

## WESTERN FOREST PRODUCTS INC. VALUE ADDED DIVISION

CHEMAINUS, BC

TECHNICAL ASSESSMENT REPORT

RWDI # 2405727

February 3, 2025

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## EXECUTIVE SUMMARY

RWDI AIR Inc. was retained by Western Forest Products Inc. to prepare their waste discharge application under the Environmental Management Act for their Value Added Division located in Chemainus, BC. The proposed Project will see the replacement of ten (10) existing batch kilns with four (4) continuous kilns and two (2) specialty kilns. There will also be the addition of a new planer facility that will result in emissions through a new cyclone and an additional baghouse with a common exhaust point which will result in additional emissions of total particulate matter (TPM), oxides of nitrogen (NO<sub>x</sub>) and Volatile Organic Compounds (VOC).

The contents of the report follow the requirements outlined in the Application Instruction Document (AID) and Information Requirements Table (IRT) provided by the Ministry dated March 11, 2024, and included in Appendix A. The final column of the IRT has been populated, specifying where each piece of information has been included in this application.

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# 1 PROJECT DESCRIPTION

## 1.1 Description of Project and Changes

The Chemainus Value-Added Division (the Facility) is a remanufacturing facility located at 9469 Trans Canada Highway, Chemainus, BC V0R 1K4. The facility is operated under permit # 13257 under the provisions of the Environmental Management Act. The facility creates a wide variety of wood products, e.g. decking, fencing, siding, paneling, moulding, dimensional lumber and gluelam(inated) products for interior, exterior, structural, and industrial construction projects.

Sources of emissions to air onsite include the following, as listed on their permit:

- Resaw/Planer Mill Baghouse
- Ten (10) Natural Gas-Directed Fired Dry Kilns
- Chipper Cyclone
- Miscellaneous Sources: Filing, grinding, welding, gas and diesel tanks
- Chemical Spray Booth

The proposed Project will see the replacement of ten (10) existing batch kilns with four (4) continuous kilns and two (2) specialty kilns. There will also be the addition of a new planer facility that will result in emissions through a new cyclone and an additional baghouse with a common exhaust point which will result in additional emissions of total particulate matter (TPM), oxides of nitrogen (NO<sub>x</sub>) and Volatile Organic Compounds (VOC).

The facility is planning to start construction of the first continuous wood drying kiln in Q2 2025 and operations to begin in Q4 2025. The new kiln will burn natural gas and the created heat will be used to dry wood after it is processed in offsite sawmills and before the planer mill. The combustion of natural gas will create emissions to air of oxides of nitrogen (NO<sub>x</sub>), total particulate matter (TPM) and carbon monoxide (CO). The kiln will have a capacity of 70 million board feet per year (or mmfbm/year) and anticipated fuel use of 17 million BTU per hour (or MMBTU/hr) of natural gas. The kiln is also proposed to have a 7.5 mmBTU/hr condensate burner. The other new kilns and new planer mill will be constructed subsequently.

## 1.2 Location Map

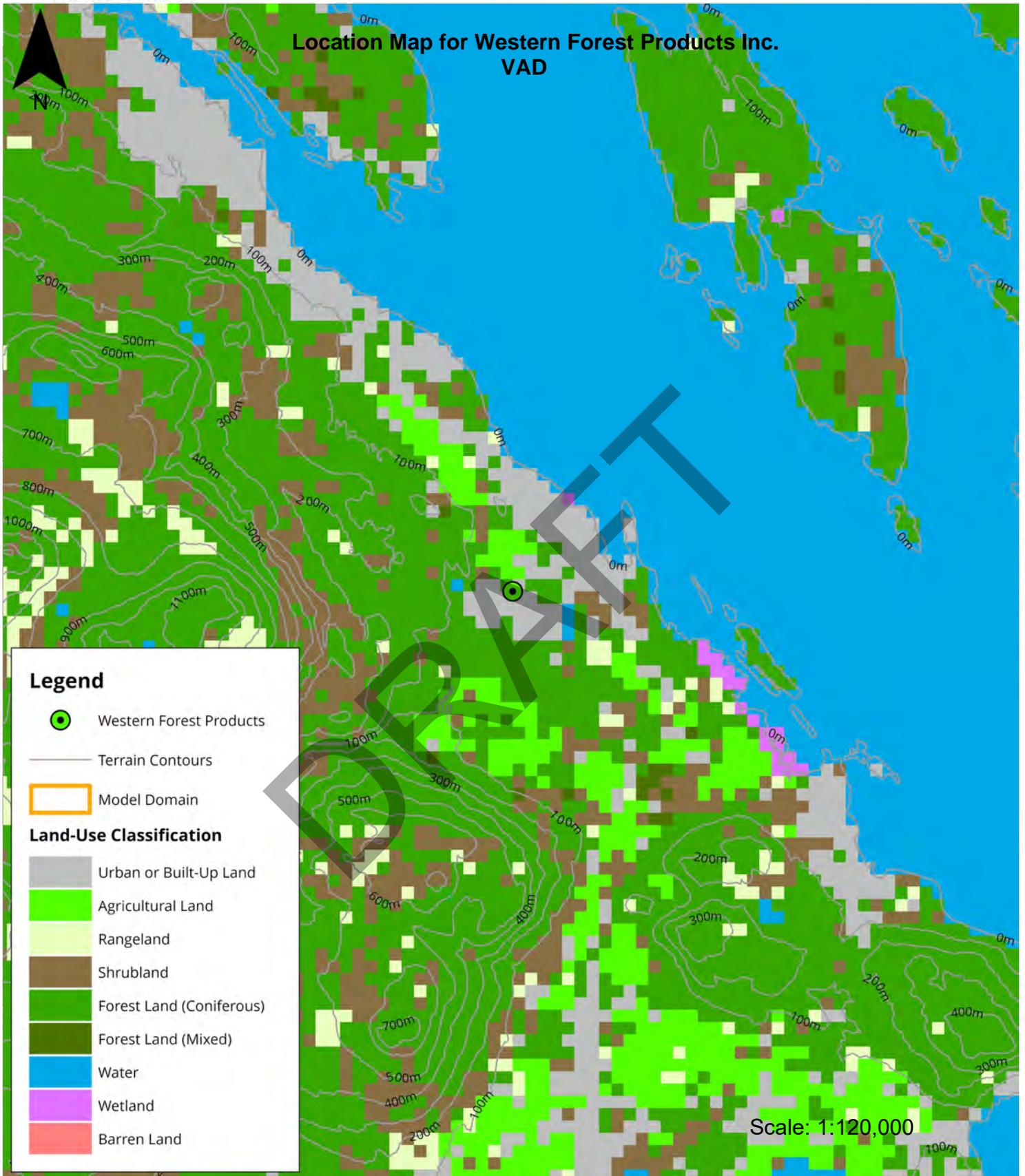
Figure 1 shows a map of the facility and surrounding areas, showing land use categories and nearby industrial facilities.

