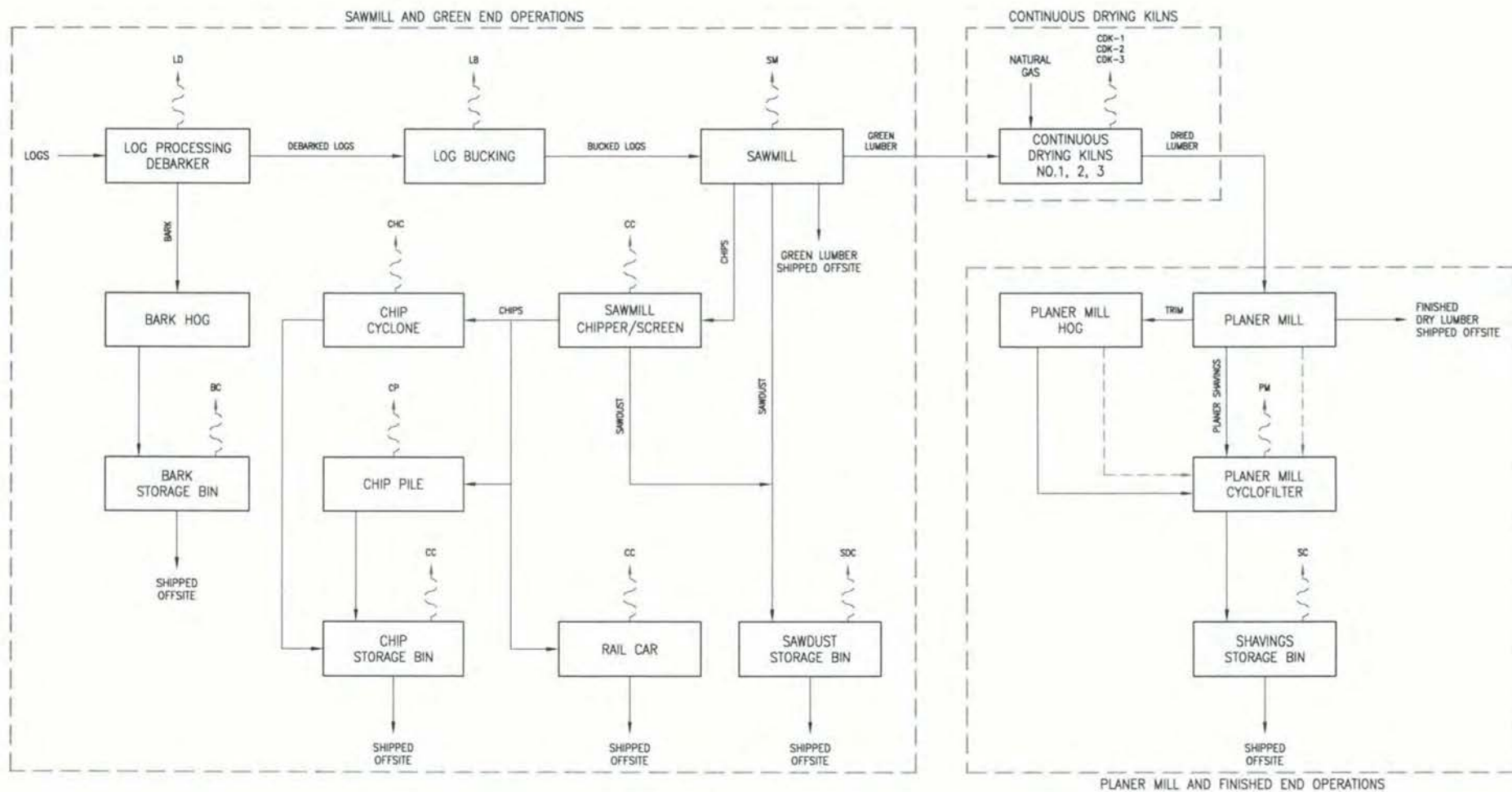
AREA OF INTEREST



Google



2178.000.G1			
AREA MAP			
GEORGIA-PACIFIC WOOD PRODUCTS, LLC TALLADEGA, ALABAMA			
Approved by:	BMH	 STRATEGIC ENVIRONMENTAL SERVICES 210 Green Lane Bryce, Alabama 35020	Project No.: 2178-17-030
Checked by:	BMH		Date: 08/30/2017
Drawn by:	IT		Scale: SHOWN



NOTE: ANCILLARY & MISCELLANEOUS SOURCES NOT ASSOCIATED WITH PRODUCTION PROCESS ARE NOT SHOWN.

2178.100.G1

PROCESS FLOW DIAGRAM

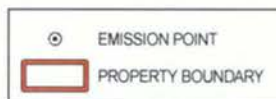
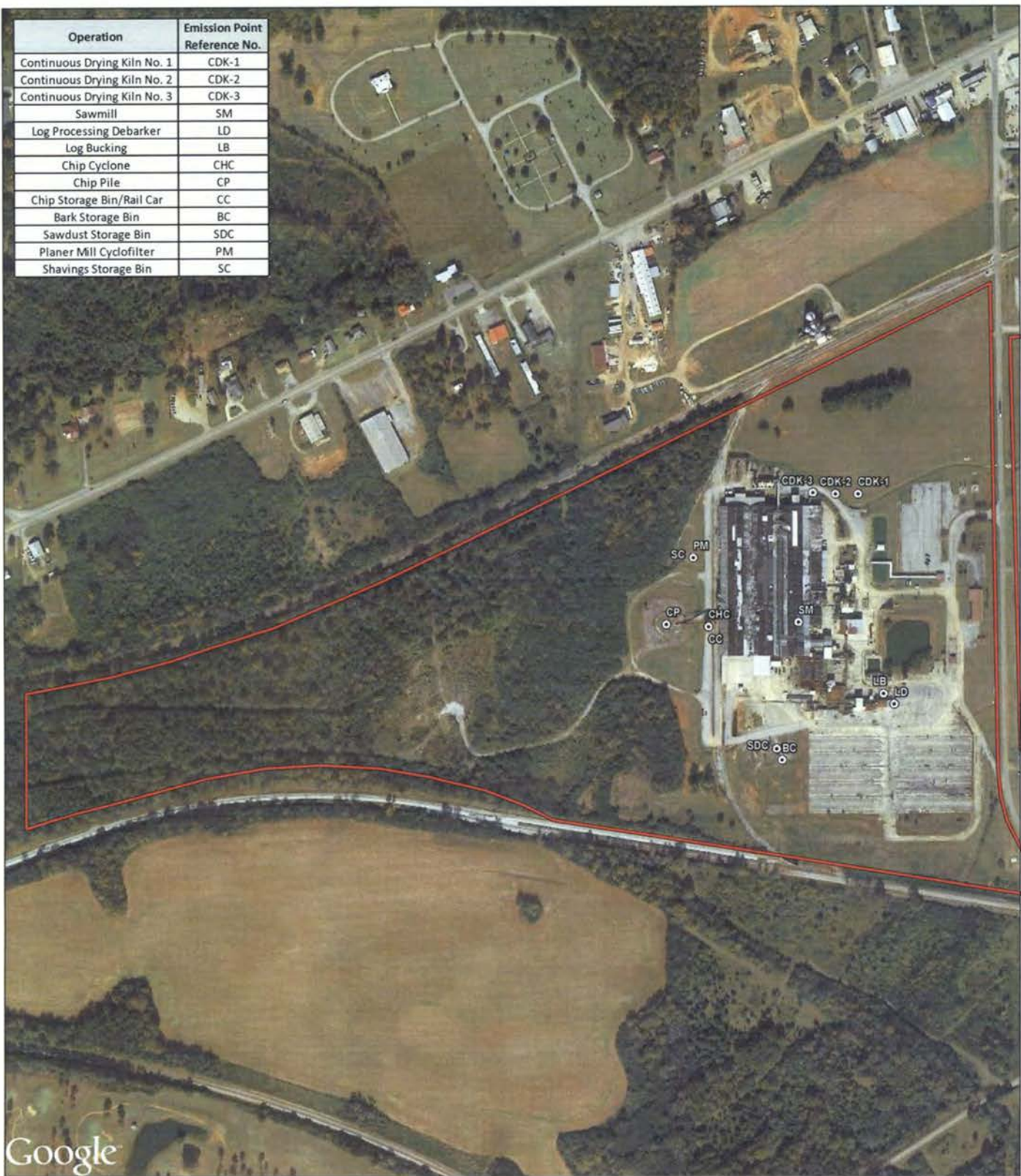
GEORGIA-PACIFIC WOOD PRODUCTS LLC
TALLADEGA, ALABAMA

Approved by: LMR
Checked by: CWR
Drawn by: IT

GBM
ENGINEERING CONSULTING SERVICES
218 South Lake
Bryant, AL 35002

Project No.: 2178-17-030
Date: 08/30/2017
Scale: ---

Operation	Emission Point Reference No.
Continuous Drying Kiln No. 1	CDK-1
Continuous Drying Kiln No. 2	CDK-2
Continuous Drying Kiln No. 3	CDK-3
Sawmill	SM
Log Processing Debarker	LD
Log Bucking	LB
Chip Cyclone	CHC
Chip Pile	CP
Chip Storage Bin/Rail Car	CC
Bark Storage Bin	BC
Sawdust Storage Bin	SDC
Planer Mill Cyclofilter	PM
Shavings Storage Bin	SC



2178.000.G2

PLOT PLAN

GEORGIA-PACIFIC WOOD PRODUCTS, LLC
TALLADEGA, ALABAMA

Approved by: BMH
Checked by: BMH
Drawn by: IT



Project No: 2178-17-030
Date: 08/31/2017
Scale: SHOWN

APPENDIX B

EMISSION CALCULATIONS

GP Talladega: Emission Summary

Source Group	Description	Pollutant	Potential Facility-Wide Emissions	
			lb/hr	tpy
Facility Wide	Criteria Pollutant Emissions	PM	19.76	23.75
		PM ₁₀	8.77	14.48
		PM _{2.5}	4.33	9.49
		SO ₂	0.58	0.41
		VOC ^[1]	314.40	878.87
		CO	10.73	40.10
		Lead	5.39E-05	2.36E-04
		NO _x	14.43	31.19
	HAP Emissions	Acetaldehyde	2.68E+00	8.06E+00
		Acrolein	3.19E-01	9.60E-01
		Arsenic	2.16E-05	9.45E-05
		Benzene	2.33E-03	1.52E-03
		Beryllium	--	--
		Cadmium	1.19E-04	5.20E-04
		Chromium	1.51E-04	6.61E-04
		Cobalt	9.06E-06	3.97E-05
		Dichlorobenzene	1.29E-04	5.67E-04
		Formaldehyde	1.36E+00	4.08E+00
		Hexane	1.94E-01	8.50E-01
		Manganese	4.10E-05	1.79E-04
		Mercury	2.80E-05	1.23E-04
		Methanol	1.33E+01	4.01E+01
		Methyl Isobutyl Ketone	6.38E-02	1.92E-01
		Naphthalene	2.57E-04	3.36E-04
		Nickel	2.26E-04	9.92E-04
		Phenol	6.58E-02	1.98E-01
		POM	3.65E-04	1.14E-04
		Propionaldehyde	6.38E-02	1.92E-01
		Selenium	--	--
		Toluene	7.67E-03	2.10E-02
		Xylene	1.34E-02	3.86E-02
		Highest Single HAP	13.33	40.10
		Total HAP	18.10	54.70
	Air Toxics	Barium	4.75E-04	2.08E-03
		Butane	2.26E-01	9.92E-01
		Copper	9.17E-05	4.02E-04
		Ethane	3.34E-01	1.46E+00
		Molybdenum	1.19E-04	5.20E-04
		Pentane	2.80E-01	1.23E+00
		Propane	1.73E-01	7.56E-01
		Vanadium	2.48E-04	1.09E-03
	GHG Emissions	Zinc	3.13E-03	1.37E-02
		CH ₄	0.26	1.07
		N ₂ O	0.027	0.11
		GHG	13,310.3	56,784.0
		Total CO ₂ e	13,324.7	56,841.7

Note:

[1] VOC emissions are represented as VOC as WWP1 for the Continuous Drying Kilns, VOC as TOC for the Fire Pump Engine, and VOC as C for the Large Storage Tanks and Storage Tanks < 1,000 gallons.

GP Talladega: Emission Summary (Continued)

Source Group	Description	Pollutant	Potential Source Group Emissions	
			lb/hr	tpy
Sawmill and Green End Operations	Total Source Group (LD, LB, SM, CHC, BC, CC, CP, SDC, RD): Emission Summary	PM	17.92	18.96
		PM ₁₀	5.93	6.02
		PM _{2.5}	1.50	1.06
Continuous Drying Kilns	Total Source Group (CDK-1, CDK-2, CDK-3): Emission Summary	PM	0.90	2.98
		PM ₁₀	1.99	7.11
		PM _{2.5}	1.99	7.11
		VOC as C	227.70	684.80
		VOC (WPP1)	292.07	878.40
		SO ₂	0.06	0.28
		CO	9.06	39.68
		NO _x	6.68	29.25
		Lead	5.39E-05	2.36E-04
		Acetaldehyde	2.68E+00	8.06E+00
		Acrolein	3.19E-01	9.60E-01
		Arsenic	2.16E-05	9.45E-05
		Barium	4.75E-04	2.08E-03
		Benzene	2.26E-04	9.92E-04
		Beryllium	--	--
		Butane	2.26E-01	9.92E-01
		Cadmium	1.19E-04	5.20E-04
		Chromium	1.51E-04	6.61E-04
		Cobalt	9.06E-06	3.97E-05
		Copper	9.17E-05	4.02E-04
		Dichlorobenzene	1.29E-04	5.67E-04
		Ethane	3.34E-01	1.46E+00
		Formaldehyde	1.35E+00	4.08E+00
		Hexane	1.94E-01	8.50E-01
		Manganese	4.10E-05	1.79E-04
		Mercury	2.80E-05	1.23E-04
		Methanol	1.33E+01	4.01E+01
		Methyl Isobutyl Ketone	6.38E-02	1.92E-01
		Molybdenum	1.19E-04	5.20E-04
		Naphthalene	6.58E-05	2.88E-04
		Nickel	2.26E-04	9.92E-04
		Pentane	2.80E-01	1.23E+00
		Phenol	6.58E-02	1.98E-01
		POM	5.59E-06	2.45E-05
		Propane	1.73E-01	7.56E-01
		Propionaldehyde	6.38E-02	1.92E-01
		Selenium	--	--
		Toluene	6.75E-03	2.08E-02
		Vanadium	2.48E-04	1.09E-03
		Xylene	1.28E-02	3.84E-02
		Zinc	3.13E-03	1.37E-02
		CO ₂	12,943.2	56,691.1
		CH ₄	0.24	1.07
		N ₂ O	0.02	0.11
		GHG	12,943.4	56,692.3
		Total CO ₂ e	12,956.5	56,749.7
		Highest Single HAP	1.33E+01	4.01E+01
		Total HAP	1.81E+01	5.47E+01
Planer Mill and Finished End Operations	Total Source Group (PM, SC): Emission Summary	PM	0.39	1.67
		PM ₁₀	0.28	1.20
		PM _{2.5}	0.27	1.18

GP Talladega: Emission Summary (Continued)

Source Group	Description	Pollutant	Potential Source Group Emissions	
			lb/hr	tpy
Fire Pump Engine	Total Source Group (FE): Emission Summary	PM	0.55	0.14
		PM ₁₀	0.57	0.14
		PM _{2.5}	0.57	0.14
		NO _x	7.75	1.94
		CO	1.67	0.42
		VOC as TOC	0.63	0.16
		SO ₂	0.51	0.13
		Acetaldehyde	1.73E-03	4.31E-04
		Acrolein	--	--
		Benzene	2.10E-03	5.25E-04
		1,3-Butadiene	--	--
		Formaldehyde	2.66E-03	6.64E-04
		Naphthalene	1.91E-04	4.77E-05
		Toluene	9.20E-04	2.30E-04
		Xylene	6.41E-04	1.60E-04
		POM	3.59E-04	8.98E-05
		CO ₂	3.67E+02	9.17E+01
		CH ₄	1.49E-02	3.72E-03
		N ₂ O	2.98E-03	7.44E-04
		GHG	3.67E+02	9.17E+01
Large Storage Tanks	Total Source Group (LST-1, LST-2, LST-3): Emission Summary	Total CO ₂ e	3.68E+02	9.20E+01
		Highest Single HAP	2.66E-03	6.64E-04
Trivial Activities ^[1]	Total Trivial Tank Group (TST) Emission Summary:	Total HAP	4.10E-01	2.10E-03
		VOC as C	2.14E+01	3.16E-01
		VOC as C	2.58E-01	1.18E-03

Note:

[1] Trivial activity emissions have been included for PSD applicability, however, are not included as proposed permitted sources in accordance with Section 1.E(2) of the TRIVIAL AND INSIGNIFICANT ACTIVITIES list dated September 23, 2009.

GP Talladega: PSD Potential To Emit vs PSD SER Summary

Source Group	NO _x	CO	SO ₂ ^[1]	PM ^[1]	PM ₁₀	PM _{2.5}	VOC ^[2]	Lead	CO2e
Sawmill and Green End Operations	--	--	--	19.0	6.0	1.1	--	--	--
Continuous Drying Kilns	29.3	39.7	0.3	3.0	7.1	7.1	878.4	0.0002	56,750
Planer Mill and Finished End Operations	--	--	--	1.7	1.2	1.2	--	--	--
Fire Pump Engine	1.9	0.4	0.1	0.1	0.1	0.1	0.2	--	92
Large Storage Tanks	--	--	--	--	--	--	0.3	--	--
Storage Tanks < 1,000 gallons	--	--	--	--	--	--	0.001	--	--
Total PTE	31.2	40.1	0.4	23.7	14.5	9.5	878.9	0.0002	56,842
New Project Emissions	31.2	40.1	0.4	23.7	14.5	9.5	878.9	0.0002	56,842
PSD SER	40	100	40	25	15	10	40	0.6	75,000
PSD Triggered?	No	No	No	No	No	No	Yes	No	No

Notes:

[1] Potential emission calculations are calculated according to design limitations.

[2] VOC emissions are represented as VOC as WWP1 for the Continuous Drying Kilns, VOC as TOC for the Fire Pump Engine, and VOC as C for the Large Storage Tanks and Storage Tanks < 1,000 gallons.

State Regulated Allowable Emissions

State Regulated Allowable PM Emissions Summary Table

Operation	Emission Point Reference No.	Emission Group	Allowable PM ^[1] (lb/hr)	Allowable PM ^[1] (tpy)	Requested PM ^[1] (lb/hr)	Requested PM ^[1] (tpy)
Log Processing Debarker	LD	Sawmill and Green End Operations	29.33	128.46	0.66	1.35
Log Bucking	LB		14.75	64.62	9.77	0.91
Sawmill	SM		28.44	124.55	0.84	1.71
Chip Conveyance	CC		35.61	155.98	0.58	1.20
Bark Conveyance	BC		29.33	128.46	0.14	0.28
Chip Pile	CP		14.10	61.74	<0.01	<0.01
Sawdust Conveyance	SDC		28.44	124.55	0.13	0.27
Chip Cyclone	CHC		35.61	155.98	0.69	3.00
Haul Roads	RD		49.04	214.80	5.11	10.23
Continuous Drying Kiln No. 1	CDK-1	Continuous Drying Kilns	32.19	141.01	0.33	1.11
Continuous Drying Kiln No. 2	CDK-2		32.19	141.01	0.33	1.11
Continuous Drying Kiln No. 3	CDK-3		30.12	131.94	0.23	0.76
Planer Mill	PM	Planer Mill and Finished End Operations	15.55	68.12	0.37	1.61
Shavings Conveyance	SC		15.55	68.12	0.02	0.06
Total Allowable PTE for PM			390.26	1,709.33	19.21	23.61

Notes:

[1] Unrestricted potential to emit emissions calculated in accordance with ADEM Admin. Code r. 335-3-4-.04(5) process weight rule (PWR) would cause a net increase of PM emissions above the PSD SER. Therefore, PM limits are requested as specified in the Requested PM amounts above; emission estimates are explained in detail in the emission calculations included as Appendix B.

[2] The emergency fire pump engine is not subject to the ADEM Admin. Code r. 335-3-4 process weight rule (PWR) particulate matter limits.

State Regulated Allowable Emissions (Cont.)

335-3-4-.04 Process Industries - Allowable Particulate Matter Emissions (E): $E = 3.59P^{0.62}$, when $P < 30$ tons/hr ; $E = 17.31P^{0.16}$, when $P \geq 30$ ton/hr

Operation	Emission Point Reference No.	Production (P) (ton/hr)	Allowable PM PTE (E) (lb/hr)	Allowable PM PTE (tpy)	Comments
Sawmill	SM	28.2	28.44	124.55	Production (P) is assumed to be the potential process weight of sawdust and chip throughput.
Chip Cyclone	CHC	90.8	35.61	155.98	Production (P) is assumed to be the potential process weight of the chip throughput.
Planer Mill	PM	10.6	15.55	68.12	Production (P) is assumed to be the potential process weight of the shavings throughput.
Haul Roads	RD	670.8	49.04	214.80	Production (P) is assumed to be the potential process weight of all products and byproducts hauled on and off site in a year back calculated to an hourly rate based on 4,000 hours of
Shavings Conveyance	SC	10.6	15.55	68.12	Production (P) is assumed to be the potential process weight of the shavings throughput.
Log Processing Debarker	LD	29.6	29.33	128.46	Production (P) is assumed to be the potential process weight of bark throughput.
Log Bucking	LB	9.8	14.75	64.62	Production (P) is assumed to be the potential process weight of sawdust throughput.
Chip Conveyance	CC	90.8	35.61	155.98	Production (P) is assumed to be the potential process weight of the chip throughput.
Chip Pile	CP	9.1	14.10	61.74	Production (P) is assumed to be 10% of the potential process weight of the chip throughput.
Bark Conveyance	BC	29.6	29.33	128.46	Production (P) is assumed to be the potential process weight of the bark throughput.
Sawdust Conveyance	SDC	28.2	28.44	124.55	Production (P) is assumed to be the potential process weight of the sawdust throughput.
Continuous Drying Kiln No. 1	CDK-1	48.3	32.19	141.01	Production (P) calculations are based on wood density = 58 lb/ft ³ ; Lumber (tons) = (MBF/hr) x (1000 BF/1 MBF) x (1 Ft ³ /12 BF) x (lb/ft ³ Wood Density) x (1 ton/2,000 lbs)
Continuous Drying Kiln No. 2	CDK-2	48.3	32.19	141.01	
Continuous Drying Kiln No. 3	CDK-3	31.9	30.12	131.94	

State Regulated Allowable Emissions (Cont.)

335-3-5-.01 Fuel Combustion - Allowable Sulfur Dioxide Emissions (E): $E = 4.0H$, where H = Heat input in MMBtu/hr

Operation	Emission Point Reference No.	Heat Input (H) (MMBtu/hr)	Allowable SO ₂ PTE (E) (lb/MMBtu)	Allowable SO ₂ PTE (lb/hr)	Allowable SO ₂ PTE (tpy)	Requested SO ₂ PTE (lb/hr)	Requested SO ₂ PTE (tpy)	Notes
Continuous Drying Kiln No. 1	CDK-1	40.0	4.000	160.00	700.80	0.024	0.10	[1]
Continuous Drying Kiln No. 2	CDK-2	40.0	4.000	160.00	700.80	0.024	0.10	[1]
Continuous Drying Kiln No. 3	CDK-3	30.0	4.000	120.00	525.60	0.018	0.08	[1]
Fire Pump Engine	FE	2.3	4.000	9.00	39.42	0.51	0.13	[1]
Total Allowable PTE for SO ₂				449.000	1,966.620	0.577	0.412	

Note:

[1] Heat input (H) is based on the equipment design.

GP Talladega: Production Data

Recovery Information:

Material	Conversion	Units
Logs	4.10	ton/MBf
Bark	0.37	ton bark/MBf
Chips	1.135	ton/MBf
Shavings	0.200	ton/MBf
Sawdust	0.352	ton/MBf

Production Information Used for Emission Calculations

Process	Proposed Operations		
	(Hourly Production)	(Annual Production)	Notes
Logs Processed	328 ton/hr	1,351,360 tpy	[1]
Sawmill Operation	298 ton/hr	1,229,408 tpy	[2]
	80 MBf/hr	329,600 MBf/yr	[3][4]
Bark	30 ton/hr	121,952 tpy	[1]
Chips	91 ton/hr	374,096 tpy	[1]
Sawdust	28.2 ton/hr	116,019 tpy	[1]
CDK No. 1 (Natural Gas)	20 MBf/hr	120,000 MBf/yr	[5]
CDK No. 2 (Natural Gas)	20 MBf/hr	120,000 MBf/yr	[5]
CDK No. 3 (Natural Gas)	13.2 MBf/hr	80,000 MBf/yr	[5]
Dry Shavings	10.6 ton/hr	64,000 tpy	[6]

Notes:

- [1] Logs, bark, chips, and sawdust production estimated based on recovery factors and sawmill MBf rates.
- [2] Tons of debarked logs through the sawmill based on the tons of logs processed minus the tons of bark.
- [3] Hourly sawmill average design production rate will be 60 MBf/hr. The peak hour production at 100% will be approximately 80 MBf/hr.
- [4] Annual sawmill production rate includes the dry lumber production rate 320,000 MBf/yr and up to an additional 3% production (9,600 MBf/yr) of green lumber.
- [5] Hourly production based on kiln design capacity assuming product mix with greatest possible hourly production rate. Annual throughput based on expected product mixture.
- [6] Dry Shavings estimated based on recovery factors and the sum of all three CDK production rates.

