

Lane Regional Air Protection Agency  
 Standard Air Contaminant Discharge Permit

**REVIEW REPORT**

**Emerald Forest Products, Inc. – Plant #1**

118 Highway 99 North  
 Eugene, Oregon 97402

**Permit No. 202528**

SIC	2436 – Veneer Drying & Plywood Manufacturing 4961 – Fuel Burning Equipment
NAICS	321212

Source Categories (LRAPA Title 37, Table 1)	Part B: 57 Plywood Mfg.&/or Veneer Drying Part C: 6 Sources having the potential to emit more than 10 tons or more per year of a single HAP Part C: 7 Sources having the potential to emit more than 25 tons or more per year of a single HAP
Public Notice Category	II – LRAPA 37-0066(4)(a)(A)

**Compliance and Emissions Monitoring Requirements:**

Unassigned emissions	X
Emission credits	
Special Conditions	
Compliance schedule	

Source test [date(s)]	
COMS	NA
CEMS	
Ambient monitoring	

**Reporting Requirements:**

Annual report (due date)	Feb. 15 <sup>th</sup>
NSPS Report (due date)	NA

Excess emissions report	
Other reports	

**Air Programs:**

NSPS (list subparts)	A, Dc
NESHAP (list subparts)	A, JJJJJJ (6J)
CAM	
Greenhouse Gases (GHG)	X
Regional Haze (RH)	
Synthetic Minor (SM)	X
Title V	
ACDP (SIP)	
New Source Review (NSR)	
Prevention of Significant Deterioration (PSD)	
Acid Rain	
Clean Air Mercury Rule (CAMR)	
TACT	

<b>Emissions Detail Sheets:</b>	<b>Pages 12-16</b>
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PSEL/PTE Emissions	Page 13
HAP Emissions	Page 14
Baseline Period Emissions	Page 15
PM, PM <sub>10</sub> PM <sub>2.5</sub> PSEL Acct.	Page 16



which is then loaded onto trucks and shipped off site. The facility uses two (2) Burley scrubbers to control PM emissions from the gas-heated and steam-heated veneer dryers. In 2018, the amount of veneer dried in EU-NGVDRY#1 was approximately 49,681 MSF-3/8" basis and 27,348 MSF-3/8" basis in EU-STVDRY#2, and the amount of plywood produced was approximately 193,981 MSF-3/8" basis. The maximum design rate for the plywood presses is 40,000 MSF-3/8" basis per hour and 350,400 MSF-3/8" basis per year (3/8" basis).

5. The facility's potential to emit (PTE) was determined during the 2004 permit renewal process. EFP#1 estimated emissions using updated emissions factors for veneer drying and plywood presses from DEQ and NCASI to calculate the facility's PTE. The PTE for Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) exceeded the major source thresholds of 10 tons per year (tpy) for a single HAP (Methanol) and 25 tons per year for combined HAPs and 100 tons per year for VOC. However, through the facility's recordkeeping and annual reporting, EFP#1 demonstrated that actual HAP and VOC emissions had not exceeded Title V thresholds. Based on EFP#1's 12-month rolling emission calculations and annual reporting, LRAPA made the determination that EFP#1 was not a major source of HAPs or VOC's and therefore did not require a Title V permit. The facility requested PSEL limits for HAPs (9 tpy for individual HAPs and 24 tpy for combined HAPs) and VOC and CO, establishing the source as an area source for HAPs and a Synthetic Minor for regulated pollutants (<100 tpy).
6. As part of this permit renewal, the facility's potential to emit (PTE) was recalculated based on updated emission factors for the veneer dryers, plywood presses and the boiler and the permitting of the boiler NESHAP 6J exempt NG Boiler. VOC and HAP emissions estimates from miscellaneous plywood activities (hog trim and saws) were also added to the PSEL calculations. The updated emission factors (except those derived from facility source tests described below) are based DEQ's Wood Products AQGP-010 factors (revised 10/2017) for the veneer dryers (AQGP-010, Section 13.5a&b) and plywood presses (AQGP-010, Section 13.6). Facility source test (2003) factors for VOCs, Formaldehyde and Methanol emissions were used for the natural gas-fired dryer and have not changed since the last permit renewal. Also, facility source test (2006) factors for Formaldehyde, Methanol and Phenol emissions from the plywood presses were used as well as an NCASI emission factor for VOCs. The PM<sub>10</sub> emission factor for distillate oil for the boiler (AQGP-010, Section 13.1) was updated and VOC, Acetaldehyde, Formaldehyde, and Methanol emission factors for Miscellaneous Plywood Activities (AQGP-010, Section 3.7) were also added. These updated emission factors were used to determine the facility's 2018 emissions based on actual 2018 production data and compared to maximum production emission rates to demonstrate that EFP#1 does not exceed major source HAP thresholds (10 TPY Single HAP, 25 TPY Combined HAP) and VOC (≥100 tpy) Title V threshold.

#### Compliance

7. A partial Informational Inspection of the facility on November 30, 2018 indicated the facility was in compliance with monitoring and recordkeeping permit requirements. (PCADs Report #2505)
8. A Comprehensive Compliance Status Inspection of the facility on August 30, 2016 determined the facility was in compliance with permit conditions. (PCADs Report #2194)
9. A complaint was received by LRAPA on May 25, 2016 about a brown plume from the facility. (PCADs Report #2124) Complaint investigation by an LRAPA inspector determined that the plume resulted from a routine bag changeout on the northern baghouse. The facility plant manager was advised of the permit excess emission notification requirement and no further action was taken. No other complaints were received about the facility during the previous permit term.
10. A partial Informational Inspection of the facility on October 30, 2014 indicated the facility was in compliance with O&M recordkeeping and rolling 12-month emissions demonstration permit requirements. (PCADs Report #1980)

11. A Comprehensive Compliance Status Inspection of the facility on March 8, 2011 determined the facility was in compliance with all permit conditions. (PCADs Report #1659)
12. Enforcement History:
  - 12.a. There have been no enforcement actions against the facility since December 2001 (see 12.b).
  - 12.b. December 2001: The facility received a Stipulated Final Order No. 02-2346, (SFO 02-2346), to allow the facility to continue burning diesel oil while EFP's permit was being modified to increase the throughputs of usage of diesel oil.
  - 12.c. November 1994: The facility signed the Stipulated Final Order (SFO) for No. 93-05 and 94-28 for the penalty of \$3,500.
  - 12.d. June 1994: The facility received a Notice of Violation and Civil Penalty Assessment No. 94-28 (NCP 94-28), for exceeding the opacity limits as allowed by the facility's permit.
  - 12.e. May 1994: The facility received the Notice of Violation and Stipulated Final Order No. 93-05 (SFO 93-05), for failure to submit the final compliance determination to LRAPA by the date required in Director's Order No. 93-05 (DO 93-05).
  - 12.f. July 1993: The facility received a Notice of Civil Penalty Assessment 93-17 (NCP 93-17), for violation of permit conditions and not submitting an approvable plan and compliance schedule required by NOV 93-05.
  - 12.g. May 1993: The facility received a Notice of Violation and Intent to Assess Civil Penalty No. 93-05 (NOV 93-05), for emitting particulate matter (PM) greater than 250 microns in size to be deposited on the real property of another person and for exceeding the plant site emission limits (PSEL) and mass emission rate allowed by the ACDP.
  - 12.h. January 1993: The facility received a Notice of Violation and Intent to Assess Civil Penalty No. 93-01 (NOV 93-01), for failure to comply with the action required in (NON 92-31) by not scheduling a source test within 14 days of the receipt of NON 92-31.
  - 12.i. December 1992: The facility received a Notice of Non-Compliance No. 92-31 (NON 92-31), for failure to conduct a required source test.
  - 12.j. April 1989: The facility received a Notice of Violation No. 89-10 (NOV 89-10), for exceeding opacity limits as allowed by the facility's permit.