## 1.3 Qualified Professional

The following qualified professional has contributed to this application.

- Jeff Lundgren, M.Sc., Technical Director at RWDI: reviewed the technical assessment report and acted as advisor to Western Forest Products Inc. on this application.

See Appendix B for their signed Conflict of Interest and Declaration of Competency forms.



AUTHORIZATION:

Date:

(Office Use Only)

for Director, *Environmental Management Act*

(Office Use Only)



## 2 ENVIRONMENTAL SETTING – METEOROLOGY

The meteorological setting is described in the accompanying **Air Quality Dispersion Model Study** in **Appendix B - CALMET**.

## 3 AIR DISCHARGES AND TREATMENT

### 3.1 Pollution Control Works

The 1<sup>st</sup> kiln will be heated by two 12MMBTU/hr direct-fired natural gas burners for a total capacity of 24MMBTU/hr, which is expected to operate at 17MMBtu/hr. Heat from the combustion chambers is circulated through ducts and a plenum into the kiln enclosure via a large fan for each burner. The kiln drying section will have 12 square vents approximately 30 inch x 30 inch throughout the roof of the drying chamber to allow for steam to escape. The vent opening is controlled by humidity and temperature inside the kiln. Each end of the kiln will have a vapour extraction fan to force vapour out of the end of the non-heated conditioning chambers. The vapour extraction fans are 20,000 cubic feet per minute (cfm), 32 feet diameter, and approximately 35 feet off the ground. The species to be dried may include a mix of coastal species including Hemlock, Douglas Fir, Western Red Cedar, Yellow Cedar, and Balsam. The condensate system is described in section 6.3 below. Each subsequently built kiln will have similar operational parameters.

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## 3.2 Emission Inventory

The point source emissions are summarized in Table 1. Kiln emissions are provided in Table 2. In each table the emissions for sources already authorized under existing permit PA-13257 are also included. This is because both existing emissions and proposed sources were modelled in the accompanying Air Quality Dispersion Modelling Report.

For point sources, emissions of TPM were allocated into PM<sub>2.5</sub> and PM<sub>10</sub> using the fractions for 'wood handling sources' given in the NPRI guidance for reporting emissions of 'Wood Products Operations'. <https://www.canada.ca/en/environment-climate-change/services/national-pollutant-release-inventory/report/tools-calculating-emissions/wood-products-operations.html>. This results in PM<sub>2.5</sub> and PM<sub>10</sub> fractions of 11% and 67% of TPM, respectively.

Fractions for PM<sub>2.5</sub> or PM<sub>10</sub> for kiln emissions are not provided in the NPRI guidance. Thus, all TPM from kilns was assumed to be PM<sub>2.5</sub>.

As the Kilns are not specific point source locations, a latitude/longitude for each is not provided in Table 2. The source for all these can be considered the facility center of (48.9133N, 123.7395W) as was provided in the application form

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Table 1: Emissions Inventory for Existing Permitted and Proposed Future Point Sources

Source	Scenario	Latitude, Longitude (N, W)	EMS ID	Maximum Permitted Flow (SDm3/sec)	Maximum Permitted TPM Concentration (mg/SDm3)	Hours/year	TPM Emissions		PM <sub>10</sub> Fraction	PM <sub>10</sub> emissions		PM <sub>2.5</sub> Fraction	PM <sub>2.5</sub> emissions	
							t/yr	g/s		t/yr	g/s		t/yr	g/s
Resaw/Planer Mill Baghouse	Existing Permitted and Future Proposed	48.9142,-123.7376	E221400	23.3	20.0	6361	10.7	0.466	0.67	7.17	0.312	0.11	1.18	0.051
Chipper Cyclone 1	Existing Permitted and Future Proposed	48.9142,-123.7375	E310828	3.1	115.0	6361	8.2	0.357	0.67	5.49	0.239	0.11	0.90	0.039
Planer Mill Baghouse 2	Future Proposed	48.9131, 123.7378	-	23.3	20.0	6361	10.7	0.466	0.67	7.17	0.312	0.11	1.18	0.051

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**Table 2: Emissions Inventory for Existing Permitted and Proposed Future Kilns**

Source	Scenario	EMS ID	Hours/year	Production mmfbm/year <sup>(1)</sup>	Burner MMBTU/hr <sup>(2)</sup>	PM <sub>10</sub> <sup>(3)</sup>		PM <sub>2.5</sub> <sup>(3)</sup>		VOC		NO <sub>x</sub>	
						t/yr	g/s	t/yr	g/s	t/yr	g/s	t/yr	g/s
Lumber Dry Kilns 1-10	Existing Permitted	E221492	8766	110	125	56.494	1.79	56.494	1.79	20.27	0.64	48.61	1.54
2 Continuous Kilns	Future Proposed		8766	140	66	69.155	2.19	69.155	2.19	23.82	0.76	25.73	0.82
2 Small Continuous Kilns	Future Proposed		8766	84	41	41.535	1.32	41.535	1.32	14.32	0.45	15.98	0.51
2 Specialty Batch Kilns	Future Proposed		8766	30	30	15.289	0.48	15.289	0.48	5.44	0.17	11.69	0.37

Notes:

- (1) Emissions from MoE Discharge Factors 4.2.1
- (2) Emissions from US EPA 42 Factors for Gas Burners
- (3) All PM emissions assumed to be PM<sub>25</sub>



### 3.3 Source Parameters

Sources parameters for Existing Permitted and Proposed Future Point Sources as listed below in Table 3. Buoyant Area Source Parameters for Existing Permitted and Proposed Future Kilns are given in Table 4.

