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ALL PERMIT REVIEW

Permit Issue Date: **PROPOSED**

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400125
Inspector's Name: Russell Morgan III
Date of Last Inspection: 09/13/2010
Compliance Code: 3 / Compliance - inspection

Facility Data			Permit Applicability (this application only)
Applicant (Facility's Name): West Fraser, Inc. - Armour Lumber Mill Facility Address: West Fraser, Inc. - Armour Lumber Mill 361 Federal Road Riegelwood, NC 28456 SIC: 2421 / Sawmills & Planing Mills General NAICS: 321113 / Sawmills Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			SIP: NSPS: Removed 40 CFR Part 60, Subpart Dc NESHAP: PSD: Revised to 1997 BACT limits PSD Avoidance: NC Toxics: 112(r): Other:
Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	Application Number: 2400125.10B Date Received: 10/28/2010 Application Type: Renewal Application Schedule: TV-Renewal Existing Permit Data Existing Permit Number: 02248/T23 Existing Permit Issue Date: 05/16/2011 Existing Permit Expiration Date: 07/31/2011
Peter Provencher Plant Manager (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Peter Provencher Plant Manager (910) 655-4106 361 Federal Road Riegelwood, NC 28456	Peter Provencher Plant Manager (910) 655-4106 361 Federal Road Riegelwood, NC 28456	
Review Engineer: Jenny Kelvington Review Engineer's Signature: _____ Date: _____		Comments / Recommendations: Issue 02248/T24 Permit Issue Date: PROPOSED Permit Expiration Date:	

I. Purpose of the Application

This permitting action is a renewal and modification of an existing Title V permit for West Fraser, Inc. - Armour Lumber Mill (West Fraser) received October 28, 2010. West Fraser's existing Title V permit (**02248T23**) was issued on May 16, 2011 and has an expiration date of July 31, 2011. However, because the renewal application was received more than nine months prior to the expiration date, their existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit remain in effect until that time. In the renewal application, West Fraser requests the deletion of two never constructed sources from their permit. These include No. 2 wood-fired boiler (**ID No. ES-BW-2**) and No. 5 steam heated lumber drying kiln (**ID No. ES-K1-5**).

II. Facility Description

The West Fraser Armour Plant is an existing lumber mill located in Riegelwood, Columbus County, North Carolina. The primary product manufactured at this facility is southern yellow pine dimensional lumber. Other products formed as a result of this operation include wood chips, sawdust, bark and shavings. Pine logs are trucked in, debarked, and cut into appropriate dimensions in the sawmill. The green lumber is dried and planed. Four steam-fired kilns are used to dry the lumber from approximately 50 to 15 percent moisture content. Steam is provided by a wood-fired boiler. The dried lumber is sorted by length, size, and grade and transported by truck or rail for delivery to the customer. Approximately, 180 million board feet of dimensional lumber are typically produced each year. An attached satellite photograph shows the layout of the site operations.

and PSD History

Date	Description
5/16/2011	NC DAQ issued Permit T23 for the addition of the Case-by-Case Boiler MACT requirements.
2/11/2011	NC DAQ made an applicability determination that no permit is required for the rebuilding of the Planer Mill as it does not result in any increase in emissions or trigger any new air quality emission standards or permitting requirements. The rebuild includes the replacement of the package infeed, the stick collection system, the grading and trimming systems, the tray sorter and stacker systems, and the planer hog.
8/06/2007	NC DAQ issued Permit T22 for the removal of the Boiler MACT requirements, the revision of the maximum heat capacity for Boiler ES-BW-1 from 93 to 110 million Btu per hour, and the correction of the multicyclone excursion values specified in the CAM condition.
7/23/2007	NC DAQ issued Permit T21 for the revision of the Boiler MACT manganese limit to a HBCA limit.
2/12/2007	NC DAQ issued Permit T20 for the permit ownership change from International Paper to West Fraser, Inc. ó Armour Lumber Mill, effective April 1, 2007.
8/31/2006	NC DAQ renewed the Air Quality Permit as Revision T19.
6/14/2006	<p>NC DAQ issued an Air Quality Permit (PSD Modification) as Revision T18 enabling the increase in production capacity from 205 to 292 million board feet of lumber per year. The following item were permitted to accomplish the expansion.</p> <ul style="list-style-type: none"> a) modification of the existing two line optimized bucking, double length infeed, edger infeed and trimmer, sorter stacker, log handling and sawmill operations; b) modification of an existing Kiln #4 from low temperature to high temperature; and c) addition of an edger and trimmer/sorter/stacker, a fifth kiln, a planer mill system, and a 60 mmBtu per hour boiler.
3/17/1997	<p>NC DAQ issued an Air Quality Permit for the PSD modification to add the fourth lumber drying kiln (ES-K1-4) as a low temperature kiln with the following PSD limits:</p> <ul style="list-style-type: none"> • 5.73 pounds VOC per thousand board feet of lumber dried • 94.26 tons of VOC emissions per year • 32.9 million board feet of lumber dried per year