Source Test/Performance Test Results:

Source Test Summary:

Source Test Date	Emission Unit	Production Rate	Pollutant	Emission Rate	
March 4, 1994	NG Boiler (EU-Boiler)	24.9 MMBtu/hr Heat Input	NOx	2.41 lbs/hr	0.10 lbs/MMBtu
Oct. 3, 2000	NG Veneer Dryer (EU-NGVDY#1)	9.52 MSF/hr	PM	1.8 lbs/hr	0.194 Lbs/MSF 3/8"
			VOC	2.7 lbs/hr	0.30 Lbs/MSF 3/8"
Mar. 28, 2002	EU-Boiler	Normal on #2 oil	Opacity	4.5% Avg max reading 3-hr test	
Feb.28, 2006	Plywood Press (EU-PLYPRS)	8.96 MSF/hr	Formaldehyde	0.007 lbs/hr	0.0008 lbs/MSF 3/8"
			Methanol	0.169 lbs/hr	0.0188 lbs/MSF 3/8"
			Phenol	0.01 lbs/hr	0.001 lbs/MSF 3/8"

13. February 2006: EFP tested one of the plywood presses for Formaldehyde, Methanol, and Phenol emitted to determine if the presses would be subject to the 40 CFR 63, Subpart DDDD – Plywood

and Composite Wood Product regulations. It was determined that the facility was not a major source of HAPs and therefore, not subject to the MACT.

14. March 2002: As part of the Stipulated Final Order No. 02-2346 and the 2002 permit modification to increase burning of #2 oil in EU-Boiler, EFP#1 was required to conduct an Initial 3-hour Performance test for opacity using EPA Method 9 while burning #2 oil in accordance with NSPS Subpart Dc §60.45c(a)(8). The average opacity for the highest periods of the 3-hour test was 4.5% which is well below the 20% opacity (6 minute average) NSPS §60.43(e) limit.
15. October 2000: The Moore natural gas-fired veneer dryer with Burley wet scrubber was tested for PM and VOC as total gaseous organic compounds (TGOC). The test measured emission rates in pounds per hour. The PM results were 1.8 lb/hr and VOC were 2.7 lb/hr.
16. March 1994: The facility installed a Cleaver Brooks 42.87 MMBtu/hr natural gas boiler that required the NO<sub>x</sub> emission factor to be verified with stack testing. The test measured NO<sub>x</sub> emission rates in lbs NO<sub>x</sub>/MMBTU and lbs NO<sub>x</sub>/hr, The NO<sub>x</sub> results were 0.10 lbs/MMBTU and 2.41 lbs/hr.

Plant Site Emission Limits (PSELS), and Baseline Emission Rate (BER) and Unassigned Emission Accounting:

17. Below are the facility's PSELS as they appear in the permit. In accordance with LRAPA Title 42, the limits are set at the generic PSEL level for SO<sub>2</sub>, NO<sub>x</sub>, CO, HAP<sub>single</sub>, HAP<sub>combined</sub> and GHGs. PM, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOC are set at source-specific levels accounting for baseline emissions and a potential to emit that is greater than the Significant Emissions Rate (SER) for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOC.

**Annual (12-month rolling) PSELS  
(tons/year)**

	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Single HAP	Combined HAPs	GHG
PSEL	34	32	9	39	39	99	99	9	24	74,000

- 17.a. The PM<sub>2.5</sub> PSEL is established as part of this permit action and is based on the fraction of PM<sub>10</sub> that is PM<sub>2.5</sub>. See the PM<sub>2.5</sub> PSEL and Netting Detail Sheet on page 16 and Item 19.b below for the basis of PM<sub>2.5</sub> PSEL.
- 17.b. The GHG PSEL is established as part of this permit action and is set at the Generic PSEL level in accordance with LRAPA Title 12 (Definitions) and Title 42 (PSEL rule). See the Baseline Emission Detail Sheet on page 15 for the basis of GHG PSEL.

Comparison of Baseline Emission Rates (BERs), Netting Basis (NB), PSELS and Unassigned Emissions

18. The table below summarizes the historical changes to the facility's BERs, Netting Basis, PSELS and Unassigned Emissions in previous permits with corrections made to 2010 PM and PM<sub>10</sub> PSELS and Unassigned emissions:

Pollutant (ton/yr)	1978 Baseline	Netting Basis prior to July 2007	PSEL 2006 Permit	Difference between PSEL & Baseline = Unassigned 2006	PSELS 2010 Permit	Corrected 2010 PSELS (PM&PM <sub>10</sub> PSELS only <sup>(18a)</sup> )	Corrected Unassigned Emissions 2010 (PM & PM <sub>10</sub> only <sup>(18b)</sup> )	Unassigned Emissions Expired 7/2010 Reduced to SER	Netting Basis NB (reset after 2010 rule)	Proposed 2019 Netting Basis
PM	121	121	49	-72	49	35	86	86-61=25	121-61=60	60
PM <sub>10</sub>	85	85	48	-37	48	33	52	52-37=15	85-37=48	48

Pollutant (ton/yr)	1978 Baseline	Netting Basis prior to July 2007	PSEL 2006 Permit	Difference between PSEL & Baseline = Unassigned 2006	PSELS 2010 Permit	Corrected 2010 PSELS (PM&PM <sub>10</sub> PSELS only <sup>(18a)</sup> )	Corrected Unassigned Emissions 2010 (PM & PM <sub>10</sub> only <sup>(18b)</sup> )	Unassigned Emissions Expired 7/2010 Reduced to SER	Netting Basis NB (reset after 2010 rule)	Proposed 2019 Netting Basis
PM <sub>2.5</sub>	NA	NA	NA	NA	NA	NA	NA	NA	NA	25
SO <sub>2</sub>	3	3	41	+38	41	41	0	0	0	2
NO <sub>x</sub>	55	55	29	-26	39 <sub>Gen</sub>	39 <sub>Gen</sub>	16	16	16	16
CO	527	527	12	-515	99 <sub>Gen</sub>	99 <sub>Gen</sub>	428	428-328=100	527-328=199	199
VOC	177	177	99	-78	99 <sub>SM</sub>	99 <sub>SM</sub>	78	78-38=40	177-38=139	139
HAP <sub>single</sub>	NA	NA	NA	NA	9 <sub>Gen</sub>	9 <sub>Gen</sub>	NA	NA	NA	NA
HAP <sub>Combined</sub>	NA	NA	NA	NA	24 <sub>Gen</sub>	24 <sub>Gen</sub>	NA	NA	NA	NA