**Table 3: Source Parameters for Existing Permitted and Proposed Future Point Sources.**

Source	Scenario	Stack Height (m)	Stack Inner Diameter (m)	Exit Velocity (m/s)	Exit Temp (°C)	Building Downwash (y/n)
Resaw/Planer Mill Baghouse	Existing Permitted and Future Proposed	10	1.2	20.6	293.2	Y
Chipper Cyclone 1	Existing Permitted and Future Proposed	15	0.8	6.2	293.2	Y
Planer Mill Baghouse 2	Future Proposed	22.1	1.6	6.5	293.2	Y

**Table 4: Buoyant Area Source Parameters for Existing Permitted and Proposed Future Kilns.**

Source	Scenario	Emissions Height (m)	Exit Temp (°C)	Weff (m/s)	Reff (m)	Sigma <sub>z</sub> (m)
Lumber Dry Kilns	Existing Permitted	10.7	361	1.0	37.2	1
Continuous Kilns	Future Proposed	9.1	361	1	18.0	1
Small Continuous Kilns	Future Proposed	9.1	361	1	15.9	1
Specialty Kilns	Future Proposed	9.1	361	1	16.2	1

### 3.4 Assessment of Best Practices

Please see Appendix C, which includes an assessment of continuous kilns being the best lumber drying practice from an air emissions perspective.

### 3.5 Emissions Offsets

There are no emissions offsets associated with the currently permit sources or the proposed sources.

### 3.6 Process Flow Diagrams for Waste Streams

A process flow diagram for the facility is included in Appendix D.

### 3.7 Detailed Site Plan

Figure 2 shows a detailed site plan including the locations for the existing and propose points sources and kiln discharges.

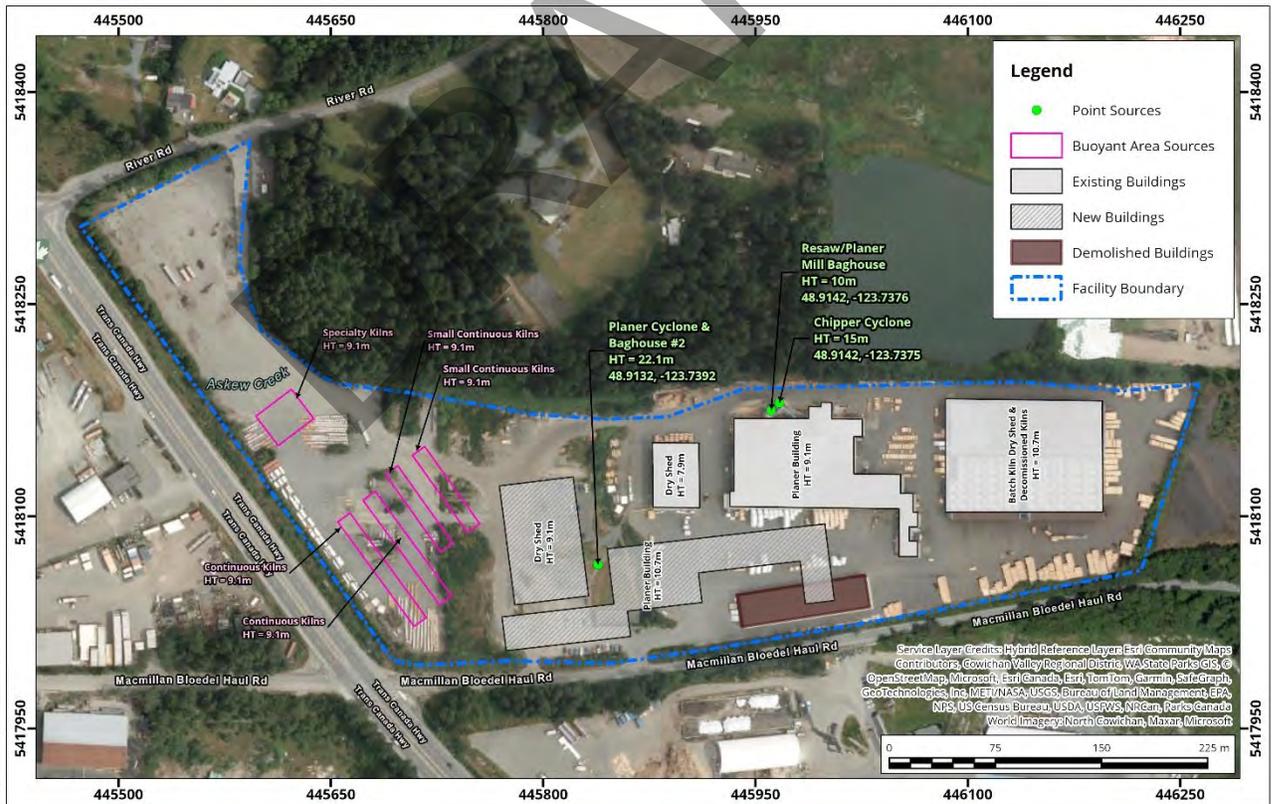


Figure 2: Site Plan for Western Forest Products Inc. Value Added Division showing emission points.



## 4 IMPACT ASSESSMENT

### 4.1 Impacts And Risks

A detailed assessment of the air quality changes is provided in the accompanying Air Quality Dispersion Model Report.