GP Talladega: Sawmill (Emission Point Reference No. SM)

Log Sawing

Operating Parameters	Sawmill Throughputs	Units	Notes
Annual Debarked Log Throughput	1,229,408	ton log/yr	[1][7]
Max Hourly Debarked Log Throughput	298	ton log/hr	[7]
Max Annual Sawdust Generated	114,190	ton sawdust/yr	[8]
Max Annual Emitted Sawdust	11,419	ton sawdust/yr	[2]
Hourly Sawdust Generated	28.2	ton sawdust/hr	[3]
Hourly Emitted Sawdust	2.82	ton sawdust/hr	[2]

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Pollutant	Emission Factor	Units	Control Efficiency	Potential Emissions		Notes
						lb/hr	tpy	
Sawmill	SM	PM	1	lb/ton sawdust generated	70%	0.84	1.71	[1][4][6]
		PM ₁₀	0.36		70%	0.30	0.62	[4][6]
		PM _{2.5}	0.11		70%	0.09	0.19	[5][6]

Notes:

[1] PM emission limits are requested based on the annual log throughput and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

[2] It is assumed that only 10% of the green sawdust generated could be emitted as particulate at the sawmill since the saws are watered.

[3] Hourly sawdust generated estimated based on recovery factors and the maximum hourly sawmill MBF throughput rate.

[4] PM (TSP)/PM₁₀ emission factors per FIRE database for SCC 30700803 for sawdust storage pile handling.

[5] PM_{2.5} ratio of PM per EPA PMCALC database EPA's PMCALC database sawdust handling.

[6] A 70% control efficiency was assumed for the all saws based on partial enclosure of the individual saws and building envelope. The level of control claimed is conservative (as the sawdust generated contains 50% moisture) and consistent with Air Pollution Engineering Manual, 2nd Ed., AWMA, c2000, Ch 15, p. 694.

[7] See Production Data section for details on estimation of maximum throughputs.

[8] See sample calculations below for estimating the maximum annual sawdust generated at the sawmill.

SAMPLE CALCULATIONS

Max Annual Sawdust Generated, Sawmill:

$$\frac{116,019 \text{ ton sawdust facility wide}}{\text{yr}} - \frac{1,829 \text{ ton sawdust bucking saw}}{\text{yr}} = \frac{114,190 \text{ ton sawdust}}{\text{yr}}$$

Hourly PM Emission Rate, Sawmill:

$$\frac{1 \text{ lb PM}}{\text{ton sawdust}} \times \frac{3 \text{ ton sawdust}}{\text{hr}} \times (1 - 0.7) = \frac{0.84 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Sawmill:

$$\frac{1 \text{ lb PM}}{\text{ton sawdust}} \times \frac{11,419 \text{ ton sawdust}}{\text{yr}} \times (1 - 0.7) \times \frac{2000 \text{ lb}}{\text{ton}} = \frac{1.71 \text{ ton PM}}{\text{yr}}$$

GP Talladega: Chip Cyclone (Emission Point Reference No. CHC)

Chip Cyclone

Operating Parameters	Throughputs	Units	Notes
Max Hourly Chip Production	90.8	tons chips/hr	[1][4]
Max Cyclone Flow Rate	8,000	CFM	[2]

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Pollutant	Grain Loading Emission	Units	Potential Emissions		Notes
					lb/hr	ton/yr	
Chip Cyclone	CHC	PM (f)	1.00E-02	gr/dscf	0.69	3.00	[3][4]
		PM ₁₀	4.97E-03	gr/dscf	0.34	1.49	[3]
		PM _{2.5}	6.49E-04	gr/dscf	0.04	0.19	[3]

Notes:

[1] See Production Data section for details on estimation of maximum throughputs.

[2] Cyclone design not finalized. Flow rate is estimated to be between 6,000 and 8,000 cfm. Potential emission rates requested at 8,000 cfm.

[3] Chip loading emission factor for PM based on typical vendor data for green end cyclones. PM₁₀ and PM_{2.5} based on testing of similar unit plus a safety factor of 20%.

[4] PM emission limits are requested based on the cyclone flow rate and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Chip Cyclone:

$$\frac{1.00\text{E-}02 \text{ grains}}{\text{dscf}} \times \frac{\text{lb}}{7000 \text{ grains}} \times \frac{8,000 \text{ dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{0.69 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Chip Cyclone:

$$\frac{0.69 \text{ lb PM}}{\text{hr}} \times \frac{\text{ton}}{2000 \text{ lb}} \times \frac{8,760 \text{ hr}}{\text{yr}} = \frac{3.00 \text{ ton PM}}{\text{yr}}$$

GP Talladega: Continuous Drying Kilns (Emission Point Reference Nos. (CDK-1, CDK-2, CDK-3))

Fuel Information

Fuel	btu/scf
Natural Gas	1,020

Kiln Information

Description	Emission Point Reference No.	Hourly Burner Rating (MMBtu/hr)	Hourly Production (MBf/hr)	Annual Burner Rating (MMBtu/yr)	Annual Total Production (MBf/yr)	Notes
Continuous Drying Kiln No. 1	CDK-1	40.0	20.0	350,400	120,000	[1][2][15]
Continuous Drying Kiln No. 2	CDK-2	40.0	20.0	350,400	120,000	[1][2][15]
Continuous Drying Kiln No. 3	CDK-3	30.0	13.2	262,800	80,000	[1][2][15]

Criteria & GHG Air Pollutant Emission Calculations

Pollutant	Emission Factor		Potential Emissions						Notes
			CDK-1		CDK-2		CDK-3		
	lb/MBf	lb/MMscf	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
PM (f)	0.013	1.9	0.33	1.11	0.33	1.11	0.23	0.76	[1][8][9]
PM ₁₀	0.022	7.6	0.74	2.63	0.74	2.63	0.51	1.86	[8][9]
PM _{2.5}	0.022	7.6	0.74	2.63	0.74	2.63	0.51	1.86	[8][9]
VOC as C	4.28	--	85.60	256.80	85.60	256.80	56.50	171.20	[3]
VOC (WPP1)	5.49	--	109.80	329.40	109.80	329.40	72.47	219.60	[4]
SO ₂	--	0.6	0.02	0.10	0.02	0.10	0.02	0.08	[9][16]
CO	--	84	3.29	14.43	3.29	14.43	2.47	10.82	[10]
NO _x	--	61.9	2.43	10.64	2.43	10.64	1.82	7.98	[13]
Lead	--	5.00E-04	1.96E-05	8.59E-05	1.96E-05	8.59E-05	1.47E-05	6.44E-05	[9]
CO ₂	--	120,019	4,707	20,615	4,707	20,615	3,530	15,461	[14]
CH ₄	--	2.26	0.09	0.39	0.09	0.39	0.07	0.29	[14]
N ₂ O	--	0.23	0.01	0.04	0.01	0.04	0.01	0.03	[14]
GHG	--	120,021	4,707	20,615	4,707	20,615	3,530	15,462	[14]
Total CO ₂ e	--	120,142	4,711	20,636	4,711	20,636	3,534	15,477	[14]

GP Talladega: Continuous Drying Kilns (Emission Point Reference Nos. (CDK-1, CDK-2, CDK-3) Continued

Air Pollutant Emission Calculations

Pollutant	Emission Factor		Potential Emissions						Notes
			CDK-1		CDK-2		CDK-3		
	lb/MBf	lb/MMscf	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Acetaldehyde	5.04E-02	--	1.01E+00	3.02E+00	1.01E+00	3.02E+00	6.65E-01	2.02E+00	[6]
Acrolein	6.00E-03	--	1.20E-01	3.60E-01	1.20E-01	3.60E-01	7.92E-02	2.40E-01	[6]
Arsenic	--	2.00E-04	7.84E-06	3.44E-05	7.84E-06	3.44E-05	5.88E-06	2.58E-05	[12]
Benzene	--	2.10E-03	8.24E-05	3.61E-04	8.24E-05	3.61E-04	6.18E-05	2.71E-04	[11]
Beryllium	--	ND	--	--	--	--	--	--	[12]
Cadmium	--	1.10E-03	4.31E-05	1.89E-04	4.31E-05	1.89E-04	3.24E-05	1.42E-04	[12]
Chromium	--	1.40E-03	5.49E-05	2.40E-04	5.49E-05	2.40E-04	4.12E-05	1.80E-04	[12]
Cobalt	--	8.40E-05	3.29E-06	1.44E-05	3.29E-06	1.44E-05	2.47E-06	1.08E-05	[12]
Dichlorobenzene	--	1.20E-03	4.71E-05	2.06E-04	4.71E-05	2.06E-04	3.53E-05	1.55E-04	[11]
Formaldehyde	2.53E-02	7.50E-02	5.08E-01	1.53E+00	5.08E-01	1.53E+00	3.36E-01	1.02E+00	[7][11]
Hexane	--	1.80E+00	7.06E-02	3.09E-01	7.06E-02	3.09E-01	5.29E-02	2.32E-01	[11]
Manganese	--	3.80E-04	1.49E-05	6.53E-05	1.49E-05	6.53E-05	1.12E-05	4.90E-05	[12]
Mercury	--	2.60E-04	1.02E-05	4.47E-05	1.02E-05	4.47E-05	7.65E-06	3.35E-05	[12]
Methanol	2.51E-01	--	5.01E+00	1.50E+01	5.01E+00	1.50E+01	3.31E+00	1.00E+01	[7]
Methyl Isobutyl Ketone	1.20E-03	--	2.40E-02	7.20E-02	2.40E-02	7.20E-02	1.58E-02	4.80E-02	[5]
Naphthalene	--	6.10E-04	2.39E-05	1.05E-04	2.39E-05	1.05E-04	1.79E-05	7.86E-05	[11]
Nickel	--	2.10E-03	8.24E-05	3.61E-04	8.24E-05	3.61E-04	6.18E-05	2.71E-04	[12]
Phenol	1.24E-03	--	2.47E-02	7.42E-02	2.47E-02	7.42E-02	1.63E-02	4.94E-02	[6]
POM	--	5.18E-05	2.03E-06	8.90E-06	2.03E-06	8.90E-06	1.52E-06	6.67E-06	[11]
Propionaldehyde	1.20E-03	--	2.40E-02	7.20E-02	2.40E-02	7.20E-02	1.58E-02	4.80E-02	[6]
Selenium	--	ND	--	--	--	--	--	--	[12]
Toluene	1.20E-04	3.40E-03	2.53E-03	7.78E-03	2.53E-03	7.78E-03	1.68E-03	5.24E-03	[6][11]
Xylene	2.40E-04	--	4.80E-03	1.44E-02	4.80E-03	1.44E-02	3.17E-03	9.60E-03	[6]
Highest Single HAP	--	--	5.01	15.04	5.01	15.04	3.31	10.02	
Total HAP	--	--	6.80	20.50	6.80	20.50	4.49	13.69	
Barium	--	4.40E-03	1.73E-04	7.56E-04	1.73E-04	7.56E-04	1.29E-04	5.67E-04	[12]
Butane	--	2.10E+00	8.24E-02	3.61E-01	8.24E-02	3.61E-01	6.18E-02	2.71E-01	[11]
Copper	--	8.50E-04	3.33E-05	1.46E-04	3.33E-05	1.46E-04	2.50E-05	1.10E-04	[12]
Ethane	--	3.10E+00	1.22E-01	5.32E-01	1.22E-01	5.32E-01	9.12E-02	3.99E-01	[11]
Molybdenum	--	1.10E-03	4.31E-05	1.89E-04	4.31E-05	1.89E-04	3.24E-05	1.42E-04	[12]
Pentane	--	2.60E+00	1.02E-01	4.47E-01	1.02E-01	4.47E-01	7.65E-02	3.35E-01	[11]
Propane	--	1.60E+00	6.27E-02	2.75E-01	6.27E-02	2.75E-01	4.71E-02	2.06E-01	[11]
Vanadium	--	2.30E-03	9.02E-05	3.95E-04	9.02E-05	3.95E-04	6.76E-05	2.96E-04	[12]
Zinc	--	2.90E-02	1.14E-03	4.98E-03	1.14E-03	4.98E-03	8.53E-04	3.74E-03	[12]

GP Talladega: Continuous Drying Kilns (Emission Point Reference Nos. (CDK-1, CDK-2, CDK-3) Continued

Notes:

- [1] PM emission limits are requested based on the kiln production rates, burner capacity, and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP. Annual burner rating assumes 8,760 hr per a year.
- [2] Hourly production based on kiln design capacity assuming product mix with greatest possible hourly production rate.
- [3] VOC as C emission factor based on the average plus one standard deviation from site test data from several facilities: GP - Columbia, GP - McCormick, Bibler Brothers - Russellville, Rex Lumber - Grace Mills.
- [4] VOC (WPP1) calculated using the Interim VOC Measurement Protocol for the Wood Products Industry – July 2007.
- [5] NCASI TB 845 (2002), Table BB1 Steam FSK Emission factor plus a 20% safety factor.
- [6] NCASI Wood Products Electronic Database, Updated February 2013. Emission factor is the median plus 20%.
- [7] NCASI Wood Products Electronic Database, Updated February 2013. Emission factor is the median plus 1 standard deviation.
- [8] Natural gas drying emissions also include emissions associated with wood drying (indirect-fired kiln emissions on a lb/MBF basis) based on GP Warrenton Title V factors, August 2012. Average plus 2 standard deviations.
- [9] Emission factor per AP-42, Section 1.4, Natural Gas Combustion, Table 1.4-2 (7/98).
- [10] Emission factor per AP-42, Section 1.4, Natural Gas Combustion, AP-42 Table 1.4-1 (7/98).
- [11] Emission factor per AP-42, Section 1.4, Natural Gas Combustion, AP-42 Table 1.4-3 (7/98).
- [12] Emission factor per AP-42, Section 1.4, Natural Gas Combustion, AP-42 Table 1.4-4 (7/98).
- [13] The NO_x emission factor is based on 50 ppm exhaust loading @ 3% O₂. Emission factor calculated using EPA Method 19, Eq. 19.1 and tables 19-1 and 19.2.
- [14] GHG Emission factors are from Tables C-1 and C-2 of EPA's Mandatory Reporting Rule for Greenhouse Gases (40 CFR 98). Factors are converted from kg/MMBtu to lb/MMscf using a high heat value of 1,026 btu/scf in accordance with 40 CFR 98.
- [15] See Production Data section for details on estimation of maximum throughputs.
- [16] SO₂ emission limits are requested based on the kiln production rates, burner capacity, and emission factors in lieu of the ADEM 335-3-5-.01 fuel combustion equation for SO₂. Annual burner rating assumes 8,760 hr per a year.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Continuous Drying Kilns No. 1:

$$\frac{40 \text{ MMBtu}}{\text{hr}} \times \frac{\text{MMscf}}{1020 \text{ MMBtu}} \times \frac{1.9 \text{ lb}}{\text{MMscf}} + \frac{20 \text{ MBF}}{\text{hr}} \times \frac{0.013 \text{ lb}}{\text{MBF}} = \frac{0.33 \text{ lb}}{\text{hr}}$$

Annual PM Emission Rate, Continuous Drying Kilns No. 1:

$$\frac{350,400 \text{ MMBtu}}{\text{yr}} \times \frac{\text{MMscf}}{1020 \text{ MMBtu}} \times \frac{1.9 \text{ lb}}{\text{MMscf}} \times \frac{\text{ton}}{2000 \text{ lb}} + \frac{120,000 \text{ MBF}}{\text{yr}} \times \frac{0.013 \text{ lb}}{\text{MBF}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{1.11 \text{ ton}}{\text{yr}}$$

GP Talladega: Planer Mill Cyclofilter (Emission Point Reference No. PM)

Planer Mill

Operating Parameters	Throughputs	Units	Notes
Max Hourly Shavings Production	10.6	tons shavings/hr	
Max Cyclofilter Flow Rate	70,600	CFM	[2]

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Pollutant	Grain Loading Emission Factor	Units	Potential Emissions		Notes
					lb/hr	ton/yr	
Planer Mill	PM	PM (f)	6.08E-04	gr/dscf	0.37	1.61	[1][2]
		PM ₁₀	4.43E-04	gr/dscf	0.27	1.17	[2][3]
		PM _{2.5}	4.43E-04	gr/dscf	0.27	1.17	[2][3]

Notes:

[1] PM emission limits are requested based on the cyclofilter flow rate and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

[2] Filterable grain loading of PM, PM₁₀, PM_{2.5} based on the mass of material after control of the respective particle sizes from the manufacturer cyclofilter design dust emission calculation model.

[3] Filterable PM₁₀ + Condensable PM. Condensable PM based on testing of similar unit. Assumed PM_{2.5} = PM₁₀.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Planer Mill Cyclofilter:

$$\frac{6.08\text{E-}04 \text{ grains}}{\text{dscf}} \times \frac{\text{lb}}{7000 \text{ grains}} \times \frac{70,600 \text{ dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{0.37 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Planer Mill Cyclofilter:

$$\frac{0.37 \text{ lb}}{\text{hr}} \times \frac{\text{ton}}{2000 \text{ lb}} \times \frac{8,760 \text{ hr}}{\text{yr}} = \frac{1.61 \text{ ton PM}}{\text{yr}}$$

DUST EMISSION CALCULATIONS FOR A CYCLOFILTER

Airflow (CFM) :
 Airflow (Cu.met. / hr) :
 Volume of material (lbs/hr) :
 Volume of material (kg/hr) :
 Max. dust emission level (mg / c.m.) :

70600
120042
57355
26070,45
5

ESTIMATED

Range no. 1: lower than :
 Range no. 2: between the 2 values
 Range no. 3: between the 2 values
 Range no. 4: between the 2 values
 Range no. 5: between the 2 values
 Range no. 6: between the 2 values
 Range no. 7: larger than :

1
1-50
50-100
100-500
500-1000
1000-5000
5000

	% of particles	Collector effic.
microns	0,01	99
microns	0,09	99,9
microns	0,9	99,95
microns	5	99,99
microns	12	99,995
microns	17	100
microns	65	100

Calculs

Volume	% of particles	Efficiency	KG of material
26070,45	0,01	99	0,0260705
26070,45	0,09	99,9	0,0234634
26070,45	0,9	99,95	0,1173170
26070,45	5	99,99	0,130352273
26070,45	12	99,995	0,156422727
26070,45	17	100	0
26070,45	65	100	0

Total of reject : 0,454 kg

Dust reject

Total of reject	Multiplier	(C.M. / hr)		
0,45363	1000000	120042	Dust reject :	3,7789 mg / c.m.
			Dust reject :	0,0017 gr. / dscf

Dust emission before control

Volume	Convert (gr/kg)	(C.M. / hr)		
26070,45	1000	120042	Dust emission before control :	217,18 gr / c.m.

Dust emission after control

Reject	Convert (gr/kg)	(C.M. / hr)		
3,7789	0,000001	120042	Dust emission after control :	0,454 kg / hr

Conclusion:

Airflow : 70600 CFM
 Volume of particles : 57355 lb / hr
 Volume of dust rejected : 3,7789 mg / c.m.
 Emission level before control : 217,1772 gr/c.m.
 Emission level after control : 0,45363 kg / hr
 Max. dust emission level : 5 mg / c.m.
 0,0017 gr. / dscf

Project no : FS - 12919 - 17

By : Daniel Beaupre

Customer : TALLEDEGA, ALABAMA

Date : September,07,2017

Identification : DUST COLLECTOR model CF - 12.5

Signature :

GP Talladega: Haul Road (Emission Point Reference No. RD)

Road Information

Road Segment	Paved/ Unpaved	Length ^[1]
		(mi)
A	Paved	0.163
B	Paved	0.041
C	Paved	0.039
D	Paved	0.145
E	Paved	0.137
F	Paved	0.145
G	Paved	0.023
H	Paved	0.075
I	Paved	0.069
J	Paved	0.100
K	Unpaved	0.182
L	Unpaved	0.463

Note:

[1] Route segment lengths based on planned traffic flow and google earth measurements.

Truck Traffic Routes

Truck Material	Route ^[1]
Shavings	A, B, E, F, G, I, J, K, I, G, F, E, B, A
Chips	A, B, E, F, G, I, J, K, I, G, F, E, B, A
Logs	A, D, E, B, A
Logs (overflow)	A, B, C, L, L, C, B, D, E, B, A
Bark	A, B, E, F, H, G, F, E, B, A
Green Sawdust	A, B, E, F, H, G, F, E, B, A
Finished Lumber	A, B, E, F, H, G, F, E, B, A

Note:

[1] See truck route map for planned traffic flow.

Truck Traffic Details

Truck Material	Material Throughput ^[5]	Throughput Units	Truck Weight ^[1] (tons)		Average Truck Weight (tons)	Number of Trucks ^[2]	Routes Traveled (# = No of trips)											
			Unloaded	Loaded			A	B	C	D	E	F	G	H	I	J	K	L
Shavings	64,000	tpy	15	40	27.5	2,560	2	2			2	2	2		2	1	1	
Chips	374,096	tpy	15	40	27.5	14,964	2	2			2	2	2		2	1	1	
Logs ^[3]	1,337,846	tpy	15	40	27.5	53,514	2	1		1	1							
Logs (overflow) ^[3]	13,514	tpy	15	40	27.5	541	2	3	2	1	1							2
Bark	121,952	tpy	15	40	27.5	4,878	2	2			2	2	1	1				
Green Sawdust	116,019	tpy	15	40	27.5	4,641	2	2			2	2	1	1				
Finished Lumber ^[4]	329,600	MBf/yr	15	40	27.5	16,480	2	2			2	2	1	1				

Notes:

[1] Truck weight based on engineering estimates.

[2] Number trucks based on material throughput divided by haul weight.

[3] Assumes 1% of logs are stored in the overflow storage area.

[4] Lumber trucks based on 20 MBf per truck.

[5] See Production Data section for details on estimation of maximum throughputs.

GP Talladega: Haul Road (Emission Point Reference No. RD) Continued

Notes (continued):

[2] Unpaved route emission factor is based on Equations 1a and 2 of AP-42, Section 13.2.2 (November 2006):

Equations 1a and 2 (combined):

$$E = k \times \left(\frac{s}{12}\right)^a \times \left(\frac{W}{3}\right)^b \times \left(\frac{365 - P}{365}\right)^c$$

- E = size specific emission factor (lb/VMT)
s = 1.1 average surface material silt content (%), based on testing done at the GP Warrenton Lumber Mill.
W = mean vehicle weight (tons)
k = 4.9 particle size multiplier, AP-42, Section 13.2.2, Table 13.2.2-2.
1.5
0.15
a = 0.7 empirical constant (PM), AP-42, Section 13.2.2, Table 13.2.2-2.
0.9 empirical constant (PM10/PM2.5), AP-42, Section 13.2.2, Table 13.2.2-2.
b = 0.45 empirical constant, AP-42, Section 13.2.2, Table 13.2.2-2.
P = 115 number of days in a year with at least 0.254 mm (0.01 in) of precipitation, AP-42, Section 13.2.2, Figure 13.2.2-1

Air Pollutant Emission Calculations

Road Segment	Vehicle Miles Traveled ^[1]	Potential Emissions ^{[2][3]}					
		PM		PM ₁₀		PM _{2.5}	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
A	31823.4	1.33	2.66	0.27	0.53	0.07	0.13
B	5870.3	0.25	0.49	0.05	0.10	0.01	0.02
C	42.2	0.00	0.00	0.00	0.00	0.00	0.00
D	7831.7	0.33	0.65	0.07	0.13	0.02	0.03
E	19267.6	0.80	1.61	0.16	0.32	0.04	0.08
F	12578.7	0.53	1.05	0.11	0.21	0.03	0.05
G	1433.7	0.06	0.12	0.01	0.02	0.00	0.01
H	1782.5	0.07	0.15	0.01	0.03	0.00	0.01
I	2402.9	0.10	0.20	0.02	0.04	0.00	0.01
J	1752.4	0.07	0.15	0.01	0.03	0.00	0.01
K	3182.8	1.36	2.72	0.26	0.52	0.03	0.05
L	500.4	0.21	0.43	0.04	0.08	0.00	0.01
Total		5.11	10.23	1.01	2.01	0.20	0.41

Notes:

[1] VMT calculated from segment length times number of trips.

[2] Emissions Calculated from emission factor (lb/VMT) * VMT / 2000 lb/ton.

[3] PM emission limits are requested based on the production rates and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

[4] Hourly road calculations are conservatively estimated at annual throughput with 4,000 hours of operation per year.

