Notice of Construction (NOC) Worksheet

PUGET SOUND
Clean Air Agency

Source: Darrington Wood Innovation Center LLC	**NOC Number:** 12246
Installation Address: 1300 Block of SR 530 | Darrington, WA 98241	**Registration Number:** 30402
Contact Name: Dan Rankin	**Contact Email:** Dan.Rankin@darringtonwa.us
Applied Date: 03/30/2022	**Contact Phone:** 360-436-1131
Engineer: Carl Slimp	**Inspector:** Rain Yates

A. DESCRIPTION

For the Order of Approval:
Darrington Wood Innovation Center LLC (DWIC) to construct a forest-to housing manufacturing facility in Darrington, WA

The facility will include a debarker, a sawmill, 10 lumber kilns with a total drying capacity of 21,188 thousand-board feet (Mbdft) per year, a 28 MMBtu/hr biomass boiler, six MMBtu per hour emergency diesel-fired boiler, a Glulam Beam and cross laminated timber (CLT) panel assembly process, and a modular unit construction operation. All components will be manufactured onsite from whole log feedstock. CLT panels, pre-fabricated wall and floor panels, and other structural members will be pieced together to create modular units for residential and commercial use.

Additional Information (if needed):

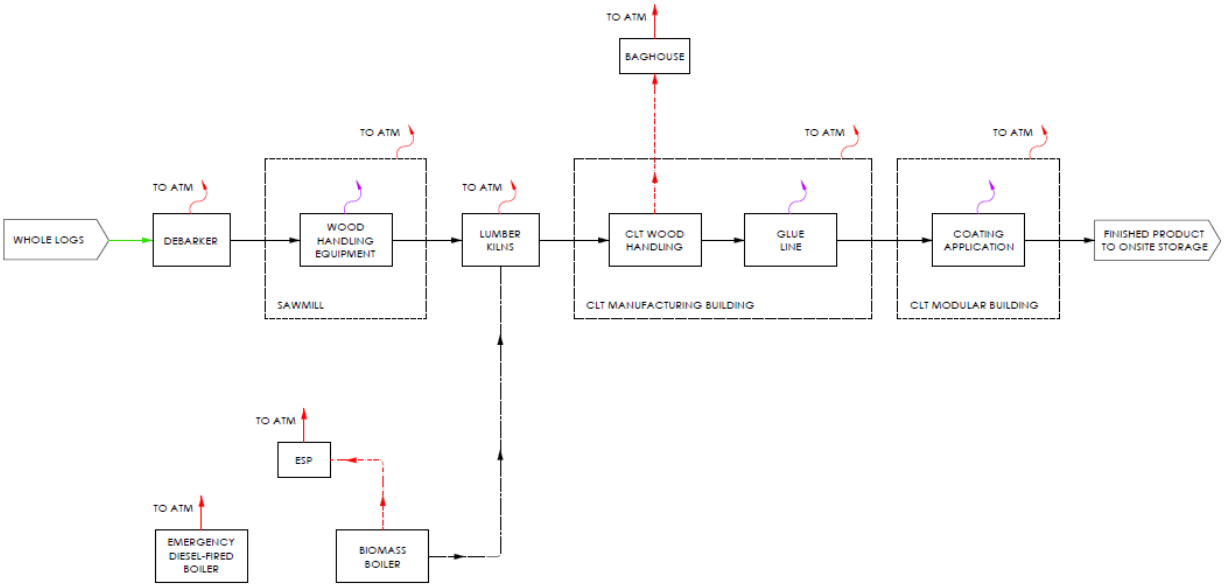
Facility

Whole logs will be delivered by truck and stored in an onsite log yard. Whole logs will be received directly from point of harvest with a moisture content between 40 and 60 percent on a wet basis (also referred to as “green”). Harvested wood species will primarily include Western Hemlock, Douglas Fir, Engelmann Spruce, and Larch. DWIC anticipates Douglas Fir and Larch will represent approximately 75 percent of annual production, with the remaining 25 percent split between Western Hemlock and Engelmann Spruce.
From the log yard, whole logs will be arranged in the log deck prior to entering a debarking line via front end loader. The front end loader will then transport debarked logs to the sawmill. Once in the sawmill, debarked logs will be bucked (cut) to the appropriate length, sawn, then planed into pieces of green dimensional lumber. Green lumber dimensions will vary based on product specifications for the CLT facility. Bucked ends from green logs will be pneumatically transferred to a chipper for further processing prior to being moved by a front end loader to a fuel storage bin. The fuel storage bin will be used to supply fuel to the proposed biomass boiler.
After exiting the sawmill, green lumber will be stacked in one of the proposed batch lumber kilns. Green lumber will be dried at a maximum temperature of 200 degrees Fahrenheit and the drying cycle will last for up to 198 hours to achieve the required final moisture content of 12 percent (wet basis). DWIC is proposing to install 10 kiln stalls in two adjacent buildings. Each stall will have four roof vents for a total of 40 roof vents. The lumber kilns will be indirectly heated by steam from the proposed biomass boiler.