In summary, the proposed project is predicted to result in minimal increases in ambient air quality parameters. There are small increases in predicted NO<sub>2</sub> concentrations, but maximum predictions close to the facility are well below ambient objectives. The Project does result in predicted exceedances of 24-hr and annual PM<sub>2.5</sub> objectives and additional exceedances of the 24-hr PM<sub>10</sub> objective, but these are limited to within 100m of the facility boundary to the south over industrial areas and do not reach sensitive receptors such as the Church or dog kennels to the north. Elevation concentrations to the north were predicted to occur over a band of trees that will act as natural mitigation of airborne PM. There are predicted localized increases of VOC concentrations, but these are small and secondary PM formation is not likely to affect ambient PM levels in the vicinity of the Project. There are no predicted discernable changes to local air quality or human health.

The air quality assessment methodology and details of predicted concentrations of pollutants of concern are provided in the accompanying Air Quality Dispersion Model Report.

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## 5 MONITORING PLANS

### 5.1 Discharge Monitoring Plan

The facility's current permit doesn't require source testing, and the facility doesn't currently conduct source testing. Because this is a minor amendment to the existing permit, the requirement for source testing isn't anticipated to change.

### 5.2 Baseline Ambient Monitoring Plan

Current and/or Historical ambient monitoring of pollutants of interest is described in the Air Quality Dispersion Modelling Report. There are no plans for additional ambient monitoring.

### 5.3 Post-Permitting Ambient Monitoring Plan

As there are no predicted discernable changes to local air quality or human health, there is no plan for site specific post permit ambient monitoring.

## 6 MANAGEMENT PLANS

### 6.1 Maintenance Start-Up and Shutdown Plan

The facility's current permit doesn't require a maintenance start-up and shutdown plan, and the kiln and wood handling emission profiles are such that there is no significant changes during these periods. Unlike, for example, a waste-to-energy incinerator that requires time to reach full temperature in the combustion chamber, or a gas plant that may have to flare excess gas during a shutdown, there is little or no change in emissions when either starting or stopping the kilns or the planers. Therefore, no specific plan for either is required.

### 6.2 Air Episode Management Plan

The facility's current permit doesn't require an air episode management plan, and the facility doesn't currently have one. Since the facility sources are relatively minor sources of emissions and there is only one other large industrial source nearby, the contribution of the facility to cumulative impacts during air quality episodes in the region is expected to be negligible. As a result, it's not anticipated that an air episode management plan will be required.

### 6.3 Fugitive Dust Management Plan

The facility's fugitive dust management plan is attached in Appendix E.



## 6.4 Treatment Residuals Management Plan

Kiln condensate will be collected by gravity in drains and sumps and pumped to a large boil off tank and evaporated. The kiln is proposed to come with a 7.5 MMBtu/hr condensate burner, but will be designed to be operated at 2.5 MMBtu/hr.

Other potential kiln condensate treatment methods which may be considered in the future include discharging to the local sanitary sewer system, or to the existing on-site stormwater collection and treatment pond.

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## **7 STATEMENT OF LIMITATION**

This report entitled “Technical Assessment Report for Western Forest Products Inc. Value Added Division” was prepared by RWDI AIR Inc. (“RWDI”) for Western Forest Products Inc. (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

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## 8 REFERENCES

United States Environmental Protection Agency (U.S. EPA), 1998. AP 42, Fifth Edition, Volume 1 Chapter 1: External Combustion Sources. Website: [https://www.epa.gov/sites/default/files/2020-09/documents/1.4\\_natural\\_gas\\_combustion.pdf](https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf)

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## APPENDIX A

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# Information Requirements Table for Air Emissions

Application Tracking Number: 433987  
 Authorization Number: 13257  
 Western Forest Products Inc. VAD

Applicant Summary		Ministry of Environment	
<b>Application Tracking #</b>	<b>433987</b>	<b>Prepared by:</b>	<b>Peter Lawrie</b>
<b>Authorization #</b>	<b>13257</b>	<b>Title:</b>	<b>Section Head</b>
<b>Applicant / Facility Name:</b>	<b>Western Forest Products Inc. Value Added Division</b>	<b>Date:</b>	<b>2024-03-14</b>

The *Information Requirements Table (IRT) for Air Emissions* is a tool used by Ministry of Environment and Climate Change Strategy (ENV) staff to document specific guidance and instructions given to an applicant pursuing authorization to discharge under the *Environmental Management Act*.

Note: this document was developed to capture all the items and complexities concerning air emissions.

Accordingly, for any given application, not all the items will apply and not all required items will warrant detailed discussion of methods and other concerns.

As part of the Preliminary Application Phase, ENV will discuss with the applicant the items listed in this table to determine what will be required in support of their final application. A tick mark in the "Required" box of the "Requirements" Column in the table indicates an information item to be included into the application package as agreed to by both parties or as directed by ENV. Should it be determined that specific methods will be used to derive this information, this will be specified with a tick mark in the "Methods" box and specific details in the Comments column. In cases where complex impact assessments are to be undertaken, agreement on the methods used will be required. For simple methods, the methods used could be discussed with the applicant in a meeting and noted in the "Comments" column as agreed to in the table. For more complex methods, the applicant may be required to submit a "Methods Package" by an agreed date for ENV review, comment and acceptance. Once methods are accepted by ENV they should be either described in the "Comments" column and/or a reference made to the document describing the Methods Package.

If an IRT is required, the Final IRT will form part of an Application Instruction Document (AID) which documents application submission requirements for the applicant. The AID is issued by the Director after a preliminary application meeting has occurred. The AID will also include specific instructions related to the signoff of Qualified Professionals for Declaration of Competency and Conflict of interest.

When submitting the final application, please ensure the IRT is also submitted with the "Location" Column filled out to identify where each of the required items is located in the final application for all information requirements identified.

The ENV will be screening and assessing this application against this table and it is expected that the applicant does the same prior to any preliminary meetings and/or prior to any final submissions. The Ministry will be screening the final received application against the requirements noted in the Final AID to ensure it is complete before resources are dedicated to a full, detailed review.