IV. Emissions Summary

Pollutant	2010 Actual Emissions (tpy)	Potential Emissions (tpy)
TSP	303	703
PM ₁₀	176	214
PM _{2.5}	161	61.8
SO ₂	11.1	11.5
NO _x	156	102
CO	411	423
VOC	341	520 ¹
Methanol	21.4	24.9
Total HAPs	33.4	53.6

¹ Potential VOCs are based upon NC DAQ emission factor of 4.09 lbs/1000 board feet of lumber dried in a steam heated kiln.

Page(s)	Section	Description of Change(s)
N/A	Insignificant Activities List	Moved the log sawing operation (IES-Fug-L1-2) to the list of insignificant activities; and Added one existing diesel-fired fire water pump (IES-FP-1), one existing emergency generator (IES-EG-1), and one 1,000 gallon above ground used oil storage tank (IES-UOST-1) to the list of insignificant activities.
1	Permit Cover Page	Amended permit revision numbers and issuance/effective dates.
3	List of Permitted Sources	Removed wood-fired boiler ES-BW-2, lumber drying kiln ES-K1-5, and fugitive log sawing operation (ID No. ES-Fug-L1-2).
4	2.1.A.1	Added particulate stack test requirement for the wood-fired boiler; and Removed the annual internal inspection of the structural integrity of the multicyclone and the monitoring of the differential pressure across the multicyclone.
5 - 6	2.1.A.4	Added a condition that CAM applies until the initial compliance date of May 16, 2014 for the Case-By-Case MACT specified in Condition 2.1.A.5.a; and Removed the pressure differential across the multicyclone as an indicator for CAM.
9	2.1.B.2.c	Increased the VE monitoring frequency from every six months to every month.
10 - 11	2.1.C	Combined the four lumber kilns under one section; Reverted back to the 1997 established BACT limits for the low-temperature kiln (ID No. ES-K1-4);and Added the 2D .1100 requirements as 2.1.C.2 of this section.
13-21	3.0	Updated General Conditions to Version 3.5.

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. On its latest inspection, performed on September 13, 2010 by Mr. Russell Morgan of the Wilmington Regional Office, the facility was in compliance with all applicable requirements.

VII. Table of Permitted Sources at the Facility

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-BW-1 Case-By-Case MACT	wood-fired boiler (104.336 million Btu per hour maximum heat input)	CD-3 CD-2	multicyclone (72 tubes, each nine inches in diameter) venting to venturi wet scrubber (350 gallons per minute minimum liquid injection rate, based on a 3-hour average)
<i>ES-BW-2 PSD, NSPS Dc, To be deleted from permit</i>	<i>wood-fired boiler (60 million Btu per hour maximum heat input)</i>	<i>CD-5 CD-4</i>	<i>multicyclone (42 tubes, each nine inches in diameter) venting to electrostatic precipitator</i>
ES-WW1	woodwaste collection system	CD-A1-1	simple cyclone (192 inches in diameter)
ES-WW2	woodwaste collection system	CD-C1-1	simple cyclone (96 inches in diameter)

Source	Control Device ID No.	Control Device Description
ES-Fug-L1-1	Log debarking operation	N/A
ES-Fug-L1-2	Log sawing operation	N/A
ES-K1-1, ES-K1-2, and ES-K1-3 MACT DDDD	Three steam heated lumber drying kilns	N/A
ES-K1-4 and ES-K1-5 PSD, MACT DDDD <i>ES-K1-5 to be deleted from permit</i>	Two steam heated, high temperature lumber drying kilns	N/A