Dried lumber will be moved by front end loader to the CLT manufacturing building where it will be introduced to the CLT processing line. The dried lumber will be jointed, planed, cut to achieve the desired dimensions, then laid out in layers typically measuring 12 feet (ft) by 60 ft. The dimensions of each layer will depend on the type of CLT panel being produced. The layers will be conveyed to the glue line through an adhesive gate where a primer and an adhesive will be applied between each layer. Each subsequent layer of dried lumber will be laid out in an alternating perpendicular orientation to the previous layer. This process will be repeated until the desired thickness of the CLT panel is achieved which will be typically between 3 to 9 layers. The finished panel will be conveyed to a cold press. The cold press will utilize high pressure and radio frequencies to cure the adhesive and bind the layers together.

After pressing, CLT panels will be sent to a Computer Numeric Control (CNC) machine for removal of materials in areas where windows, doors, mechanical, electrical, and/or plumbing lines will be installed. After processing in the CNC machine, panels will go through a planer for final dimensioning. Shavings and wood residuals collected by residuals handling equipment inside the CLT manufacturing building will be pneumatically conveyed to a hog to reduce material size. Hogged materials will be transported by front end loader to a fuel storage bin that will provide fuel to the proposed biomass boiler. Shavings and sawdust containing glue shall not be used in the Hogfuel boiler. Exhaust from each jointer, saw, and the CNC machine will be routed to a downstream baghouse for control of particulate matter (PM) emissions prior to venting to atmosphere. Finished panels will be stored inside the CLT manufacturing building prior to moving to the modular construction building. Once in the CLT modular construction building, finished panels will be spray coated with a water-based wood oil inside a spray booth. After curing, finished panels will be sanded and assembled to create modular buildings of various sizes. Modular buildings will be stored onsite prior to shipment offsite to customers.

The proposed facility will utilize an emergency diesel-fired boiler rated for a maximum heat input capacity of six MMBtu per hour. The emergency boiler will only be used as backup during periods when the proposed biomass boiler is shut down. The emergency boiler will be operational during prescriptive maintenance periods not to exceed one 10-hour shift per day or 50 hours per year.



Proposed Equipment/Activities

Biomass Boiler
DWIC is proposing to install a biomass boiler manufactured by Polytechnik which will be rated for a maximum heat input capacity of 28 million British thermal units (MMBtu) per hour. The proposed biomass boiler will provide steam to heat the lumber kilns and process areas during winter months for personnel comfort. Hogged fuel from debarking and wood residuals collected onsite will be supplied to the proposed biomass boiler as fuel via a fuel storage bin. A Liquid Petroleum Gas (LPG) start up burner system shall be implemented from start up. This fuel will need to be stored onsite, as a gas pipeline is not an option for the facility.
Exhaust from the proposed biomass boiler will be routed through a multi-clone for removal of coarse particulate followed by a downstream dry electrostatic precipitator (ESP) for removal of fine particulate emissions prior to exhausting to atmosphere. The dry ESP will be manufactured by Polytechnik and will have a design inlet gas flowrate capacity of approximately 10,000 standard cubic feet per minute. The proposed biomass boiler will also use a flue gas recirculation system to improve the combustion efficiency, reducing potential emissions of carbon monoxide (CO) and nitrogen oxides (NOX).
The proposed biomass boiler and downstream control devices are conservatively assumed to operate continuously up to 8,760 hours per year. However, the proposed biomass boiler will be shut down for maintenance and cleaning at some point in any given year.

Emergency Diesel-Fired Boiler
DWIC is proposing to install a 6 mmBTU/hr diesel-fired boiler with a maximum heat input rating of six MMBtu per hour for emergency backup purposes. The proposed emergency boiler will only operate during periods when the proposed biomass boiler is shut down. Only ultra-low sulfur diesel with sulfur concentrations below 15 parts per million will be utilized as fuel. This boiler will also implement low NO_x burners. This engine is exempt from NSR by exemption 6.03(c)(1)(a).

