GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Jeng-Hon Su

FROM: Eddie Gomez

DATE: September 23, 2022

Facility Name:	Wilkes Lumber
AIRS No.:	317-00034
Location:	Washington, GA (Wilkes County)
Application #:	28526
Date of Application:	August 3, 2022

Background Information

Wilkes Lumber (hereinafter "facility") is a greenfield facility located at 371 Harris Road, Washington, Georgia 30673 (Wilkes County). Wilkes county is an attainment county for all criteria air pollutants. The facility produces lumber.

The proposed lumber mill will be constructed on the former site of the International Paper Company – Washington Lumber Mill, which seized operation several years ago and had all equipment removed from the site.

Operations at the facility will include log preparation/sawmill, a lumber drying kiln, as well as lumber planing. Cyclones will be present on site. Further details, including equipment involved are explained below.

Purpose of Application

On August 3, 2022 the facility submitted Application No. 28526 for the construction and operation of a lumber mill that includes only one direct-fired continuous kiln.

Equipment List

Table 1: Equipment

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
DB1	Debarker	2022	--	--
PM1	Planer Mill	2022	PMC1	Cyclone
S1	Silo	2022	SC1	Cyclone
CS1	Chipper/Chip Screens	2022	OCC1	Cyclone
HH1	Hammer Hog	2022	--	--
SM1	Sawmill	2022	--	--
CDK1	Direct Fired Kiln (with a 40 MMBtu/hr. burner)	2022	--	--
CT1	Chip Truck Loading	2022	--	--
BT1	Bark Truck Loading	2022	--	--
SDT1	Sawdust Truck Loading	2022	--	--
ST1	Shavings Truck Loading	2022	--	--
BT2	Bark Transfer	2022	--	--

Fuel Burning Sources

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
FP1	1.9	Emergency fire pump	2022	2022

Emissions Summary

According to Application No. 28526, the direct-fired continuous kiln (ID No. CDK1) is capable of drying 90 million board feet per year (MMbf/yr.). Using the NCASI emission factor, potential volatile organic compound (VOC) emissions from CDK1 are calculated as follows.

(4.0 lb. VOC/Mbf.) * (90,000 MMbf/yr.) * (1 ton/2000 lb.) = 180 tpy

Since CDK1 is capable of firing both natural gas and wood, the worst-case scenario between the two fuels is selected to calculate the potential emissions for other criteria pollutants.

Table 2: Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	0	19.7/12.9/7.3	19.7/12.9/7.3	0	19.7/12.9/7.3	19.7/12.9/7.3
NOx	0	19.3	19.3	0	19.3	19.3
SO_2	0	4.5	4.5	0	4.5	4.5
CO	0	33.3	33.3	0	33.3	33.3
VOC	0	180	180	0	180	180
Max. Individual HAP	0	7.2	7.2	0	7.2	7.2
Total HAP	0	15.3	15.3	0	15.3	15.3
Total GHG (if applicable)	0	36,800	36,800	0	36,800	36,800

According to the table above, the facility is a major source under Title V of the 1990 Clean Air Act Amendments (CAAA) because the VOC potential-to-emit (PTE) is greater than 100 tpy. Since the facility is a greenfield facility, the facility will be issued a SIP (E) permit for the authorization for construction and operation of the lumber mill. The facility must submit a Title V application within one (1) year of beginning operation.

Regulatory Applicability

Federal Rules:

40 CFR 52.21 – Prevention of Significant Deterioration of Air Quality

As mentioned above, the facility is in Wilkes County, which is an attainment area for all criteria pollutants. As shown in Table 2, PTE for nitrogen oxides (NO_x), carbon monoxide (CO), VOC, particulate matter (PM/PM10/PM2.5), and sulfur dioxide (SO_2) are each less than 250 tpy and total GHG is less than 100,000 tpy, respectively; therefore, the facility will be a minor source under the PSD regulation.

However, the permit will limit throughput from the direct fired kiln (ID No. CDK1) to 90 million board feet (MMbf). so that VOC emissions from it would remain below 180 tpy and not exceed the 250 tpy PSD threshold. The Division has included this annual throughput rate in Condition 2.1 as the PSD avoidance limit.