GP Talladega: Haul Road (Emission Point Reference No. RD) Continued

Truck Route Map



GP Talladega: Emergency Fire Pump Engine (Emission Point Reference No. FE)

Operation	Emission Point Reference No.	Parameter	Value	Units	Notes
Emergency Fire Pump Engine	FE	Max Power	250	bhp	[1]
		Average Brake-Specific Fuel Consumption	9,000	Btu/hp-hr	[2]
		Heat Input Capacity	2.25	MMBtu/hr	[7]
		Annual Hours of Operation	500	hr/yr	

Air Pollutant Emission Calculations

Pollutant	Emission Factor		Potential Emissions		Notes
	lb/hp-hr	lb/MMBtu	lb/hr	ton/yr	
PM (f)	2.20E-03	--	0.55	0.14	[3][7]
PM ₁₀	2.20E-03	7.70E-03	0.57	0.14	[3][9]
PM _{2.5}	2.20E-03	7.70E-03	0.57	0.14	[3][9]
NOx	3.10E-02	--	7.75	1.94	[3]
CO	6.68E-03	--	1.67	0.42	[3]
VOC as TOC	2.51E-03	--	0.63	0.16	[6]
SO ₂	2.05E-03	--	0.51	0.13	[3][8]
Acetaldehyde	--	7.67E-04	1.73E-03	4.31E-04	[4]
Acrolein	--	ND	--	--	[4]
Benzene	--	9.33E-04	2.10E-03	5.25E-04	[4]
1,3-Butadiene	--	ND	--	--	[4]
Formaldehyde	--	1.18E-03	2.66E-03	6.64E-04	[4]
Naphthalene	--	8.48E-05	1.91E-04	4.77E-05	[4]
Toluene	--	4.09E-04	9.20E-04	2.30E-04	[4]
Xylene	--	2.85E-04	6.41E-04	1.60E-04	[4]
POM as Total PAH (includes Naphthalene)	--	1.60E-04	3.59E-04	8.98E-05	[4]
Highest Single HAP	--	--	2.66E-03	6.64E-04	
Total HAPs	--	--	8.40E-03	2.10E-03	[4]
CO ₂	--	1.63E+02	366.9	91.72	[5]
CH ₄	--	6.61E-03	0.015	3.72E-03	[5]
N ₂ O	--	1.32E-03	0.003	7.44E-04	[5]
GHG	--	1.63E+02	366.9	91.72	[5]
Total CO ₂ e	--	1.64E+02	368.1	92.03	[5]

Notes:

- [1] Engine bhp information from previous Talladega facility/permit No. 309-S002.
- [2] Average brake-specific fuel consumption (BSFC) based on estimate used in previous permitting for Talladega facility/permit No. 309-S002.
- [3] Emission factor per AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1. PM emissions for filterable components are included as all PM is assumed to be less than 1 micron in aerodynamic diameter.
- [4] Emission factor per AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-2.
- [5] GHG Emission factors are from Tables C-1 and C-2 of EPA's Mandatory Reporting Rule for Greenhouse Gases (40 CFR 98). Factors are converted from kg/MMBtu to lb/MMBtu.
- [6] Selected BACT limit based on TOC factor for exhaust and crankcase within AP-42 Section 3.3 Gasoline And Diesel Industrial Engines, Table 3.3-1.
- [7] PM emission limits are requested based on the engine burner capacity and AP-42 emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP. Annual burner rating assumes 8,760 hr per a year.
- [8] SO₂ emission limit is requested based on the engine combustion rating and emission factors in lieu of the ADEM 335-3-5-.01 fuel combustion equation for SO₂. Annual combustion rate assumes 500 hr per a year as the source is only used for emergency situation and maintenance.
- [9] Condensable PM Emission factor per AP-42, Section 3.4, Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-2.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Emergency Fire Pump Engine:

$$\frac{250 \text{ bhp}}{1} \times \frac{2.20\text{E-}03 \text{ lb}}{\text{bhp}} = \frac{0.55 \text{ lb}}{\text{hr}}$$

Hourly Acetaldehyde Emission Rate, Emergency Fire Pump Engine:

$$\frac{2.25 \text{ MMBtu}}{\text{hr}} \times \frac{7.67\text{E-}04 \text{ lb}}{\text{MMBtu}} = \frac{1.73\text{E-}03 \text{ lb}}{\text{hr}}$$

Annual PM Emission Rate, Emergency Fire Pump Engine:

$$\frac{0.55 \text{ lb}}{\text{hr}} \times \frac{500 \text{ hr}}{\text{yr}} = \frac{275 \text{ lb}}{\text{yr}} = \frac{275 \text{ lb}}{2000 \text{ lb}} = \frac{0.14 \text{ ton}}{\text{yr}}$$

$$\frac{1.73\text{E-}03 \text{ lb}}{\text{hr}} \times \frac{500 \text{ hr}}{\text{yr}} = \frac{0.865 \text{ lb}}{\text{yr}} = \frac{0.865 \text{ lb}}{2000 \text{ lb}} = \frac{4.31\text{E-}04 \text{ ton}}{\text{yr}}$$

GP Talladega: Chip Pile (Emission Point Reference No. CP)

Operation	Silt Content ^[1]	No. Dry Days per Year ^[2]	% time winds >12 mph ^[3]	Emission Factor ^{[4],[5]} (lb/day/acre)			Pile Area (acre)
	(s)	(d)	(f)	PM	PM ₁₀	PM _{2.5}	
Chip Pile	0.00014	250	3.2	3.60E-05	2.09E-05	6.84E-06	1.0

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Potential Emissions					
		PM ^[6]		PM ₁₀		PM _{2.5}	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Chip Pile	CP	1.50E-06	6.57E-06	8.70E-07	3.81E-06	2.85E-07	1.25E-06

Notes:

[1] NCASI Special Report 15-01 Table 5.20, Average TSP and Silt Content for Chips.

[2] Number of days in a year with at least 0.254 mm (0.01 in) of precipitation, AP-42, Section 13.2.2, *Unpaved Roads*, Figure 13.2.2-

[3] Percent of time wind speed greater than 12 mph calculated from NCDC dataset for Anniston, AL for 2012-2016.

[4] Emissions calculated from NCASI Technical Bulletin 424 (March 1984) Figure 10.

[5] PM₁₀ and PM_{2.5} speciation from EPA's "PMCALC" database were used to estimate those quantities. (PM₁₀ = 58% and PM_{2.5} = 19%).

[6] PM emission limits are requested based on the estimated pile size and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

SAMPLE CALCULATIONS

Emission Factor:

$$EF \text{ (lb/day/acre)} = 1.7 \times \left(\frac{s}{1.5} \right) \times \left(\frac{d}{235} \right) \times \left(\frac{f}{15} \right)$$

$$\frac{1.7}{1.5} \times \frac{0.00014}{235} \times \frac{250}{15} = \frac{3.60E-05 \text{ lb}}{\text{day-acre}}$$

Hourly PM Emission Rate, Chip Pile:

$$\frac{1.0 \text{ acre}}{\text{day-acre}} \times \frac{3.60E-05 \text{ lb}}{24 \text{ hr}} = \frac{1.50E-06 \text{ lb}}{\text{hr}}$$

Annual PM Emission Rate, Chips Conveyance:

$$\frac{1.0 \text{ acre}}{\text{day-acre}} \times \frac{3.60E-05 \text{ lb}}{\text{yr}} \times \frac{365 \text{ day}}{2000 \text{ lb}} = \frac{6.57E-06 \text{ ton}}{\text{hr}}$$

GP Talladega: Drop Points (Emission Point Reference Nos. CC, BC, SDC, and SC)

Drop Point Information

Material	Hourly Throughput (tons/hr)	Annual Throughput (tons/yr)	Moisture Content (%)	No. of Transfer Points	Emission Factor (lb/ton)			Notes
					PM	PM ₁₀	PM _{2.5}	
Chips	90.8	374,096	4.8	7	9.19E-04	4.35E-04	6.59E-05	[1][2][3][7][8]
Bark	29.6	121,952	4.8	5	9.19E-04	4.35E-04	6.59E-05	[1][2][4][7][8]
Sawdust	28.2	116,019	4.8	5	9.19E-04	4.35E-04	6.59E-05	[1][2][6][7][8]
Shavings	10.6	64,000	4.8	2	9.19E-04	4.35E-04	6.59E-05	[1][2][5][7][8]

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Potential Emissions						Notes
		PM		PM ₁₀		PM _{2.5}		
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Chip Conveyance	CC	5.84E-01	1.20E+00	2.76E-01	5.69E-01	4.19E-02	8.62E-02	[7]
Bark Conveyance	BC	1.36E-01	2.80E-01	6.44E-02	1.33E-01	9.75E-03	2.01E-02	[7]
Sawdust Conveyance	SDC	1.29E-01	2.67E-01	6.12E-02	1.26E-01	9.27E-03	1.91E-02	[7]
Shavings Conveyance	SC	1.96E-02	5.88E-02	9.25E-03	2.78E-02	1.40E-03	4.21E-03	[7]

Notes:

- [1] For all materials, moisture content (M) is set equal to the maximum value for which the equation is appropriate. Actual moisture content is higher.
- [2] Emission factor per AP-42, Section 13.2.4, Aggregate Handling and Storage Piles, drop equation. Mean wind speed for Birmingham, AL per Comparative Climate Data for the United States through 2015.
- [3] Pneumatic chip transfer points consist of only 1 drop at a time from either pneumatic conveyance to chip pile, railcar loadout, or through the cyclone to storage bin. Mechanical conveyance consists of 1 drop from saws, 1 drop from chippers, 1 drop from chip screen, 1 drop point from chip pile to conveyor belt, 1 drop point from conveyor belt to storage bin, and 1 drop from loadout (truck loading).
- [4] Bark transfer points consist of: 1 drop from debarker, 1 drop from primary to secondary conveyor, 1 drop from bark hog, 1 drop to storage bin, and 1 drop from loadout (truck loading).
- [5] Sawdust transfer points consist of: 1 drop from saws, 1 drop from primary to secondary conveyor, 1 drop from chippers, 1 drop to sawdust bin, and 1 drop from loadout (truck loading).
- [6] Shavings transfer points consist of 1 drop from cyclone to storage bin and 1 drop from loadout (truck loading).
- [7] PM emission limits are requested based on the production rates and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.
- [8] See Production Data section for details on estimation of maximum throughputs.

GP Talladega: Drop Points (Emission Point Reference Nos. CC, BC, SDC, and SC) Continued

SAMPLE CALCULATIONS

Emission factor for PM:

$$\frac{0.74}{1} \times \frac{0.0032}{1} \times \frac{\left(\frac{6.2}{5}\right)^{1.3}}{\left(\frac{4.8}{2}\right)^{1.4}} = \frac{9.19\text{E-}04 \text{ lb PM}}{\text{ton}}$$

Emission factors calculated from AP-42, Section 13.2.4 Equation 1:

$$E \text{ (lb/ton)} = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

where:

k: Particle size multiplier

0.74 PM
0.35 PM₁₀
0.053 PM_{2.5}
6.2 mph

U: Mean wind speed

Hourly PM Emission Rate, Chip Conveyance:

$$\frac{91 \text{ ton}}{\text{hr}} \times \frac{9.19\text{E-}04 \text{ lb PM}}{\text{ton}} \times \frac{7 \text{ transfers}}{1} = \frac{0.584 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Chip Conveyance:

$$\frac{374096 \text{ ton}}{\text{yr}} \times \frac{9.19\text{E-}04 \text{ lb PM}}{\text{ton}} \times \frac{7 \text{ transfers}}{1} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = \frac{1.204 \text{ ton PM}}{\text{hr}}$$

GP Talladega: Large Storage Tanks (Emission Point Reference No. LST-1, LST-2, LST-3)

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Tank Size AST (gal)	Tank Dimensions (Diameter (ft) X Height (ft))	TANKS Report Emissions (lb/yr)	Potential Emissions		Notes
					Hourly VOC Emissions (lb/hr)	Annual VOC Emissions (tpy)	
Fuel Station Gasoline Tank	LST-1	2,000	5 x 12	628.36	21.18	3.14E-01	[1][2][5]
Fuel Station Diesel Tank	LST-2	6,000	8 x 16	2.66	0.14	1.33E-03	[2][3][5]
Lubrication Building Hydraulic Tank	LST-3	6,000	8 x 16	1.3	0.14	6.50E-04	[2][4][5]
Large Storage Tanks Emission Total:					21.45	0.32	

Notes:

- [1] Potential emission calculations assumes 1,690 gallon/month fuel usage. It is conservatively estimated there are 12 turnover per year for working loss as well as constant breathing loss.
- [2] Hourly emissions were estimated using working loss and the assumption of 1 working hr per turnover. See TANKS 4.09d reports for more details.
- [3] Potential emission calculations assumes 5,828 gallon/month fuel usage. It is conservatively estimated there are 12 turnover per year for working loss as well as constant breathing loss. Diesel fuel used onsite is assumed to be distillate fuel oil no. 2.
- [4] Potential emission calculations assumes 5,828 gallon/month hydraulic fluid throughput. It is conservatively estimated there are 2 turnover per year for working loss as well as constant breathing loss.
- [5] The emissions are estimated by EPA TANKS 4.0.9d program. See TANKS 4.0d reports for more details.

GP Talladega: Log Processing Debarker (Insignificant Activity, Emission Point Reference No. LD)

Log Debarking Information

Operation	Emission Point Reference No.	Operating Parameters	Throughputs	Units	Notes
Debarker	LD	Max Annual Log Throughput	1,351,360	ton log/yr	[1][4]
		Max Hourly Log Throughput	328	ton log/hr	[4]

Air Pollutant Emission Calculations

Operation	Pollutant	Emission Factor	Units	Control Efficiency	Potential Emissions		Notes
					lb/hr	ton/yr	
Debarker	PM	2.00E-02	lb/ ton of logs	90%	0.66	1.35	[1][2]
	PM ₁₀	1.10E-02	lb/ ton of logs	90%	0.36	0.74	[2]
	PM _{2.5}	6.75E-05	lb/ ton of logs	0%	0.02	0.05	[3]

Notes:

[1] PM emission limits are requested based on the log throughput and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

[2] Debarker PM and PM₁₀ emission factors from EPA FIRE database, SCC 30700801 (Log Debarking). Applied a 90% control factor for enclosure around debarker.

[3] Debarker PM_{2.5} emission rate based on information from NCASI July 2014 memo for PM_{2.5} Emissions from Drum Debarking. Emission factor presented was 4.5 E-05 lb/ton log processed. Emissions from drum debarker are already considered controlled due to enclosed nature, so no additional controls taken. As data are based on limited testing, a 50% safety factor was used.

[4] See Production Data section for details on estimation of maximum throughputs.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Log Debarking:

$$\frac{328 \text{ ton logs}}{\text{hr}} \times \frac{2.00\text{E-}02 \text{ lb}}{\text{ton logs}} \times (1 - 0.9 \text{ control}) = \frac{0.66 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Log Debarking:

$$\frac{1,351,360 \text{ ton logs}}{\text{yr}} \times \frac{2.00\text{E-}02 \text{ lb}}{\text{ton logs}} \times (1 - 0.9 \text{ control}) \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{1.35 \text{ ton PM}}{\text{yr}}$$

GP Talladega: Log Bucking (Insignificant Activity, Emission Point Reference No. LB)

Log Sawing Information:

Operating Parameters	Sawmill Throughputs	Units	Notes
Max Annual Log Throughput	1,229,408	ton log/yr	[1][7]
Max Hourly Log Throughput	328	ton log/hr	[7]
Average Raw Log Stem Length	42	ft/log	[2]
Max Raw Log Stem Length	65	ft/log	[2]
Annual Avg. Raw Log Stem Diameter	1.0	ft	[2]
Hourly Max Raw Log Stem Diameter	1.8	ft	[2]
Annual No. of Log Stems	1,146,763	log stems/yr	[3]
Max No. of Log Stems per Hour	600	logs stems/hr	[2]
Average Log Density	65.0	lb/ft ³	[2]
Max Number of Cuts / Stem	5.0	cuts/stem	[2]
Annual Average Number of Cuts / Stem	1.5	cuts/stem	[8]
Max Kerf per cut	0.5	inches	[4]
Max Annual Sawdust Generated	1,829.5	tpy	[3]
Max Hourly Sawdust Generated	9.8	tph	[3]

Air Pollutant Emission Calculations

Operation	Emission Point Reference No.	Pollutant	Emission Factor	Units	Potential Emissions		Notes
					lb/hr	tpy	
Log Bucking	LB	PM	1	lb/ton sawdust generated	9.77	0.91	[1][5]
		PM ₁₀	0.36		3.52	0.33	[5]
		PM _{2.5}	0.11		1.07	0.10	[6]

Notes:

[1] PM emission limits are requested based on the log throughput and emission factors in lieu of the ADEM 335-3-4-.04 process weight rule (PWR) equation that applies to TSP.

[2] Based on design proposal stem handling system/ bucking saw design data.

[3] Sawdust calculated from No. logs * No. cuts * log area (ft²) * kerf width (ft) * density (lb/ft³)/2000. Annual calculation makes use of average cuts/stem while hourly calculation makes use of max cuts/stem.

[4] Final design of bucking saw has not been selected. Saw kerf per cut based on maximum kerf for similar facilities (GP Gurdon, GP Warrenton, and GP Sterling).

[5] PM (TSP)/PM₁₀ emission factors per FIRE database for SCC 30700803 for sawdust storage pile handling.

[6] PM_{2.5} ratio of PM per EPA PMCALC database EPA's PMCALC database sawdust handling.

[7] See Production Data section for details on estimation of maximum throughputs.

[8] Based on operating information provided by the facility.

SAMPLE CALCULATIONS

Hourly PM Emission Rate, Sawmill:

$$\frac{1 \text{ lb}}{\text{ton sawdust}} \times \frac{9.8 \text{ ton sawdust}}{\text{hr}} = \frac{9.77 \text{ lb PM}}{\text{hr}}$$

Annual PM Emission Rate, Sawmill:

$$\frac{1 \text{ lb}}{\text{ton sawdust}} \times \frac{1,829 \text{ ton sawdust}}{\text{yr}} = \frac{0.91 \text{ ton PM}}{\text{yr}}$$

GP Talladega: Storage Tanks < 1,000 gallons (Trivial Activities, Emission Point Reference No. TST)

Air Pollutant Emission Calculations

Operation	Source Category	Tank Dimensions (Diameter (ft) X Length (ft))	Tank Size (gal)	TANKS Report Emissions (lb/yr)	Potential Emissions		Notes
					Hourly VOC Emissions (lb/hr)	Annual VOC Emissions (tpy)	
Fire Pump Diesel Tank	Trivial	2.5 x 6	250	0.14	5.83E-03	7.00E-05	[1][2][3][8]
Mobile Shop Motor Oil Tank 1	Trivial	3.5 x 7	450	0.23	1.00E-02	1.15E-04	[2][3][4][8]
Mobile Shop Motor Oil Tank 2	Trivial	3.5 x 7	450	0.23	1.00E-02	1.15E-04	[2][3][4][8]
Mobile Shop Motor Oil Tank 3	Trivial	3.5 x 12	900	0.43	2.08E-02	2.15E-04	[2][3][4][8]
Mobile Shop Hydraulic Tank	Trivial	3 x 5	280	0.13	8.00E-02	6.50E-05	[2][3][5][8]
Mobile Shop Transmission Oil	Trivial	3 x 5	280	0.13	8.00E-02	6.50E-05	[2][3][6][8]
Mobile Shop Used Oil Tank	Trivial	3.5 x 12	900	0.43	2.08E-02	2.15E-04	[2][3][7][8]
Wet Deck Pond Skimmer Used Oil Tank	Trivial	4 x 8	800	0.38	1.83E-02	1.90E-04	[2][3][7][8]
Lubrication Building Small Hydraulic Tank	Trivial	3.5 x 8	500	0.26	1.17E-02	1.30E-04	[2][3][6][8]
Trivial Small Tank Emission Total:					2.58E-01	1.18E-03	

Notes:

- [1] Diesel fuel used onsite is has been modeled as distillate fuel oil no. 2.
- [2] Hourly emissions were estimated using working loss and the assumption of 1 working hr per turnover.
- [3] A maximum of 12 turnovers per year have been assumed for working loss as well as constant breathing loss.
- [4] Motor oil was conservatively modeled as distillate fuel oil no. 2.
- [5] Hydraulic fluid was conservatively modeled as distillate fuel oil no. 2.
- [6] Transmission oil was conservatively modeled as distillate fuel oil no. 2.
- [7] Used oil was conservatively modeled as distillate fuel oil no. 2.
- [8] The emissions are estimated by EPA TANKS 4.0.9d program. See TANKS 4.0d reports for more details.

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: FSDT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Vertical Fixed Roof Tank
Description: Fuel Station Diesel Tank

Tank Dimensions

Shell Height (ft): 16.00
Diameter (ft): 8.00
Liquid Height (ft): 15.50
Avg. Liquid Height (ft): 8.00
Volume (gallons): 5,828.20
Turnovers: 12.00
Net Throughput(gal/yr): 69,938.45
Is Tank Heated (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good
Roof Color/Shade: White/White
Roof Condition: Good

Roof Characteristics

Type: Dome
Height (ft): 0.50
Radius (ft) (Dome Roof): 8.00

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

FSDT - Vertical Fixed Roof Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

FSDT - Vertical Fixed Roof Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	1.63	1.03	2.66

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: FSGT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Vertical Fixed Roof Tank
Description: Fuel Station Gasoline Tank

Tank Dimensions

Shell Height (ft): 12.00
Diameter (ft): 5.00
Liquid Height (ft): 11.50
Avg. Liquid Height (ft): 6.00
Volume (gallons): 1,689.12
Turnovers: 12.00
Net Throughput(gal/yr): 20,269.46
Is Tank Heated (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good
Roof Color/Shade: White/White
Roof Condition: Good

Roof Characteristics

Type: Dome
Height (ft): 0.50
Radius (ft) (Dome Roof): 5.00

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

FSGT - Vertical Fixed Roof Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Gasoline (RVP 15.0)	All	64.09	58.43	69.75	62.20	8.7758	7.9171	9.7063	60.0000			92.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

FSGT - Vertical Fixed Roof Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 15.0)	254.11	374.25	628.36

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: LBHT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Vertical Fixed Roof Tank
Description: Lubrication Building Hydraulic Tank

Tank Dimensions

Shell Height (ft): 16.00
Diameter (ft): 8.00
Liquid Height (ft): 15.50
Avg. Liquid Height (ft): 8.00
Volume (gallons): 5,828.20
Turnovers: 2.00
Net Throughput(gal/yr): 11,656.41
Is Tank Heated (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good
Roof Color/Shade: White/White
Roof Condition: Good

Roof Characteristics

Type: Dome
Height (ft): 0.50
Radius (ft) (Dome Roof): 8.00

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

LBHT - Vertical Fixed Roof Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

LBHT - Vertical Fixed Roof Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.27	1.03	1.30

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: FPD
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Fire Pump Diesel Tank

Tank Dimensions

Shell Length (ft): 6.00
Diameter (ft): 3.00
Volume (gallons): 250.00
Turnovers: 12.00
Net Throughput(gal/yr): 3,000.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

FPD - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

FPD - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.07	0.07	0.14

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: MSHT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Mobile Shop Hydraulic Tank

Tank Dimensions

Shell Length (ft): 5.00
Diameter (ft): 3.00
Volume (gallons): 280.00
Turnovers: 12.00
Net Throughput(gal/yr): 3,360.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MSHT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

MSHT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.08	0.06	0.13

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: MSMOT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Mobile Shop Motor Oil Tank - 900 gallon

Tank Dimensions

Shell Length (ft): 12.00
Diameter (ft): 3.50
Volume (gallons): 900.00
Turnovers: 12.00
Net Throughput(gal/yr): 10,800.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MSMOT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

MSMOT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.25	0.18	0.43

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: MSMOT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Mobile Shop Motor Oil Tank

Tank Dimensions

Shell Length (ft): 7.00
Diameter (ft): 3.50
Volume (gallons): 450.00
Turnovers: 12.00
Net Throughput(gal/yr): 5,400.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MSMOT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

MSMOT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.13	0.11	0.23

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: WDPSUOT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Wet Deck Pond Skimmer Used Oil Tank

Tank Dimensions

Shell Length (ft): 8.00
Diameter (ft): 4.00
Volume (gallons): 800.00
Turnovers: 12.00
Net Throughput(gal/yr): 9,600.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

WDPSUOT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

WDPSUOT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.22	0.16	0.38

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: LBSHT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Lubrication Building Small Hydraulic Tank

Tank Dimensions

Shell Length (ft): 8.00
Diameter (ft): 3.50
Volume (gallons): 500.00
Turnovers: 12.00
Net Throughput(gal/yr): 6,000.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

LBSHT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

LBSHT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.14	0.12	0.26

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: MSTOT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Mobile Shop Transmission Oil Tank

Tank Dimensions

Shell Length (ft): 5.00
Diameter (ft): 3.00
Volume (gallons): 280.00
Turnovers: 12.00
Net Throughput(gal/yr): 3,360.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MSTOT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

MSTOT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.08	0.06	0.13

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: MSUOT
City: Talladega
State: Alabama
Company: Georgia-Pacific
Type of Tank: Horizontal Tank
Description: Mobile Shop Used Oil Tank

Tank Dimensions

Shell Length (ft): 12.00
Diameter (ft): 3.50
Volume (gallons): 900.00
Turnovers: 12.00
Net Throughput(gal/yr): 10,800.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Birmingham, Alabama (Avg Atmospheric Pressure = 14.44 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

MSUOT - Horizontal Tank
Talladega, Alabama

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	64.09	58.43	69.75	62.20	0.0075	0.0062	0.0089	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

MSUOT - Horizontal Tank
Talladega, Alabama

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.25	0.18	0.43

APPENDIX C

BACT SUPPORTING DOCUMENTATION

Table C-1. Emission Unit Subject to BACT

Unit	Max. Throughput Capacity
CDK No 1	20 MBf/hr 120 MMBf/yr 40 MMBtu/hr
CDK No 2	20 MBf/hr 120 MMBf/yr 40 MMBtu/hr
CDK No 3	13.2 MBf/hr 80 MMBf/yr 30 MMBtu/hr
CDK No 2 and 3	33.2 MBf/hr 200 MMBf/yr 70 MMBtu/hr

Table C-2. Potential Control Scenario Summary

Emission Unit	Pollutant	Control Basis	Current Potential Emissions (VOC as WWP1) ¹	Current Potential Emissions (VOC as C)	Capture Efficiency ²
CDK No 1	VOC	RTO	5.49 lb/MBF	4.28 lb/MBF	80.0%
CDK No 2 and 3	VOC	RTO	5.49 lb/MBF	4.28 lb/MBF	80.0%

Table C-2 Notes:

1. Engineering estimate based design characteristics of continuous kiln.

2. VOC (WWP1) calculated using the Interim VOC Measurement Protocol for the Wood Products Industry – July 2007.

Table C-3. Cost Summary

Emission Unit	Capture Efficiency (%)	Technology	Control Efficiency ¹ (%)	Pollutant	Potential Emissions (tpy)	Pollutant Removed (tpy)	Cost Effectiveness (\$/ton removed)
CDK No 1	80.0%	RTO	95%	VOC as WPP1	329.40	250.34	\$ 9,591
				VOC as C	256.80	195.17	\$ 12,303
CDK No 2 and 3	80.0%	RTO	95%	VOC as WPP1	549.00	417.24	\$ 9,466
				VOC as C	428.00	325.28	\$ 12,142

Table C-3 Notes:

1. RTO control efficiency per Air Pollution Control Technology Fact Sheet - EPA-452/F-03-021. Higher RTO VOC control values have been demonstrated for some applications, but high control is not expected for low concentration high flow applications like those at the CDKs.