# Information Requirements Table for Air Emissions

Application Tracking Number: 433987  
 Authorization Number: 13257  
 Western Forest Products Inc. VAD

Information	Requirements	Comments	Location in Final Application
<b>1 PROJECT DESCRIPTION</b>			
<p>1.1 <del>Describe the project including the proposed facilities and processes, an existing facility overview and describe the products</del></p> <p>Provide a summary of the proposed changes. E.g. Upgrading existing primary wood manufacturing facility to eliminate stud mill and add additional drying capacity.</p> <p>Describe the project as it relates to <u>changes in waste discharges</u>.</p> <p>(a) a description of the waste in general terms based on the origin or nature of the operation that produced it;</p> <p>(b) the characteristics of the waste in specific terms including the content of potential pollution causing substances expressed in metric scientific units;</p> <p>(c) the volume of material to be discharged, emitted or stored during a specific time period;</p> <p>(d) changes in discharge works (additions and removals); and</p> <p>(d) proposed implementation phases and dates.</p>	Required <input checked="" type="checkbox"/>		In Technical Assessment Report (TAR) Section 1.1
1.2 <del>Describe the project permitting history and list related reports</del>	Required <input type="checkbox"/>		
1.3 <del>Provide a location map of the facility and surrounding areas and include scale. Identify the project location including site and surrounding land uses and other industrial facilities in the area</del>	Required <input checked="" type="checkbox"/>	<p>Facility location of GPS coordinates must be in decimal degrees and to the fourth decimal place.</p> <p>Ministry template:</p> <p><a href="https://www2.gov.bc.ca/assets/gov/environment/waste-management/waste-discharge-authorization/guides/forms/epd-ema-08_location_map_form.pdf">https://www2.gov.bc.ca/assets/gov/environment/waste-management/waste-discharge-authorization/guides/forms/epd-ema-08_location_map_form.pdf</a></p>	Figure 1 in Section 1.2 of TAR
1.4 <del>List of Qualified Professionals and signed Conflict of Interest &amp; Declaration of Competency</del>	Required <input checked="" type="checkbox"/>	Must have a combination of suitable education, training, experience acceptable to the Director and both forms signed	Section 1.3 and Appendix B of TAR
<b>2 ENVIRONMENTAL SETTING – METEOROLOGY</b>			

# Information Requirements Table for Air Emissions

Application Tracking Number: 433987

Authorization Number: 13257

Western Forest Products Inc. VAD

Information	Requirements	Comments	Location in Final Application
2.1 Provide a detailed map showing the location of all site-specific and regional meteorological stations in relation to project facilities	Required <input checked="" type="checkbox"/>		Figure 1 in Air Quality Q Dispersion Modelling Report (AQ Report)
2.2 Baseline meteorological study	Required <input checked="" type="checkbox"/>		Appendix B in AQ Report
<b>3 AIR DISCHARGES AND TREATMENT</b>			
3.1 Provide a description of pollution control works and treatment efficiencies based on manufacturer specifications for pollution control works or an engineering assessment.  Include efficacy evaluation by a Qualified Professional for the cyclones for the material to be treated. Include a description of the venting systems of the kilns and the heating sources. Provide an breakdown of the species and approximate proportion to be processed.	Required <input checked="" type="checkbox"/>		Section 3.1 of TAR
3.2 Provide an emissions inventory that includes for each contaminant and source (point and non-point sources) <ul style="list-style-type: none"> <li>• % change (if an amendment)</li> <li>• Maximum and average discharge rate (g/s) and concentration (mg/m<sup>3</sup>) for each contaminant</li> <li>• Maximum and average flow rate</li> <li>• Operating durations (i.e. hours per day, days per year) and frequency</li> <li>• Discharge location in decimal degrees, to the fourth decimal place</li> <li>• Clarify methods used to determine emissions summary</li> </ul>	Required <input checked="" type="checkbox"/>		Section 3.2 of TAR
3.3 For each point-source discharge provide: <ul style="list-style-type: none"> <li>• Stack height (m)</li> <li>• Stack top inside diameter (m)</li> <li>• Elevation of stack base (m above sea level)</li> <li>• Stack gas exit velocity (m/s)</li> <li>• Stack gas discharge temperature</li> </ul>	Required <input checked="" type="checkbox"/>		Section 3.3 of TAR
3.4 Best Achievable Technology Assessment by QP and/or assessment of Best Practices <a href="http://gov.bc.ca">Best Achievable Technology Steps (gov.bc.ca)</a>	Required <input checked="" type="checkbox"/>	Prepared by a QP	Section 3.4 and Appendix D of TAR