VIII. Emission Source-by-Source Evaluation

A. One wood-fired boiler without fly ash re-injection (104.336 mmBtu per hour heat input, ES-BW-1, MACT) and associated venturi wet scrubber (350 gallons per minute minimum liquid injection rate, CD-2) and one multicyclone (72 tubes, each nine inches in diameter, CD-3)

The unit is a Babcock & Wilcox Model No. H438 fixed grate wood-fired boiler constructed in 1973 by McBurney, Inc. and placed into operation on May 6, 1974. The boiler is designed to operate at a maximum capacity of **104.336 million Btu per hour** while firing bark with a HHV of 4515 Btu/lb and is rated at 79,000 pph steam. The boiler contains an economizer that increases the thermal efficiency by 10%.

According to the most recent inspection report, at each cold startup of the boiler, a few gallons of diesel fuel are sprayed on the wood piled in the fire zone of the boiler to facilitate the ignition of the wood. Ash is manually raked from the boiler approximately every eight hours and is currently being mixed with sawdust/wood shavings and sold as chicken house bedding. Wet scrubber ash is disposed of off-site.

A single stage multiclone mechanical dust collector, integral to the boiler design, is used to remove larger size particulates consisting primarily of inert and uncombusted materials. An AirPol, Inc. venturi scrubber with water as the scrubbing medium is then used to remove smaller particulate matter. As flue gas approaches the scrubber throat, its velocity increases causing dust particles to be removed by impinging on the slower moving water droplets.

During stack testing performed on 2/13/1996 by Trigon and on 9/19/2000 by Davis & Floyd, the boiler operated at **116 million BTU per hour** and at **104 to 116 million BTU per hour**, respectively in compliance with all applicable emission limits.

Regulatory Requirements applicable to boiler ES-BW-1:

- É 15A NCAC 2D .0504
- É 15A NCAC 2D .0516
- É 15A NCAC 2D .0521
- É 15A NCAC 2D .0614
- É 15A NCAC 2D .1111 (Case-By-Case MACT)
- É 15A NCAC 2D .1806 ó Facility Wide Condition

The existing permit also indicates the wood-fired boiler is subject to acetaldehyde and formaldehyde emission limits under 15A NCAC 2D .1100. A records review shows that this is in error. At the time of the last permit renewal in 2006, Mr. Booker Pullen, the permit engineer, determined that as an unadulterated wood-fired boiler, the emission source is not subject to N.C. air toxics regulations. Mr. Pullen corrected the 2D .1100 limits in Section 2.2 of the permit but inadvertently left the reference in Section 2.1 of the permit. The permit has been corrected accordingly.

Direct Heat Exchangers
combustion based on the following equation:

$$E = 1.1698 * Q^{-0.2230} = 1.1698 (104.336)^{-0.2230} = 0.41 \text{ lbs/million Btu}$$

Where: E = Allowable particulate emission rate (pounds per million Btu)
Q = Maximum facility wide heat input rate from wood combustion (million Btu/hour)

To remain below the permit limit, particulate matter emissions from boiler (**ID No. ES-BW-1**) are controlled by a multicyclone flyash collector (**ID No. CD-3**) in series with a wet venturi scrubber² (**ID No. CD-2**). West Fraser estimates uncontrolled and controlled PM emissions at 0.60 lbs/million Btu and 0.07 lbs/million Btu, respectively, based on the design specification for the AirPol, Inc. scrubber when it was replaced in June, 2005. This is consistent with the NC DAQ Woodwaste Combustion Spreadsheet Revision J dated July 15, 2011³ which uses a factor of 0.577 lbs/million Btu for uncontrolled PM emissions and 0.08 lbs/million Btu for PM emissions controlled with a wet scrubber. Compliance is clearly indicated when emissions are controlled by the venturi scrubber.