Table C-4. Cost Analysis Supporting Information for CDK 1 WESP

Parameter	CDK	Units	Note(s)
Maximum Production Capacity	120	MMBf/yr	1
Airflow Capture Efficiency	80	%	1
PM Control Efficiency	95	%	2
Airflow	40,000	acfm	1
Pressure Drop	1.50	inches of H ₂ O	3
Fan Motor Efficiency	55	%	4
Fan Electricity Usage	52.0	kW-hr	5
Water Requirement	2.7	gal/min	3
	160	gal/hr	
Water Consumption Cost	0.0053	\$/gal	6
Cost to Treat Water	0.375	\$/1000 gal	6
Solid Material to be Disposed (PM Collected)	0.84	ton/yr	7
Landfill Fees	320	\$/ton	6
Operating Labor Cost	18.2	\$/hr	6
Maintenance Labor Cost	26.0	\$/hr	6
Electricity Cost	0.06	\$/kW-hr	6
WESP Equipment Life	20	years	8
Interest Rate	7%	%	8
January 2017 Chemical Engineering Index	553.1	n/a	9
June 2017 Chemical Engineering Index	567.1	n/a	9

Table C-4 Notes:

1. Engineering estimate based on design characteristics of a continuous lumber kiln.
2. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 3.14 (highest efficiency value), Page 3-41 of Section 6 (Particulate Matter Controls), Chapter 3 (Electrostatic Precipitators).
3. Based on vendor discussions for previous installations.
4. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Page 2-41 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators). Fan efficiency vary from 40 to 70%. Average value of 55% was chosen
5. Per WESP Vendor quote, B&W MEGTEC, January 13, 2017.
6. Based on cost data from similar facility.
7. PM Collected = (PM (filt)) * % Capture * 95% Control on captured PM
8. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Page 3-50 of Section 6 (Particulate Matter Controls), Chapter 2 (Electrostatic Precipitators). The typical equipment life of 20 years chosen.
9. Chemical Engineering Index

Table C-5. Capital Cost Evaluation for Wet ESP for the CDK 1

Capital Cost	CDK	OAQPS Notation¹
<i>Purchased Equipment Costs</i>		
Total Equipment Cost ²	1,797,372	A
Instrumentation ²	---	
Freight	89,869	0.05 × A
<i>Total Purchased Equipment Costs</i>	<i>1,887,240</i>	<i>B</i>
<i>Direct Installation Costs</i>		
Foundations and Supports	75,490	0.04 × B
Handling and Erection	943,620	0.50 × B
Electrical	150,979	0.08 × B
Piping	18,872	0.01 × B
Insulation	37,745	0.02 × B
Painting	37,745	0.02 × B
<i>Total Direct Installation Costs</i>	<i>1,264,451</i>	<i>C</i>
<i>Indirect Installation Costs</i>		
Engineering ²	---	---
Construction and Field Expense	377,448	0.20 × B
Contractor Fees	188,724	0.10 × B
Start-up	18,872	0.01 × B
Performance Test	18,872	0.01 × B
Process Contingencies	56,617	0.03 × B
<i>Total Indirect Installation Costs</i>	<i>660,534</i>	<i>D</i>
Total Capital Investment (\$)	3,812,225	TCI = B + C + D

Table C-5 Notes:

1. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 3.16, Page 3-46 of Section 6 (Particulate Matter Controls), Chapter 3 (Electrostatic Precipitators).

2. Capital Costs are based the budgetary quote from B&W for a SonicKleen WESP (the pricing is for design, engineering and supply of equipment, drawings and flow sheets). Quote provided January 2017.

B&W Cost Estimate for 40,000 acfm flow	\$1,753,000
January 2017 Chemical Engineering Index	553.1
June 2017 Chemical Engineering Index	567.1
Ratio of indices	1.03
Cost for airflow at design acfm CDK	\$1,797,372

Table C-6. Annualized Cost Evaluation for Wet ESP for the CDK 1

Operating Cost	CDK	
<i>Direct Annual Costs, \$¹</i>		
Operating Labor (0.5-hr/day, 365 days/yr) ³	3,312	E
Supervisory Labor	497	$F = 0.15 \times E$
Maintenance Labor (0.5 hr, per 8-hr shift)	14,251	G
Maintenance Materials	14,251	$H = G$
Electricity	27,331	I
Water	7,428	J
Water Treatment	526	J
Waste Disposal (solid material)	270	J
<i>Total Direct Annual Costs, \$</i>	<i>67,867</i>	$DAC = E + F + G + H + I + J$
<i>Indirect Annual Costs, \$¹</i>		
Overhead	19,387	$K = 0.60 \times (E + F + G + H)$
Administrative Charges	76,245	$L = 0.02 \times TCI$
Property Tax	38,122	$M = 0.01 \times TCI$
Insurance	38,122	$N = 0.01 \times TCI$
Capital Recovery Factor (CRF) ²	0.0944	Based on 7% interest rate and 20 yr control equip. life
Capital Recovery	359,847	$O = CRF \times TCI$
<i>Total Indirect Annual Costs, \$</i>	<i>531,723</i>	$IDAC = K + L + M + N + O$
Total Annual Cost, \$	599,590	$TAC = DAC + IDAC$

Table C-6 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).
2. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Equation 2.8a, Page 2-21 of Section 1, Chapter 2
3. Based on operating experience at GP's OSB Plants

Table C-7. Cost Analysis Supporting Information for CDK 1 RTO

Parameter	CDKs	Units	Note(s)
Maximum Production Capacity	120	MMBf/yr	1
Uncontrolled Stack Inlet Emissions (VOC as WPP1)	329.40	tpy	2
Uncontrolled Stack Inlet Emissions (VOC as C)	256.80	tpy	2
Airflow Capture Efficiency	80	%	1
Removal Efficiency	95	%	3
VOC as WPP1 Removed	250.34	tpy	4
VOC as C Removed	195.17	tpy	4
Combustion Chamber Temperature (°F)	1600	° F	5
Airflow at stack conditions	40,000	acfm	1
Electricity Usage	120.0	kW-hr	6
Energy Required From Fuel	41,820	MMBtu/yr	6
Operating Labor Cost	18.2	\$/hr	7
Maintenance Labor Cost	26.0	\$/hr	7
Electricity Cost	0.060	\$/kW-hr	7
Natural Gas	4.0	\$/mmbtu	7
RTO Equipment Life	20	years	8
Interest Rate	7%		8
February 2007 Chemical Engineering Index	525.4	n/a	
2015 Chemical Engineering Index	556.8	n/a	
January 2017 Chemical Engineering Index	553.1	n/a	
June 2017 Chemical Engineering Index	567.1	n/a	

Table C-7 Notes:

1. Engineering estimate based on design characteristics of a continuous lumber kiln.
2. Potential inlet emissions based on maximum capacity and emission factor of 5.49 lb/MBf (VOC as WPP1) or 4.28 lb/MBf (VOC as C).
3. RTO control efficiency per Air Pollution Control Technology Fact Sheet - EPA-452/F-03-021. Higher RTO VOC control values have been demonstrated for some applications, but high control is not expected for low concentration high flow applications like those at the CDKs.
4. VOC Removed (tpy) = Capture efficiency (%) * Removal Efficiency (%) × Uncontrolled Stack Inlet Emissions (tpy).
5. Based on design specifications for similar unit. Assumes 1,600 °F combustion chamber temperature and 200 °F exhaust temperature
6. Per RTO Vendor quote, B&W MEGTEC, January 13, 2017.
7. Based on cost data from similar facility.
8. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), (Incinerators). Equipment life of 20 years chosen in lieu of 10 years for conservatism

Table C-8. Cost Evaluation for CDK 1 RTO

Capital Cost		CDKs	OAQPS Notation ¹
<i>Purchased Equipment Costs</i>			
	Total RTO Equipment Cost ²	920,525	A
	Duct Fire Protection (\$350/ft) ³	113,750	
<i>Total Purchased Equipment Costs</i>		1,034,275	B
<i>Direct Installation Costs</i>			
	Foundations and Supports	0.08 B	
	Handling and Erection	0.14 B	
	Electrical	0.04 B	
	Insulation	0.01 B	
	Painting	0.01 B	
	Instrumentation, including Control Devices, Parametric Monitoring, Communication, Spare Parts	included in quote	
	Site Development ⁴	96,280	
	Buildings ⁴	50,514	
<i>Total Direct Installation Costs</i>		436,391	
<i>Indirect Installation Costs²</i>			
	Engineering ⁴	341,944	
	Construction and Field Expense	0.05 B	
	Contractor Fees	0.10 B	
	Start-up	0.02 B	
	Performance Test	0.01 B	
	Process Contingencies	0.03 B	
<i>Total Indirect Installation Costs</i>		559,142	
<i>Additional Scoped Equipment Costs⁴</i>			
	Ductwork ⁵	2,730,849	C
	Ductwork Heater ⁶	4,411,117	D
Total Capital Investment (\$)		9,171,774	TCI = B+C+D

Table C-8 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.8, Page 2-42 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).

2. RTO & Media Cost from Quote from B&W MEGTEC for 40,000 acfm lumber kiln, provided January 31, 2017.

Total RTO Equipment Cost Estimate for 40,000 acfm flow	\$897,800
January 2017 Chemical Engineering Index	553.1
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.025

Total RTO Equipment Cost Estimate for 40,000 acfm flow (Index Cost Ratio Adjusted) **\$920,525**

3. Cost estimate based on spark detection and suppression system at GP Hosford Plant and distance from unit to control device. Of 325.00 feet.

4. RTO & Media Cost from Quote submitted to GP Thorsby by Pro-Environmental, Inc, for a 40,000 acfm plywood veneer dryer, provided December 22, 2007 (revised February 1, 2008).

Site Development Cost Estimate	\$89,200
Building Cost Estimate	\$46,800
Engineering Cost Estimate	\$316,800
February 2007 Chemical Engineering Index	525.4
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.079

Site Development Cost Estimate (Index Cost Ratio Adjusted) **\$96,280**

Building Cost Estimate (Index Cost Ratio Adjusted) **\$50,514**

Engineering Cost Estimate (Index Cost Ratio Adjusted) **\$341,944**

5. +/- 30% Cost estimate of design, equipment and installation of 36" stainless steel ductwork for 1000 feet with insulation, heat tracing, and duct heaters to prevent condensation within ductwork. Ratioed quoted system to project duct length of 325 ft based on distance to nearest area for control device.

Ductwork Cost Estimate for 1,000 ft	\$8,250,000
2015 Chemical Engineering Index	556.8
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.018

Ductwork Cost Estimate for 325 ft (Index Cost Ratio Adjusted) **\$2,730,849**

6. Provided by AECOM estimator, February 2015 for ~40,000 cfm flow.

Ductwork Heater Cost Estimate for 40,000 acfm flow	\$4,331,000
2015 Chemical Engineering Index	556.8
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.018

Ductwork Heater Cost Estimate for 40,000 acfm flow (Index Cost Ratio Adjusted) **\$4,411,117**

Table C-9. Total Cost Evaluation for CDK 1 RTO & WESP

Operating Cost		CDKs	OAQPS Notation ¹
Direct Annual Costs, \$			
	Replacement of Media every 4 years	29,412	Based on experience at other Bldg Product facilities
	Operating Labor (0.5 hr, per 8-hr shift)	9,937	E
	Supervisory Labor	1,491	$F = 0.15 \times E$
	Maintenance Labor (0.5 hr, per 8-hr shift)	14,251	G
	Maintenance Materials	14,251	$H = G$
	Electricity Usage	63,072	I
	Natural Gas - RTO	167,281	J
	Natural Gas - Duct Heater	245,280	duct heaters at 7 mmbtu/hr
Total Direct Annual Costs, \$		544,975	$DAC = E + F + G + H + I + J$
Indirect Annual Costs, \$			
	Overhead	23,958	$K = 0.60 \times (E + F + G + H)$
	Administrative Charges	183,435	$L = 0.02 \times TCI$
	Property Tax	91,718	$M = 0.01 \times TCI$
	Insurance	91,718	$N = 0.01 \times TCI$
	Capital Recovery Factor ²	0.0944	Based on 7% interest and 20-yr control equipment life
	Capital Recovery	865,751	$O = CRF \times TCI$
Total Indirect Annual Costs, \$		1,256,580	$IDAC = K + L + M + N + O$
Total Annual Cost RTO (\$/yr)		1,801,555	$TAC = DAC + IDAC$
Total Annual Cost WESP (\$/yr)		599,590	$TAC = DAC + IDAC$
VOC as WPP1 Removed from Natural Gas-Fired Kiln (tpy)		250.34	VOC as WPP1
VOC as C Removed from Natural Gas-Fired Kiln (tpy)		195.17	VOC as C
Cost per ton of VOC as WPP1 Removed from Natural Gas-Fired Kiln (\$/ton)		\$9,591	$\$/ton = TAC / \text{Pollutant Removed}$
Cost per ton of VOC as C Removed from Natural Gas-Fired Kiln (\$/ton)		\$12,303	$\$/ton = TAC / \text{Pollutant Removed}$

Table C-9 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).
2. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Equation 2.8a, Page 2-21 of Section 1, Chapter 2

Table C-10. Cost Analysis Supporting Information for CDK 2 & 3 WESP

Parameter	CDK	Units	Note(s)
Maximum Production Capacity	200	MMBf/yr	1
Airflow Capture Efficiency	80	%	1
PM Control Efficiency	95	%	2
Airflow	70,000	acfm	1
Pressure Drop	1.50	inches of H ₂ O	3
Fan Motor Efficiency	55	%	4
Fan Electricity Usage	91.0	kW-hr	5
Water Requirement	5	gal/min	3
	280	gal/hr	
Water Consumption Cost	0.0053	\$/gal	6
Cost to Treat Water	0.375	\$/1000 gal	6
Solid Material to be Disposed (PM Collected)	1.42	ton/yr	7
Landfill Fees	320	\$/ton	6
Operating Labor Cost	18.2	\$/hr	6
Maintenance Labor Cost	26.0	\$/hr	6
Electricity Cost	0.06	\$/kW-hr	6
WESP Equipment Life	20	years	8
Interest Rate	7%	%	8
January 2017 Chemical Engineering Index	553.1	n/a	9
June 2017 Chemical Engineering Index	567.1	n/a	9

Table C-10 Notes:

1. Engineering estimate based on design characteristics of a continuous lumber kiln.
2. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 3.14 (highest efficiency value), Page 3-41 of Section 6 (Particulate Matter Controls), Chapter 3 (Electrostatic Precipitators).
3. Based on vendor discussions for previous installations.
4. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Page 2-41 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators). Fan efficiency vary from 40 to 70%. Average value of 55% was chosen
5. Per WESP Vendor quote, B&W MEGTEC, January 13, 2017.
6. Based on cost data from similar facility.
7. PM Collected = (PM (filt)) * % Capture * 95% Control on captured PM
8. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Page 3-50 of Section 6 (Particulate Matter Controls), Chapter 2 (Electrostatic Precipitators). The typical equipment life of 20 years chosen.
9. Chemical Engineering Index

Table C-11. Capital Cost Evaluation for Wet ESP for CDK 2 & 3

Capital Cost	CDK	OAQPS Notation ¹
<i>Purchased Equipment Costs</i>		
Total Equipment Cost ²	3,145,401	A
Instrumentation ²	---	
Freight	157,270	$0.05 \times A$
<i>Total Purchased Equipment Costs</i>	<i>3,302,671</i>	<i>B</i>
<i>Direct Installation Costs</i>		
Foundations and Supports	132,107	$0.04 \times B$
Handling and Erection	1,651,335	$0.50 \times B$
Electrical	264,214	$0.08 \times B$
Piping	33,027	$0.01 \times B$
Insulation	66,053	$0.02 \times B$
Painting	66,053	$0.02 \times B$
<i>Total Direct Installation Costs</i>	<i>2,212,789</i>	<i>C</i>
<i>Indirect Installation Costs</i>		
Engineering ²	---	---
Construction and Field Expense	660,534	$0.20 \times B$
Contractor Fees	330,267	$0.10 \times B$
Start-up	33,027	$0.01 \times B$
Performance Test	33,027	$0.01 \times B$
Process Contingencies	99,080	$0.03 \times B$
<i>Total Indirect Installation Costs</i>	<i>1,155,935</i>	<i>D</i>
Total Capital Investment (\$)	6,671,394	TCI = B + C + D

Table C-11 Notes:

1. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 3.16, Page 3-46 of Section 6 (Particulate Matter Controls), Chapter 3 (Electrostatic Precipitators).
2. Capital Costs are based the budgetary quote from B&W for a SonicKleen WESP (the pricing is for design, engineering and supply of equipment, drawings and flow sheets). Quote provided January 2017.

B&W Cost Estimate for 40,000 acfm flow	\$1,753,000
January 2017 Chemical Engineering Index	553.1
June 2017 Chemical Engineering Index	567.1
Ratio of indices	1.03
Cost for airflow at design acfm CDK	\$3,145,401

Table C-12. Annualized Cost Evaluation for Wet ESP for CDK 2 & 3

Operating Cost	CDK	
<i>Direct Annual Costs, \$¹</i>		
Operating Labor (0.5-hr/day, 365 days/yr) ³	3,312	E
Supervisory Labor	497	F = 0.15 × E
Maintenance Labor (0.5 hr, per 8-hr shift)	14,251	G
Maintenance Materials	14,251	H = G
Electricity	47,830	I
Water	13,000	J
Water Treatment	920	J
Waste Disposal (solid material)	454	J
<i>Total Direct Annual Costs, \$</i>	<i>94,515</i>	<i>DAC = E + F + G + H + I + J</i>
<i>Indirect Annual Costs, \$¹</i>		
Overhead	19,387	K = 0.60 × (E + F + G + H)
Administrative Charges	133,428	L = 0.02 × TCI
Property Tax	66,714	M = 0.01 × TCI
Insurance	66,714	N = 0.01 × TCI
Capital Recovery Factor (CRF) ²	0.0944	Based on 7% interest rate and 20 yr control equip. life
Capital Recovery	629,732	O = CRF×TCI
<i>Total Indirect Annual Costs, \$</i>	<i>915,975</i>	<i>IDAC = K + L + M + N + O</i>
Total Annual Cost, \$	1,010,491	<i>TAC = DAC + IDAC</i>

Table C-12 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).
2. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Equation 2.8a, Page 2-21 of Section 1, Chapter 2
3. Based on operating experience at GP's OSB Plants

Table C-13. Cost Analysis Supporting Information for CDK 2 & 3 RTO

Parameter	CDKs	Units	Note(s)
Maximum Production Capacity	200	MMBf/yr	1
Uncontrolled Stack Inlet Emissions (VOC as WPP1)	549.00	tpy	2
Uncontrolled Stack Inlet Emissions (VOC as C)	428.00	tpy	2
Airflow Capture Efficiency	80	%	1
Removal Efficiency	95	%	3
VOC as WPP1 Removed	417.24	tpy	4
VOC as C Removed	325.28	tpy	4
Combustion Chamber Temperature (°F)	1600	° F	5
Airflow at stack conditions	70,000	acfm	1
Electricity Usage	210.0	kW-hr	6
Energy Required From Fuel	73,185	MMBtu/yr	6
Operating Labor Cost	18.2	\$/hr	7
Maintenance Labor Cost	26.0	\$/hr	7
Electricity Cost	0.060	\$/kW-hr	7
Natural Gas	4.0	\$/mmbtu	7
RTO Equipment Life	20	years	8
Interest Rate	7%	%	8
February 2007 Chemical Engineering Index	525.4	n/a	
2015 Chemical Engineering Index	556.8	n/a	
January 2017 Chemical Engineering Index	553.1	n/a	
June 2017 Chemical Engineering Index	567.1	n/a	

Table C-13 Notes:

1. Engineering estimate based on design characteristics of a continuous lumber kiln.
2. Potential inlet emissions based on maximum capacity and emission factor of 5.49 lb/MBf (VOC as WPP1) or 4.28 lb/MBf (VOC as C).
3. RTO control efficiency per Air Pollution Control Technology Fact Sheet - EPA-452/F-03-021. Higher RTO VOC control values have been demonstrated for some applications, but high control is not expected for low concentration high flow applications like those at the CDKs.
4. VOC Removed (tpy) = Capture efficiency (%) * Removal Efficiency (%) * Uncontrolled Stack Inlet Emissions (tpy).
5. Based on design specifications for similar unit. Assumes 1,600 °F combustion chamber temperature and 200 °F exhaust temperature
6. Per RTO Vendor quote, B&W MEGTEC, January 13, 2017. Adjusted for proposed 70,000 cfm airflow from the 40,000 cfm airflow in vender quote.
7. Based on cost data from similar facility.
8. U.S. EPA OAQPS, EPA Air Pollution Control Cost Manual (6th Edition), January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators). Equipment life of 20 years chosen in lieu of 10 years for conservatism

Table C-14. Cost Evaluation for CDK 2 & 3 RTO

Capital Cost		CDKs	OAQPS Notation ¹
<i>Purchased Equipment Costs</i>			
	Total RTO Equipment Cost ²	\$1,610,919	A
	Duct Fire Protection (\$350/ft) ³	218,750	
<i>Total Purchased Equipment Costs</i>		1,829,669	B
<i>Direct Installation Costs</i>			
	Foundations and Supports	0.08 B	
	Handling and Erection	0.14 B	
	Electrical	0.04 B	
	Insulation	0.01 B	
	Painting	0.01 B	
	Instrumentation, including Control Devices, Parametric Monitoring, Communication, Spare Parts	included in quote	
	Site Development ⁴	96,280	
	Buildings ⁴	50,514	
<i>Total Direct Installation Costs</i>		659,101	
<i>Indirect Installation Costs²</i>			
	Engineering ⁴	341,944	
	Construction and Field Expense	0.05 B	
	Contractor Fees	0.10 B	
	Start-up	0.02 B	
	Performance Test	0.01 B	
	Process Contingencies	0.03 B	
<i>Total Indirect Installation Costs</i>		726,174	
<i>Additional Scoped Equipment Costs⁴</i>			
	Ductwork ⁵	5,251,633	C
	Ductwork Heater ⁶	7,719,455	D
Total Capital Investment (\$)		16,186,033	TCl = B+C+D

Table C-14 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.8, Page 2-42 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).
2. RTO & Media Cost from Quote from B&W MEGTEC for 40,000 acfm lumber kiln, provided January 31, 2017.

Total RTO Equipment Cost Estimate for 40,000 acfm flow	\$897,800
January 2017 Chemical Engineering Index	553.1
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.025

Total RTO Equipment Cost Estimate for 70,000 acfm flow (Index Cost Ratio Adjusted) **\$1,610,919**

3. Cost estimate based on spark detection and suppression system at GP Hosford Plant and distance from unit to control device. Of 625.00 feet.
4. RTO & Media Cost from Quote submitted to GP Thorsby by Pro-Environmental, Inc, for a 40,000 acfm plywood veneer dryer, provided December 22, 2007 (revised February 1, 2008).

Site Development Cost Estimate	\$89,200
Building Cost Estimate	\$46,800
Engineering Cost Estimate	\$316,800
February 2007 Chemical Engineering Index	525.4
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.079

Site Development Cost Estimate (Index Cost Ratio Adjusted)	\$96,280
Building Cost Estimate (Index Cost Ratio Adjusted)	\$50,514
Engineering Cost Estimate (Index Cost Ratio Adjusted)	\$341,944

4. +/- 30% Cost estimate of design, equipment and installation of 36" stainless steel ductwork for 1000 feet with insulation, heat tracing, and duct heaters to prevent condensation within ductwork. Ratioed quoted system to project duct length of 625 ft based on distance to nearest area for control device.