18.a. **Corrections:** PSEL calculations for PM and PM<sub>10</sub> in the 2006 ACDP (& carried through to the 2010 permit) inadvertently double-counted ~13.5 tons/yr of particulate emissions from the steam-heated veneer dryers. The 2010 PM and PM<sub>10</sub> PSELS and corresponding Unassigned Emissions have been corrected in this permit renewal. The PM<sub>10</sub> PSEL has also been revised for updated emission factors. See page 16 for details of changes to the 2010 PSELS.

18.b. **Correction:** A typo in the 2010 Review Report listed unassigned PM<sub>10</sub> as 72 tons/yr; Unassigned PM<sub>10</sub> Emissions have been corrected here to 52 tons/yr with the revisions to the PM<sub>10</sub> PSEL.

19. The table below summarizes the changes to the facility's BERs, Netting Basis, PSELS and Unassigned Emissions since the permit was last renewed in 2010:

Pollutant	Baseline Emission Rate (BER) <sup>19a</sup> (tons/yr)	Netting Basis (NB)			Plant Site Emission Limit (PSEL)			
		NB <sub>initial</sub> (tons/yr)	NB Reduction (2010 Rule) (tons/yr)	Proposed NB <sub>2019</sub> (tons/yr)	Previous PSEL <sub>2010</sub> (Corrected <sup>19b</sup> ) (tons/yr)	Unassigned Emissions <sub>2010</sub> (2010 rule reduction to ≤SER) (tons/yr)	Proposed <sup>19c</sup> PSEL <sub>2019</sub> (tons/yr)	Proposed Unassigned Emissions <sup>19d</sup> (tons/yr)
PM	121	121	-61	60	35	86-61=25	34	26
PM <sub>10</sub>	85	85	-37	48	33	52-37=15	32	16
PM <sub>2.5</sub>	NA	NA	NA	25	NA	NA	9	16
SO <sub>2</sub>	3	3	0	0	41	NA	39 <sub>Gen</sub>	2
NO <sub>x</sub>	55	55	0	16	39 <sub>Gen</sub>	NA	39 <sub>Gen</sub>	16
CO	527	527	-328	199	99 <sub>Gen</sub>	NA	99 <sub>Gen</sub>	100
VOC	177	177	-38	139	99 <sub>SM</sub>	NA	99	40
GHG <sub>2004</sub>	14,200	NA	NA	14,200	NA	NA	74,000 <sub>Gen</sub>	0
HAP <sub>single</sub>	NA	NA	NA	NA	9 <sub>Gen</sub>	NA	9 <sub>Gen</sub>	0
HAP <sub>Combined</sub>	NA	NA	NA	NA	24 <sub>Gen</sub>	NA	24 <sub>Gen</sub>	0

Gen = Generic PSEL Level SM = Synthetic Minor Limit

19.a. The baseline emission rates (BERs) for PM, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC were determined in previous permitting actions and there have been no changes. The 1978 baseline period was used to establish the BERs for PM, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC. The baseline period for GHGs is based upon the facility's actual GHG emissions from 2004 calendar year rounded to 14,200 tons. (See the BER calculations on page 15 at the end of this review report.)

A baseline emission rate is not required for PM<sub>2.5</sub> in accordance with the definition of "baseline emission rate" in LRAPA Title 12. The PM<sub>2.5</sub> netting basis is established with

this permitting action as the overall fraction of PM<sub>2.5</sub> of the corrected PM<sub>10</sub> PSEL (0.29) multiplied by the PM<sub>10</sub> netting basis (85 tons/yr) in effect on May 1, 2011. [LRAPA 42-0046(2)(b)] (See PSEL Emissions Detail Sheet on page 16 of this Review Report for the PM<sub>2.5</sub> R factor, revised PM<sub>10</sub> PSEL, netting basis, and unassigned emissions calculations.)

- 19.b. The 2010 PM and PM<sub>10</sub> PSELs have been corrected and revised with updated emission factors as part of this permit renewal and the associated Unassigned Emissions have been adjusted accordingly (see Item 18 and page 16 for an accounting of the changes). The proposed PM<sub>2.5</sub> netting basis is based on the fraction of PM<sub>2.5</sub> of the **corrected 2010 PM<sub>10</sub>** PSEL multiplied by the corrected PM<sub>10</sub> netting basis in effect on May 1, 2011. Since the proposed PM<sub>2.5</sub> PSEL (9 tons/yr) does not exceed the proposed PM<sub>2.5</sub> netting basis (25 tons/year) by more than the PM<sub>2.5</sub> SER of 10 tons/year, no “true-up” for PM<sub>2.5</sub> netting basis was necessary. [LRAPA 42-0046 (2)(b)]
- 19.c. In accordance with LRAPA 42-0040 the proposed PSELs for SO<sub>2</sub>, NO<sub>x</sub>, CO, GHGs, HAP<sub>single</sub> and HAP<sub>combined</sub> are set at the generic PSEL levels. In accordance with LRAPA 42-0041 the PM, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOC PSELs are set at a source specific annual levels calculated with updated/revised emission factors. (See the updated/revised PSEL calculations on page 13 of this review report)
- 19.d. The Unassigned Emissions were updated with this renewal to reflect corrections to 2010 PM and PM<sub>10</sub> PSELs and the expiration of the Unassigned Emissions on July 1, 2010 in accordance with LRAPA 42-0045. Upon expiration the unassigned emissions were reduced to no more than the SER for each pollutant in LRAPA 12, Table 2. Because the facility switched the boiler (EU-Boiler) to firing only natural gas, an additional ton of PM, PM<sub>10</sub>, PM<sub>2.5</sub> has been added to unassigned emissions due to the decrease in PTE.

The proposed Unassigned Emissions of 26 tons/yr for PM, 16 tons/yr for PM<sub>10</sub>, and 16 tons/yr of PM<sub>2.5</sub>, will be reduced to no more than the SER (25 TPY for PM, 15 TPY for PM<sub>10</sub>, and 10 TPY for PM<sub>2.5</sub>) at the next permit renewal unless the PM, PM<sub>10</sub>, and PM<sub>2.5</sub> Unassigned Emissions have been used for internal netting actions at the facility in accordance with LRAPA 42-0046(3)(a)(C).