The existing permit requires the differential pressure across the multicyclone to be maintained between 3.0 and 8.0 inches of water along with inspection and maintenance for both the multicyclone and scrubber to ensure compliance. West Fraser has requested that the requirement to monitor the multicyclone differential pressure be removed from the permit because it is more a measure of the change in boiler gas flow resulting from fluctuations in steam demands than the multicyclone's performance. Because the DAQ spreadsheet and wet scrubber manufacturer's emission factors support compliance with the PM limit when the boiler emissions are controlled only with the wet scrubber, the multicyclone differential pressure monitoring requirement has been removed from the permit along with the requirement to perform an annual internal inspection of the multicyclone's structural integrity. The permit will require the follow inspection and maintenance to ensure compliance with the PM limit:

- A monthly external visual inspection of the system ductwork, multicyclone, scrubber, and material collection unit for leaks;
- Inspection of spray nozzles to detect clogging or corrosion damage of nozzles and perform maintenance and repair when necessary to assure proper operation of the scrubber;
- Inspection, cleaning, and calibration of all associated instrumentation; and
- The performance of any maintenance and repair when necessary to assure proper operation of the multicyclone and scrubber.

NC DAQ guidance recommends particulate emissions testing for wood-fired boilers which have not undergone testing in the last five years. Because compliance with the particulate limit has been demonstrated during previous stack testing and is supported by emission factors, the testing completion date will be delayed to coincide with the initial testing deadline for the Case-By-Case Boiler MACT should West Fraser opt to demonstrate compliance with the MACT through stack testing rather than fuel analysis.

2D .0516: Sulfur Dioxide from Combustion Sources

Sulfur dioxide emissions are limited to 2.3 pounds per million Btu heat input. No monitoring, recordkeeping, or reporting is required because wood is inherently low in SO₂ emissions. Compliance is indicated.

² The venturi scrubber utilizes the kinetic energy of the air stream to accomplish dust collection through the principle of impaction. The contaminated air stream is accelerated through the throat section and water is introduced at 450 gallons per minute ahead of the throat and atomized by the high air velocity. Dust particles collide and are captured in the small droplets of water. The water-laden gas stream enters the cyclonic separator where droplets are removed by centrifugal force. The scrubber is designed to operate with 450 gallons per minute liquid injection rate.

³ AP-42 filterable PM emission factors for uncontrolled, multicyclone controlled, and wet scrubber controlled wood (bark) combustion are 0.56 lbs/million Btu, 0.54 lbs/million Btu, and 0.07 lbs/million Btu, respectively.

opacity when averaged over a six-minute period except not more than in any 24-hour period. West Fraser is required to daily monitor visible emissions in comparison to normal and either take appropriate action to correct the above normal emissions or demonstrate in accordance with 15A NCAC 2D .2610 (Method 9) the percent opacity is below 20% opacity.

The most recent inspection report stated "Established normal V.E. for the boiler stack is 18% opacity. Daily observations are being performed and recorded. Appropriate action is being taken as needed for observations that are not judged to be normal." Continued compliance is expected.

2D .0614: Compliance Assurance Monitoring (CAM)

The existing permit requires CAM for two indicator parameters for the wood-fired boiler, one associated with the multicyclone and the other with the scrubber emissions. Current guidance only requires that CAM be applied to the unit directly emitting to the atmosphere when control devices are installed in series. Therefore, the CAM requirements will be limited to the scrubber whose indicator is daily visible emissions observations. An excursion is defined as a deviation from "normal" opacity. "Normal" opacity has already been determined via 30 days of daily observations following issuance of the initial Title V air permit. Should an apparent excursion occur, the Permittee may demonstrate compliance with opacity limits via EPA Reference Method 9 (40 CFR 60, Appendix A). West Fraser has consistently complied with this requirement and is expected to continue to maintain visible emissions below the allowable opacity limitation.

2D .1109 – CAA § 112(j); Case-by-Case MACT for Boilers & Process Heaters

On July 20, 2007, the D.C. Circuit Court vacated the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, which had been promulgated under 40 CFR 63, Subpart DDDDD. The North Carolina Attorney General's office has determined that the NESHAP vacatur equates to the failure of the U.S. EPA to promulgate a standard as required under Section 112(d) of the Clean Air Act (CAA). As a result, the site-specific Maximum Achievable Control Technology (MACT) standards required under CAA § 112(j), commonly referred to as the MACT "hammer" provisions, have been triggered. North Carolina regulations implementing the MACT hammer are found at 15A NCAC 2D .1109. NC DAQ has developed this guidance to provide standards and compliance procedures that it has determined meet the requirements of § 112(j) (<http://daq.state.nc.us/permits/112j/>). On September 14, 2009, the NC DAQ received a Part 2 MACT "Hammer" application from this facility asking that the NC DAQ establish 112(j) emissions limitations in accordance with NC DAQ's recommendations. With permit revision T23, issued May 16, 2011, NC DAQ added the MACT requirement to the permit for the existing wood-fired boiler. The condition establishes the following limits for ES-BW-1