Ductwork Cost Estimate for 1,000 ft	\$8,250,000
2015 Chemical Engineering Index	556.8
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.018

Ductwork Cost Estimate for 625 ft (Index Cost Ratio Adjusted) **\$5,251,633**

6. Provided by AECOM estimator, February 2015 for ~40,000 cfm flow.

Ductwork Heater Cost Estimate for 40,000 acfm flow	\$4,331,000
2015 Chemical Engineering Index	556.8
June 2017 Chemical Engineering Index	567.1
Ratio of Indices	1.018

Ductwork Heater Cost Estimate for 70,000 acfm flow (Index Cost Ratio Adjusted) **\$7,719,455**

Table C-15. Total Cost Evaluation for CDK 2 & 3 RTO & WESP

Operating Cost		CDKs	OAQPS Notation ¹
<i>Direct Annual Costs, \$</i>			
	Replacement of Media every 4 years	51,471	Based on experience at other Bldg Product facilities
	Operating Labor (0.5 hr, per 8-hr shift)	9,937	E
	Supervisory Labor	1,491	$F = 0.15 \times E$
	Maintenance Labor (0.5 hr, per 8-hr shift)	14,251	G
	Maintenance Materials	14,251	$H = G$
	Electricity Usage	110,376	I
	Natural Gas - RTO	292,742	J
	Natural Gas - Duct Heater	245,280	duct heaters at 7 mmbtu/hr
<i>Total Direct Annual Costs, \$</i>		739,799	$DAC = E + F + G + H + I + J$
<i>Indirect Annual Costs, \$</i>			
	Overhead	23,958	$K = 0.60 \times (E + F + G + H)$
	Administrative Charges	323,721	$L = 0.02 \times TCI$
	Property Tax	161,860	$M = 0.01 \times TCI$
	Insurance	161,860	$N = 0.01 \times TCI$
	Capital Recovery Factor ²	0.0944	Based on 7% interest and 20-yr control equipment life
	Capital Recovery	1,527,847	$O = CRF \times TCI$
<i>Total Indirect Annual Costs, \$</i>		2,199,247	$IDAC = K + L + M + N + O$
Total Annual Cost RTO (\$/yr)		2,939,045	$TAC = DAC + IDAC$
Total Annual Cost WESP (\$/yr)		1,010,491	$TAC = DAC + IDAC$
VOC as WPP1 Removed from Natural Gas-Fired Kilns 2 & 3 (tpy)		417.24	
VOC as C Removed from Natural Gas-Fired Kilns 2 & 3 (tpy)		325.28	
Cost per ton of VOC as WPP1 Removed from Natural Gas-Fired Kilns 2 & 3 (\$/ton)		\$9,466	$\$/ton = TAC / \text{Pollutant Removed}$
Cost per ton of VOC as C Removed from Natural Gas-Fired Kilns 2 & 3 (\$/ton)		\$12,142	$\$/ton = TAC / \text{Pollutant Removed}$

Table C-15 Notes:

1. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Table 2.10, Page 2-45 of Section 3.2 (VOC Destruction Controls), Chapter 2 (Incinerators).
2. U.S. EPA OAQPS, *EPA Air Pollution Control Cost Manual (6th Edition)*, January 2002, Equation 2.8a, Page 2-21 of Section 1, Chapter 2

Table C-16. RESULTS OF RBLC SEARCH FOR LUMBER KILN VOC BACT

RBLCID	Facility Name	State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Control Method Description	Emission Limit
AL-0235	ALBERTVILLE SAWMILL	AL	4/9/2008	TWO 182.14 MBF, STEAM-HEADED LUMBER DRY KILNS (NORTH & SOUTH - K100/K101)		182.14 MBF	OPERATE W/ WET BULB SET POINT DRYING SCHEDULE OF LESS THAN OR EQUAL TO 185F; DAILY AND MONTHLY KILN I/M PROCEDURES	7 LB/MBF
AL-0257	WEST FRASER-OPELIKA LUMBER MILL	AL	11/1/2013	Two(2) 87.5 MMBF/YR Continuous kilns with a 35 MMBtu/hr direct-fired wood burner	Wood Shavings	175 MMBF/YR		3.76 LB/MBF
AL-0258	WEST FRASER, INC. - MAPLESVILLE MILL	AL	4/15/2013	Two(2) 100 MMBF/Y Continuous direct fired kiln	Wood Residuals	200 MMBF/YR		3.76 LB/MBF
AL-0259	THE WESTERVELT COMPANY	AL	8/21/2013	Three (3) 93 MMBF/Y Continuous, Dual path, indirect fired kilns	Steam (indirect heat)	0		4.57 LB/MMBF
AL-0260	THE WESTERVELT COMPANY	AL	1/4/2011	Two (2) 125 MMBtu/Hr. Wood-fired Boilers	Wood Residuals	125 MMBTU/H each		0.5 LB/MMBTU
AL-0273	MILLPORT WOOD PRODUCTS FACILITY	AL	12/30/2014	Continuous direct-lumber dry kiln	Green sawdust	140000 mbf/yr	Proper maintenance & operating practice requirements. Test method information: Method 18/25.	4.7 LB
*AL-0305	RESOLUTE FOREST PRODUCTS - ALABAMA SAWMILL	AL	6/24/2015	Continuous Direct-Fired Lumber Dry Kilns with 35 mmbtu/hr Wood Fired Burner	Wood	108.33 mmbf/yr - each		3.76 LB/MBF
AR-0101	BIBLER BROTHERS LUMBER COMPANY	AR	8/25/2008	SN-07G AND SN-13G CONTINUOUS OPERATING KILNS	WOOD RESIDUE	25 MMBTU/H		3.8 LB/MBF
AR-0102	ANTHONY TIMBERLANDS, INC.	AR	9/16/2009	KILN #3 INDIRECT-FIRED	NONE	200 MMBF/YR		3.5 LB/MBF
AR-0102	ANTHONY TIMBERLANDS, INC.	AR	9/16/2009	KILN #4 INDIRECT-FIRED	NONE	200 MMBF/YR		3.5 LB/MBF
AR-0102	ANTHONY TIMBERLANDS, INC.	AR	9/16/2009	KILN #5 INDIRECT-FIRED	NONE	200 MMBF/YR		3.5 LB/MBF
AR-0120	OLA	AR	2/11/2015	Dry Kiln No. 3 (SN-06)	None	105 MMBF/yr		33.3 LB/H
AR-0120	OLA	AR	2/11/2015	Drying Kiln No. 4 (SN-12)	None	105 MMBF/yr		33.2 LB/H
AR-0120	OLA	AR	2/11/2015	Drying Kiln No. 5 (SN-21)	wood residue	60 MMBF/yr		23.5 LB/H
AR-0122	GEORGIA-PACIFIC WOOD PRODUCTS SOUTH LLC (GURDON PLYWOOD AND	AR	2/6/2015	SN-09 #4 LUMBER KILN	NATURAL GAS	130 MILLION BOARD FEET		3.8 LB/MBF
AR-0123	DELTIC TIMBER CORPORATION WALDO	AR	10/18/2013	KILN NO. 3		0	PROPER KILN OPERATION	27 LB/H
AR-0123	DELTIC TIMBER CORPORATION WALDO	AR	10/18/2013	KILN NO. 4		0		46.2 LB/H
AR-0123	DELTIC TIMBER CORPORATION WALDO	AR	10/18/2013	KILN NO. 5		0		27 LB/H
AR-0124	EL DORADO SAWMILL	AR	8/3/2015	LUMBER DRYING KILN SN-01	NATURAL GAS	45 MMBTU/H	PROPER MAINTENANCE AND OPERATION	3.8 LB/MBF
AR-0124	EL DORADO SAWMILL	AR	8/3/2015	LUMBER DRYING KILN SN-02	NATURAL GAS	45 MMBTU/H		3.8 LB/MBF
AR-0124	EL DORADO SAWMILL	AR	8/3/2015	LUMBER DRYING KILN SN-03	NATURAL GAS	45 MMBTU/H		3.8 LB/MBF
AR-0127	DELTIC TIMBER CORPORATION - OLA	AR	10/13/2015	STEAM HEATED CONTINUOUS KILN NO. 3		79000 MBF/YR	PROPER DRYING SCHEDULE AND A TEMPERATURE BASED ON MOISTURE CONTENT OF THE LUMBER TO BE DRIED AND THE MANUFACTURER'S SPECIFICATIONS	33.3 LB/H
AR-0127	DELTIC TIMBER CORPORATION - OLA	AR	10/13/2015	STEAM HEATED CONTINUOUS KILN NO. 4		79000 MBF/YR	PROPER DRYING SCHEDULE AND A TEMPERATURE BASED ON MOISTURE CONTENT OF THE LUMBER TO BE DRIED AND THE MANUFACTURER'S SPECIFICATIONS	33.3 LB/H
AR-0127	DELTIC TIMBER CORPORATION - OLA	AR	10/13/2015	DIRECT-FIRED CONTINUOUS KILN NO. 5		79000 MBF/YR	PROPER DRYING SCHEDULE AND A TEMPERATURE BASED ON MOISTURE CONTENT OF THE LUMBER TO BE DRIED AND THE MANUFACTURER'S SPECIFICATIONS	38.2 LB/H
AR-0135	WEST FRASER, INC. (LEOLA LUMBER MILL)	AR	8/5/2013	LUMBER KILN, CONTINUOUS, INDIRECT		275 MMBF/YR		3.5 LB/MBF
AR-0143	CADDO RIVER LLC	AR	2/8/2017	CONTINUOUS LUMBER DRYING KILNS	WOOD	1.16E+08 BOARD FEET		53.2 LB/H
FL-0315	NORTH FLORIDA LUMBER/BRISTOL SAW MILL	FL	8/4/2009	Wood lumber kiln	steam heated	92000000 board-ft lumber/yr	Best operating practices: 1) minimize over-drying lumber; 2) maintain consistent moisture content for processed lumber charge; and 3) dry at the minimum temperature.	116.93 T/YR
FL-0340	PERRY MILL	FL	4/1/2014	Direct-fired lumber drying kiln	Waste wood	90 million board ft/yr	At a minimum, the permittee shall operate the kiln in accordance with the following best operating practices (BMP). a. Minimize over-drying the lumber; b. Maintain consistent moisture content for the processing lumber charge; and c. Dry at the minimum temperature. The permittee shall develop and operate in accordance with a written plan to implement the above BMP and any others required by the kiln manufacturer. Ninety days before the initial startup of the kiln, the permitted shall submit to the Compliance Authority the BMP plan. The Title V air operation permit shall include the submitted BMP plan.	3.5 LB/MBF

Table C-16. RESULTS OF RBLC SEARCH FOR LUMBER KILN VOC BACT

RBLCID	Facility Name	State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Control Method Description	Emission Limit
FL-0343	WHITEHOUSE LUMBER MILL	FL	9/9/2014	Direct-Fired Continuous Kilns	Wood waste	40 MMBTU/H	Proper Maintenance and Operating Procedures: • Minimize over-drying the lumber. • Maintain consistent moisture content for the processing lumber charge. • Dry the lumber at the minimum temperature. • Develop a written Operation and Maintenance (O&M) plan identifying the above practices and the operation and maintenance requirements from the kiln manufacturer. • Record and monitor the total monthly amount and 12-month annual total of wood dried in each kiln (board-feet). • Record the calculated monthly and 12-month annual total emissions of VOC to demonstrate compliance with the process and emissions limits.	3.76 LB/MBF
FL-0358	GRACEVILLE LUMBER MILL	FL	7/14/2016	Direct-fired continuous lumber drying Kiln No. 5	Sawdust	110000 Thousand bf/yr	Lumber moisture used as proxy for VOC emissions -- product that is over dried likely means more VOC driven off and emitted	3.5 LB/MBF
GA-0146	SIMPSON LUMBER CO, LLC MELDRIM OPERATIONS	GA	4/25/2012	KILN 3	WASTE WOOD	65000000 BF/YR	PROPER MAINTENANCE AND OPERATION	3.83 LB/MBF
GA-0146	SIMPSON LUMBER CO, LLC MELDRIM OPERATIONS	GA	4/25/2012	KILN 4	WASTE WOOD	73000000 BF/YR	PROPER MAINTENANCE AND OPERATION	3.93 LB/MBF
LA-0252	JOYCE MILL	LA	8/16/2011	Lumber kilns		300 million board feet/yr	properly design and operation	930 T/YR
LA-0281	SOUTHWEST LOUISIANA LUMBER OPERATIONS	LA	1/31/2014	EP-3K -Wood-Fired Dry Kiln No. 1	Wood	60000 MBF/YR	Proper kiln design & operation; annual production limit	29.27 LB/H
LA-0281	SOUTHWEST LOUISIANA LUMBER OPERATIONS	LA	1/31/2014	EP-4K & 6" Wood-Fired Dry Kiln No. 2	Wood	60000 MBF/YR	Proper kiln design & operation; annual production limit	29.27 LB/H
LA-0281	SOUTHWEST LOUISIANA LUMBER OPERATIONS	LA	1/31/2014	EP-5K & 6" Wood-Fired Dry Kiln No. 3	Wood	60000 MBF/YR	Proper kiln design & operation; annual production limit	29.27 LB/H
LA-0281	SOUTHWEST LOUISIANA LUMBER OPERATIONS	LA	1/31/2014	EP-6K & 6" Wood-Fired Dry Kiln No. 4	Wood	60000 MBF/YR	Proper kiln design & operation; annual production limit	29.27 LB/H
LA-0293	CHOPIN MILL	LA	3/18/2014	Lumber Dry Kilns Nos. 1 & 2 (EQT 37 & 38)		25000 M BD-FT/YR	Good operating practices to limit VOC emissions to 4.29 lb/M bd-ft (12-month rolling average).	24.51 LB/MBF
LA-0294	DODSON DIVISION	LA	12/30/2013	Dry Kiln 1 (033, EQT 15)		14 M BD-FT/H	Good operating practices, including proper design, operation, and maintenance	79.4 LB/H
LA-0294	DODSON DIVISION	LA	12/30/2013	Dry Kiln 2 (034, EQT 16)		14 M BD-FT/H	Good operating practices, including proper design, operation, and maintenance	79.4 LB/H
LA-0294	DODSON DIVISION	LA	12/30/2013	Dry Kiln 3 (035, EQT 17)		16 M BD-FT/H	Good operating practices, including proper design, operation, and maintenance	90.74 LB/H
LA-0294	DODSON DIVISION	LA	12/30/2013	Dry Kiln 4 (051, EQT 32)		16 M BD-FT/H	Good operating practices, including proper design, operation, and maintenance	90.74 LB/H
SC-0135	NEW SOUTH COMPANIES, INC. - CONWAY PLANT	SC	9/24/2012	LUMBER KILNS		380.56 MMBD-FT/YR	PROPER MAINTENANCE AND OPERATION	799.18 T/YR
SC-0136	SIMPSON LUMBER COMPANY, LLC	SC	8/29/2012	DIRECT-FIRED LUMBER DRYING KILN NO. 4	DRY WOOD WASTE	34 MMBTU/H	WORK PRACTICE STANDARDS	104 T/YR
SC-0138	ELLIOTT SAWMILLING COMPANY	SC	4/14/2009	DIRECT FIRED LUMBER DRYING KILN NO.5	SAWDUST	35 MMBTU/H	WORK PRACTICE STANDARDS	119 T/YR
SC-0149	KLAUSNER HOLDING USA, INC	SC	1/3/2013	LUMBER DRYING KILNS EU007		700 million board feet/yr		3.5 LB/MBF
SC-0151	WEST FRASER - NEWBERRY LUMBER MILL	SC	4/30/2013	TWO - 35 MMBTU/H DUAL PATH, DIRECT FIRED, CONTINUOUS LUMBER KILNS, 15 THOUSAND BF/H, EACH	SAWDUST	0	PROPER OPERATION AND GOOD OPERATING PRACTICES	3.76 LB/MBF
*SC-0162	NEW SOUTH LUMBER COMPANY, INC. DARLINGTON PLANT	SC	6/18/2013	DKN1	STEAM HEATED	60 MMBF/YR	PROPER OPERATION AND MAINTENANCE	343.98 T/YR
*SC-0162	NEW SOUTH LUMBER COMPANY, INC. DARLINGTON PLANT	SC	6/18/2013	DKN4	STEAM HEATED	60 MMBF/YR	MAINTENANCE AND OPERATING PRACTICES	343.98 T/YR
*SC-0162	NEW SOUTH LUMBER COMPANY, INC. DARLINGTON PLANT	SC	6/18/2013	DKN5	WOOD WASTE	75 MMBF/YR	PROPER MAINTENANCE AND OPERATION	141 T/YR
SC-0163	KAPSTONE CHARLESTON KRAFT LLC- SUMMERVILLE	SC	1/20/2015	LUMBER KILNS		194.83 MMBF/YR	PROPER MAINTENANCE AND OPERATION	225.6 T/YR
SC-0164	SIMPSON LUMBER COMPANY, LLC	SC	6/20/2014	LUMBER KILNS		166 MMBF/YR	PROPER OPERATION AND MAINTENANCE	156 T/YR
SC-0165	NEW SOUTH COMPANIES, INC. - CONWAY PLANT	SC	10/15/2014	LUMBER KILNS		295.6 MMBF/YR	PROPER MAINTENANCE AND OPERATION	602 T/YR
*SC-0166	NEW SOUTH LUMBER COMPANY - DARLINGTON INC.	SC	1/26/2016	TWO KILNS - KILNS AND KLN6	GREEN SAWDUST	85 MILLION BD-FT/YR	PROPER OPERATION AND MAINTENANCE	0
*SC-0169	CAMDEN PLANT	SC	6/18/2014	DKN6 - DIRECT FIRED CONTINUOUS LUMBER DRYING KILN	WOOD	80 MMBD-FT/YR		150.4 T/YR

Table C-16. RESULTS OF RBLC SEARCH FOR LUMBER KILN VOC BACT

RBLCID	Facility Name	State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Control Method Description	Emission Limit
*SC-0172	NEW SOUTH COMPANIES, INC. - CONWAY PLANT	SC	10/15/2014	LUMBER KILNS		295.6 MMBD-FT/YR	PROPER MAINTENANCE AND OPERATION	602 T/YR
*SC-0176	GEORGIA PACIFIC - MCCORMICK SAWMILL	SC	10/27/2016	Direct fired continuous lumber kiln	Wood Fired	26 MMBTU/HR		0
TX-0584	TEMPLE INLAND PINELAND MANUFACTURING COMPLEX	TX	8/12/2011	Dry studmill kilns 1 and 2	wood	156000 boardfeet per charge	good operating practice and maintenance	2.49 LB/MBF
TX-0607	LUMBER MILL	TX	12/15/2011	Continuous lumber kilns (2)	wood	275 MMBF/YR	proper temperature and process management; drying to appropriate moisture content	3.5 LB/MBF

Table C-17. RESULTS OF RBLC SEARCH FOR ENGINE VOC BACT

RBLCID	Facility Name	State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Control Method Description	Emission Limit	Emission Limit (converted)
*WI-0261	ENBRIDGE ENERGY - SUPERIOR TERMINAL	WI	6/12/2014	EG7 - Diesel Emergency Electric Generator w/ tank	Diesel	197 BHP	NSPS engine (Tier 3 emergency engine). EG7 Storage tank, conventional fuel oil storage tank, good operating practices; limiting leakage, spills. (FT01). Engine limited to 200 hours / year (total) and NSPS requirements.	3.75 GRAM / HP-HR	8.267E-03 LB/HP-H
LA-0313	ST. CHARLES POWER STATION	LA	8/31/2016	SCPS Emergency Diesel Firewater Pump 1	Diesel	282 HP	Good combustion practices	1.87 LB/H	6.631E-03 LB/HP-H
MD-0044	COVE POINT LNG TERMINAL	MD	6/9/2014	5 EMERGENCY FIRE WATER PUMP ENGINES	ULSD	350 HP	USE ONLY ULSD, GOOD COMBUSTION PRACTICES, AND DESIGNED TO ACHIEVE EMISSION LIMIT	3 G/HP-H	6.614E-03 LB/HP-H
SC-0113	PYRAMAX CERAMICS, LLC	SC	2/8/2012	FIRE PUMP	Diesel	500 HP	CERTIFIED ENGINES THAT COMPLY WITH NSPS, SUBPART III. HOURS OF OPERATION LIMITED TO 100 HOURS PER YEAR FOR MAINTENANCE AND TESTING.	4 GR/KW-H	6.533E-03 LB/HP-H
ID-0018	LANGLEY GULCH POWER PLANT	ID	6/25/2010	FIRE PUMP ENGINE	Diesel	235 KW	TIER 3 ENGINE-BASED, GOOD COMBUSTION PRACTICES (GCP)	4 G/KW-H	6.533E-03 LB/HP-H
SC-0159	US10 FACILITY	SC	7/9/2012	FIRE PUMPS, FIRE1, FIRE2, FIRE3	Diesel	211 KW	BACT HAS BEEN DETERMINED TO BE COMPLIANCE WITH NSPS, SUBPART III, 40 CFR60.4202 AND 40 CFR60.4205.	4 GKW-H	6.533E-03 LB/HP-H
*KS-0030	MID-KANSAS ELECTRIC COMPANY, LLC - RUBART STATION	KS	3/31/2016	Compression Ignition RICE emergency fire pump	ULSD	197 HP		1.14 G/HP-HR	2.513E-03 LB/HP-H
AK-0082	POINT THOMSON PRODUCTION FACILITY	AK	1/23/2015	Airstrip Generator Engine	ULSD	490 hp		0.0025 LB/HP-H	2.500E-03 LB/HP-H
LA-0224	ARSENAL HILL POWER PLANT	LA	3/20/2008	DFF DIESEL FIRE PUMP	Diesel	310 HP	USE OF LOW-SULFUR FUELS, LIMITING OPERATING HOURS AND PROPER ENGINE MAINTENANCE	0.77 LB/H	2.484E-03 LB/HP-H
OK-0129	CHOUTEAU POWER PLANT	OK	1/23/2009	EMERGENCY FIRE PUMP (267-HP DIESEL)	LSD	267 HP	GOOD COMBUSTION	0.66 LB/H	2.472E-03 LB/HP-H
LA-0254	NINEMILE POINT ELECTRIC GENERATING PLANT	LA	8/16/2011	EMERGENCY FIRE PUMP	Diesel	350 HP	ULTRA LOW SULFUR DIESEL AND GOOD COMBUSTION PRACTICES	1 G/HP-H	2.205E-03 LB/HP-H
*KS-0036	WESTAR ENERGY - EMPORIA ENERGY CENTER	KS	3/18/2013	Cummins 6BTA 5.9F-1 Diesel Engine Fire Pump	Diesel	182 BHP	utilize efficient combustion/design technology	0.77 G/BHP-H	1.698E-03 LB/HP-H
OH-0317	OHIO RIVER CLEAN FUELS, LLC	OH	11/20/2008	FIRE PUMP ENGINES (2)	Diesel	300 HP	GOOD COMBUSTION PRACTICES AND GOOD ENGINE DESIGN	0.26 LB/H	8.667E-04 LB/HP-H
OH-0352	OREGON CLEAN ENERGY CENTER	OH	6/18/2013	Emergency fire pump engine	Diesel	300 HP	Purchased certified to the standards in NSPS Subpart III	0.25 LB/H	8.333E-04 LB/HP-H
*WV-0025	MOUNDSVILLE COMBINED CYCLE POWER PLANT	WV	11/21/2014	Fire Pump Engine	Diesel	251 HP		0.17 LB/H	6.773E-04 LB/HP-H
IL-0114	CRONUS CHEMICALS, LLC	IL	9/5/2014	Firewater Pump Engine	Diesel	373 hp	Tier IV standards for non-road engines at 40 CFR 1039.102, Table 7.	0.4 G/KW-H	6.533E-04 LB/HP-H
IN-0158	ST. JOSEPH ENRGY CENTER, LLC	IN	12/3/2012	TWO (2) FIREWATER PUMP DIESEL ENGINES	Diesel	371 BHP	COMBUSTION DESIGN CONTROLS AND USAGE LIMITS	0.16 LB/H	4.313E-04 LB/HP-H
IA-0105	IOWA FERTILIZER COMPANY	IA	10/26/2012	Fire Pump	Diesel	290 HP	good combustion practices	0.25 G/KW-H	4.083E-04 LB/HP-H
OK-0164	MIDWEST CITY AIR DEPOT	OK	1/8/2015	Diesel-Fueled Fire Pump Engines	ULSD	300 HP	1. Good Combustion Practices.	0.15 GRAMS PER HP-HR	3.307E-04 LB/HP-H
IN-0173	MIDWEST FERTILIZER CORPORATION	IN	6/4/2014	FIRE PUMP		500 HP	GOOD COMBUSTION PRACTICES	0.141 G/BHP-H	3.109E-04 LB/HP-H
IN-0173	MIDWEST FERTILIZER CORPORATION	IN	6/4/2014	RAW WATER PUMP	Diesel	500 HP	GOOD COMBUSTION PRACTICES	0.141 G/BHP-H	3.109E-04 LB/HP-H
IN-0180	MIDWEST FERTILIZER CORPORATION	IN	6/4/2014	FIRE PUMP		500 HP	GOOD COMBUSTION PRACTICES	0.141 G/B-HP-H	3.109E-04 LB/HP-H
IN-0180	MIDWEST FERTILIZER CORPORATION	IN	6/4/2014	RAW WATER PUMP	Diesel	500 HP	GOOD COMBUSTION PRACTICES	0.141 G/B-HP-H	3.109E-04 LB/HP-H
IN-0179	OHIO VALLEY RESOURCES, LLC	IN	9/25/2013	DIESEL-FIRED EMERGENCY WATER PUMP	Diesel	481 BHP	GOOD COMBUSTION PRACTICES	0.141 G/B-HP-H	3.109E-04 LB/HP-H
*PA-0309	LACKAWANNA ENERGY CTR/JESSUP	PA	12/23/2015	Fire pump engine	ULSD	290 HP		0.12 GM/HP-HR	2.646E-04 LB/HP-H
LA-0301	LAKE CHARLES CHEMICAL COMPLEX ETHYLENE 2 UNIT	LA	5/23/2014	Firewater Pump Nos. 1-3 (EQTs 997, 998, & 999)	Diesel	500 HP	Compliance with 40 CFR 60 Subpart III and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures (consistent with safe operation) designed to maximize combustion efficiency and minimize fuel usage	0.1 LB/HR	2.000E-04 LB/HP-H