Hazardous Air Pollutants:

- 20. The HAPs potential to emit (PTE) and the actual 2018 HAPs emissions (based on the proposed revised emission factors) from the facility are shown in the table below. The emission factors for the single HAP are based on a combination of DEQ General Permit Emission Factors, source test data, and NCASI Bulletin #768 information. The facility has the potential to become a major source for HAPs but has demonstrated through annual reporting that the facility has not triggered the major source thresholds for any single or combined HAP.

HAP	Potential Emissions (tons/yr)	2018 Actual Emissions (tons/year)
Acetaldehyde	5.87	2.47
Acrolein	0.62	0.24
Benzene	0.40	0.24
Formaldehyde	2.50	1.04
Methanol (highest single HAP)	7.07	3.57
Phenol	2.27	0.89
Propionaldehyde	0.66	0.30

HAP	Potential Emissions (tons/yr)	2018 Actual Emissions (tons/year)
Toluene	0.51	0.18
m,p-Xylene	0.27	0.10
<b>Total HAPs</b>	<b>20.17</b>	<b>9.03</b>

Because Methanol is the highest single HAP emitted by the facility, compliance demonstration with the 9 tons/year Single HAP PSEL may be demonstrated by performing 12-month rolling emission calculations for Methanol. (See the HAP Emissions Detail Sheet on page 14 of the Review Report.)

PSEL Compliance Demonstration

- To ensure that the 12-month rolling PSELs are not exceeded, the facility is required to perform emission calculations by the 15<sup>th</sup> day of each month and submit annual reports by February 15<sup>th</sup> to LRAPA. For GHGs, compliance with the PSEL is determined by complying with the Oregon GHG reporting program requirements specified in OAR 340, division 215 (as applicable).

Continuous Compliance

- Each Burley Scrubber, including the spray nozzles, are required to be inspected daily.
- The PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from the unpaved haul roads are not included in the PSEL demonstration for the source since the emissions are only 1% of the total annual PM PSEL. The PM, PM<sub>10</sub>, and PM<sub>2.5</sub> continuous compliance calculations assume a constant amount is emitted by the pneumatic transfer system. Since the totals of PM, PM<sub>10</sub>, and PM<sub>2.5</sub> from the system are relatively small (0.8, 0.7 and 0.4 tons/year, respectively), this assumption is reasonable for continuous compliance PSEL calculations.
- To ensure compliance with the 12-month rolling PSELs, and as required by the boiler NSPS for Items P and Q and the NESHAP 6J Exemption for Item R, the permittee must keep and maintain the following records for a period of at least five (5) years at the plant site and be available for inspection by authorized representatives of LRAPA. [LRAPA 34-016 and 42-0080]

Item	Emission Source, Unit, Control Device	Process Parameter (units)	Minimum Monitoring & Recording Frequency
A	Facility-Wide Annual (12-month rolling) PSEL	Rolling 12-month PSEL Compliance Demonstration	By the 15 <sup>th</sup> of each month in accordance w/Permit Condition 22
B	EU-PXFSYS	Total throughput - Bone Dry Tons (BDT)	Monthly
C	EU-PXFSYS Cyclone & Baghouses (2)	Visual inspections and maintenance of cyclone and baghouses (2)	As performed
D	EU-PXFSYS Baghouses	Pressure drop readings (inches H <sub>2</sub> O) on baghouse gauges	Weekly
E	EU-NGVDY#1	Total throughput - 1000 square feet (3/8-inch basis)	Monthly
F	EU-NGVDY#1	Total cubic feet of natural gas combusted	Monthly
G	EU-NGVDY#1 Scrubber	Water flow return on Burley	Weekly



Item	Emission Source, Unit, Control Device	Process Parameter (units)	Minimum Monitoring & Recording Frequency
		scrubber gauge and opacity	
H	EU-NGVDRY#1 & Scrubber	Dryer and scrubber maintenance	As performed
I	EU-STVDRY#2	Total throughput - 1000 square feet (3/8-inch basis)	Monthly
J	EU-STVDRY#2 Scrubber	Water flow return on Burley scrubber gauge and opacity	Weekly
K	EU-STVDRY#2 & Scrubber	Dryer and scrubber and maintenance	As performed
L	EU-PLYPRS (5)	Total production - 1000 square feet (3/8-inch basis)	Monthly
M	EU-PLYMISC	Total throughput -1000 square feet (3/8-inch basis) to chippers & saws	Monthly
N	EU-Boiler	Cubic feet of Natural Gas Combusted	Monthly
O	EU-Boiler on #2 oil	Gallons	Monthly
P	EU-Boiler on #2 oil	Opacity	Per required VE Test on #2 oil
Q	EU-Boiler on #2 oil	Certification of Sulfur Content in No. 2 oil	Each delivery
R	EU-Boiler on #2 oil	Elapsed time (in hours) of combustion of No. 2 oil	Per occurrence

Other Regulatory Considerations

25. LRAPA 48-015 limits fugitive emissions leaving the facility's property.
26. LRAPA 32-010(3) limits visible emissions from sources within the facility (EUPXFSYS) to an average of less than or equal to 20% opacity for a period or periods aggregating more than three minutes in any one (1) hour.
27. LRAPA 33-03(a)(B) limits visible emissions from any veneer dryer (EU-NGVDRY and EU-STVDRY) to a daily average operating opacity of 10 percent on more than two days within any 12-month period, with the days separated from each other by at least 30m days, as measured by EPA Method 9; and a maximum of 20% opacity at any time measured by EPA Method 9.
28. LRAPA 32-015(2)(b)(B) limits particulate matter emissions for sources other than fuel burning equipment, refuse burning equipment, and fugitive emission sources, to 0.14 grains per dry standard cubic foot for sources installed, constructed, or modified before or after June 1, 1970, (EUPXFSYS, EU-NGVDRY, EU-STVDRY), and for which there are no representative compliance source test results.
29. LRAPA 33-060(3) establishes minimum performance and emission standards for veneer and plywood operations, to limit condensable hydrocarbons (VOCs) such that visible emission from each veneer dryer are limited to a level which does not cause a characteristic "blue haze" to be observable. Each veneer dryer must be maintained and operated such that air contaminant generating processes and all contaminant control devices must be at full efficiency and effectiveness so that the emissions of air contaminants are kept at the lowest practicable levels.

30. LRAPA 32-007 establishes operational, maintenance and work practice requirements for the veneer dryers and the Burley Scrubbers, with one requirement being an Operation and Maintenance Plan (O&M Plan) for the veneer dryers and the Burley Scrubbers on site.
31. 40 CFR 60, Subpart Dc establishes limits to weight percentage of sulfur combusted in the 42.87 MMBtu/hr natural gas and diesel-fired boiler.
32. LRAPA 32-030(1)(b) limits particulate matter emissions from fuel burning equipment sources (EU-Boiler) to 0.14 grains per dry standard cubic foot for equipment installed, constructed, or modified after June 1, 1970.