- i. Total Selected Metals (TSM)⁴: 0.0003 lbs/mmBtu.
- ii. Mercury (Hg): 5e-06 lbs/mmBtu
- iii. Hydrogen Chloride-equivalent (HCl): 188.5 lbs/hr. HCl-equivalent is defined by the following equation:

$$E = E_{HCl} + E_{Cl_2} * (Rf_{HCl} / Rf_{Cl_2})$$

- Where:
- E = HCl-equivalent emission rate (in lbs/hr)
 - E_{HCl} = HCl emission rate (in lbs/hr);
 - E_{Cl₂} = Cl₂ emission rate (in lbs/hr);
 - Rf_{HCl} = Reference concentration for HCl (20 µg/m³); and
 - Rf_{Cl₂} = Reference concentration for Cl₂ (0.20 µg/m³).

- iv. Carbon Monoxide (CO): 834 ppmvd, corrected to 7% oxygen

Following the initial compliance date established as May 16, 2014, West Fraser must demonstrate initial and ongoing compliance testing, work practices, monitoring, recordkeeping and reporting. Compliance is expected.

⁴ TSM is defined as the following: arsenic, beryllium, cadmium, chromium, lead, nickel, selenium. [Manganese shall not be included in the determination of TSM.]

ection (60 mmBtu per hour heat input, ES-BW-2) and associated

As requested in the permit application, this emission source has been removed from the permit.

C. Woodworking operations including two woodwaste collection systems (ID Nos. ES-WW1 and ES-WW2) and associated cyclones (ID Nos. CD-A1-1 and CD-C1-1), fugitive debarking operation (ID No. ES-Fug-L1-1), fugitive log sawing operation (ID No. ES-Fug-L1-2), and two planer mills (ID No. ES-Plane-1)

West Fraser operates two separate planing lines within their planer mill, one line which produces only 2x4s and 2x6s and a second line which produces various boards ranging from 2x4s up to 2x12s. A wood residue collection system (ES-WW1) consisting of a simple (192 inch diameter) cyclone collects approximately 90% of the total shavings generated from the planing and wood hog operations. The collected shavings are sold. The remaining planer and hog shavings are collected by a second wood residue collection system (ES-WW2) consisting of a simple (96 inch diameter) cyclone and used as fuel in the wood fired boiler. Potential particulate emissions from the two wood residue collection systems are 10.5 tpy for ES-WW-1 and 2.17 tpy for ES-WW-2. Because emissions from the planing operations are vented through the wood residue collection systems and not directly to the atmosphere, the two planer mills (ID No. ES-Plane-1) has been removed from the description of the woodworking operations.

The log debarking operation was placed in service in 2005 and consists of the north and south debarkers. This source has to the potential to emit up to 10.4 tpy of fugitive particulate emissions.

Potential particulate emissions from the fugitive log sawing operation are less than 5 tpy (2.9 tpy) and thus this operation is considered an insignificant activity and has been removed from the listed of permitted sources.

The permit has been revised to show the woodworking operations as follows: ***Woodworking operations including two wood material collection systems (ID Nos. ES-WW1 and ES-WW2) and associated cyclones (ID Nos. CD-A1-1 and CD-C1-1) and fugitive debarking operation (ID No. ES-Fug-L1-1)***

Regulatory Requirements applicable to the woodworking operations include:

- É 15A NCAC 2D .0512
- É 15A NCAC 2D .0521
- É 15A NCAC 2D .1806 ó Facility Wide Condition

2D .0512: Particulates from Miscellaneous Wood Products Finishing Plants

This rule requires duct work and properly designed collectors for particulate matter resulting from the working, sanding, or finishing of wood and discharged from a stack, vent, or building into the atmosphere. The two wood residue collection systems (ES-WW1 and ES-WW2) are adequately designed and maintained for this purpose. The permit requires inspection and maintenance of the two cyclones as recommended by the manufacturer and as a minimum include monthly external inspections of the ductwork and cyclones, noting structural integrity.