Lumber Kilns
DWIC is proposing to install and operate batch kilns to dry the green dimensional lumber processed in the sawmill. The proposed kilns will be manufactured by Katres Drying Technology. DWIC will construct two kiln buildings. Each building will contain 5 kiln chambers. Therefore, DWIC proposes to install 10 kilns with a total drying capacity of 21,188 thousand-board feet (Mbdft) per year. Each individual kiln will have a maximum drying capacity of 56.1 Mbdft per batch, while total simultaneous drying capacity between all ten kilns will be 561 Mbdft. Emissions from each kiln will be exhausted to atmosphere through a series of four roof vents.

Debarker
In the log yard, DWIC is proposing to install a whole log debarker manufactured by Artiglio. The proposed debarker will be capable of processing 134 tons of whole green logs per day over two nine hour shifts. This equates to 48,885 tons of whole green logs annually. The proposed debarker will utilize a steel mesh cage surrounding the rotating blades to capture bark cut from green logs. The steel cage will reduce coarse particulate emissions released during debarking. The proposed debarker will only generate emissions of particulate matter, including PM with aerodynamic diameters of less than 10 and 2.5 micrometers (PM10 and PM2.5), respectively.

Sawmill Wood Handling Equipment

DWIC is proposing to install wood handling equipment to process whole green logs to green dimensional lumber in the sawmill. Proposed wood handling equipment will be manufactured by Artiglio and will located inside an enclosed, warehouse-style building with an attached bay door. Proposed wood handling equipment includes a band and edging saw, a planer, and a chipper. Green shavings from sawing and planing will be pneumatically transferred to the chipper for further particle size reduction. Negligible emissions of sawdust will be generated by the sawmill wood handling equipment due to the high moisture content of the green logs. These activities will also occur inside an enclosed building. Therefore, only a small fraction of generated sawdust will be emitted to atmosphere. The proposed wood handling equipment in the sawmill will generate PM emissions only.
Relevant exemptions to this activity include Regulation I, section 6.03(c)(39) and section 6.03(c)(42).

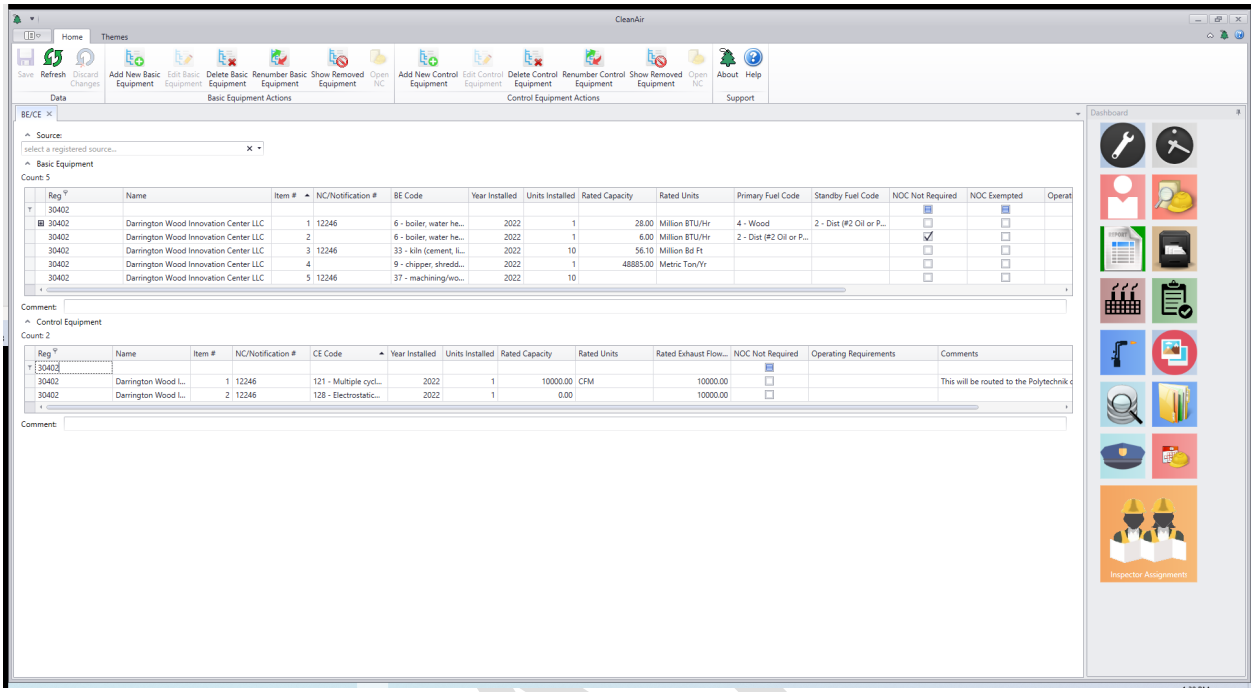
CLT Facility Wood Handling Equipment
DWIC is proposing to construct a CLT manufacturing building that will contain wood handling equipment to process kiln-dried lumber into CLT panels. Proposed wood handling equipment will be manufactured by Artiglio including a jointer, four planers, two crosscut saws, a flying saw, a CNC machine, and a chipper. Particulate laden exhaust from each piece of equipment in the CLT manufacturing building will be pneumatically conveyed through ductwork to a downstream baghouse for control of coarse and fine particulate emissions prior to exhausting to atmosphere.
Relevant exemptions to this activity include Regulation I, section 6.03(c)(39) and section 6.03(c)(42).