#### Typically Achievable Control Technology (TACT)

33. LRAPA Title 32-008 requires an existing emission unit at a facility to meet TACT if the emissions unit has emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutant or five (5) tons per year of particulate, and the emissions unit is not subject to the emissions standards under LRAPA Title 30, Title 32, Title 33, Title 38, Title 39, or Title 46 for the pollutants emitted, and the facility is required to have a permit. The veneer dryers, plywood presses, pneumatic transfer system are subject to Title 33, and the boiler is subject to the requirements of LRAPA 32-030 therefore; there are no emission units required to meet TACT.

#### Criteria Pollutants

34. A major source is a facility that has the potential to emit more than 100 tons per year of any criteria pollutant. This facility is not a major source of criteria pollutant emissions which has been demonstrated through recordkeeping and reporting.

#### New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

35. The facility is not subject to LRAPA's PSD requirements for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub>, CO, and VOC in LRAPA Title 38 because there are no increases in the proposed PSELs for regulated pollutants. The proposed PSELs are at or below previous permitted PSELs levels and there have been no modifications with emission increases above the Significant Emission Rates (SERs) in defined LRAPA Title 12, Table 2.

#### New Source Performance Standards (NSPS)

36. Because the facility's boiler (EU-Boiler (Max. Design Rate 42.87MMBtu/hr)) operates between 10 MMBtu/hr and 100 MMBtu/hr and was constructed after June 9, 1989 (EU-Boiler installed in 1994), the boiler is subject to 40 CFR 60, Subpart Dc; New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units. Subpart Dc requirements include, but are not limited to, record keeping of fuel usage and annual reporting.

Per 40 CFR 60, Subpart Dc and LRAPA 32-065-2(b), the sulfur content in ASTM Grade 2 fuel oil may not exceed 0.5% by weight. The facility is allowed to demonstrate compliance with this rule by fuel supplier certification.

#### National Emission Standards for Hazardous Air Pollutants (NESHAP)

37. The HAP emission estimations indicate that the facility emits less than 10 tons per year of any single HAP and less than 25 tons per year for any combination of HAPs and is, therefore, a minor or "Area" source of HAPs and is not subject to 40 CFR 63, Subpart DDDD – Plywood and Composite Wood Products or 40 CFR 63, Subpart DDDDD – Major Source: Industrial, Commercial, and Institutional Boilers and Process Heaters.

38. The facility's boiler (EU-Boiler) is potentially subject to Boiler Area Source NESHAP (40 CFR 63, Subpart JJJJJJ or 6J) but the permit limits the operation of the boiler while burning distillate oil to meet the definition of gas-fired boiler (§63.11237) which is exempt from Subpart 6J requirements. Specifically, burning of distillate oil in EU-Boiler is allowed only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training. The permit limits periodic testing, maintenance, or operator training on distillate oil to a combined total of 48 hours during any calendar year.

#### Reporting Requirements

39. The facility is required to submit an annual report by Feb. 15<sup>th</sup> of each year as described in the permit. [LRAPA 34-016]
40. By March 31<sup>st</sup> each year, the facility is also required to submit an annual GHG report, as applicable, in accordance with OAR 340 division 215.

#### Public Notice

41. The draft permit was on public notice from June 4, 2019 to July 8, 2019. No written comments were submitted during the 35-day comment period

KEC/cmw  
7/11/2019

**Emission Factors:**

Emission Factors (EF)				Emission Factor Reference/Source	
Emission Unit: EU ID	Pollutant (throughput)	Emission Factor	Units		
<b>EU-PXFSYS: Pneumatic Transfer System</b>					
Cyclone and Baghouses	PM	0.001	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
	PM10	0.001	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
	PM2.5	0.001	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
Target Box	PM	0.1	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
	PM10	0.085	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
	PM2.5	0.050	lb/BDT	DEQ AQGP-010, Section 13.2: Emission Factors (10/2017)	
<b>Veneer Dryers (2)</b>					
EU-NGVDRY#1: Direct NG FIRED VENEER DRYER #1	PM	0.29	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF02 -08/11	
	PM10	0.28	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF03 -08/11	
	PM2.5	0.07	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF03 -08/11	
	NOx	0.12	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	CO	0.02	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
EU-NGVDRY#1: Heating, Cooling Zones & Fugitive Combined EFs	VOC	0.71	lb/1000 sq.ft. (3/8" basis)	Combined Plant#3 Nov '03 Source Test + Oct '17 DEQ AQGP-010 EFs	
	Acetaldehyde	0.068	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Acrolein	0.009	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Benzene	0.0057	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Formaldehyde	0.030	lb/1000 sq.ft. (3/8" basis)	Combined Plant#3 Nov '03 Source Test + Oct '17 DEQ AQGP-010 EFs	
	Methanol	0.031	lb/1000 sq.ft. (3/8" basis)	Combined Plant#3 Nov '03 Source Test + Oct '17 DEQ AQGP-010 EFs	
	Phenol	0.026	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Propionaldehyde	0.0036	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Toluene	0.0074	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	m,p-xylene	0.0039	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
Combined HAP EF	0.184	lb/1000 sq.ft. (3/8" basis)			
EU-STVDRY#2 - Steam-Heated (Indirect) Veneer Dryer #2: Heating, Cooling, & Fugitive Zones Combined EFs Zone EFs	PM	0.56	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF02 -08/11	
	PM10	0.53	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF03 -08/11	
	PM2.5	0.14	lb/1000 sq.ft. (3/8" basis)	DEQ Emission Factors Wood Products; AQ-EF03 -08/11	
	VOC	1.9	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Acetaldehyde	0.027	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Acrolein	0.001	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Benzene	0.00059	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Formaldehyde	0.016	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Methanol	0.059	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Phenol	0.016	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Propionaldehyde	0.0024	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	Toluene	0.0011	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
	m,p-xylene	0.00075	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.5: Emission Factors (10/2017)	
Combined HAP EF	0.124	lb/1000 sq.ft. (3/8" basis)			
<b>Plywood Presses (5)</b>					
EU-PLYPRS(5): Plywood Presses	VOC*	0.085	lb/1000 sq.ft. (3/8" basis)	NCASI #768 Hardwood Converted to "as propane"	
	Acetaldehyde	0.0042	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.6: Emission Factors (10/2017)	
	Formaldehyde*	0.0008	lb/1000 sq.ft. (3/8" basis)	*Em Forest Prod Plant#1 Feb. 2006 Source Test LRAPA Review Calcs	
	Methanol*	0.019	lb/1000 sq.ft. (3/8" basis)	*Em Forest Prod Plant#1 Feb. 2006 Source Test LRAPA Review Calcs	
	Phenol*	0.001	lb/1000 sq.ft. (3/8" basis)	*Em Forest Prod Plant#1 Feb. 2006 Source Test LRAPA Review Calcs	
	Propionaldehyde	0.002	lb/1000 sq.ft. (3/8" basis)	DEQ General ACDP; EFP 2010 ACDP	
	Combined HAP EF	0.027	lb/1000 sq.ft. (3/8" basis)		
<b>Miscellaneous Plywood Activities</b>					
Plywood Chippers & Saws	VOC	0.154	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.7: Emission Factors (10/2017) Chip+SawEFs	
	Acetaldehyde	0.0009	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.7: Emission Factors (10/2017) Chip+SawEFs	
	Formaldehyde	0.0003	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.7: Emission Factors (10/2017) Chip+SawEFs	
	Methanol	0.02	lb/1000 sq.ft. (3/8" basis)	DEQ AQGP-010, Section 13.7: Emission Factors (10/2017) Chip+SawEFs	
	Combined HAP EF	0.0212	lb/1000 sq.ft. (3/8" basis)		
<b>Boiler (1)</b>					
EU-NGBOILER: Gas or Diesel-Fired Boiler (42.87MMbtu/hr)	PM	3.3	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	PM10	2.3	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017) updated factor	
	PM2.5	1.6	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	CO	5	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	NOx	20	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	SO2	71	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	VOC (NMTOC)	0.2	lb/1000 gal	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	<b>Natural Gas EF</b>				
	PM	2.5	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	PM10	2.5	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	PM2.5	2.5	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	CO	84	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	NOx	100	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	SO2	1.7	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	
	VOC (NMTOC)	5.5	lb/10 <sup>6</sup> scf	DEQ AQGP-010, Section 13.1: Emission Factors (10/2017)	