2D .0521: Control of Visible Emissions

Visible emissions are limited to 20 percent opacity when averaged over a six-minute period except not more than once in any hour and not more than four times in any 24-hour period. West Fraser is required to observe visible emissions in comparison to normal every six months. If visible emissions are observed above normal, the facility must either take appropriate action to correct the above normal emissions or demonstrate in accordance with 15A NCAC 2D .2610 (Method 9), the percent opacity is below 20% opacity.

The most recent inspection report stated "Established normal V.E. for the planer cyclone [ES-WW1] is 14% opacity; 1% opacity for the fuel chain cyclone [ES-WW2] and the north and south debarkers; and 17 % opacity for the N. & S. buck saw and the N. and S. crook saw. Semiannual observations are being performed and recorded. These are being performed in January and July for the cyclones and in March and September for the remaining sources. Appropriate action is being taken as needed for observations that are not judged to be normal." Continued compliance is expected.

ed as high as 14% opacity, the monitoring frequency will be NC DAQ typically only allows semiannual VE monitoring when

normal is 0% opacity.

2D .0614: Compliance Assurance Monitoring (CAM)

The cyclones on these woodworking operations are not subject to CAM because they are used as equipment transfer and collection units that capture usable or saleable product such as wood chips and shavings, and not for the purpose of complying with an emission standard or limitation.

D. Four steam heated lumber drying kilns (ES-K1-1, ES-K1-2, ES-K1-3, and ES-K1-4)

As requested in the permit application, lumber drying kiln (ID No. ES-K1-5) has been removed from the permit. To simplify the permit, kiln ES-K1-4 has been combined with the other three kilns under Section 2.1.C.

Kilns 1, 2, and 3 are high-temperature heated batch kilns while Kiln 4 is a low-temperature batch kiln which operates on flash steam. Each kiln is heated with steam provided by the wood-fired boiler. The combined lumber drying capacity of the four kilns is 250 million board feet per year. During drying, the moisture content of the lumber is reduced from approximately 50% to 15%. The capacity and drying times for each kiln in terms of thousand board feet (MBF) is listed below:

Kiln ID No.	MBF/Charge	MBF/hour	MBF/year	Charge Time
ES-K1-1	145	8.11	71,060	17.88 hours
ES-K1-2	145	8.11	71,060	17.88 hours
ES-K1-3	153	8.56	74,980	17.88 hours
ES-K1-4	145	3.76	32,900	38.61 hours

Regulatory Requirements applicable to the lumber drying kilns include:

- É 15A NCAC 2D .0530 (Kiln ES-K1-4 only)
- É 15A NCAC 2D .1100
- É 15A NCAC 2D .1111, 40 CFR Part 63, Subpart DDDD
- É 15A NCAC 2D .18066 Facility Wide Condition
- É 15A NCAC 2Q .07116 Facility Wide Condition

2D .0530: Prevention of Significant Deterioration (Kiln ES-K1-4 only)

On March 11, 1997, kiln #4 was added to the permit through a PSD modification as a low temperature kiln subject to the following limits:

- 5.73 pounds of VOC emissions per thousand board feet of lumber dried,
- 94.26 tons of VOC emissions per year , and
- 32.9 million board-feet per year drying capacity.

On June 14, 2006, a second PSD modification to the permit added wood-fired boiler #2 (ES-BW-2) and kiln #5 (ES-K1-5) and allowed kiln #4 to be modified from a low temperature to a high temperature kiln. The PSD limits for kiln #4 were revised to the following:

- 3.97 pounds of VOC emissions per thousand board feet of lumber dried (short-term VOC testing limit),
- 3.15 pounds of VOC emissions per thousand board feet of lumber dried (long-term VOC testing limit), and
- 158 tons of VOC emissions per year from Kilns 4 and 5 combined.