Table C-18. RESULTS OF RBLC SEARCH FOR TANKS VOC BACT

RBLCID	Facility Name	State	Permit Issuance Date	Process Name	Primary Fuel	Throughput	Control Method Description	Emission Limit
FL-0285	PROGRESS BARTOW POWER PLANT	FL	01/26/2007	TWO NOMINAL 3.5 MILLION GALLON DISTILLATE FUEL OIL STORAGE TANKS	FUEL OIL			N/A
FL-0286	FPL WEST COUNTY ENERGY CENTER	FL	01/10/2007	TWO NOMINAL 6.3 MILLION GALLON DISTILLATE FUEL OIL STORAGE TANKS	DISTILLATE FUEL OIL			N/A
FL-0346	LAUDERDALE PLANT	FL	04/22/2014	Three ULSD fuel oil storage tanks		N/A	The Department sets BACT for these storage tanks to minimize VOC emissions as the use of pressure relief valves/vapor condensers. In lieu of pressure relief valves/vapor condensers, FPL as an alternative, can use tanks with internal floating roofs or the equivalent to minimize VOC emissions.	N/A
FL-0354	LAUDERDALE PLANT	FL	08/25/2015	Two 3-million gallon ULSD storage tanks		N/A	Low vapor pressure prevents evaporative losses	N/A
IA-0088	ADM CORN PROCESSING - CEDAR RAPIDS	IA	06/29/2007	CORROSION INHIBITOR STORAGE TANK		8500 GALLON STORAGE		0.85 T/YR
IA-0089	HOMELAND ENERGY SOLUTIONS, LLC, PN 06-672	IA	08/08/2007	ADDITIVE (CORROSION INHIBITOR) TANK, T66 (07-A-977P)		2300 GAL		0.05 T/YR
IL-0119	PHILLIPS 66 PIPELINE LLC	IL	01/23/2015	Distillate Storage Tank (Tank 2001)		200000 bbl	low vapor pressure material	0.1 PSIA
IN-0158	ST. JOSEPH ENERGY CENTER, LLC	IN	12/03/2012	EMERGENCY GENERATOR ULSD TANKS		550 GALLONS EA	GOOD DESIGN AND OPERATING PRACTICES	N/A
IN-0158	ST. JOSEPH ENERGY CENTER, LLC	IN	12/03/2012	FIRE PUMP ENGINE ULSD TANKS		70 GALLONS EA	GOOD COMBUSTION PRACTICE AND FUEL SPECIFICATION	N/A
IN-0158	ST. JOSEPH ENERGY CENTER, LLC	IN	12/03/2012	VEHICLE GASOLINE DISPENSING TANK		650 GALLONS	SUBMERGED FILL PIPES AND STAGE 1 VAPOR CONTROL	N/A
IN-0158	ST. JOSEPH ENERGY CENTER, LLC	IN	12/03/2012	VEHICLE DIESEL TANK		650 GALLONS	GOOD COMBUSTION PRACTICE AND FUEL SPECIFICATION	N/A
IN-0158	ST. JOSEPH ENERGY CENTER, LLC	IN	12/03/2012	EMERGENCY GENERATOR ULSD TANK		300 GALLONS	GOOD COMBUSTION PRACTICE AND FUEL SPECIFICATION	N/A
LA-0213	ST. CHARLES REFINERY	LA	11/17/2009	TANKS - FOR HEAVY MATERIALS			EQUIPPED WITH FIXED ROOF AND COMPLY WITH 40 CFR 63 SUBPART CC	N/A
LA-0228	BATON ROUGE JUNCTION FACILITY	LA	11/02/2009	EQT031-EQT035 FIVE DISTILLATE TANKS (TD06-TD10)		240000 BBL (EACH)	SUBMERGED FILL PIPES AND PRESSURE/VACUUM VENTS	45 T/YR
LA-0232	STERLINGTON COMPRESSOR STATION	LA	06/24/2008	CONDENSATE STORAGE TANK		5760 BBL/YR	SUBMERGED FILL PIPE	1.28 LB/H
LA-0237	ST. ROSE TERMINAL	LA	05/20/2010	HEAVY FUEL OIL STORAGE TANKS (18)		N/A	FIXED ROOF	67.53 T/YR
LA-0265	BATON ROUGE REFINERY	LA	10/02/2012	FR Storage Tanks EQT0087 and EQT0088		N/A	Comply with 40 CFR 63 Subpart CC (Group 2)	N/A
LA-0276	BATON ROUGE JUNCTION FACILITY	LA	12/15/2016	Vertical Fixed Roof Tanks 174, 175, 176		N/A	Submerged fill pipes and pressure/vacuum vents	N/A
LA-0309	BENTELER STEEL TUBE FACILITY	LA	06/04/2015	Gasoline Tank S16		600 gallons	Submerged fill pipe	N/A
LA-0314	INDORAMA LAKE CHARLES FACILITY	LA	08/03/2016	Unleaded Gasoline Tank TK-33		1000 gallons	Submerged fill pipe and LAC 33:III.2.103	N/A
LA-0320	ST. CHARLES REFINERY	LA	03/05/2014	Equilization Tank 2013-16		N/A	Comply with 40 CFR 63 Subpart CC	N/A
MA-0040	CHELSEA TERMINAL	MA	08/20/2008	Heated Residual Oil Storage Tanks		N/A	Regenerative Thermal Oxidizer with 99% destruction efficiency	7.7 TONS
NV-0047	NELLIS AIR FORCE BASE	NV	02/26/2008	FUEL TANKS/LOADING RACKS/FUEL DISPENSING	GASOLINE		STAGE 1 AND STAGE 2 VAPOR RECOVERY SYSTEMS AND LIMIT OF REID VAPOR PRESSURE TO 10 PSI	0.0033 LB/GAL. THROUGHPUT
OH-0317	OHIO RIVER CLEAN FUELS, LLC	OH	11/20/2008	FIXED ROOF TANKS (8)	DIESEL FUEL OIL	262500 GAL/D	SUBMERGED FILL	0.8 T/YR
*OK-0148	BUFFALO CREEK PROCESSING PLANT	OK	09/12/2012	Condensate Tanks (Petroleum Storage-Fixed Roof Tanks)	N/A	1.46 MMBPY	Flare.	N/A
OK-0153	ROSE VALLEY PLANT	OK	03/01/2013	CONDENSATE TANKS	NA	9198000 GAL/YR	FLARE	0.82 TPY
OK-0154	MOORELAND GENERATING STA	OK	07/02/2013	DIESEL TANK (2800 GALLON)	NA	2800 GALLONS	FIXED-ROOF TANK	N/A
OR-0050	TROUTDALE ENERGY CENTER, LLC	OR	03/05/2014	Storage tank	ULSD	N/A	Submerged fill line; Vapor balancing during tank filling.	N/A
TX-0656	GAS TO GASOLINE PLANT	TX	05/16/2014	Fixed Roof Tanks (3)		800000 GAL/YR	WATER SCRUBBER	1.65 T/YR
TX-0728	PEONY CHEMICAL MANUFACTURING FACILITY	TX	04/01/2015	Diesel and lube oil tanks		10708 gallons/yr	low vapor pressure fuel, submerged fill, white tank	0.02 LB/H
TX-0731	CORPUS CHRISTI TERMINAL CONDENSATE SPLITTER	TX	04/10/2015	Petroleum Liquids Storage in Fixed Roof Tanks		3.4 MMBbl/yr	Temperature reduced to maintain volatile organic compound (VOC) vapor pressure < 0.5 pounds per square inch actual (psia) at all times.	15.78 TONS/YR/TANK
TX-0756	CCI CORPUS CHRISTI CONDENSATE SPLITTER FACILITY	TX	06/19/2015	Storage Tanks, TK-110, TK-111, TK-112		57960 gal/hr	Tanks are required to be painted white and be equipped with submerged fill pipes	3.07 LB/HR
TX-0756	CCI CORPUS CHRISTI CONDENSATE SPLITTER FACILITY	TX	06/19/2015	Storage Tanks, TK-113, TK-114, and TK-115		47000000 gal/yr/tank	Tanks are required to be painted white and be equipped with submerged fill pipes	0.85 LB/HR
TX-0772	PORT OF BEAUMONT PETROLEUM TRANSLOAD TERMINAL (PBPTT)	TX	11/06/2015	Petroleum Liquids Storage in Fixed Roof Tanks		47.62 BBL/YR	Tank uses submerged fill and is aluminum in color.	0.01 T/YR
TX-0799	BEAUMONT TERMINAL	TX	06/08/2016	Storage Tanks - fixed roof		N/A	Fixed-roof tanks (EPNs 168, 222, 225, 227, 229, 254, 256, 257, 258, 259, 475, and 476) will use submerged fill and have white exterior surfaces. Fuel tanks (EPN DTK01 and GTK01) are horizontal fixed-roof design and will use submerged fill and have white or aluminum exterior surfaces.	72.5 T/YR
*TX-0808	HOUSTON FUEL OIL TERMINAL	TX	09/02/2016	Storage Tank		N/A	Insulated, submerged fill, painted white	0.1 T/YR
*TX-0813	ODESSA PETROCHEMICAL PLANT	TX	11/22/2016	Petroleum Liquid Storage in Fixed Roof tanks		N/A	Submerged fill pipe, reflective or white exterior paint.	0.01 T/YR
*TX-0825	PASADENA TERMINAL	TX	07/14/2017	Horizontal fixed roof storage tanks		N/A	painted white, has submerged fill	0.37 T/YR
*TX-0825	PASADENA TERMINAL	TX	07/14/2017	Horizontal fixed roof storage tanks maintenance, start up, and shutdown		N/A	Degassing and refilling losses will be controlled by vapor combustor with a 99.5% destruction efficiency.	26.28 T/YR

APPENDIX D
PERMIT APPLICATION FORMS

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (AIR DIVISION)

Facility Number

Do not Write in This Space

309 - 0075

CONSTRUCTION/OPERATING PERMIT APPLICATION FACILITY IDENTIFICATION FORM			
1. Name of Facility, Firm, or Institution:	Talladega Sawmill		
	Facility Physical Location Address		
Street & Number:	440 Ironaton Cutoff Road		
City: Talladega	County: Talladega	Zip: 35160	
Facility Mailing Address (If different from above)			
Address or PO Box:			
City:	State:	Zip:	
Owner's Business Mailing Address			
2. Owner:	Georgia- Pacific Wood Products		
Street & Number:	133 Peachtree Street NE	City: Atlanta	
State: GA	Zip: 30303	Telephone: 404-652-4000	
Responsible Official's Business Mailing Address			
3. Responsible Official:	Jim Brody	Title: Vice President of Operations	
Street & Number:	133 Peachtree Street NE		
City: Atlanta	State: GA	Zip: 30303	
Telephone Number: 404-652-6907		E-mail Address: jim.brody@gapac.com	
Plant Contact Information			
4. Plant Contact:	Joe Gorski	Title: Lumber Division Environmental Manager	
Telephone Number: 404-652-6455		E-mail Address: joe.gorski@gapac.com	

5. Location Coordinates:

UTM 587400 E-W 3700970 N-S

Latitude/Longitude 33.444579° LAT -86.059666° LONG

6. Permit application is made for:

☐ Existing source (initial application)

☐ Modification

☒ New source (to be constructed)

☐ Change of ownership

☐ Change of location

☐ Other (specify) _____

Existing source (permit renewal)

If application is being made to construct or modify, please provide the name and address of installer or contractor

_____ Telephone _____

Date construction/modification to begin 12/1/2017 to be completed TBD

7. Permit application is being made to obtain the following type permit:

☒ Air permit

☐ Major source operating permit

☐ Synthetic minor source operating permit

☐ General permit

8. Indicate the number of each of the following forms attached and made a part of this application: (if a form does not apply to your operation indicate "N/A" in the space opposite the form). Multiple forms may be used as required.

_____ ADEM 104 - INDIRECT HEATING EQUIPMENT

4 ADEM 105 - MANUFACTURING OR PROCESSING OPERATION

_____ ADEM 106 - REFUSE HANDLING, DISPOSAL, AND INCINERATION

1 ADEM 107 - STATIONARY INTERNAL COMBUSTION ENGINES

_____ ADEM 108 - LOADING, STORAGE & DISPENSING LIQUID & GASEOUS ORGANIC COMPOUNDS

_____ ADEM 109 - VOLATILE ORGANIC COMPOUND SURFACE COATING EMISSION SOURCES

2 ADEM 110 - AIR POLLUTION CONTROL DEVICE

_____ ADEM 112 - SOLVENT METAL CLEANING

_____ ADEM 438 - CONTINUOUS EMISSION MONITORS

_____ ADEM 437 - COMPLIANCE SCHEDULE

9. General nature of business: (describe and list appropriate standard industrial classification (SIC) and North American Industry Classification System (NAICS) (www.naics.com) code(s)):

The facility will install and operate a softwood sawmill to produce dimensional lumber, NAICS 321113-Sawmills and SIC 2421 - Sawmills and Planing Mills, General. The mill will consist of a sawmill, three natural gas fired continuous lumber drying kilns, a planer mill, and ancillary support equipment.

10. For those making application for a synthetic minor or major source operating permit, please summarize each pollutant emitted and the emission rate for the pollutant. Indicate those pollutants for which the facility is major.

Regulated pollutant	Potential Emissions* (tons/year)	Major source? yes/no
PM**	23.75**	No**
PM10	14.48	No
PM2.5	9.49	No
SO2**	0.41**	No**
VOC***	878.87	Yes
CO	40.10	No
NOx	31.19	No
Total HAPs (see emission summary section for speciated HAPs)	54.70	Yes
Methanol (included in Total HAPs)	40.10	Yes
Lead	2.36E-04	No
**PM and SO2 are represented as the requested PM and SO2 limits to avoid		
being major for these pollutants using the maximum allowable emission rates		
in accordance with the Alabama regulations. See the emission calculations		
section for comparison between maximum allowable and maximum potential		
emission rates.		
***VOC emissions are represented as VOC as WWP1 for the		
Continuous Drying Kilns, VOC as TOC for the Fire Pump Engine, and		
VOC as C for the Large Storage Tanks and Storage Tanks < 1,000 gallons.		

*Potential emissions are either the maximum allowed by the regulations or by permit, or, if there is no regulatory limit, it is the emissions that occur from continuous operation at maximum capacity.

11. For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Sawmill and Green End Operations

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
LD	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
LB	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
SM	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CHC	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
BC	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CC	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CP	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
SDC	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
RD	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A

¹ PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

² Attach compliance plan

³ Attach compliance schedule (ADEM Form-437)

⁴ Fugitive emissions must be included as separate entries

11. **For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.**

Emission unit or source: Continuous Drying Kilns

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
CDK-1	VOC	40 CFR Part 52	PSD	Production Recordkeeping, Operation/Maint. Plan	Proposed	N/A
CDK-2	VOC	40 CFR Part 52	PSD	Production Recordkeeping, Operation/Maint. Plan	Proposed	N/A
CDK-3	VOC	40 CFR Part 52	PSD	Production Recordkeeping, Operation/Maint. Plan	Proposed	N/A
CDK-1	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CDK-2	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CDK-3	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
CDK-1	HAP	40 CFR Part 63 Sub DDDD	NESHAP - PWCP MACT	Notification; Completed by Permit Application	Yes	N/A
CDK-2	HAP	40 CFR Part 63 Sub DDDD	NESHAP - PWCP MACT	Notification; Completed by Permit Application	Yes	N/A
CDK-3	HAP	40 CFR Part 63 Sub DDDD	NESHAP - PWCP MACT	Notification; Completed by Permit Application	Yes	N/A
CDK-1	SO2	ADEM Code 335-3-5-.01	SIP Regulation	Production Recordkeeping	Proposed	N/A
CDK-2	SO2	ADEM Code 335-3-5-.01	SIP Regulation	Production Recordkeeping	Proposed	N/A

¹PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

²Attach compliance plan

³Attach compliance schedule (ADEM Form-437)

⁴Fugitive emissions must be included as separate entries

11. For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Continuous Drying Kilns (cont.)

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
CDK-3	SO2	ADEM Code 335-3-5-.01	SIP Regulation	Production Recordkeeping	Proposed	N/A

¹PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

²Attach compliance plan

³Attach compliance schedule (ADEM Form-437)

⁴Fugitive emissions must be included as separate entries

11. For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Fire Pump Engine

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
FE	VOC	40 CFR Part 52	PSD	Records of operating hours and maintenance	Proposed	N/A
FE	PM	ADEM Code 335-3-16	SIP Regulation	Records of operating hours and maintenance	Proposed	N/A
FE	SO2	ADEM Code 335-3-5-.01	SIP Regulation	Records of operating hours and maintenance	Proposed	N/A

¹PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

²Attach compliance plan

³Attach compliance schedule (ADEM Form-437)

⁴Fugitive emissions must be included as separate entries

11. For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Planer Mill and Finished End Operations

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
PM	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A
SC	PM	ADEM Code 335-3-4-.04(5)	SIP Regulation	Production Recordkeeping	Proposed	N/A

¹PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

²Attach compliance plan

³Attach compliance schedule (ADEM Form-437)

⁴Fugitive emissions must be included as separate entries

11. For those applying for a major source operating permit, indicate the compliance status by program for each emission unit or source and the method used to determine compliance. Also cite the specific applicable requirement.

Emission unit or source: Large Storage Tanks

(description)

Emission Point No.	Pollutant ⁴	Standard	Program ¹	Method used to determine compliance	Compliance Status	
					IN ²	OUT ³
LST-1	VOC	40 CFR Part 52	PSD	Light color tank	Proposed	N/A
LST-2	VOC	40 CFR Part 52	PSD	Light color tank	Proposed	N/A
LST-3	VOC	40 CFR Part 52	PSD	Light color tank	Proposed	N/A

¹PSD, non-attainment NSR, NSPS, NESHAP (40 CFR Part 61), NESHAP (40 CFR Part 63), accidental release (112(r)), SIP regulation, Title IV, Enhanced Monitoring, Title VI, Other (specify)

²Attach compliance plan

³Attach compliance schedule (ADEM Form-437)

⁴Fugitive emissions must be included as separate entries

[illegible]

13. List and explain any exemptions from applicable requirements the facility is claiming:

- a. No exemptions requested, however, more stringent industry-specific PM and SO₂ limits
- b. are requested in lieu of PWR and fuel combustion maximum allowable limits. See the
- c. Regulatory Applicability section for more details.
- d.
- e.
- f.
- g.
- h.
- i.

14. List below other attachments that are a part of this application(all supporting engineering calculations must be appended):

- a. Executive Summary, Facility and Project Description, Emission Calculations, Regulatory Applicability,
- b. Best Available Control Technology, Additional Impact, Ozone Review, and Class 1 Area Review, Appendix A - Facility Map and Process
- c. Flow Diagram, Appendix B - Emission Calculations, Appendix C - BACT Supporting Documentation, Appendix D - Permit
- d. Application Forms, Appendix E - Fugitive Emission Control Analysis, Appendix F - Proposed Monitoring and Recordkeeping
- e.
- f.
- g.
- h.
- i.

I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND COMPLETE.

I ALSO CERTIFY THAT THE SOURCE WILL CONTINUE TO COMPLY WITH APPLICABLE REQUIREMENTS FOR WHICH IT IS IN COMPLIANCE, AND THAT THE SOURCE WILL, IN A TIMELY MANNER, MEET ALL APPLICABLE REQUIREMENTS THAT WILL BECOME EFFECTIVE DURING THE PERMIT TERM AND SUBMIT A DETAILED SCHEDULE, IF NEEDED FOR MEETING THE REQUIREMENTS.


SIGNATURE OF RESPONSIBLE OFFICIAL

Vice President of Operations
TITLE

9/15/17
DATE

**PERMIT APPLICATION
FOR
MANUFACTURING OR PROCESSING OPERATION**

			-				-			
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Do not write in this space

1. Name of firm or organization: Talladega Sawmill

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number 1

Incoming logs will be typically stored on-site prior to processing. Logs are debarked (LD) and then cut to length within the log bucking process (LB) before being routed through the sawmill (SM). The end product of this process is rough, green dimensional lumber, some of which will be sold without further processing. By-products from this operation include bark, chips, and sawdust which are conveyed and stored in various locations prior to being shipped off site.

Bark from the debarker will be conveyed to the bark hog and then to a bark storage bin before being shipped offsite (BC). Chip conveyance (CC) includes chips from the sawmill to the sawmill chipper/screen, from the chipper to rail car, through the chip cyclone (CHC) to the chip storage bin, or to the chip pile (CP) for storage prior to conveyance to the chip storage bin. The chip cyclone, as process equipment, pneumatically conveys chips. Sawdust is conveyed (SDC) from the sawmill and sawmill chipper/screen to the sawdust storage bin. Haul Roads (RD) are utilized for shipments off site.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Sawmill and Green End Operations (i.e. Log Debarker, Log Bucking, Sawmill, Chip Conveyance, Bark Conveyance, Chip Cyclone, Chip Pile and Sawdust Conveyance, Roads)

Make: NA Model: NA

8,000 CFM (cyclone)

Rated process capacity (manufacturer's or designer's guaranteed maximum) in pounds/hour: 656,000 lb/hr

Manufactured date: TBD Upon Approval

Proposed installation date: 12/1/2017

Original installation date (if existing): NA

Reconstruction or Modification date (if applicable): NA

4. Normal operating schedule:

Hours per day: 24

Days per week: 7

Weeks per year: 52

Peak production season (if any):

NA

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Raw Logs		656,000	1,351,360

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Green Lumber	329.6	MMBf/yr
Chips	374,096	ton/yr
Bark	121,952	ton/yr
Sawdust	116,019	ton/yr

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

It is requested that the particulate matter (PM) emission limitations for this source be based on industry specific emission factors provided in this application in lieu of using the ADEM general industry process weight rule (PWR) to derive emissions. Compliance is proposed to be demonstrated by tracking total green lumber production. The design throughput through the Sawmill and Green End Operations, of 329.2 MMBf/year in total, demonstrates compliance with the emission rates provided.

9. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (Where a control device exists, Form ADEM-110 must be completed and attached).

*Form ADEM-110 has been attached for CHC in the event that ADEM would require it. However, CHC is considered process equipment.

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit (lb/hr)	Regulatory Emission Limit (units of standard)
		(lb/hr)	(Tons/yr)			
LD	PM	0.66	1.35	EPA Fire Database	29.33	$E = 17.31P^{0.16}$ ADEM 335-3-4-.03-4
LD	PM10	0.36	0.74	EPA Fire Database	NA	
LD	PM2.5	0.02	0.05	NCASI factor	NA	
LB	PM	9.77	0.91	EPA Fire Database	14.75	$E = 3.59P^{0.62}$ ADEM 335-3-4-.03-4
LB	PM10	3.52	0.33	EPA Fire Database	NA	
LB	PM2.5	1.07	0.10	EPA PMCALC Database	NA	
SM	PM	0.84	1.71	EPA Fire Database	28.44	$E = 3.59P^{0.62}$ ADEM 335-3-4-.03-4
SM	PM10	0.30	0.62	EPA Fire Database	NA	
SM	PM2.5	0.09	0.19	EPA PMCALC Database	NA	

12. Using a flow diagram:

Table Continued on Next Page

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☐ (Check box if extra pages are attached)
Process flow diagram

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit (lb/hr)	Regulatory Emission Limit (units of standard)
		(lb/hr)	(Tons/yr)			
CC	PM	0.58	1.20	AP42 factor	35.61	E = 17.31P ^{0.16} ADEM 335-3-4-.04
CC	PM10	0.28	0.57	AP42 factor	NA	
CC	PM2.5	0.04	0.09	AP42 factor	NA	
BC	PM	0.14	0.28	AP42 factor	29.33	E = 3.59P ^{0.62} ADEM 335-3-4-.04
BC	PM10	0.06	0.13	AP42 factor	NA	
BC	PM2.5	0.01	0.02	AP42 factor	NA	
SDC	PM	0.13	0.27	AP42 factor	28.44	E = 17.31P ^{0.16} ADEM 335-3-4-.04
SDC	PM10	0.06	0.13	AP42 factor	NA	
SDC	PM2.5	0.01	0.02	AP42 factor	NA	

12. Using a flow diagram:

Table Continued on Next Page

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☐ (Check box if extra pages are attached)
Process flow diagram

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit	
		(lb/hr)	(Tons/yr)		(lb/hr)	(units of standard)
CP	PM	1.50E-06	6.57E-06	AP42 factor	14.10	$E = 3.59P^{0.62}$ ADEM 335-3-4-.04
CP	PM10	8.70E-07	3.81E-06	EPA PMCALC Database	NA	
CP	PM2.5	2.85E-07	1.25E-06	EPA PMCALC Database	NA	
RD	PM	5.11	10.23	AP42 factor	49.04	$E = 17.31P^{0.16}$ ADEM 335-3-4-.04
RD	PM10	1.01	2.01	AP42 factor	NA	
RD	PM2.5	0.20	0.41	AP42 factor	NA	
CHC	PM	0.69	3.00	Vendor data	35.61	$E = 17.31P^{0.16}$ ADEM 335-3-4-.04
CHC	PM10	0.34	1.49	Vendor data	NA	
CHC	PM2.5	0.04	0.19	Vendor data	NA	

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☒ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☒ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)
Bark	NA	NA	Storage Bin (BC)
Sawdust	NA	NA	Storage Bin (SDC)
Chips	NA	NA	Chip Pile (CP)
Chips (cont.)	NA	NA	Chip Storage Bin (CC)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature:

Lisa M. Reed

Date:

9/14/2017

3 + 4 = 7

Page 1 of 5

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Natural Gas (CDK-1)		39.2 MCF/hr	343,530 MCF/hr
Rough Green Lumber (CDK-1)		20.0 MBf/hr	120,000 MBf/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas	1020	Btu/ft ³	<0.0005	NA	NA	NA
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Dried Lumber	320,000*	MBf/yr

*The facility is requesting a production bubble containing all three kilns (CDK-1, CDK-2 and CDK-3).

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

Proper maintenance and operation is required as BACT for the continuous lumber kiln. See the BACT analysis for more information.

It is requested that the particulate matter (PM) and sulfur dioxide (SO₂) emission limitations for this source be based on industry specific emission factors provided in this application in lieu of using the ADEM general industry process weight rule (PWR) to derive PM emissions and fuel combustion emission limitations for SO₂. The design throughput of kiln dried lumber, not to exceed 320 MMBf/year in total for the mill, demonstrates compliance with the emission estimates for the unit.

9. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (Where a control device exists, Form ADEM-110 must be completed and attached).

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit	
		(lb/hr)	(Tons/yr)		(lb/hr)	(units of standard)
CDK-1	VOC as C/ VOC as WPP1	85.6/109.8	256.8/329.4	Stack Test	NA	
CDK-1	PM	0.33	1.11	NCDENR & AP42 factors	32.19	E = 17.31P ^{0.16} ADEM 335-3-4-0.4
CDK-1	PM10	0.74	2.63	NCDENR & AP42 factors	NA	
CDK-1	PM2.5	0.74	2.63	NCDENR & AP42 factors	NA	
CDK-1	SO2	0.02	0.10	AP42 Factor	160.0	4.0 lb/MMBtu ADEM 335-3-5-.01
CDK-1	CO	3.29	14.43	AP42 Factor	NA	
CDK-1	NOx	2.43	10.64	EPA Method 19	NA	
CDK-1	Lead	0.0000196	0.000086	AP42 Factor	NA	
CDK-1	HAPs (see attached emission summary for HAP breakdown)	6.80	20.50	NCDENR & AP42 factors	NA	

* Table continued on next page

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☒ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature: Lisa M. Reed

Date: 10/04/2017

**PERMIT APPLICATION
FOR
MANUFACTURING OR PROCESSING OPERATION**

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Do not write in this space

1. Name of firm or organization: Talladega Sawmill

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number 1

The rough, green lumber is sorted and stacked before being dried in a continuous lumber drying kiln. Three kilns (CDK-1, CKD-2 and CDK-3) direct-fired with natural gas, are proposed at the facility. CDK-2 will have a maximum capacity 120 MMBf/yr and is equipped with a 40 MMBtu/hr natural gas-fired burner. After drying, the rough lumber will be processed in the planer mill.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): A natural gas fired Continuous Dry Kiln (CDK-2) equipped with a 40 MMBtu burner

Make: _____ Model: _____

Rated process capacity (manufacturer's or designer's guaranteed maximum) in pounds/hour: See item 5

Manufactured date: TBD Upon Approval

Proposed installation date: 12/1/2017

Original installation date (if existing): NA

Reconstruction or Modification date (if applicable): NA

4. Normal operating schedule:

Hours per day: 24

Days per week: 7

Weeks per year: 52

Peak production season (if any):

NA

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Natural Gas (CDK-2)		39.2 MCF/hr	343,530 MCF/hr
Rough Green Lumber (CDK-2)		20.0 MBf/hr	120,000 MBf/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas	1020	Btu/ft ³	<0.0005	NA	NA	NA
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Dried Lumber	320,000*	MBf/yr

*The facility is requesting a production bubble containing all three kilns (CDK-1, CDK-2 and CKD-3).