**PSEL/PTE Emissions Detail Sheet:**

Emerald Forest Products Plant #1 - Plant Site Emission Limit (PSEL) Detail Sheet (Revised 5/2019)														
Source	Maximum Throughput	Units	PM EF	Units	PM (TPY)	PM <sub>10</sub> EF	Units	PM <sub>10</sub> (TPY)	PM <sub>2.5</sub> EF	Units	PM <sub>2.5</sub> (TPY)	Pollutant TPY	PSEL	2018 Actuals
EU-PXFRSYS	15500	BDT/yr <sup>(1)</sup>	0.001	lb/BDT	0.01	0.001	lb/BDT	0.01	0.001	lb/BDT	0.01	PM	34	15
EU-PXFRSYS-Target Boxes	15500	BDT/yr <sup>(1)</sup>	0.1	lb/BDT	0.8	0.085	lb/BDT	0.7	0.05	lb/BDT	0.4	PM <sub>10</sub>	32	14
EU-NGVDY#1	131400	MSF/yr <sup>(1)</sup>	0.29	lb/MSF3/8"	19.1	0.28	lb/MSF3/8"	18.1	0.07	lb/MSF3/8"	4.8	PM <sub>2.5</sub>	9	4
EU-STVDY#2	48180	MSF/yr <sup>(1)</sup>	0.56	lb/MSF3/8"	13.5	0.53	lb/MSF3/8"	12.8	0.14	lb/MSF3/8"	3.4	SO <sub>2</sub> Generic	39	0.4
EU-BOILER	12602	gal/yr <sup>(2)</sup>	3.3	lb/10 <sup>3</sup> gal Diesel	0.0	2.3	lb/10 <sup>3</sup> gal Diesel	0.0	1.6	lb/10 <sup>3</sup> gal Diesel	0.0	NO <sub>x</sub> generic	39	13
EU-BOILER	356	MMCF/yr <sup>(2)</sup>	2.5	lb/10 <sup>6</sup> CF NG	0.4	2.5	lb/10 <sup>6</sup> CF NG	0.4	2.5	lb/10 <sup>6</sup> CF NG	0.4	CO <sub>Generic</sub>	99	9
Total PM/PM10/PM2.5					33.8			32.0			9.0	VOC <sub>SynMin</sub>	99	54
	Maximum Throughput	Units	SO <sub>2</sub> EF	Units	SO <sub>2</sub> (TPY)	NO <sub>x</sub> EF	Units	NO <sub>x</sub> (TPY)	CO EF	Units	CO (TPY)	VOC EF	Units	VOC (TPY)
EU-NGVDY#1	131400	MSF/yr <sup>(1)</sup>	NA		NA	0.12	lb/MSF3/8"	7.9	0.02	lb/MSF3/8"	1.3	0.71	lb/MSF3/8"	46.6
EU-STVDY#2	48180	MSF/yr <sup>(1)</sup>	NA		NA	NA		NA	NA		NA	1.9	lb/MSF3/8"	45.8
EU-PLYPRS(5)	350400	MSF/yr <sup>(1)</sup>	NA		NA	NA		NA	NA		NA	0.085	lb/MSF3/8"	14.9
EU-PLYMISC	28032	MSF/yr	NA		NA	NA		NA	NA		NA	0.154	lb/MSF3/8"	2.2
EU-BOILER	12602	gal/yr <sup>(2)</sup>	71	lb/10 <sup>3</sup> gal Diesel	0.4	20	lb/10 <sup>3</sup> gal Diesel	0.1	5	lb/10 <sup>3</sup> gal Diesel	0.0	0.2	lb/10 <sup>3</sup> gal Diesel	0.0
EU-BOILER	356	MMCF/yr <sup>(2)</sup>	1.7	lb/10 <sup>6</sup> CF NG	0.3	100	lb/10 <sup>6</sup> CF NG	17.8	84	lb/10 <sup>6</sup> CF NG	15.0	5.5	lb/10 <sup>6</sup> CF NG	1.0
Total					0.7			25.8			16.3			110.4

<sup>(1)</sup>Max. Daily/Hourly Throughputs: EU-PXFRSYS = 45 BDT/day; EU-NGVDY = 15 MSF3/8"/hr; EU-STVDY = 5.5 MSF3/8"/hr; EU-PLYPRS = 40 MSF3/8" /hr

<sup>(2)</sup>Based on 2019 Revised Permit Application-NESHAP 6J Exemption: max 48hrs/yr on #2 oil and 8712 hrs/yr NG

1150000 gallons (2010 ACDP) \*48hrs/yr/4380 hrs/yr = **12,602 gallon No2 oil/yr**; 42.87MMBtu/hr\*8712 hrs/yr NG/1050Btu = **356 MMCF NG**