40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

New Source Performance Standards (NSPS) 40 Code of Federal Regulations (CFR) 60 Subpart IIII applies to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005, where the ICE were manufactured after April 1, 2006 are not fire pump engines or were manufactured as a National Fire Protection Association (NFPA) fire pump engine after July 1, 2006. The emergency fire pump engine (ID No. FP1) was manufactured as a fire pump engine before July 1, 2006. Therefore, the unit will not be subject to this rule.

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

The facility is not subject to 40 CFR 63 Subpart DDDD because the facility is, per Table 2 of this narrative, not a major source of Hazardous Air Pollutant (HAP) emissions.

40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The Stationary Reciprocating Internal Combustion Engines (RICE) Maximum Achievable Control Technology (MACT) applies to internal combustion engines operated at a facility that is either a major or area source of HAP emissions.

The fire pump engine (ID No. FP1) is considered an existing emergency stationary source under the RICE MACT (installed before June 12, 2006). The rule requires an oil change or oil analysis program to occur after 500 hours of operation of the fire pump engine or annually, whichever comes first. The engine must also be equipped with a non-resettable hour meter. Outside of emergency purposes, the engine is limited to 100 hours per year of operation for maintenance and testing purposes.

Georgia State Rules:

<u>Georgia Rules for Air Quality Control (GRAQC) 391-3-1-.02(2)(b) – Visible Emissions</u>

Because the proposed facility will result in air contaminants being emitted from exhaust stacks, equipment which emit pollutants through these stacks are subject to this rule, which limits the opacity of emissions to 40%. This requirement will be included in Condition 2.3. The processing of lumber is expected to generate mostly large particulate matter. Through the use of two cyclones (ID Nos. OCC1 and SC1), the new facility is expected to comply with the GA Rule (b) limit.

<u>GRAQC 391-3-1-.02(2)(e) – Particulate Emissions from Manufacturing Processes</u>

The Georgia Particulate Emissions Rule states that particulate matter from manufacturing processes in operation or under construction after July 2, 1968 is not allowed to emit PM from any of the equipment in quantities equal to or greater than:

i. $E = 4.1\ P^{0.67}$, for process input weight rate up to and including 30 tons per hour.
ii. $E = 55\ P^{0.11} - 40$, for process input weight rate in excess of 30 tons per hour.

Where: E = allowable weight of emissions of PM in pounds per hour, and
P = process weight rate in tons per hour.

The nature of operations of the facility are likely to generate PM emissions; however, compliance with the GA Rule (e) PM emission limits is expected through the use of the two cyclones.

GRAQC 391-3-1-.02(2)(g) – Sulfur Dioxide

The Georgia Sulfur Dioxide Rule states that all fuel burning sources operating with a heat input of less than 100 MMBtu/hr. shall not burn fuel which contains more than 2.5 percent sulfur by weight.

Because Condition 2.2 restricts the fuel types allowed in the direct fired kiln (ID No. CDK1) to natural gas and wood, and both fuels contain minimum amount of sulfur, the condition is expected to satisfy this rule. The fire-pump engine (ID No. FP1) is subject to this rule and is expected to comply because it fires exclusively on diesel, and diesel contains no more than 0.5% sulfur.

GRAQC 391-3-1-.03(6)(b)13 – Firefighting Equipment

GA Rule 391-3-1-.03(6)(b)13. exempts emergency fire pump engines from permitting. Although its emissions are included in the facility-wide PTE, but it is not included in the permit.

Permit Conditions

Condition 2.1 contains the PSD avoidance limit for the operation of the direct fired kiln (ID No. CDK1).

Condition 2.2 specifies the fuel types for the direct fired kiln (ID No. CDK1) to comply with the GA Rule (g) requirement.

Condition 2.3 restricts opacity to 40 percent per the GA Rule (b) visible emission standard.

Condition 2.4 subjects all manufacturing processes to the GA Rule (e) PM emission limits.

Condition 7.1 requires that the facility submit written notification to the Division within 15 days after its initial startup.

Conditions 7.2 and 7.3 require that the facility keep records of the monthly and 12-consecutive month total amount of dried lumber processed through the direct fired kiln (ID No. CDK1). The records will be used to demonstrate compliance with the PSD avoidance limit specified in Condition 2.1.