Glue Line
A proposed glue line will be used to apply a primer and an adhesive between the layers of each CLT panel. The primer and adhesive will be applied through low velocity nozzles designed for full coverage of each CLT panel. The proposed primer and adhesive, manufactured by the Henkel Corporation, will have low volatile organic compound (VOC) contents. Potential VOC emissions from the primer and adhesive application process will be released uncontrolled inside the CLT manufacturing building.

Coating Application
A protective wood oil coating will be applied to finished CLT panels in the proposed CLT modular construction building. The wood oil coating will be applied to both the inside and outside faces of finished CLT panels inside a spray booth. A forced draft fan will be used to provide ventilation inside the spray booth. Exhaust from the forced draft fan will be routed via ductwork through the CLT modular construction building roof and emitted to atmosphere.

Finishing Sanding
Final pieces will be cut and sanded to size inside. Exhaust from machinery used for these tasks will be controlled by the same baghouse used for the CLT Facility Wood Handling Equipment. Machine sanding does not fall under the same exemptions as the CLT Wood Handling Equipment.

B. DATABASE INFORMATION



New NSPS due to this NOCOA?	**Yes**	**Applicable NSPS: Dc**	**Delegated? Yes**
New NESHAP due to this NOCOA?	**Yes**	**Applicable NESHAP: JJJJJJ**	**Delegated? Yes**
New Synthetic Minor due to this NOCOA?	**Yes**		

40 CFR Part 60 Subpart Dc—Small Industrial-Commercial-Institutional Steam Generating Units

Subpart Dc applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).
The proposed emergency diesel-fired boiler will have a maximum heat input capacity of six MMBtu per hour and therefore will not be subject to Subpart Dc.
The proposed biomass boiler will have a maximum heat input capacity of 28 MMBtu per hour and will be constructed after June 9, 1989. Therefore, the proposed biomass boiler will be subject to Subpart Dc requirements. Relevant sections of section Dc can be found in section J.

40 CFR Part 63 Subpart HHHHHH—Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

Subpart HHHHHH applies to owners and operators of paint stripping operations that use chemical strippers containing methylene chloride and spray application of coatings containing target HAPs to metals and plastics. DWIC will not utilize any coatings containing any target HAP

(compounds of chromium, lead, manganese, nickel, or cadmium) and will not apply coatings to plastics or metals. Therefore, the coating application equipment at the proposed facility will not be subject to Subpart HHHHHH requirements.

40 CFR Part 63 Subpart JJJJJJ—Industrial, Commercial, and Institutional Boilers at Area Sources
Subpart JJJJJJ applies to owners and operators of industrial, commercial, or institutional boilers located at area sources of HAPs. The proposed biomass boiler and proposed emergency diesel-fired boiler do not meet the exemption provisions under §63.11195. Therefore, the proposed boilers will be subject to Subpart JJJJJJ including, but not limited to, specific emission limits, work practice standards, and continuous compliance requirements.

40 CFR Part 63 Subpart DDDD -- This applies to plywood and composite wood product manufacturers (PCWP). This part would apply if DWIC becomes a major source.

40 CFR Part 63 Subpart DDDDD -- **National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters:** This applies to does not apply because this is not a major source of HAPs

C. NOC FEES AND ANNUAL REGISTRATION FEES

NOC Fees:

Fees have been assessed in accordance with the fee schedule in Regulation I, Section 6.04. All fees must be paid prior to issuance of the final Order of Approval.

Fee Description	Cost	Amount Received (Date)
Filing Fee	$ 1,550	
Equipment ($650 each)(Biomass boiler, ESP, Lumber Kilns, Glue Line, Coating Application, Wood Handling Equipment)	$3,900	
NSPS and NESHAP ($1,050 *2)	$2,100	
Public Notice	$750	
Agency Review of Screening Dispersion Modeling Analysis (provided by applicant)	$800	
Filing received		$ 1,550 (3/30/2022)
Additional fee		$6,800 (2/9/2024)
Additional Fee		$800 (not yet paid)
Total	**$ 11,600**	

Registration Fees:
Registration fees are assessed to the facility on an annual basis. Fees are assessed in accordance with Regulation I, Section 5.07.