**HAP Emissions Detail Sheet:**

Emerald Forest Products Plant #1 HAP PTE Emissions Detail Sheet																	
Emission Unit ID	Maximum Throughput	Units	Acetaldehyde			Acrolein			Benzene			Formaldehyde			Methanol		
			EF	Units	TPY	EF	Units	TPY	EF	Units	TPY	EF	Units	TPY	EF	Units	TPY
EU-NGVDY#1	131400	MSF/yr	0.068	lb/MSF3/8"	4.5	0.009	lb/MSF3/8"	0.6	0.0057	lb/MSF3/8"	0.4	0.030	lb/MSF3/8"	2.0	0.031	lb/MSF3/8"	2.0
EU-STVDY#2	48180	MSF/yr	0.027	lb/MSF3/8"	0.7	0.001	lb/MSF3/8"	0.0	0.001	lb/MSF3/8"	0.0	0.016	lb/MSF3/8"	0.4	0.059	lb/MSF3/8"	1.4
EU-PLYPRS(5)	350400	MSF/yr	0.0042	lb/MSF3/8"	0.7	NA	lb/MSF3/8"	NA	NA	lb/MSF3/8"	NA	0.0008	lb/MSF3/8"	0.1	0.019	lb/MSF3/8"	3.3
EU-PLYMISC	28032	MSF/yr	0.0009	lb/MSF3/8"	0.0	NA	lb/MSF3/8"	NA	NA	lb/MSF3/8"	NA	0.0003	lb/MSF3/8"	0.0	0.02	lb/MSF3/8"	0.3
EU-BOILER	12602	gal/yr	NA	lb/10 <sup>3</sup> gal #2ds	NA	NA	lb/10 <sup>3</sup> gal #2ds	NA	0.0028	lb/10 <sup>3</sup> gal #2ds	0.0	0.061	lb/10 <sup>3</sup> gal #2ds	0.0	NA	lb/10 <sup>3</sup> gal #2ds	NA
EU-BOILER	356	MMCF/yr	NA	lb/10 <sup>6</sup> CF NG	NA	NA	lb/10 <sup>6</sup> CF NG	NA	NA	lb/10 <sup>6</sup> CF NG	NA	0.075	lb/10 <sup>6</sup> CF NG	0.0	NA	lb/10 <sup>6</sup> CF NG	NA
Total Individual HAPs PTE:					5.87	0.62			0.40			2.50			7.07		
Emission Unit ID	Maximum Throughput	Units	Naphthalene			Phenol			Propionaldehyde			Toluene			m, p-Xylene		
			EF	Units	TPY	EF	Units	TPY	EF	Units	TPY	EF	Units	TPY	EF	Units	TPY
EU-NGVDY#1	131400	MSF/yr	NA	lb/MSF3/8"	NA	0.026	lb/MSF3/8"	1.7	0.004	lb/MSF3/8"	0.3	0.0074	lb/MSF3/8"	0.5	0.0039	lb/MSF3/8"	0.3
EU-STVDY#2	48180	MSF/yr	NA	lb/MSF3/8"	NA	0.016	lb/MSF3/8"	0.4	0.002	lb/MSF3/8"	0.0	0.0011	lb/MSF3/8"	0.0	0.00075	lb/MSF3/8"	0.0
EU-PLYPRS(5)	350400	MSF/yr	NA	lb/MSF3/8"	NA	0.001	lb/MSF3/8"	0.2	0.002	lb/MSF3/8"	0.4	NA	lb/MSF3/8"	NA	NA	lb/MSF3/8"	NA
EU-BOILER	12062	gal/yr	0.00033	lb/10 <sup>3</sup> gal #2ds	0.0	NA	lb/10 <sup>3</sup> gal #2ds	NA	NA	lb/10 <sup>3</sup> gal #2ds	NA	NA	lb/10 <sup>3</sup> gal #2ds	NA	NA	lb/10 <sup>3</sup> gal #2ds	NA
EU-BOILER	356	MMCF/yr	NA	lb/10 <sup>6</sup> CF NG	NA	NA	lb/10 <sup>6</sup> CF NG	NA	NA	lb/10 <sup>6</sup> CF NG	NA	0.0034	lb/10 <sup>6</sup> CF NG	0.0	NA	lb/10 <sup>6</sup> CF NG	NA
Total Individual HAPs PTE:					0.00	2.27			0.66			0.51			0.27		
HAP:		PTE	2018 Actual		Aggregate HAP EFs												
Acetaldehyde		5.87	2.47		EU-NGVDY#1	0.185 lb/MSF3/8"											
Acrolein		0.62	0.24		EU-STVDY#2	0.124 lb/MSF3/8"											
Benzene		0.40	0.24		EU-PLYPRS(5)	0.027 lb/MSF3/8"											
Formaldehyde		2.50	1.04		EU-MISCPLY	0.021 lb/MSF3/8"											
Methanol		7.07	3.57														
Naphthalene		0.00	0.00														
Phenol		2.27	0.89														
Propionaldehyde		0.66	0.30														
Toluene		0.51	0.18														
m, p-Xylene		0.27	0.10														
Total Combined HAPs:		20.17	9.03														

Baseline Emissions Detail Sheet:

Emerald Forest Products Plant #1 - Baseline Emission Rates (BERs)									
Baseline Emission Rate (BER):1978 Baseline Period:	Production/Throughput	Units	Pollutant						
			PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOx	CO	VOC
			tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Cyclone/Baghouses	15500	BDT/yr	1.2	0.6	NA				
Target Box	15500	BDT/yr	6.8	6.8	NA				
Veneer Dryers (2) Steam-Htd	84,000	MSF 3/8"	42.4	42.4	NA	0.0	0.0	0.0	153.7
Wood-Fired Boiler	45 Mlb Steam/hr*7800 hrs		70.2	35.1	NA	2.5	54.5	526.5	22.8
			120.6	84.9		2.5	54.5	526.5	176.5

Emerald Forest Products #1 GHG Emission Rate (BER) Calculation using 2004 Fuel Usage:

 This sheet calculates greenhouse gas emissions from fuel combustion. 1) Enter the combustion emission sources at the facility (e.g. "boiler 1") in the 1<sup>st</sup> column. 2) In the 2<sup>nd</sup> column, select the fuel type used in each emissions unit. If more than one fuel type was used in a single emissions unit, you must enter that same emissions unit on multiple rows and then enter the different fuel types in each row. 3) Enter the fuel quantities in the 3<sup>rd</sup> column and specify the unit of measure in the 4<sup>th</sup> column. Emissions are then calculated in metric tons of carbon dioxide equivalent (mtCO<sub>2</sub>e).