# Information Requirements Table for Air Emissions

Application Tracking Number: 433987

Authorization Number: 13257

Western Forest Products Inc. VAD

Information	Requirements	Comments	Location in Final Application
3.5 Describe emissions offsets (if applicable)	Required <input checked="" type="checkbox"/>		Section 3.5 of TAR
3.6 Provide process flow diagrams for waste streams	Required <input checked="" type="checkbox"/>		Section 3.6 of and Appedinx D of TAR
3.7 Detailed site plan that includes locations and coordinates (as appropriate) for each point and non-point discharge  Coordinates must be in decimal degrees and to the fourth decimal place	Required <input checked="" type="checkbox"/>	Prepared by a QP <a href="https://www2.gov.bc.ca/assets/gov/environment/waste-management/waste-discharge-authorization/guides/forms/epd-ema-09_site_plan_form.pdf">https://www2.gov.bc.ca/assets/gov/environment/waste-management/waste-discharge-authorization/guides/forms/epd-ema-09_site_plan_form.pdf</a>	Section 3.7 of TAR and Figure 2
<b>4 IMPACT ASSESSMENT</b>			
4.1 Provide a plain language summary of the impacts and risks based on technical assessment	Required <input checked="" type="checkbox"/>		Section 4.1 of TAR
4.2 Baseline meteorological and air quality monitoring report for the proposed discharges and facility.	Required <input checked="" type="checkbox"/>		Section 2.4 and Appendix B of AQ Report
4.3 Provide a summary of previous stack tests which may include a Continuous Emissions Monitoring Systems (CEMS) data summary and interpretation	Required <input type="checkbox"/>	(For existing facilities) Provide data summary in digital format.	
4.4 Dispersion modelling plan and report (dispersion modeling plan must be approved by an ENV Air Quality Meteorologist) Prepared by a QP.	Required <input checked="" type="checkbox"/>	Prepared by a QP. <a href="http://www.bcairquality.ca/assessment/dispersion-modelling.html">http://www.bcairquality.ca/assessment/dispersion-modelling.html</a>	Appendix A of AQ Report
<b>5 MONITORING PLANS</b>			
5.1 Provide a discharge monitoring (point source) plan for all proposed emissions	Required <input checked="" type="checkbox"/>		Section 5.1 of TAR
5.2 Provide a Baseline Ambient Monitoring (pre-permitting) plan (may include existing stations, if applicable)	Required <input checked="" type="checkbox"/>		Section 5.2 of TAR
5.3 Provide a Ambient Monitoring (post-permitting) plan	Required <input checked="" type="checkbox"/>		Section 5.3 of TAR
5.4 Continuous Emissions Monitoring /Process Monitoring Systems (i.e. pressure drop in baghouses, opacity monitoring etc.)	Required <input type="checkbox"/>		
<b>6 MANAGEMENT PLANS</b>			
6.1 Maintenance Start-up and Shutdown Plan • Outline procedures to reduce air emissions during start-up and shutdown periods	Required <input checked="" type="checkbox"/>		Section 6.1 of TAR

# Information Requirements Table for Air Emissions

Application Tracking Number: 433987  
 Authorization Number: 13257  
 Western Forest Products Inc. VAD

Information	Requirements	Comments	Location in Final Application
6.2 <u>Air Episode Management Plan</u> <ul style="list-style-type: none"> <li>Outline procedures to reduce air emissions during air quality advisories</li> </ul>	Required <input checked="" type="checkbox"/>		Section 6.2 of TAR
6.3 <u>Fugitive Dust Management Plan</u> <ul style="list-style-type: none"> <li>Specify facility areas with high risk of fugitive dust generation</li> <li>Facility inspection and monitoring schedule</li> <li>Fugitive dust mitigation measures and documentation</li> <li>Record keeping and data submission requirements</li> </ul>	Required <input checked="" type="checkbox"/>	Ministry Fugitive Dust Management Plan guidance document available.	Section 6.3 of TAR
6.4 <u>Treatment Residuals Management Plan</u> Treatment method for kiln condensate	Required <input checked="" type="checkbox"/>		Section 6.4 of TAR
6.5 <u>Odour Management Plan</u>	Required <input type="checkbox"/>		

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## APPENDIX B

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## Conflict of Interest Disclosure Statement

A qualified professional <sup>1</sup> providing services to either the Ministry of Environment and Climate Change Strategy (“ministry”), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person’s business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

### Declaration

I Jeff Lundgren, as a member of NA  
declare

#### **Select one of the following:**

Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Permit application.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Peter Lawrie, erring on the side of caution.

Real or perceived conflict of interest

Description and nature of conflict(s):

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I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

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Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X Jeff Lundgren

Print name: Jeff Lundgren

Date: 07/23/2024

Witnessed by:

X Matthew Sawycky

Print name: Matthew Sawycky

<sup>1</sup>Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

## Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals<sup>1</sup>, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Jeff Lundgren  
Title Technical Director and Principal
2. Are you a registered member of a professional association in B.C.?  Yes  No  
Name of Association: \_\_\_\_\_ Registration # \_\_\_\_\_
3. Brief description of professional services:  
Emissions estimation and permitting support

This declaration of competency is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

## Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

**X** Jeff Lundgren

Print Name: Jeff Lundgren

Witnessed by:

**X** Matthew Sawycky

Print Name: Matthew Sawycky

Date signed: 07/23/2024

<sup>1</sup>Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

## APPENDIX C

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# ASSESSMENT OF BEST PRACTICES FOR A CONTINUOUS LUMBER DRY KILN AND SAWDUST CYCLONE

To: Peter Lawrie, Section Head, Ministry of Environment and Climate Change Strategy

From: Jarrad Astren, P. Eng., Capital Projects Engineer

Date: January 29<sup>th</sup>, 2025

**Re: Information Requirements Table for Air Emissions, Application Tracking Number 433987, Authorization Number 13257, Western Forest Products Inc., Value Added Division**

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## Preface

This *Assessment of Best Practices* memo is not intended to satisfy a *Best Achievable Technology Assessment (BAT)* by QP.

## Assessment of Best Practices for a Continuous Lumber Dry Kiln

In the North American lumber industry there are two predominant types of lumber drying kilns used for drying boards in the sub-timber (< 6" thick) size class: batch kilns and continuous kilns. The operation of batch kilns involves loading a kiln full of lumber stacked on carts, closing doors at each end, and drying the lumber until the desired final moisture content is reached. Continuous kilns operate by carts of lumber being pushed through the kiln on two tracks in counterflow directions at frequent intervals ( $\leq 1$ hr) at a push rate required to reach the desired final moisture content. Continuous kilns achieve operational efficiencies due to the inherent lumber conditioning performance of the counterflow design. While other lumber drying kiln technologies exist, such as radio-frequency drying, they are not viable options for the application and scale of Western Forest Products' (WFP) business.

There are various heating mediums used in lumber drying kilns, but this assessment only considers direct-fired natural gas heated kilns and not indirect heating mediums such as thermal oil, water, or steam which typically require standalone biomass energy plants to provide heat. This assessment assumes that the primary metric used to assess air emission best practices is the volume of lumber dried per unit of natural gas burned, which could be generally described as the energy efficiency of the kiln.