The permit renewal application received October 28, 2010 states that boiler #2 and kiln #5 have never been constructed and requests their deletion from the permit. The application also states Kiln #4 is a low temperature kiln. On August 11, 2011, Mr. Peter Provencher, Plant Manager, sent a letter to the NC DAQ stating that the 2006 PSD modification, including the construction of boiler #2 (ES-BW-2) and kiln #5 (ES-K1-5) and the conversion of

ature kiln, has never occurred. Since the 2006 PSD modification issued in 1997 for this kiln apply instead of the PSD limits currently in the permit will be revised as follows:

1. 15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

- a. The Permittee shall comply with the PSD, Final Determination by the Division of Air Quality dated March 11, 1997. Pursuant to 15A NCAC 2D .0530 "Prevention of Significant Deterioration" and the PSD, Final Determination, the Permittee shall limit the amount of lumber processed through drying kiln **(ID No. ES-K1-4) to 32.9 million board feet per year.**
- b. Pursuant to 15A NCAC 2D .0530 "Prevention of Significant Deterioration" {40 CFR 51.166(j) Best Available Control Technology Review (BACT)} and the PSD, Final Determination, the Permittee shall comply with the following BACT limits for lumber kiln **(ID No. ES-K1-4)**:
 - i. **5.73 pounds of volatile organic compound (VOC) emissions per thousand board feet of lumber**
 - ii. **94.26 tons of volatile organic compound (VOC) emissions per consecutive 12-month period.**

Testing [15A NCAC 2Q .0508(f)]

- c. If emissions testing is required, the Permittee shall perform such testing in accordance with General Condition JJ found in Section 3. If the average of the results of this test are above the limit given in Section 2.1. C. 1. b., above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Monitoring/Recordkeeping [15A NCAC 2Q .0508(f)]

- d. Calculations of VOC emissions per month shall be made at the end of each month. VOC emissions shall be determined by multiplying the total amount of lumber dried in the kiln **(ID No. ES-K1-4)** each month by an emission factor of 4.09 pounds of VOC emissions per thousand board feet of lumber dried. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the VOC emissions exceed the limit given in Section 2.1. D. 1. a. above.
- e. The amount of lumber dried in the kiln **(ID No. ES-K1-4)**, the calculations, and the amount of VOC emissions from the kiln **(ID Nos. ES-K1-4)** shall be recorded monthly in a logbook (written or electronic format). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the amounts of lumber dried and VOCs emitted are not monitored and recorded.

Reporting [15A NCAC 2Q .0508(f)]

- f. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period and on or before July 30 of each calendar year for the preceding six-month period. The report shall contain the following:

2D .1100: Control of Toxic Air Pollutants

Pursuant to 15A NCAC 2D .1100 and in accordance with the previously approved application for an air toxic compliance demonstration, the existing permit limits toxics from the five limber drying kilns as follows:

Emission Source	Toxic Air Pollutant	Emission Limit	% of AAL as Modeled
Emission from the five lumber drying kilns (ES-K1-1 through ES-K1-5)	Acrolein	0.50 pounds per hour	55%
	Formaldehyde	1.36 pounds per hour	93%
	Phenol	0.963 lbs per hour	9%

Application No. 2400125.03A (issued as Permit revision No. T18) included a facility wide toxics demonstration for all TAPs with facility-wide emissions in excess of the levels in 2Q .0711. Toxic emissions from the permitted kilns, not including kiln ES-K1-5, were calculated at their maximum capacity of 250,000, 000 board feet per year total using the current NC DAQ spreadsheets as summarized below. The maximum emissions are less than the permit limit for each regulated toxics and thus compliance is clearly indicated.

ATOR REVISION C JULY 2007 - OUTPUT SCREEN⁵

AIR POLLUTANT EMITTED	CAS Num.	lb/hr	lb/yr	Comments
Acetaldehyde	75070	2.217	13000	Below TPER of 6.8 lb/hr
Acrolein	107028	0.300	1875	60% of allowable rate
Formaldehyde	50000	0.823	4575	61% of allowable rate
Phenol	108952	0.245	2500	49% of allowable rate

2D .111: 40 CFR Part 63, Subpart DDDD

The compliance date for the 40 CFR Part 63, Subpart DDDD, (MACT for existing kilns) is October 1, 2008. West Fraser has satisfied with the initial notification requirements for existing lumber drying kilns. Compliance is indicated.

E. All Emission Sources

1. **2D .1806:** Control and Prohibition of Odorous Emissions

The Permittee shall not cause, allow, or permit the emission sources to be operated without employing suitable measures for the control of odorous emissions.