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

Proper maintenance and operation is required as BACT for the continuous lumber kiln. See the BACT analysis for more information.

It is requested that the particulate matter (PM) and sulfur dioxide (SO₂) emission limitations for this source be based on industry specific emission factors provided in this application in lieu of using the ADEM general industry process weight rule (PWR) to derive PM emissions and fuel combustion emission limitations for SO₂. The design throughput of kiln dried lumber, not to exceed 320 MMBf/year in total for the mill, demonstrates compliance with the emission estimates for the unit.

9. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (Where a control device exists, Form ADEM-110 must be completed and attached).

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions			Regulatory Emission Limit	
		(lb/hr)	(Tons/yr)	Basis of Calculation	(lb/hr)	(units of standard)
CDK-2	VOC as C/ VOC as WPP1	85.6/109.8	256.8/329.4	Stack Test	NA	
CDK-2	PM	0.33	1.11	NCDENR & AP42 factors	32.19	E = 17.31P ^{0.16} ADEM 335-3-4-.04
CDK-2	PM10	0.74	2.63	NCDENR & AP42 factors	NA	
CDK-2	PM2.5	0.74	2.63	NCDENR & AP42 factors	NA	
CDK-2	SO2	0.02	0.10	AP42 Factor	160.0	4.0 lb/MMBtu ADEM 335-3-5-.01
CDK-2	CO	3.29	14.43	AP42 Factor	NA	
CDK-2	NOx	2.42	10.64	EPA Method 19	NA	
CDK-2	Lead	0.0000196	0.000086	AP42 Factor	NA	
CDK-2	HAPs (see attached emission summary for HAP breakdown)	6.80	20.50	NCDENR & AP42 factors	NA	

* Table continued on next page

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☒ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature: Lisa M. Reed

Date: 10/04/2017

$$\boxed{}\boxed{}\boxed{} - \boxed{}\boxed{}\boxed{}\boxed{} - \boxed{}\boxed{}\boxed{}\boxed{}$$

Page 1 of 5

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Natural Gas (CDK-3)		29.4 MCF/hr	257,648 MCF/hr
Rough Green Lumber (CDK-3)		13.2 MBf/hr	80,000 MBf/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas	1020	Btu/ft ³	<0.0005	NA	NA	NA
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Dried Lumber	320,000*	MBf/yr
*The facility is requesting a production bubble containing all three kilns (CDK-1, CDK-2 and CDK-3).		

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

Proper maintenance and operation is required as BACT for the continuous lumber kiln. See the BACT analysis for more information.

It is requested that the particulate matter (PM) and sulfur dioxide (SO₂) emission limitations for this source be based on industry specific emission factors provided in this application in lieu of using the ADEM general industry process weight rule (PWR) to derive PM emissions and fuel combustion emission limitations for SO₂. The design throughput of kiln dried lumber, not to exceed 320 MMBf/year in total for the mill, demonstrates compliance with the emission estimates for the unit.

9. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (Where a control device exists, Form ADEM-110 must be completed and attached).

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit (lb/hr)	Regulatory Emission Limit (units of standard)
		(lb/hr)	(Tons/yr)			
CDK-3	VOC as C/VOC as WPP1	56.5/72.47	171.2/219.6	Stack Test	NA	
CDK-3	PM	0.23	0.76	NCDENR & AP42 factors	30.12	E = 17.31P ^{0.16} ADEM 335-3-4-.04
CDK-3	PM10	0.51	1.86	NCDENR & AP42 factors	NA	
CDK-3	PM2.5	0.51	1.86	NCDENR & AP42 factors	NA	
CDK-3	SO2	0.02	0.08	AP42 Factor	120.0	4.0 lb/MMBtu ADEM 335-3-5-.01
CDK-3	CO	2.47	10.82	AP42 Factor	NA	
CDK-3	NOx	1.82	7.98	EPA Method 19	NA	
CDK-3	Lead	0.0000147	0.0000644	AP42 Factor	NA	
CDK-3	HAPs (see attached emission summary for HAP breakdown)	4.49	13.69	NCDENR & AP42 factors	NA	

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☒ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature: _____

Lisa M. Reed

Date: _____

10/04/2017

**PERMIT APPLICATION
FOR
MANUFACTURING OR PROCESSING OPERATION**

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Do not write in this space

1. Name of firm or organization: Talladega Sawmill

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number 1

The facility has a 2,000 gallon gasoline tank (LST-1), 6,000 gallon diesel tank (LST-2), and a 6,000 gallon lube oil tank (LST-3)

to support operations. There are also other trivial storage tanks on site, listed on Form 103.

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Large storage tanks (LST-1, LST-2, LST-3)

Make: N/A Model: N/A

Rated process capacity (manufacturer's or designer's guaranteed maximum) in pounds/hour: N/A

Manufactured date: TBD Upon Approval

Proposed installation date:

Original installation date (if existing):

Reconstruction or Modification date (if applicable):

4. Normal operating schedule:

Hours per day: 24

Days per week: 7

Weeks per year: 52

Peak production season (if any):

N/A

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Gasoline	2.32 gal/hr	1,690 gal/hr	20,280 gal/yr
Diesel	7.98 gal/hr	5,828 gal/hr	69,936 gal/yr
Lube Oil	1.33 gal/hr	5,828 gal/hr	11,656 gal/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
N/A		

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

9. Is there any emission control equipment on this emission source?

☐ Yes ☒ No (Where a control device exists, Form ADEM-110 must be completed and attached).

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions			Regulatory Emission Limit	
		(lb/hr)	(Tons/yr)	Basis of Calculation	(lb/hr)	(units of standard)
LST - 1	VOC	21.18	0.31	AP-42	N/A	N/A
LST - 2	VOC	0.14	0.0013	AP-42	N/A	N/A
LST - 3	VOC	0.14	0.0007	AP-42	N/A	N/A

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☐ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☐ Yes ☒ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☐ Yes ☒ No N/A

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)

Name of person preparing application:

Lisa Reed, GBMc & Associates

Signature:

Lisa M. Reed

Date:

9/14/2017

**PERMIT APPLICATION
FOR
MANUFACTURING OR PROCESSING OPERATION**

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Do not write in this space

1. Name of firm or organization: Talladega Sawmill

2. Briefly describe the operation of this unit or process in your facility: (separate forms are to be submitted for each type of process or for multiple units of one process type. If the unit or process receives input material from, or provides input material to, another operation, please indicate the relationship between the operations.) An application should be completed for each alternative operating scenario.

Operating scenario number 1

The rough, dry lumber is finished in the planer mill. Planer shavings and planer hog trim are conveyed to the shavings storage bin. A cyclofilter (PM) is used for particulate control of the pneumatically conveyed shavings (SC).

3. Type of unit or process (e.g., calcining kiln, cupola furnace): Planer Mill and Finished End Operations (i.e. Planer Mill with Cyclofilter and Shaving Conveyance)

Make: _____ Model: _____

Rated process capacity (manufacturer's or designer's guaranteed maximum) in pounds/hour: 105 MBf/hr

Manufactured date: TBD Upon Approval

Proposed installation date: 12/1/2017

Original installation date (if existing): NA

Reconstruction or Modification date (if applicable): NA

4. Normal operating schedule:

Hours per day: 24

Days per week: 7

Weeks per year: 52

Peak production season (if any):

NA

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Dried Lumber		105 MBf/hr	320 MMBf/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on Form ADEM-104): _____ MMBtu/hr

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

7. Products of process or unit:

Products	Quantity/year	Units of production
Dried Finished Lumber	320	MMBf/yr
Shavings	64,000	ton/yr

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional page if necessary):

It is requested that the particulate matter (PM) emission limitations for this source be based on industry specific emission factors provided in this application in lieu of using the ADEM general industry process weight rule (PWR) to derive emissions. Finished dry lumber produced in the planer mill will be recorded to demonstrate compliance with the Planer Mill and Finish End Operations emission rates.

9. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (Where a control device exists, Form ADEM-110 must be completed and attached).

*Form ADEM-110 has been attached for PM in the event that ADEM would require it. However, PM is considered process equipment.

10. Air contaminant emission points: (Each point of emission should be listed separately and numbered so that it can be located on the attached flow diagram):

[illegible]

* Std temperature is 68°F - Std pressure is 29.92" in Hg.

11. Air contaminants emitted: Basis of estimate (material balance, stack test, emission factor, etc.) must be clearly indicated on calculations appended to this form. Fugitive emissions must be included and calculations must be appended.

Emission Point	Pollutants	Potential Emissions		Basis of Calculation	Regulatory Emission Limit (lb/hr)	Regulatory Emission Limit (units of standard)
		(lb/hr)	(Tons/yr)			
PM	PM	0.37	1.61	Vendor guarantee	15.55	$E = 3.59P^{0.62}$ ADEM 335-3-4-.04
PM	PM10	0.27	1.17	Vendor guarantee for PM	NA	
PM	PM2.5	0.27	1.17	Vendor guarantee for PM	NA	
SC	PM	0.02	0.06	AP42 factor	15.55	$E = 3.59P^{0.62}$ ADEM 335-3-4-.04
SC	PM10	0.01	0.03	AP42 factor	NA	
SC	PM2.5	0.001	0.004	AP42 factor	NA	

12. Using a flow diagram:

- (1) Illustrate input of raw materials,
- (2) Label production processes, process fuel combustion, process equipment and air pollution control equipment,
- (3) Illustrate locations of air contaminant release so that emission points under item 10 can be identified.

☒ (Check box if extra pages are attached)
Process flow diagram

13. Is this unit or process in compliance with all applicable air pollution rules and regulations?

☒ Yes ☐ No

(If "no", a compliance schedule, Form ADEM-437 must be completed and attached.)

14. Does the input material or product from this process or unit contain finely divided materials which could become airborne?

☒ Yes ☐ No

15. If "yes", is this material stored in piles or in some other facility as to make possible the creation of fugitive dust problems?

☒ Yes ☐ No

List storage piles or other facility (if any):

Type of material	Particle size (diameter or screen size)	Pile size or facility (average tons)	Methods utilized to control fugitive emissions (wetted, covered, etc.)
Shavings	NA	NA	Storage Bin (SC)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature:

Lisa M. Reed

Date: 9/14/2017

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PERMIT APPLICATION FOR
STATIONARY INTERNAL COMBUSTION ENGINES

□ □ □ □ - □ □ □ □ □ □ - □ □ □ □ □ □

Permit Number (ADEM Use Only)

1. Facility Name: Talladega Sawmill		Location: Talladega, Alabama (Talladega County)	
2. Purpose of Application:			
☐ Initial installation of a new engine (i.e. engine that has never been in service at any location)		If this application is for the installation, modification, or reconstruction of an engine, please provide the date construction is scheduled to begin: _____	
☒ Initial installation of a used engine (i.e. an engine that has been in service at another location)			
☐ Modification/Reconstruction of an engine currently installed at the facility		If this application is for an engine currently installed at this facility, please provide the date that the engine was initially installed at this facility: _____	
☐ Update information for an engine currently installed at the facility			
☐ Title V Application			
☐ Other, please describe: <u>Engine is already installed on-site</u>			
3. Engine Identification:			
A. Manufacturer's Name: Cummins		B. Model Number: 60522251	C. Model Year: 1984
D. Facility's Identification Number or Description: Fire Pump Engine		E. Serial Number: _____	
4. Engine Applicability Dates:			
A. For a new engine, Date Ordered: _____		B. Date Manufactured: 1984	C. Date Modified/Reconstructed: _____
D. For a used engine, approximate date engine was first placed into service at any location: 2005			
5. Engine Function:			
☐ Compression ☐ Electrical Generation (Maximum Electrical Output: _____) ☒ Fire Pump Driver			
☐ Other Pump Driver ☐ Research & Development ☐ Test Cell/Stand ☐ Other, please describe: _____			
6. Engine Operation:			
☒ Emergency Only ☐ Non-emergency, please provide typical operating schedule in Items A-D below:			
☐ Limited Use (<100 hr/yr) A. Hours Per Day: _____ B. Days Per Week: _____ C. Weeks per Year: _____			
D. Peak Season (if any): _____			
7. Engine Specifications:			
A. Maximum Brake Horsepower (bhp): 250		B. Maximum Engine Power (kW _m): _____	C. Maximum Heat Input (MMBtu/hr): _____
D. Type: ☐ Simple Cycle Turbine ☐ Combined Cycle Turbine ☐ Regenerative Cycle Turbine ☐ Reciprocating Engine			
E. Piston Movement: ☐ 2-Stroke RICE ☐ 4-Stroke RICE ☒ N/A ☐ Other: _____			
F. Air/Fuel Mix: ☐ Rich Burn RICE ☐ Lean Burn RICE ☐ Diffusion Flame Turbine ☐ Lean Premix Turbine ☐ Other: _____			
G. Ignition Type: ☐ Spark ☒ Compression ☐ N/A H. Cylinder Displacement (Liters per cylinder): _____			
8. Fuel Information:			
Fuel Type/Description	Sulfur Content (indicate % by weight OR ppm)	Fuel-bound Nitrogen Content (Indicate % by weight OR ppm)	Percent (%) of Gross Heat Input on Annual Basis
Primary Fuel	No. 2 Diesel Fuel		
Secondary/Backup	N/A		
9. Stack Parameters (If a control device is installed, the information should be for the control device's stack exit):			
A. Height above grade (feet): 15	B. Inside Diameter at Exit (feet): 1	C. Exhaust Gas Volume (ACFM): 1,500	
D. Base Elevation (feet): 601	E. Exhaust Gas Temperature°F: 1,000	F. Are sampling ports available? ☐ Yes ☒ No	

10. Point Source Emissions (You must attach calculations and, if used as the basis for emission estimates, manufacturer specification sheets):

Pollutant	Uncontrolled ¹ Potential Emission Rate		Controlled ^{1,2} Potential Emission Rate		Basis for Potential Emissions Calculation/Estimate (e.g. AP-42, Manufacturer Data)	Comment (Optional)
	lb/hr	ton/yr	lb/hr	ton/yr		
NOx	7.75	1.94			AP-42	
CO	1.67	0.42			AP-42	
VOC	0.63	0.16			BACT	
PM	0.55	0.14			AP-42	
SO ₂	0.51	0.13			AP-42	
Formaldehyde	2.66E-03	6.64E-04			AP-42	
Total HAP	8.40E-03	2.10E-03			AP-42	

¹Potential emissions should be calculated based on 8,760 hr/yr and maximum operation unless an enforceable limit will be applicable.

²If the pollutant is uncontrolled, leave blank.

11. Applicable Regulations (Mark all that apply):

- ☐ 40 CFR 63, Subpart YYYY, NESHAP for Stationary Combustion Turbines ☒ 40 CFR 63, Subpart ZZZZ, NESHAP for Stationary RICE
- ☐ 40 CFR 60, Subpart GG, NSPS for Stationary Gas Turbines ☐ 40 CFR 60, Subpart IIII, NSPS for Stationary Compression Ignition ICE
- ☐ 40 CFR 60, Subpart KKKK, NSPS for Stationary Combustion Turbines ☐ 40 CFR 60, Subpart JJJJ, NSPS for Stationary Spark Ignition ICE
- ☐ Other: _____ ☐ Other: _____

12. Regulatory Standards, Limitations, and Requirements:

A.	Pollutant/Parameter	Rate/Value	Units of Standard	Regulatory Basis ³	Engine Potential Emission Rate (in units of standard)
	Example: NOx + NMHC	6.4	g/kW-hr	NSPS, Subpart IIII	4.95 g/kW-hr
	Example: Annual Operation	6,000	hr/yr	SMS-PSD	N/A
	BACT - VOC	2.51E-03	lb/hp-hr	335-3-14-.04	2.51E-03 lb/hp-hr
	Work Practice Standards			§63.6602 Table 2c	

³For federal regulations, specify which NSPS or NESHAP is the basis. If a synthetic minor limit is being requested or is already applicable, specify either SMS-PSD or SMS-Title V

B. For engines subject to emission standards under NSPS, Subpart IIII or NSPS, Subpart JJJJ, is this engine certified by the manufacturer pursuant to the applicable regulation to meet the applicable emission standards? ☒ N/A ☐ No ☐ Yes (If yes, attach a copy of the certification)

C. For emergency or limited use engines, is this engine equipped with a non-resettable hour meter? ☐ N/A ☐ No ☒ Yes

13. Pollution Control Information:**A. Device/Technology Type(s):**

- ☒ No Controls
- ☐ Air-to-Fuel Ratio Controller
- ☐ Water or Steam Injection
- ☐ Low NO_x Burners
- ☐ Oxidation Catalyst
- ☐ Selective Non-catalytic Reduction (SNCR)
- ☐ Non-selective Catalytic Reduction (NSCR/3-way Catalyst)
- ☐ Selective Catalytic Reduction (SCR)
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

B. Control Efficiencies (Typical Operation)

Pollutant	% Reduction
NO _x	
CO	
VOC	
Formaldehyde	

C. Operational Parameters (if any):**14. Compliance Status:**

Is this engine in compliance with all applicable air pollution rules and regulations? ☒ Yes ☐ No (If "No", must attach ADEM Form 437)

15. Clarifying/Supplemental Information (Optional):

Please provide the following for the person preparing this application:

Name (Print or Type): Lisa Reed Company/Affiliation: GBMc & Associates

Signature: *Lisa M. Reed* Date: 9/14/2017



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PERMIT APPLICATION
FOR
AIR POLLUTION CONTROL DEVICE

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(ADEM Use Only)

1. Name of firm or organization Talladega Sawmill

2. Type of pollution control device: (If more than one, check each; however, separate forms are to be submitted for each specific device.)

- | | |
|---|---|
| ☐ Settling chamber | ☐ Electrostatic precipitator |
| ☐ Afterburner | ☒ Baghouse |
| ☒ Cyclone | ☐ Multiclone |
| ☐ Absorber | ☐ Adsorber |
| ☐ Condenser | ☐ Wet Suppression |

Wet scrubber (kind): _____

Stage 1 - Vapor balance (type): _____

Other (describe): Cyclofilter is a combined cyclone and baghouse.

3. Control device manufacturer's information:

Name of manufacturer Rodrigue Metal LTEE Model No. Cyclofilter CF-12.5

4. Emission source to which device is installed or is to be installed:

Planer Mill and Green End

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	PM	PM10	PM2.5
Mass emission rate (#/hr)			
Uncontrolled	574.75 lb/hr	57.47 lb/hr	57.47 lb/hr
Designed.....	0.37 lb/hr	0.27 lb/hr	0.27 lb/hr
Manufacturer's guaranteed.....			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	15.6 lb/hr	NA	NA
Manufacturer's guaranteed.....			
Removal efficiency (%)			
Designed.....	99.95	99.90	99.00
Manufacturer's guaranteed.....			

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68°F, 29.92" hg)	est. 70,600		est. 70,600
(ACFM, existing conditions)	-		-
Temperature (°F)	Ambient		Ambient
Velocity (ft/sec)	TBD		TBD
Percent moisture	Ambient		Ambient

Pressure drop across TBD (inches H₂O)

7. Stack dimensions:

Height above grade..... TBD (feet)
 Inside diameter at exit (if opening is round) TBD (feet)
 Inside area at exit (if opening is not round) TBD (sq. feet)
 Base Elevation 600 (feet)
 GEP Stack Height..... TBD (feet)

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

See process flow diagram section of the application.

9. Enclosed are:

- ☐ Blueprints
 ☐ Particle size distribution report
☐ Manufacturer's literature
 ☐ Size-efficiency curves
☐ Emissions test of existing installation
 ☐ Fan curves

☒ Other See Appendix B for cyclofilter manufacturer specifications and control efficiency chart.

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

TBD - equipment has not yet been selected and information will be made available as soon as able.

12. By-pass (if any) is to be used when:

TBD

13. Disposal of collected air pollutants:

	Sold waste	Solid waste	Liquid waste	Liquid waste
Volume	64,000 tpy			
Composition	Shavings			
Is waste hazardous?	No			
Method of disposal	Shavings storage bin			
Final destination	Byproduct, sold offsite			

If collected air pollutants are recycled, describe:

NA

Name of person preparing application Lisa Reed, GBMc & Associates

Signature

Lisa M. Reed

Date

9/14/2017



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PERMIT APPLICATION
FOR
AIR POLLUTION CONTROL DEVICE

--	--	--	--	--	--	--	--	--	--

(ADEM Use Only)

1. Name of firm or organization Talladega Sawmill

2. Type of pollution control device: (If more than one, check each; however, separate forms are to be submitted for each specific device.)

- | | |
|---|---|
| ☐ Settling chamber | ☐ Electrostatic precipitator |
| ☐ Afterburner | ☐ Baghouse |
| ☒ Cyclone | ☐ Multiclone |
| ☐ Absorber | ☐ Adsorber |
| ☐ Condenser | ☐ Wet Suppression |

Wet scrubber (kind): _____

Stage 1 - Vapor balance (type): _____

Other (describe): Chip cyclone is used for transfer of chips.

3. Control device manufacturer's information:

Name of manufacturer TBD - equipment has not yet been selected and information will be made available as soon as able. **Model No.** TBD - equipment has not yet been selected and information will be made available as soon as able.

4. Emission source to which device is installed or is to be installed:

Sawmill and Green End Operations

5. Emission parameters:

	Pollutants Removed		
	Pollutant #1	Pollutant #2	Pollutant #3
	PM	PM10	PM2.5
Mass emission rate (#/hr)			
Uncontrolled	NA	NA	NA
Designed.....	0.69 lb/hr	0.34 lb/hr	0.04 lb/hr
Manufacturer's guaranteed			
Mass emission rate (Expressed as units of standard)			
Required by regulation.....	35.61 lb/hr	NA	NA
Manufacturer's guaranteed			
Removal efficiency (%)			
Designed.....	NA	NA	NA
Manufacturer's guaranteed			

6. Gas conditions:

	Inlet	Intermediate Locations	Outlet
Volume (SDCFM, 68°F, 29.92" hg)	est. 8,000		est. 8,000
(ACFM, existing conditions)	-		-
Temperature (°F)	Ambient		Ambient
Velocity (ft/sec)	TBD		TBD
Percent moisture	Ambient		Ambient

Pressure drop across NA (inches H₂O)

7. Stack dimensions:

Height above grade TBD (feet)
 Inside diameter at exit (if opening is round) TBD (feet)
 Inside area at exit (if opening is not round) TBD (sq. feet)
 Base Elevation 600 (feet)
 GEP Stack Height TBD (feet)

8. Provide a flow diagram which includes gas exit from process, each control device, location of by-pass, fan or blower, each emission point, exits for collected pollutants, and location of sampling ports.

See process flow diagram section of the application.

9. Enclosed are:

- ☐ Blueprints
 ☐ Particle size distribution report
☐ Manufacturer's literature
 ☐ Size-efficiency curves
☐ Emissions test of existing installation
 ☐ Fan curves
☐ Other Cyclone equipment has not yet been selected and information will be made available as soon as able.

10. If the pollution control device is of unusual design, please provide a sketch of the device.

11. List below the important operating parameters for the device. (For example: air/cloth ratio and fabric type, weight, and weave for baghouse; throat velocity and water use rate for a venturi scrubber; etc.)

Cyclone equipment has not yet been selected and information will be made available as soon as able.

12. By-pass (if any) is to be used when:

NA

13. Disposal of collected air pollutants:

	Solid waste	Solid waste	Liquid waste	Liquid waste
Volume	374,096 tpy			
Composition	Chips			
Is waste hazardous?	No			
Method of disposal	Chip storage bin			
Final destination	Byproduct, sold offsite			

If collected air pollutants are recycled, describe:

NA

Name of person preparing application Lisa Reed, GBMc & Associates

Signature

Lisa M. Reed

Date

9/14/2017

**PERMIT APPLICATION
FOR
INDIRECT HEATING EQUIPMENT
(FUEL BURNING EQUIPMENT)**

-

-

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1. Name of firm or organization: Talladega Sawmill

2. Unit Description (i.e. No. 1 Power Boiler): NA

Equipment manufacturer's information

Name of manufacturer: NA

Model number: NA

Rated capacity-input: NA (Btu/hr.)