Kiln drying performance is highly variable based on a number of factors including: species of lumber being dried, lumber size, moisture content, ambient conditions such as temperature and humidity, and more. To describe WFP's assessment of lumber drying best practices real world examples from both 3 batch kilns and a continuous kiln drying a substantially similar product mix at the WFP Saltair Sawmill in Ladysmith, BC, which standardize the variable factors, is described.

	Lumber Dried per Year [MMFBM]	Length [ft]	Operating Hours per Year	Avg. Burner Output [MMBtu/hr]	Annual Lumber Dried per Gas Usage [FBM/MMBtu]	Annual Lumber Dried per Footprint Length [MFBM/ft]
Batch Kilns	47	1050	8082	27	<b>215.4</b>	44.8
Continuous Kilns	70	420	8400	21.7	<b>384.0</b>	166.7

## Notes:

- The batch kilns volume of lumber dried is the 2023 actual, nominal count
- The continuous kiln volume of lumber dried is based on the design data, which we are on track to do YTD
- Burner output is assumed to be maximum nameplate, although either type of kiln may operate at lower outputs

- Operating hours per year is based on known uptime information

Additionally, there are no known options of industry proven technology for further energy recovery or efficiency improvement within the direct fired natural gas kiln heating medium known to WFP.

#### Assessment of Best Practices for a Sawmill Sawdust Cyclone & Baghouse

The cyclone-baghouse combination is the industry standard for filtering Particulate Matter (PM) from a dust collection system in a wood processing facility. The supplier of the dust collection equipment provides a performance guarantee that the emissions will emit no more than 20mg of wood dust particulate matter per cubic meter of discharged air.

#### Conclusion

Based on empirical samples from the WFP Saltair sawmill, which supports expectations based on manufacturer design bases, the continuous kiln is ~78% more efficient than the batch kilns on a lumber/energy density basis. Therefore, it is WFP's assessment that continuous kilns are the technology of choice to pursue for future investments in lumber drying.

Jarrad Astren, P.Eng, Capital Projects Engineer

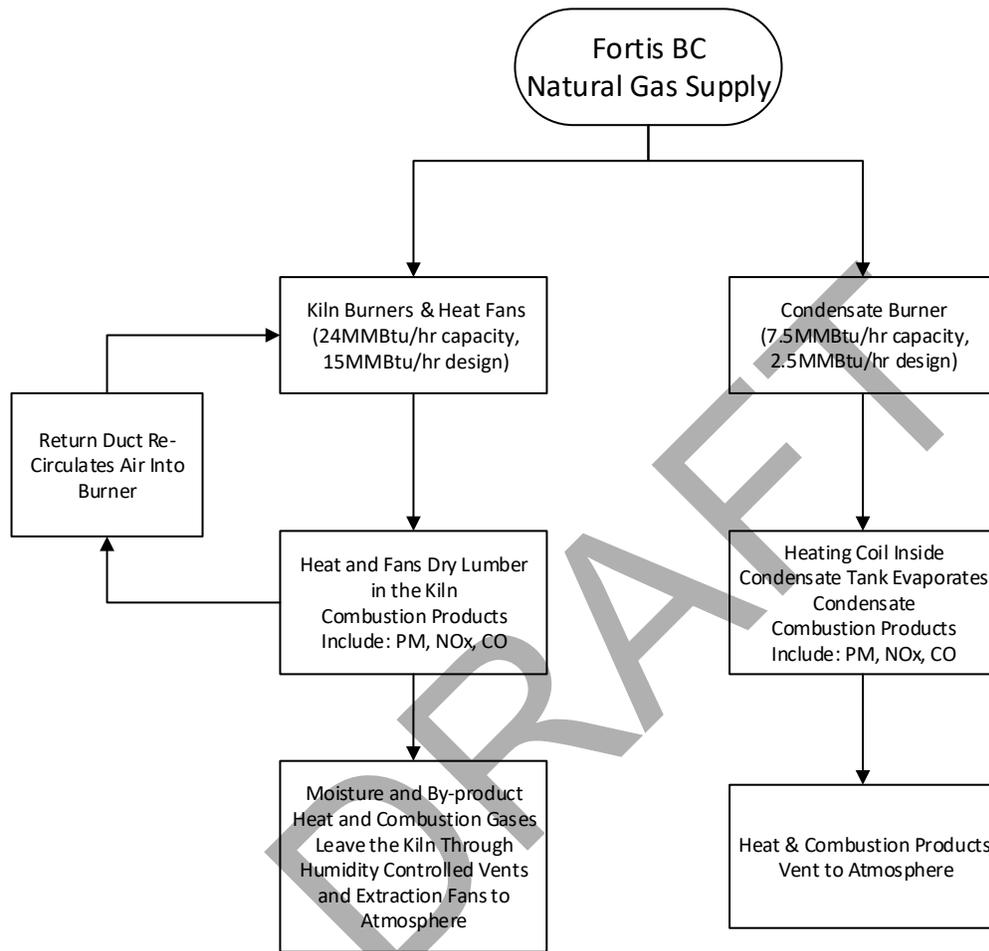


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## APPENDIX D

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## APPENDIX E

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**Fugitive Dust Checklist - Chemainus VAD Facility**

*Inspection Date:*

*Completed By:*

<b>Area</b>	<b>Observations</b>	<b>Action Required?</b>	<b>Details/Corrective Action Plan/Work Order</b>	<b>Due Date</b>
Yard Perimeter – West	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		
Chip Bins, Cyclones, Baghouse	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		
Yard Perimeter – North	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		
Yard Perimeter – East	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		
Yard Perimeter – South	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		
Office & Employee Parking	- Location of Dust or Debris:	Y / N / NA		
	- Source(s)	Y / N / NA		
	- Storm Drains & Ditches Clear	Y / N / NA		
	- Other	Y / N / NA		
		Y / N / NA		

# FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

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## 1.0 Introduction

### 1.1 Company and Permit

Western Forest Products Inc. (WFP) operates the Chemainus Value Added Division (VAD) facility (the Facility) located at 9469 Trans-Canada Highway, Chemainus, BC (see Figure 1 below).