Applicability		
Regulation I	Description	Note
5.03(a)(1)(A)	40 CFR Part 60	Subpart Dc
5.03(a)(D)	40 CFR Part 63	Subpart JJJJJJ
5.03(a)(2)	Sources with a federally enforceable emission limitation established in order to avoid operating permit program applicability under Article 7 of this regulation	Limit on CO
5.03(a)(3)(C)	Sources with annual emissions: Greater than or equal to 25.0 tons of carbon monoxide (CO), nitrogen oxides (NOx)	CO and NOx
5.03(1)(4)(C)	Sources subject to the following sections of Regulation I, II, or III: Fuel burning equipment subject to Section 9.09 of Regulation I with a rated heat input greater than or equal to 1 MMBtu/hr of any fuel other 02/17 5-2 Regulation I than natural gas, propane, butane, or distillate oil, or greater than or equal to 10 MMBtu/hr of any fuel	Polytechnik which will be rated for a maximum heat input capacity of 28 million British thermal units (MMBtu) per hour
5.03(1)(4)(D)	Sources with spray-coating operations subject to Section 9.16 of Regulation I	
5.03(6)(C)	Sources with any of the following particulate control equipment having a rated capacity of greater than or equal to 2,000 cfm (≥10" diameter inlet)	Electrostatic precipitator
Annual Registration Fee		
Regulation I	Description	Fee
5.07(c)	Sources not specified in 5.07(e) or 5.07(d) $1,150	$1,150
5.07(c)(1)	Sources subject to a federal emission standard as specified in Section 5.03(a)(1) of this regulation shall be assessed $2,100 per subpart of 40 CFR Parts 60-63	$4,200
5.07(c)(2)	Sources subject to a federally enforceable emission limitation as specified in Section 5.03(a)(2) or meeting the emission thresholds specified in Section 5.03(a)(3) of this regulation shall be assessed $2,300	$2,300

5.07(c)(3)	Sources subject to the emission reporting requirements under Section 5.05(b) of this regulation shall be assessed $30 for each ton of CO and $60 for each ton of NOx, PM10, SOx, HAP, and VOC, based on the emissions reported during the previous calendar year	$60/ton of NOx $30/ton of CO
	Total =	$7,650 + emissions reported

D. STATE ENVIRONMENTAL POLICY ACT (SEPA) REVIEW

State Environmental Policy Act (SEPA) review was conducted in accordance with Regulation I, Article 2. The SEPA review is undertaken to identify and help government decision-makers, applicants, and the public to understand how a project will affect the environment. A review under SEPA is required for projects that are not categorically exempt in WAC 197-11-800 through WAC 197-11-890. A new source review action which requires a NOC application submittal to the Agency is not categorically exempt.

The town of Darrington is the SEPA lead agency for this project and issued the associated MDNS on August 4, 2021. A copy of this MDNS is included in the NOC file. This NOC is being issued after the date that the MDNS became final.

12246 SEPA .pdf

E. TRIBAL CONSULTATION

On November 21, 2019, the Agency's Interim Tribal Consultation Policy was adopted by the Board. Criteria requiring tribal consultation are listed in Section II.A of the policy and include establishment of a new air operating permit source, establishment of a new emission reporting source, modification of an existing emission reporting source to increase production capacity, or establishment or modification of certain equipment or activities. In addition, if the Agency receives an NOC application that does not meet the criteria in Section II.A but may represent similar types and quantities of emissions, the Agency has the discretion to provide additional consultation opportunities.

The Agency identified that this NOC application meets one of the criteria in the Agency's Interim Tribal Consultation Policy, adopted by the Board on November 21, 2019. This project would establish a new air operating permit source and would lead to an air operating permit, as defined in Agency Regulation I, Section 7.01, satisfying condition II.A.1. of the Tribal Consultation Policy. This permitting action would also establish a new registered source that would be subject to emission reporting thresholds, satisfying condition II.A.2 of the Tribal Consultation Policy.

In accordance with the policy, the Agency notified each Tribe within the Agency's jurisdiction on May 12, 2022 of the intent to hold a consultation.

No requests were received.

On May 9, 2023, the Agency notified each tribe that the Agency would be proceeding with the final steps to issue the conditional approval of this Notice of Construction application.

F. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) REVIEW

Best Available Control Technology (BACT)

New stationary sources of air pollution are required to use BACT to control all pollutants not previously emitted, or those for which emissions would increase as a result of the new source or modification. BACT is defined in WAC 173-400-030 as, "an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under Chapter 70.94 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant."