Boiler type: ☐ Fire tube ☐ Water tube ☐ other(specify):

Manufactured date:

Proposed installation date:

Original installation date (if existing):

Reconstruction or Modification date (if applicable):

3. Type of fuel used:

Primary:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

Standby:

Fuel	Heat Content	Units	Max. % Sulfur	Max. % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other (specify)						

4. Purpose (if multipurpose, note percent in each use category):

☐ Space heat _____ % ☐ Power generation _____ % ☐ Process heat _____ %

Other (specify): _____

5. Normal schedule of operation:

Hours per day: _____ Days per week: _____ Weeks per year: _____

6. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work

practice standard (attach additional page if necessary): _____

7. Fugitive Emissions (attach calculation worksheets):

POLLUTANT	POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT (lb/hr)	REGULATORY EMISSION LIMIT (in units of standard)
	lb/hr	t/yr			
Particulate					
Sulfur dioxide					
Nitrogen oxides					
Carbon monoxide					
VOC's					
Other					

8. Is there any emission control equipment on this emission source?

☐ Yes ☐ No (If "yes", complete form ADEM-110)

9. Point Emissions (attach calculation worksheets):

POLLUTANT	POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT (lb/hr)	REGULATORY EMISSION LIMIT (In units of standard)
	lb/hr	t/yr			
Particulate					
Sulfur dioxide					
Nitrogen oxides					
Carbon monoxide					
VOC's					
Other					

10. Stack data:

Height above grade _____ (feet) Gas temperature at exit _____ (°F)
 Inside diameter at exit _____ (feet) Volume of gas discharged _____ (ACFM)
 Base Elevation _____ (feet)

Are sampling ports available? ☐ Yes ☐ No (If "yes", describe. Draw on separate sheet if necessary):

11. Is this item in compliance with all applicable air pollution rules and regulations?

☐ Yes ☐ No (if "no", a compliance schedule, form ADEM-114, must be attached.)

Name of person preparing application: Lisa Reed, GBMc & Associates

Signature: *Lisa M. Reed*

Date: 9/14/2017

NOT APPLICABLE

**PERMIT APPLICATION
FOR
WASTE DISPOSAL**

[] [] [] - [] [] [] [] - [] [] [] []

Do not write in this space

SECTION I

1. Name of firm or organization: Talladega Sawmill

2. Type and quantity of waste generated:

Type waste	Quantity - tons/yr	Disposal method code*
Paper		
Cardboard		
Wood		
Plastic		
Rubber		
Gaseous		
Liquid		
Pathological		
Incombustibles		
Garbage		
Other		

* method codes

(1) incineration

(2) company operated on-site disposal

(3) commercial disposal service

(4) hauled by source to separate disposal site

(5) sold or otherwise transferred to another source for reclaiming or recycling

(6) other (specify):

3. Do the methods used for disposing of waste comply with all applicable air pollution rules and regulations?

☐ yes ☐ no

(if "no", a compliance schedule, Form ADEM-114, must be completed and attached.)

SECTION II

If waste disposal is by incineration, please complete the following:

1. Incinerator manufacturer's information:

- a. Name of manufacturer: _____
- b. Model number: _____
- c. Rated capacity (specify units): _____
- d. Check type of waste (see final page for definitions of waste types)
- ☐Type 0 ☐Type 1 ☐Type 2 ☐Type 3 ☐Type 4 ☐Type 5 ☐Type 6 ☐Type 7

2. Type of incinerator (check all applicable):

- ☐Single chamber ☐Multiple chamber
- ☐Other (specify): _____

3. Auxiliary equipment (check all applicable):

- ☐Primary burner Fuel: _____ (type)
- ☐Secondary burner Fuel: _____ (type)

4. Combustion air:

- ☐Natural draft ☐Starved air ☐Induced draft ☐Forced draft
- ☐Other
(specify): _____

5. Have tests been performed on this model incinerator?

- ☐yes ☐no If yes, attach copy of report

6. Waste feed method:

- ☐Fuel fed ☐Continuous direct ☐Chute fed ☐Batch direct

7. Operating schedule (typical)

Hours per day: from: _____ (time) to: _____ (time)

Days per week: _____ on: m ☐ t ☐ w ☐ t ☐ f ☐ s ☐ s ☐

Weeks per year: _____

8. For each regulated pollutant, describe any limitations on source operation which affects emissions or any work practice standard (attach additional pages if necessary):

9. Fugitive Emissions (attach calculation worksheets):

POLLUTANT	POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT (lb/hr)	REGULATORY EMISSION LIMIT (in units of standard)
	lb/hr	t/yr			
Particulate					
Sulfur dioxide					
Nitrogen oxides					
Carbon monoxide					
Volatile organic compounds					
Other					

10. Is there any emission control equipment on the incinerator?

☐ yes

☐ no

if "yes", complete Form ADEM-110

11. Point Emissions (attach calculation worksheets):

POLLUTANT	POTENTIAL EMISSIONS		BASIS OF CALCULATION	REGULATORY EMISSION LIMIT (lb/hr)	REGULATORY EMISSION LIMIT (in units of standard)
	lb/hr	t/yr			
Particulate					
Sulfur dioxide					
Nitrogen oxides					
Carbon monoxide					
Volatile organic compounds					
Other					

12. Stack data:

Height above grade _____ (feet) Gas temperature at exit _____ (°F)
 Inside diameter at exit _____ (feet) Volume of gas discharged _____ (ACFM)
 Base Elevation _____ (feet)

Are sampling ports available? ☐ Yes ☐ No (If "yes", describe. Draw on separate sheet if necessary)

13. Is this item in compliance with all applicable air pollution rules and regulations?

☐ Yes ☐ No (If "no", a compliance schedule, Form ADEM-114, must be attached.)

Name of person preparing application (PRINT or TYPE): Lisa Reed, GBMc & Associates

Signature: *Lisa M. Reed*

Date: 9/14/2017

NOT APPLICABLE

**PERMIT APPLICATION
FOR
COMPLIANCE SCHEDULE**

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1. Name of firm or organization: Talladega Sawmill

2. Compliance schedule for: NA

3. Compliance schedule (include schedule of remedial measures leading to compliance) and schedule for submittal of progress reports (must be at least once every six months):

NA

4. Describe method(s) to be used to determine compliance: NA

5. Date by which item will be in complete compliance with all applicable air pollution control rules and regulations:

month/day/year

Name of person preparing schedule: Lisa Reed, GBMc & Associates

Signature: *Lisa M. Reed*

Date: 9/14/2017

NOT APPLICABLE

PROJECT INFORMATION SHEET

PROJECT NAME: Talladega Sawmill

PROJECT DESCRIPTION, INCLUDING NATURE OF PROJECT (i.e., New or Modified facility):
New Sawmill Facility

PROJECT LOCATION (i.e., STATE, COUNTY, NEAREST CITY; UTM COORDINATES):
440 Ironaton Cutoff Road, Talladega (Talladega County), Alabama 35160

UTM: 587400 E 3700970 N

LIST OF CLASS I AREAS WITHIN 100 KM OF THE PROPOSED SOURCE OR THOSE THAT THE PERMITTING AUTHORITY BELIEVES MAY BE IMPACTED BY A LARGE SOURCE WHICH IS BEYOND 100 KM. INCLUDE DISTANCE AND DIRECTION FROM THE CLASS I AREAS TO THE SOURCE:

No class I areas are within 100 km of the proposed facility and all associated sources.

PROPOSED EMISSION RATES AND/OR INCREASES:

EMISSIONS	lb/hr	TPY
SO₂	0.58	0.41
NO_x	14.43	31.19
PM	19.76	23.75
CO	10.73	40.10
VOC	314.40	878.87
Other (List)		
Other (List)		
Other (List)		

PROPOSED EMISSION CONTROL TECHNOLOGY AND PROPOSED REMPOVAL EFFICIENCY/EMISSION RATE (USING RBLC STANDARD UNITS, i.e., ppm, lb/MMBtu)

Proper Operation and Maintenance is proposed as BACT.

BRIEF SUMMARY OF ANY CLASS I ANALYSES CONTAINED IN THE APPLICATION (E.g., INCREMENT CONSUMPTION, VISIBILITY, DEPOSITION ANALYSES)

No class I areas are within 100 km of the proposed facility and all associated sources. See PSD Applicability Section for more information.

COMPANY CONTACT: Joe Gorski

MAILING ADDRESS:

440 Ironaton Cutoff Road, Talladega, Alabama 35160

TELEPHONE AND FAX NUMBERS: 404-652-6455

STATE CONTACT:

MAILING ADDRESS:

TIM OWEN, CHIEF, ENGINEERING BRANCH

ADEM - AIR DIVISION

P.O. BOX 301463

MONTGOMERY, AL 36130-1463

TELEPHONE AND FAX NUMBERS: 334/271-7861 (PHONE)
334/279-3044 (FAX)

APPENDIX E

FUGITIVE EMISSION CONTROL ANALYSIS

FUGITIVE EMISSION CONTROL ANALYSIS

The Talladega Sawmill proposes the following requirements to minimize fugitive emissions at the facility.

- 1) Particles generated from sawdust, chips, and bark from sawmill operations are relatively large and not respirable. Because of their large size, these particles also tend to settle out of the air quickly. Therefore, partially enclosed buildings are considered to be an industry standard control for particulate emitted from the process equipment. The proposed Sawmill and Green End Operations process equipment at the facility including the Log Processing Debarker (LD) and the Sawmill (SM) shall be partially enclosure as indicated in the emission calculations. Furthermore, water is applied to the sawmill saws while operating to reduce fugitive emissions. The Log Bucking (LB) process is enclosed by two walls and a roof, however, emissions are conservatively estimated with no control.
- 2) The Planer Mill and Finished End Operations process equipment are collected and the emissions and shavings from the Planer Mill are conveyed using a pneumatic collection system to the cyclofilter (PM). Therefore, it is assumed there are no fugitive emissions associated with the planer mill equipment. The large shaving particles are dropped out into the Shaving Storage Bin (SC) and then shipped off-site by trucks.
- 3) All sawmill byproduct (bark, chip, sawdust, and shavings) conveyance results in storage (BC, CC, SDC, and SC respectively) in bins and any chip overflow in a chip pile (CP). Fugitive particulate emissions will be minimized, watered as needed, and removed as necessary to reduce impact.
- 4) All sawdust and bark produced at the facility shall be conveyed by covered belts or drag chains to the storage bins (SDC and BC) to minimize fugitive particulate emissions.
- 5) The chip conveyance (CC) utilizes a cyclone for pneumatic conveyance to the storage bin.
- 6) The bark hog and sawmill chipper shall be completely enclosed to eliminate direct releases of fugitive emissions.
- 7) Some haul roads will be paved; unpaved roads will have speed limits posted and can be watered if fugitive emissions are problematic.

APPENDIX F

PROPOSED MONITORING AND RECORDKEEPING

PROPOSED MONITORING AND RECORDKEEPING

The Talladega Sawmill will demonstrate compliance for all process emission estimates through recordkeeping of lumber production. Records will be updated monthly and maintained on-site.

Emission Source Description	Emission Point ID	Proposed Compliance Requirements
Sawmill and Green End Operations	LD LB BC SM CHC CC CP SDC RD	Monthly recordkeeping of lumber produced (329,600 MBf/yr on a 12 month rolling average basis).
Continuous Drying Kilns	CDK-1 CDK-2 CDK-3	Monthly recordkeeping of lumber dried (320,000 MBf/yr on a 12 month rolling average basis) and records of proper operation and maintenance of the kilns. A maintenance and operating plan is proposed for ADEM review within 6 months of kiln startup.
Planer Mill and Finished End Operations	PM SC	Monthly recordkeeping of finished lumber produced (320,000 MBf/yr on a 12 month rolling average basis).
Emergency Fire Pump Engine	FE	Monthly recordkeeping of hours of operation. Records of maintenance performed.

APPENDIX F. OZONE MERPS ASSESSMENT

A source subject to Prevention of Significant Deterioration (PSD) is required to conduct dispersion modeling in order to determine an operation's impact on air quality. For pollutants emitted in excess of certain thresholds, preliminary dispersion modeling is used to determine if ground-level concentrations will exceed significant impact levels (SILs). If SILs are not exceeded, the modeling demonstration is over. If the SILs are exceeded for any pollutant, a refined modeling analysis is required. In order to avoid a complex photochemical modeling process, the EPA performed photochemical model runs with an array of hypothetical sources in locations across the continental U.S., resulting in MERP precursor emission rates (in tons per year (tpy) that would result in concentrations equal to PSD SILs. The MERPs guidance provides a framework for calculating concentrations of secondarily formed ozone (O_3), the primary pollutant of concern in this report, that can be used to simplify and streamline the PSD and air quality analysis portion of air permit applications.

Westervelt (Thomasville Mill)'s proposed project is subject to PSD permitting for volatile organic compounds (VOC) as a precursor to O_3 . For this reason, US EPA's Modeled Emission Rates for Precursors (MERPs) was utilized to conduct an ambient air quality analysis for NSLC – a source subject to PSD permitting for VOC. The following analysis demonstrates project emissions will not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) or PSD increments.

To properly conduct the analysis, EPA recommends a two-tiered approach for addressing single source impacts on O_3 . Tier 1 involves the use of appropriate and technically credible relationships between emissions and ambient impacts developed from the modeling studies determined sufficient for evaluating project impacts. Tier 2 involves chemical transport modeling. Tier 1 sufficiently demonstrates no negative impact to the air quality will result because of this project.

Following the steps outlined in US EPA's *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program* dated April 30, 2019, and the supplemental April 30, 2024 memo (Guidance), the following section documents the Thomasville Mill satisfies the compliance demonstration requirements for O_3 under the PSD program. The steps required by the EPA involve:

- ▶ Step 1 – Identify representative hypothetical source, most representative of the facility within the selected Climate Zone.
- ▶ Step 2 – Acquire source characteristics and associated source impact modeling results. Screen the closest hypothetical sources to the project facility.
- ▶ Step 3 - Apply source characteristics and photochemical modeling results from Step 2 to the MERP equation with the appropriate SIL value to assess the project source impacts.

Following the above steps, the contribution of VOCs and nitrogen oxides (NO_x) – the applicable precursors to O_3 involved in this Thomasville Mill project – have been evaluated.

The Thomasville Mill project proposes an increase in emissions of 9.66 tpy and 233.6 tpy of NO_x and VOCs, respectively. Being located just south of Thomasville, AL, there are no unusual circumstances regarding complex terrain, proximity to very large sources of NO_x or VOC, or meteorology.

As EPA recommends NO_x and VOC precursor impacts on 8-hr daily maximum O₃ be considered concurrently to determine if the project source's air quality impact would exceed the O₃ SIL, the project emissions increase is evaluated, and the concentration based impact of the hypothetical source (in ppb) is scaled by the ratio of the project emissions increase (for both NO_x and VOC) to the hypothetical source emissions of NO_x and VOC, and multiplied by the hypothetical source modeled concentration to evaluate an estimated project based impact. If the derived concentration value is less than 1 ppb, it will be less than the O₃ EPA SIL value from modeling guidance.

Based on data evaluated and downloaded from the EPA Qlik website (<https://www.epa.gov/scram/merps-view-qlik>), the following table was created for the hypothetical source of interest (Autauga County), which is a comparable source based on relevant characteristics and setting. The data from EPA Qlik website is represented in Table 1.

Table 1. Hypothetical Precursor, Pollutant, State, County, Emissions, Stack Height, MERP, and Climate Zone Information (Excerpt from EPA's SCRAM website)

Precursor	Pollutant	State	County	Emission (tpy)	Stack Height (m)	Max Concentration (ppb)	Climate Zone
VOC	O ₃	AL	Autauga	500	10	2.01172	Southeast
NO _x	O ₃	AL	Autauga	500	10	0.064137	Southeast

The project stacks are 36 feet (10.97 meters), indicating a stack height of 10 meters is more appropriate than 90 meters. Project emissions are 9.66 tpy NO_x and 233.6 tpy VOC (including both point source and fugitive emissions). As such, the EPA modeled emission rates of 500 tpy for NO_x and 500 tpy VOC are most representative. Due to the similar geographical characteristics of Autauga County and Clarke County, Alabama, the meteorology can also be considered adequately characterized. Moreover, because the Thomasville Mill is in the same region as the hypothetical source, background pollutant concentrations and emissions can be assumed to be reasonably similar.

To account for additive precursor impacts on 8-hr daily maximum O₃, the project impact was calculated using the following equation:

$$\text{Project Impact (ppb)} = \text{tpy NO}_x \text{ from source} / \text{tpy hypothetical source NO}_x \text{ Emission} \times \text{Max Modeled Concentration (ppb)} + \text{tpy VOC from source} / \text{tpy hypothetical source VOC Emission} \times \text{Max Modeled Concentration (ppb)}$$

and calculated as follows:

$$\begin{aligned} &= (9.66 \text{ tpy} / 500 \text{ tpy} \times 2.01172 \text{ ppb}) + (233.6 \text{ tpy} / 500 \text{ tpy} \times 0.064137 \text{ ppb}) \\ &= (0.0389 + 0.0300) \text{ ppb} \\ &= 0.0689 \text{ ppb} \end{aligned}$$

Based on EPA modeling results for this representative hypothetical source, the impact of the project would only be 0.0689 ppb, well less than the EPA SIL of 1 ppb. Further compliance demonstration is not required.

Westervelt - Thomasville Mill
Appendix E - ADEM Application Forms

5. Materials (feed input) used in unit or process (include solid fuel materials used, if any):

Material	Process Rate Average (lb/hr)	Maximum (lb/hr)	Quantity tons/year
Dried Lumber	53.33 MBF/hr	53.33 MBF/hr	467,200 MBF/yr

6. Total heat input capacity of process heating equipment (exclude fuel used by indirect heating equipment previously described on ADEM form 104): N/A MMBtu/hr

Primary:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

Standby:

Fuel	Heat Content	Units	Max % Sulfur	Max % Ash	Grade No. [fuel oil only]	Supplier [used oil only]
Coal		Btu/lb				
Fuel Oil		Btu/gal				
Natural Gas		Btu/ft ³				
L. P. Gas		Btu/ft ³				
Wood		Btu/lb				
Other						

7. Products of process or unit:

Products	Quantity/year	Units of production
Finished Lumber	467,200	MBF/yr
Planer Shavings	79,200	(ODT/yr)

8. For each regulated pollutant, describe any limitations on source operation or any work practice standards which affect emissions:

9. Are you requesting a limitation for permitting? ☒ Yes ☐ No if "yes", specify the limit and affected unit(s):

Existing limits are as follows:

PM = 0.92 lb/hr, PM₁₀ = 0.92 lb/hr, PM_{2.5} = 0.33 lb/hr

Westervelt is not requesting any changes to these existing limits.

10. Is there any emission control equipment on this emission source?

☒ Yes ☐ No (if "yes", ADEM Form 110 must be completed and attached)

GP Talladega: Continuous Drying Kilns (Emission Point Reference Nos. (CDK-1, CDK-2, CDK-3))

Fuel Information

Fuel	btu/scf
Natural Gas	1,020

Kiln Information

Description	Emission Point Reference No.	Hourly Burner Rating (MMBtu/hr)	Hourly Production (MBf/hr)	Annual Burner Rating (MMBtu/yr)	Annual Total Production (MBf/yr)	Notes
Continuous Drying Kiln No. 1	CDK-1	40.0	20.0	350,400	120,000	[1][2][15]
Continuous Drying Kiln No. 2	CDK-2	40.0	20.0	350,400	120,000	[1][2][15]
Continuous Drying Kiln No. 3	CDK-3	30.0	13.2	262,800	80,000	[1][2][15]

Criteria & GHG Air Pollutant Emission Calculations

Pollutant	Emission Factor		Potential Emissions						Notes
			CDK-1		CDK-2		CDK-3		
	lb/MBf	lb/MMscf	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
PM (f)	0.013	1.9	0.33	1.11	0.33	1.11	0.23	0.76	[1][8][9]
PM ₁₀	0.022	7.6	0.74	2.63	0.74	2.63	0.51	1.86	[8][9]
PM _{2.5}	0.022	7.6	0.74	2.63	0.74	2.63	0.51	1.86	[8][9]
VOC as C	4.28	--	85.60	256.80	85.60	256.80	56.50	171.20	[3]
VOC (WPP1)	5.49	--	109.80	329.40	109.80	329.40	72.47	219.60	[4]
SO ₂	--	0.6	0.02	0.10	0.02	0.10	0.02	0.08	[9][16]
CO	--	84	3.29	14.43	3.29	14.43	2.47	10.82	[10]
NO _x	--	61.9	2.43	10.64	2.43	10.64	1.82	7.98	[13]
Lead	--	5.00E-04	1.96E-05	8.59E-05	1.96E-05	8.59E-05	1.47E-05	6.44E-05	[9]
CO ₂	--	120,019	4,707	20,615	4,707	20,615	3,530	15,461	[14]
CH ₄	--	2.26	0.09	0.39	0.09	0.39	0.07	0.29	[14]
N ₂ O	--	0.23	0.01	0.04	0.01	0.04	0.01	0.03	[14]
GHG	--	120,021	4,707	20,615	4,707	20,615	3,530	15,462	[14]
Total CO ₂ e	--	120,142	4,711	20,636	4,711	20,636	3,534	15,477	[14]

EPD Recommended Emission factors for Lumber Kiln Permitting in Georgia

Below please see the emission factors we have been using lately for Lumber Mill Applications:

Steam Heated Kiln

VOC = 4.0 lbs/Mbf (pounds per thousand board feet)

Formaldehyde = 0.0149 lb/Mbf

Methanol = 0.236 lb/Mbf

Acetaldehyde = 0.0054 lb/Mbf

Direct-fired Kiln

VOC = 4.0 lbs/Mbf

Formaldehyde = 0.0386 lb/Mbf

Methanol = 0.161 lb/Mbf

Acetaldehyde = 0.045 lb/Mbf

The above emission factors are based on recent NCASI test results that are not published yet.

For PM/PM10/PM2.5, we have been using stack tested emission data that were used in Title V Application No. 21615 for West Fraser – Augusta Lumber Mill, which are:

PM = 0.14 lb/Mbf

PM10 = 0.104 lb/Mbf

PM2.5 = 0.099 lb/Mbf

NO_x = 0.28 lb/MM Btu (for Wood fired)

CO = 0.73 lb/MM Btu (for Wood Fired)

SO₂ = 0.025 lb/MM Btu (for Wood Fired)

Total GHG = 209.6 lb/MM Btu (for wood fired)

NOTES ON PM EMISSION FACTORS:

The NCASI emission factors that are used in the emission calculations were initially developed for batch lumber kilns. Since continuous kilns are a new technology, there is limited testing data. No NCASI reviewed testing data currently exists for continuous kilns. The emission factors for a continuous kiln are expected to be equal to or less than that of a batch kiln. The exception to this would be data reviewed regarding particulate matter emissions as part of the preliminary determination for Simpson Lumber Company, LLC (Application Number 20735). Based on a review of the preliminary determination document, the best available emission factors for particulate related emissions are based on tests conducted at Bibler Brothers Lumber Company, Russellville, AR. The Bibler Brothers data is for filterable PM only. The filterable PM emission factor is 0.068 lb/MBF. Condensable PM is based on unpublished data provided by NCASI. NCASI recommends a ratio of Condensable to Filterable PM of 1.016. The Condensable PM emission factor used is therefore 0.069 lb/MBF. Filterable PM10 is assumed to be 50% of filterable PM (based on Permit NO. 2421-107-0011-V-02-3 issued to Rayonier Wood Products LLC-Swainsboro Sawmill). Filterable PM2.5 is assumed to be 87% of PM10 based on AP-42 for wood combustion. All condensable PM is assumed to be PM10 and PM2.5. The resulting PM, PM10, and PM2.5 emission factors are 0.138 lb/MBF, 0.104 lb/MBF, and 0.099 lb/MBF, respectively.

Westervelt Lumber Thomasville, LLC

Facility No. 102-S014

Unit Nos. 005, 006, 007, 010 (Lumber Dry Kilns)

BACT Good Operating Procedures and Work Practices Plan

5/20/26

This document serves as the Operating and Maintenance Plan for Continuous Lumber Dry Kilns (CDK 1A-B, CDK 2A-B, CDK 3A-B, & CDK 4A-B) as required by Proviso No. 28 in ADEM Air Permit No. 102-S014.

Proper Maintenance Practices

1. Conduct daily routine maintenance: (Operator Rounds)
 - a. Clean debris from around kiln and pusher tracks.
 - b. Visually inspect the primary air fan, gas train, and gas burner.
 - c. Lubricate kiln cart pusher axle bearings as needed.
 - d. Lubricate kiln cart wheels as needed.
2. Conduct weekly inspections of:
 - a. Fan drive systems.
 - b. Cart pusher hydraulic system oil level and hose connections.
3. Conduct monthly routine maintenance:
 - a. Grease pawl manifold on the kiln cart pusher.
 - b. Kiln fan shafts and lubricate as needed.
 - c. Inspect and clean the primary air fan inlet filters on the kiln burner.
4. Conduct quarterly inspections of the plenum hatches, cleaning, as necessary.
5. Conduct semiannual routine maintenance:
 - a. Inspect fan bearings and lubricate as needed.
 - b. Replace hydraulic filter on kiln cart pusher hydraulic system.
 - c. Inspect baffles and brushes.
 - d. Lubricate primary air fan electric motors on the kiln burner.
6. Conduct annual routine maintenance:
 - a. Lubricate kiln fan electric motors as needed.
 - b. Lubricate kiln cart pusher hydraulic system electric motors.
 - c. Lubricate door baffle hinges as needed.
 - d. Lubricate man door hinges as needed.
 - e. Lubricate kiln vent hinges and linkage as needed.
 - f. Complete inspection of natural gas train and gas burner system.
 - g. Kiln shutdown for internal cleaning.

Maintain proper documentation of the tasks described above in the facility maintenance software system.

Proper Operating Practices

1. Operate the kiln with a target temperature range of 220°F to 280°F, depending on the dimensions of lumber being dried. Kiln temperature is the average of multiple continuously monitored dry bulb measurements. Kiln temperature exceeding 280°F will result in a kiln shutdown. Records of high temperature shutdown events are maintained in the system operating software. Should the unit shut down due to high temperature, these events will be submitted to ADEM's Air Division in the Semiannual Monitoring Report for that reporting period.
2. Lumber moisture content will be maintained at greater than 6% to prevent over drying of lumber. The moisture content of finished lumber will be automatically measured in the grader infeed system. Moisture content below 6% will be recorded in the applicable data collection system. Records of average moisture content per production run, which are below 6%, will be maintained in the system operating software. Production runs with average moisture content below 6% will be reported to ADEM's Air Division in the Semiannual Monitoring Report for that reporting period.