Enter emissions information				Convert to mmBtu				Emissions (kg/mmBtu)			CO <sub>2</sub> Equivalent			Anthropogenic (mtCO <sub>2</sub> e)			Biogenic (mtCO <sub>2</sub> e)
Emissions unit <sup>1</sup>	Fuel Type <sup>2</sup>	Quantity <sup>3</sup>	Fuel units <sup>3</sup>	HHV Units	HHV Unit	HHV	mmBtu	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	(mtCO <sub>2</sub> e)
Boiler and Dryer	Natural gas	233,891,400	Cubic ft	233,891,400	cubic ft	0.00103	239,973	0.001	53.06	0.0001	25	1	298	6	12,733	7	0
Boiler	Distillate oil 2	9,622	Gallon	9,622	gallon	0.138	1,328	0.003	73.96	0.0006	25	1	298	0	98	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0

Anthropogenic combustion emissions (mtCO <sub>2</sub> e):	12,845
Biogenic combustion emissions (mtCO <sub>2</sub> e):	0
<b>Total combustion emissions (mtCO<sub>2</sub>e):</b>	<b>12,845</b>

Note that EPA's revised HHV for wood (changed from 15.38 to 17.48 mmBtu/short ton) is for a dry basis. Use the following formula to calculate a wet basis HHV:

$(100-M) \times 17.48 \text{ mmBtu/short ton}$   
 M = moisture content (percent)

<b>Conversion to short tons</b>	
Anthropogenic combustion emissions:	14,159
Biogenic combustion emissions:	0
<b>Total combustion emissions:</b>	<b>14,159</b>

Use this new HHV to replace the default HHV in the calculator above once the "wood/woodwaste" fuel type is selected.

EFP#1 2018 GHG Emissions = 11,930 short tons/2018; 2017 GHG Emissions = 10,740 short tons/2017

**Detail Sheet for PM & PM<sub>10</sub> 2010 PSEL & Netting Basis Corrections and PM<sub>2.5</sub> Netting Basis Details:**

Emerald Forest Products Plant #1 - Revisions/Corrections/Updates to 2010 PSELS and Details of PM <sub>2.5</sub> Netting Basis R Factor														
Source	Maximum Throughput	Units	PM <sub>EF</sub>	Units	PM (TPY)	2010 PM <sub>10</sub> EF	Units	2010 PM <sub>10</sub> (TPY)	PM <sub>10</sub> EF	Units	PM <sub>10</sub> (TPY)	PM <sub>2.5</sub> EF	Units	PM <sub>2.5</sub> (TPY)
EU-PXFRSYS	15500	BDT/yr <sup>(1)</sup>	0.001	lb/BDT	0.01	same EF	lb/BDT	0.01	0.001	lb/BDT	0.01	0.001	lb/BDT	0.01
EU-PXFRSYS-Target Box	15500	BDT/yr <sup>(1)</sup>	0.1	lb/BDT	0.8	0.05	lb/BDT	0.4	0.085	lb/BDT	0.7	0.05	lb/BDT	0.4
EU-NGVDY#1	131400	MSF/yr <sup>(1)</sup>	0.29	lb/MSF3/8"	19.1	0.29	lb/MSF3/8"	19.1	0.28	lb/MSF3/8"	18.1	0.07	lb/MSF3/8"	4.8
EU-STVDY#2*	48180	MSF/yr <sup>(1)</sup>	0.56	lb/MSF3/8"	13.5	0.56	lb/MSF3/8"	27.0	0.53	lb/MSF3/8"	12.8	0.14	lb/MSF3/8"	3.4
EU-BOILER	1150000	gal/yr <sup>(2)</sup>	3.3	lb/10 <sup>3</sup> gal Diesel	1.9	1.3	lb/10 <sup>3</sup> gal Diesel	0.7	2.3	lb/10 <sup>3</sup> gal Diesel	1.3	1.6	lb/10 <sup>3</sup> gal Diesel	0.9
EU-BOILER	179	MMCF/yr <sup>(2)</sup>	2.5	lb/10 <sup>6</sup> CF NG	0.2	same EF	lb/10 <sup>6</sup> CF NG	0.2	2.5	lb/10 <sup>6</sup> CF NG	0.2	2.5	lb/10 <sup>6</sup> CF NG	0.2
Total PM/PM10/PM2.5					35.4	2010 PM <sub>10</sub> PSEL			47.5	33.1		9.7		
*Correction of double-counting of steam dryer emissions in the 2006 and 2010 ACDPs from 27 TPY PM to 13.5 TPY and 27 TPY PM <sub>10</sub> to 12.8 TPY w/ revised EF														
	Maximum Throughput	Units	SO <sub>2</sub> EF	Units	SO <sub>2</sub> (TPY)	NOx EF	Units	NOx (TPY)	CO EF	Units	CO (TPY)	VOC EF	Units	VOC (TPY)
EU-NGVDY#1	131400	MSF/yr	NA		NA	0.12	lb/MSF3/8"	7.9	0.02	lb/MSF3/8"	1.3	0.71	lb/MSF3/8"	46.6
EU-STVDY#2	48180	MSF/yr	NA		NA	NA		NA	NA		NA	1.9	lb/MSF3/8"	45.8
EU-PLYPRS(5)	350400	MSF/yr <sup>(1)</sup>	NA		NA	NA		NA	NA		NA	0.085	lb/MSF3/8"	14.9
EU-BOILER	1150000	gal/yr <sup>(2)</sup>	71	lb/10 <sup>3</sup> gal Diesel	40.8	20	lb/10 <sup>3</sup> gal Diesel	11.5	5	lb/10 <sup>3</sup> gal Diesel	2.9	0.2	lb/10 <sup>3</sup> gal Diesel	0.1
EU-BOILER	179	MMCF/yr <sup>(2)</sup>	1.7	lb/10 <sup>6</sup> CF NG	0.2	100	lb/10 <sup>6</sup> CF NG	9.0	84	lb/10 <sup>6</sup> CF NG	7.5	5.5	lb/10 <sup>6</sup> CF NG	0.5
Total					41.0	28.3			11.7		107.9			
<sup>(1)</sup> Max. Daily/Hourly Throughputs: EU-PXFRSYS = 45 BDT/day; EU-NGVDY = 15 MSF3/8"/hr; EU-STVDY = 5.5 MSF3/8"/hr; EU-PLYPRS = 40 MSF3/8"/hr														
<sup>(2)</sup> Based on 2002 Permit Mod: 4380hrs/yr #2 oil + 4380hrs/yr NG														
DEQ Instructions for Determining PM <sub>2.5</sub> PSEL & Netting Basis (8-27-2011) & DEQ IMD (2-1-2012)														
<b>PM<sub>2.5</sub> Netting Basis R Factor:</b>														
R = PM <sub>2.5</sub> PSEL/PM <sub>10</sub> PSEL = 9.7/33.1 = 0.29														
<b>PM<sub>2.5</sub> Netting Basis = R * PM<sub>10</sub> Netting Basis:</b>														
= 0.29 * 85 tons PM <sub>10</sub> 2010 Netting Basis = 25.0 tons PM <sub>2.5</sub> Netting Basis														
<b>PM<sub>2.5</sub> Unassigned Emissions = R * PM<sub>10</sub> Unassigned Emissions:</b>														
= 0.29 * 52 tons Unassigned PM <sub>10</sub> Emissions = <b>15.1 tons Unassigned PM<sub>2.5</sub> Emissions</b>														