An emissions standard or emissions limitation means "a requirement established under the Federal Clean Air Act or Chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment, work practice, or operational standard adopted under the Federal Clean Air Act or Chapter 70.94 RCW."

Best Available Control Technology for Toxics (tBACT)

New or modified sources are required to use tBACT for emissions control for TAP. Best available control technology for toxics (tBACT) is defined in WAC 173-460-020 as, "the term defined in WAC 173-400-030, as applied to TAP."

The applicant provided a summary of a top-down approach to BACT and tBACT for their Biomass Boiler, Lumber Kilns and the various wood handling equipment. That analysis is included in section M and will be summarized and analyzed below.

Biomass Boiler:

Similar permits

Permit – year- project	Criteria Pollutant Controls	HAP/Tap Pollutant Controls
NOC 9149 -2005- Hampton Lumber Boiler Remodification (248 mmBTU biofuel boiler)	Opacity- 20% consecutive 6-minute period or greater than 5% for any hour average 10 % aggregating more than 3 minutes in any 1 hour PM – ESP -- 0.02 lb/MMBtu averaged over 24 hours	Non-mercury Metallic HAPs – PM used as surrogate (ESP) Inorganic HAPs – HCl used as surrogate. limit of 0.004 lb/MMBtu for HCl over 24 hrs Mercury – ESP Organic HAP – CO used as surrogate, good combustion

	NOx – 0.15 lb/MMBtu averaged over 24 hours with use of SnCR Ammonia -- 25 ppm@7%O_2 over 24 hours CO – Proper Combustion- limited to 0.23 lb/MMBtu averaged over 24 hours SO_2 – Fuel limited to wood waste generated onsite, and fuel oil for start-ups. Wood as fuel is considered a BACT for SO2 control	practices, analysis of salt laden hog fuel

Other Agency Permits

Location – Date	Equipment	Control Equipment	Pollutant Emission Limit
SWCAA - Hampton Lumber Mill -- Morton WA – June 28, 2022	ABCO Industries, Inc. hog fuel boiler – 59.6 MMBtu/hr	One multiclone followed by a Branch Environmental wet venturi scrubber	• NO_x 125.0 tpy, 175 ppm @ 7% O_2 (1-hr avg) • CO 131.0 tpy, 300 ppm @ 7% O_2 (1-hr avg) • PM/PM_{10} 43.0 tpy, 0.050 gr/dscf @ 7% O_2 (1-hr avg) • (filterable only for compliance)
SWCAA Hampton Lumber Mill – December 11, 2014 – Randle, WA	Wellons Hog Fuel Boiler – 164 MMBtu/hr	One multiclone followed by a two field ESP and SNCR Startup and Shutdown limited to	• NO_x 108.70 tpy, 90 ppmvd@ 7% O_2 (24-hr avg) • CO 181.32 tpy, 225 ppmvd@ 7% O_2 (24-hr avg) • PM/PM_{10} 16.52 tpy, 0.010 gr/dscf@ 7% 02 (1 -hr avg) (filterable only) • Ammonia 10.83 tpy, 25 ppm@7% 0 2 (24-hr avg) • Acetaldehyde 0.12 tpy • Acrolein 0.02 tpy • Formaldehyde 1.24 tpy
RBLC - Coast Forest Resources – Havana Mill - 12/19/2018	Biofuel Boiler - 29.9 MMBtu/hr	Good Combustion Practices	• CO - 770 ppmvd @ 3% O_2
RBLC – Coastal Forest Resources Company	Carbonaceous fuel (wood waste) boiler – 85 MMBtu/hr	Good Combustion Practices	• CO - 3500 ppmvd@ 3% O_2 238 lb/hr

<u>Boiler BACT and tBACT Discussion</u>

Maul Foster Alongi (MFA) was consulted by DWIC for this permitting process. MFA states that they searched the EPA Reasonably Available Control Technology/BACT/Lowest Achievable Emission Rate Clearinghouse (RBLC) for the date range of January 1, 2012 to February 25, 2022 for biomass boilers under 100 MMBtu per hour and found no results. 100 MMBtu/hr is used as a limit because it is the transition from 40 CFR 60 Subpart Dc to 40 CFR 60 Subpart Db. In the example permits I found, two were above this 100 MMBtu/hr cut off. They are worth noting for the possible technologies available, as well as guidance for tBACT. I also found three examples of wood fired boilers below 100 MMBtu, as well as California's BACT guidance.