WFP currently holds a permit to discharge air contaminants under the provisions of the Environmental Management Act (permit number 13257) (the Permit) at the Facility. The air discharge permit was amended by the BC Ministry of Environment on December 11, 2019. A requirement of the permit is to control fugitive dust emissions through the preparation and implementation of a fugitive dust management plan (the Plan), which must be implemented and maintained to suppress fugitive dust at the Facility.

Specific conditions of the Permit pertaining to fugitive dust emissions control are described in Section 2.6 and 3.1, as copied below:

#### “2.6 Fugitive Emissions Control

2.6.1 The permittee must suppress fugitive dust emissions at the facility according to the site Fugitive Dust Management Plan.

2.6.2 The permittee must submit, implement and maintain a Fugitive Dust Management Plan acceptable to the director within 90 days of the date of this Authorization, and must comply with any additional control measures on Fugitive Emissions that the director may require.

2.6.3 The permittee must, within 90 days of the date of this authorization, commence maintaining records of all mitigation procedures and activities employed to reduce the amount of dust generated at the Facility as required by the site Fugitive Dust Management Plan.

2.6.4 The permittee must always make the Fugitive Dust Mitigation Plan available for inspection by Ministry staff.”

#### “3.1 Facility Operation Records

The permittee must keep records of Facility operations conditions, inspections and maintenance as required by Sections 2.2, 2.5 and 2.6. The records must be maintained for a minimum of five years and be made available for inspection by Ministry staff.”

# FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

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## 1.2 Purpose of the Plan

The purpose of the Plan is to guide fugitive dust control activities at the Facility consistent with the above Permit requirements.

## 2.0 Roles and Responsibilities

Development of, and updating the Plan, when required, is the responsibility of WFP's Director of Environment with support from VAD operations personnel. VAD operations personnel are responsible for implementation of the Plan as set out in the Plan and compliance with the Permit conditions.

## 3.0 Facility Description and Setting

VAD is owned and operated by WFP. It is located at 9469 Trans Canada Highway in Chemainus and has been operating at this location for decades (Figure 1). Details of the Facility are shown in Figure 2.

VAD is a remanufacturing operation that processes lumber from sawmills owned and operated by WFP.

The Facility includes a planer, a resaw and dry kilns to manufacture lumber into finished and unfinished products that are transported on trucks to customers or other facilities for further processing. Residual products include chips and sawdust.

The VAD property is primarily paved, with a small unpaved area in the west corner of the property (Figure 2). Potential sources of fugitive dust emissions include:

- Shavings escaping from the trucks when loading chips,
- Road dust in parking areas,
- Sawdust and residue from material handling, and
- Shavings coming out of the cyclones and bag-house.

# FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

Figure 1. VAD Location.



## FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

Figure 2. VAD Plant.



### 4.0 Plan Implementation

#### 4.1 Training

All WFP operations personnel at VAD are trained in the implementation of the Plan. For new employees, the Plan will be included in the new employee training and onboarding program.

The effectiveness of the Plan will be reviewed annually by the Director of Environment with support from VAD operations to ensure:

- An ongoing awareness of the need to report and manage fugitive dust,
- That the Plan reflects current conditions, and
- That the Plan is effective in the prevention of fugitive dust as reflected by observation, inspection records and the history of complaints.

It is the responsibility of every WFP employee and contractor to observe and report spills, fugitive emissions, abnormal point source emissions and any other occurrence that can have an impact on the environment in accordance with WFP's Environmental Policy.



## FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

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### 4.2 Mitigation Measures and Maintenance

WFP employs a number of mitigation measures onsite to manage fugitive dust emissions including the following:

- Pavement of the entire Facility
- Implementation of a weekly yard fugitive dust control checklist (Attachment A)
- Maintain lowest feasible volumes of wood chips and sawdust
- Wet sweepers used to remove wood fines, traction material and dust from roadways as required
- Manage source of potential dust by frequent maintenance and repairs of baghouse and cyclones and associated ductworks.

Mitigation, frequency of inspection, responsibility, records retained and actions taken are summarized in Table 1.

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## FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

Table 1. Mitigation measures implemented at VAD to control fugitive dust.

Mitigation Measure	Frequency	Who is Responsible	Records	Actions
Yard Fugitive Dust Control Checklist	Weekly	Supervisor or delegate	Fugitive Dust Management Checklist	Actions are dealt with upon discovery or prioritized into clean-up work plans
Street sweeping of site roadways	As required	Supervisor or delegate	Fugitive Dust Management Checklist Frequency of services is adjusted as needed. Invoices are kept for frequency tracking.	Site Administrator coordinates frequency of Power Sweep contractor
Trucks to remove chips and sawdust regularly to reduce stock-piling	~10 loads per week	Supervisor or delegate	Fugitive Dust Management Checklist Freight companies provide records to WFP Fiber Supply to support tracking and invoicing.	Supervisor or delegate contacts WFP Fiber Supply to advise if additional trucks are required
Loaders to maintain excess chips, dust and other debris into designated area	As required	Loader Operations Supervisor	Fugitive Dust Management Checklist Advise WFP Fiber Supply if truck resources are required to remove debris and/or prioritize clean-up resources.	Actions are dealt with upon discovery or prioritized into clean-up work plans. Fiber Supply coordinates resources with freight companies
Regular maintenance to ensure equipment functioning as intended	As required	Supervisor or delegate	Fugitive Dust Management Checklist	Actions are addressed upon discovery or prioritized into maintenance work plans



## FUGITIVE DUST MANAGEMENT PLAN – CHEMAINUS – VALUE ADDED DIVISION

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### VERSION HISTORY

	Revisions By	Revision Date	Description of Revision	Approval
1.0	A Chrystal	December 21, 2020	Technical and legal comments	B. Sander

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