2. **2Q .0705:** Exiting Facilities and SIC Calls for Toxic Air Pollutant Emissions Limitation Requirement

As of **June 14, 2006**, West Fraser has demonstrated on a facility-wide basis (excluding those sources exempt under 15A NCAC 2Q .0702 "Exemptions" which includes the wood-fired boiler ES-SW-1) that each of the toxic air pollutants (TAPs) emitted from all sources (the four drying kilns) at the facility are either below its respective toxic permit emission rates (TPER) listed in 15A NCAC 2Q .0711 - "Emission Rates Requiring a Permit" or the TAPs are in compliance with 15A NCAC 2D .1100 "Control of Toxic Air Pollutants." Records of the amount of board-feet of lumber dried in each kiln are sufficient to demonstrate that actual TAPs are below their respective TPER. At the maximum lumber production capacity, acetaldehyde and methyl ethyl ketone are emitted from all non-exempt sources at rates below their respective TPER. Compliance is indicated.

IX. Other Considerations:

- A. A complete permit application, containing the appropriate number of copies, the Reduction and Recycling form, and the signature of the authorized official, was received on October 28, 2010.
- B. Section 112(r): This facility **is not subject** to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule.
- C. PSD: This facility is currently a major source for PSD with one lumber kiln subject to BACT limits.

X. Facility Comments and DAQ Response

- 1. Permit Condition 2.1.A.1 ó The permit review indicated the testing to satisfy 2D .0504 for PM would be delayed to match testing required for the Case-by-Case MACT. As the Case-by-Case MACT permit condition reads, the facility has the option to perform a fuel analysis rather than conduct stack testing. Please verify PM stack testing is required to meet 2D .0504 and that a fuel analysis can be used for the Case-by-Case MACT.

Fuel analysis may be performed in lieu of stack testing. The testing date coincides with the MACT in the event West Fraser opts for a stack test.

- 2. Permit Condition 2.1.C Table ó The only limit/requirement for HAPs under the MACT is initial notification. Would it be appropriate to list the limit/standard as Initial Notification Only? This will leave no room for confusion as to what the requirements are for the Kilns under the MACT.

⁵ Emissions are based upon a maximum actual drying rate of 250,000,000 board-feet per year and 588,000 board-feet per hour.

ed and the table of applicable requirements shows the

Regulated Pollutant	Limits/Standards	Applicable Regulation
Hazardous air pollutants	<p>Plywood and Composite Wood Products Manufacturing MACT</p> <p>No applicable requirements other than initial notification.</p>	15A NCAC 2D .1111 MACT 40 CFR Part 63, Subpart DDDD

3. Permit Condition 2.1.C Table - There are no emission factors for MEK from the Kilns and acetaldehyde PTE is less than 25% of the TPER for the kilns. Should these two pollutants be removed from the table?

MEK has been removed and acetaldehyde remains based upon the current NC DAQ emissions calculator showing no MEK emissions and acetaldehyde being emitted below the TPER from steam heated kilns.

4. Permit Condition 2.1.C.1 ó Would you add in the title of the condition that this is applicable to ES-K1-4 only, so as not to cause any confusion that the condition applies to the other 3 kilns listed in permit condition C? Permit Condition 2.1.C.1.d ó The reference of permit condition 2.1.D.1.a should be changed to permit condition 2.1.C.1.b.ii. Permit Condition 2.1.C ó It is a bit confusing having the BACT limit from 1997 of 5.73 lb/hr VOC and the requirement under 2.1.C.1.d to calculate emissions for Kiln 4 using an emission factor of 4.09 lb/VOC. Would you clear it up by adding a footnote why there is the difference in the two emission rates or in another manner that you think will clear up the confusion?

These requested changes have been made to the permit.

XI. Public Notice

A thirty-day public notice **is required** for this renewal application. The thirty day public notice period for this facility will run from August X, 2011 through **September X, 2011**.

The EPA 45 day comment period is scheduled from **August X, 2011** through **September X, 2011**.

XII. Recommendations:

A copy of this review, the draft permit, and other pertinent documents were sent via email to Mr. Russell Morgan III of the Wilmington Regional Office. Mr. Morgan concurs with the issuance of this permit.

This renewal for West Fraser Inc. ó Armour Lumber Mill, located in Riegelwood, Columbus County, North Carolina, has been reviewed by the DAQ to determine compliance with all procedures and requirements. The DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements.



Planer Mill

Log Runs