The applicants suggested BACT is no control and good combustion practices. Good combustion practices include monitoring air-to-fuel ratios, performing routine maintenance and inspections, and minimizing fluctuations in fuel supply quality. DWIC is also proposing the use of a dry Electrostatic Precipitator (ESP) and a flue gas recirculation system (FGR) to limit the potential to emit fine particulate, NO_X and organic TAPs. For wood fired boilers under 30 MMBtu's, could not find applicable emission limits for NO_x. I propose to set the limit at what was utilized for modelling.

Good combustion practices echo what was shown from the RBLC and should include a CO limit. The South West Clean Air Agency determined that a multiclone followed by a wet venturi scrubber was BACT. An ESP should achieve the same results. I could not find an example for this category of boiler with a BACT lower than the PSCAA regulation I, section 9.09 for Burning wood and installed after March 1, 1986 of 0.02 gr/dscf @ 7% O_2. There is a requirement from 40 CFR 63 subpart JJJJJJ of 0.07 lb/MMBtu filter PM and a limit of 10% opacity.

The ESP should also help control any TAPs that would be found in the solid phase, which is most metal oxides.

One group of TAPs that the applicant did not address in the TBACT is acid gases, although they are accounted for in the emission inventory. Again, no recent Hog Fuel Boilers have been permitted by the PSCAA recently, but while reviewing 9149, no add on controls were required. Add on controls that could be possibilities include a Venturi Scrubber or a wet ESP. Instead, NOC 9149 for Hampton Lumber Mill has implemented fuel and monitoring requirements. Fuel with low chlorine content should not emit high levels of chlorine. Wood absorbs chlorine mostly from soaking in ocean water or growing near the ocean. To assure quality of fuel, new sources of fuel can be tested for chlorine content prior to burning. Since all fuel proposed to be used will come from the debarker onsite, this should be a trackable qualifier.

The Darrington Cogeneration Facility permitted under NOC 8955 is a similar unit that uses wood residue (hog fuel), but is rated for ~300 MMBtu's has similar equipment, however it does exceed 100 MMBtu per hour. This unit implemented an ESP and ammonia injection.

Instead of a SCR, Flue Gas Recirculation, (FGR) can still lower NOx by as much as 75%. The EPA Air pollution Control Cost Manual, Section 3 has guidance for both SNCRs and SCRs that indicates it may not be applicable to this situation. Table 1.1 in Chapter 1 suggests that a 50% reduction can be expected while using Urea, and a 65% reduction while using Ammonia. Suitable conditions of an SNCR are described as follows:

SNCR is only effective in a relatively high, narrow temperature range and therefore is not suitable for all applications. The site-specific operating and design characteristics of the emission unit must be evaluated on a case-by-case basis to determine whether SNCR is feasible. Several factors determine whether SNCR is an appropriate control for a source, including temperature, residence time, feasibility of installing reagent injection ports, and the NOx concentration. SNCR is not suitable for sources where the residence time is too short, temperatures are too low, NOx concentrations are low, the reagent would contaminate the product, or no suitable location exists for installing reagent injection ports. For example, SNCR is generally not used for gas turbines because low NOx concentrations in the flue gas make SNCR less efficient than other available control methods [2]. Sources with stable temperatures of 1550°F to 1950°F, uncontrolled NOx emissions above 200 ppm, and residence times of 1 second are generally well suited to SNCR and attain the highest levels of NOx control. (Sorrels, 2022)

BAAQMD wood boilers.pdf

The FGR conflicts with SNCR's by lowering the temperature of the combustion. This lowering of the temperature also lowers the NOx production, and when DWIC was asked, they did provide the following statement:

> *The project may elect to engage with a different boiler vendor than originally contemplated and so all thoughts on this topic are academic until final vendor information is known. The emission rates estimated in the application do not take credit for flue gas recirculation (FGR) so we believe they will be conservative in establishing permitted emission limits. Maul Foster & Alongi (MFA) has reviewed a number of Environmental Protection Agency publications on the topic of FGR and has found that NOx emissions can be reduced 30-70% with the use of FGR and other techniques used to reduce the peak temperature of the combustion chamber. [1] The level of control achieved will depend upon the biomass boiler type and flue gas recirculation design.*
>
> *One instructive source of information is Combustion Source Evaluation, Student Manual, published by the Air Pollution Training Institute, US Environmental Protection Agency. On page 6-28, the following figure is provided:[2]*

[1] Nitrogen Oxides (NO_x), Why and How They are Controlled, Clean Air Technology Center, U.S. Environmental Protection Agency, EPA-456/F-99-006R, November 1999.
[2] Combustion Source Evaluation, Student Manual, APTI Course 427, Air Pollution Training Institute, U.S. Environmental Protection Agency, June 2003.