Condition 8.2 requires the facility to calculate and pay an annual Permit fee to the Division

Finally, Condition 8.3 requires that the facility submit a Title V application within 12 months after the initial startup of the continuous drying kiln (ID No. DK09).

Toxic Impact Assessment

The proposed lumber mill will emit nine toxic air pollutants (TAP), Acetaldehyde, Acrolein, Arsenic, hexavalent Chromium, Formaldehyde, Hydrogen Chloride (HCl), Methanol, Phenol, and Propionaldehyde. The facility wide emissions of these compounds are presented in the table below.

Table 3: Facility-wide HAP/TAP PTE and MER Comparison

Chemical Name	CAS Number	Emissions (lb./hr.)	Emissions (lb./yr.)	MER (lb./yr.)	Subject?
Acetaldehyde	75-07-0	0.46	4,050	1,110	Yes
Acrolein	107-02-8	0.062	540	4.87	Yes
Arsenic	7440-38-2	1.76E-05	0.155	0.0567	Yes
Chromium, hexavalent (particulate)	18540-29-9	1.40E-04	1.23	24.3	No
Formaldehyde	50-00-0	0.40	3,474	267	Yes
HCl	7647-01-0	0.76	6,658	4,870	Yes
Methanol	67-56-1	1.65	14,490	30,100	No
Phenol	108-95-2	0.11	927	2,200	No
Propionaldehyde	123-38-6	0.04	360	1,950	No

As demonstrated in the table above, the emissions of Acetaldehyde, Acrolein, Arsenic, Formaldehyde, and HCl are at levels which exceed the Minimum Emissions Rate (MER) thresholds. Therefore, modeling was conducted via Screen 3 to determine whether the maximum ground level concentrations (MGLC) of these five TAPs were above or below the 15-minute or long-term averaging period acceptable ambient concentrations (AAC). The results of this assessment are presented in the following table. For each of these five TAPs, the long-term averaging period is annual.

Table 4: Screen 3 Results

Chemical Name	Long Term MGLC ($\mu g/m^3$)	Long Term AAC ($\mu g/m^3$)	Is Long Term MGCL > Long Term ACC	15-min MGLC ($\mu g/m^3$)	15-min AAC ($\mu g/m^3$)	Is 15-min MGCL > 15-min ACC
Acetaldehyde	4.51	4.55	No	74.4	4500	No
Acrolein	**0.60**	0.35	**Yes**	9.92	23.0	No
Arsenic	0.000172	0.000233	No	0.00284	0.200	No
Formaldehyde	**3.87**	1.10	**Yes**	63.8	245	No
HCl	7.41	20.0	No	122	700	No

*The Stationary Source Permitting Program (SSPP) approved the applicant's case-by-case request to use a revised annual AAC of 0.35 $\mu g/m^3$ for acrolein.

Because the long term MGLCs for Acrolein and Formaldehyde exceeded their respective long-term ACCs, additional modeling was required. Once the Division specified that our procedures required the AERMOD software to conduct this modeling, the facility submitted their AERMOD results. The Division interpreted the results to indicate that the concentrations of Acrolein and Formaldehyde are below the acceptable ambient concentrations (AAC) in the table below.

Table 5: AERMOD Results

TAP	Averaging Period	AAC (µg/m^3)	Max Modeled Conc. (µg/m^3)	Receptor UTM Zone: 17	
				Easting (meter)	Northing (meter)
Acrolein	Annual	0.35*	0.09	336,804.40	3,731,174.10
Formaldehyde	Annual	1.10	0.57	336,804.40	3,731,174.10

*The Stationary Source Permitting Program (SSPP) approved the applicant's case-by-case request to use a revised annual AAC of 0.35 µg/m^3 for acrolein.

Summary & Recommendations

I recommend that Permit No. 2421-317-0034-E-01-0 be issued to the facility. A Public Advisory was issued on August 10, 2022 and comments were due by September 9, 2022. No comments were received. The Stationary Source Compliance Program (SSCP) will be responsible for inspections and complaints/investigations.