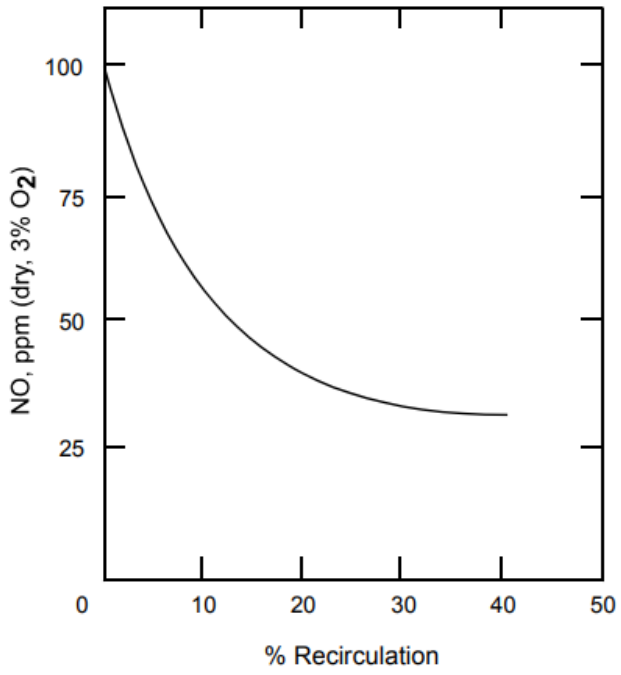


Figure 6-8. Effect of Flue Gas Recirculation on Emissions

This figure seems to confirm that 30-70% NO_x emissions reduction is achievable depending upon the level of recirculation that is designed. Startup source testing can be used to confirm the NOx emission factor for the boiler and determine whether there is a reduction from the factor provided by the EPA in AP-42.

Summary BACT determination

Pollutant	Available Method That Meets BACT	Implementation of Method
NO_x	Flue Gas Recirculation	Flue Gas Recirculation
SO_2	Fuel Choice	Wood
CO	Good wood burning practices	Annual Testing
Total VOCs	Good wood burning practices	Annual Testing
PM	0.005 gr/dscf	ESP

Summary tBACT determination

Pollutant	Available Method That Meets BACT	Implementation of Method
HCl and CL_2	▪ Appropriately sized Boiler	Annual testing
Metals	▪ Particulate filtered out	ESP

Kiln

Similar Permits

Permit – year- project	Criteria Pollutant Controls	HAP/Tap Pollutant Controls
NOC 9149 -2005- 3 Dry kilns, 104-foot double-track	VOC - good operating practice" kiln temperature limit of 200 °F	Methanol, formaldehyde - good operating practice" kiln temperature limit of 200 °F Tracking board feet by species
NOC 10439 – 2012 -- Seattle-Snohomish Mill Co Inc – 3 dry kilns	VOC – 200 degree F dry bulb temp limit PM – Opacity not to exceed 10% (aggregate 3 minutes in any 1 hour)	200 degree F dry bulb temp limit
NOC 11188 & 10732 – 2016 -- Sierra Pacific Industries – six double-track dry kilns	VOC -- 200 degree F dry bulb temp limit	Not addressed

The kiln is expected to release VOC's and PM. The applicant proposes that BACT and TBACT for the kiln will be to equip it with precise temperature control systems and designed for maximum energy efficiency with advanced sealing and insulating systems. DWIC will maintain consistent moisture contents for each lumber charge and prevent over-drying of lumber by monitoring and drying at temperatures at or below 200°F.

Looking at recent local permits, there are not many recent examples. The 200F limit matches the controls for Sierra Pacific/ Centralia. Again, looking at NOC 10081, the dry kiln has a 10% opacity limit for PM. A 9.9 tons methanol limit, that should not be possible here due to size, and the kiln shall not exceed 200 degrees F on a 1-hour average. A more recent BACT determination was made for Kilns in 2014 for Sierra Pacific Industries, Inc. with NOC 10732, which did not include any controls beyond best practices and no add on controls were needed. This was also the BACT for the Hampton Lumber Mill kiln approved by SWCAA in permit I concur with MFA's statement.

Southwest Clean Air Agency Permit for Hamton Lumber Mills, issued December 11, 2014, states it has 8 Dry Kilns that are controlled by a Process temperature limit of 200F.

Summary BACT determination

Pollutant	Available Method That Meets BACT	Implementation of Method
Total VOCs, methanol, formaldehyde	Limit of 200^0F for Kiln	Precise temperature control
PM		

Recommendations:

BACT for kilns does not include any add on emissions controls. BACT has been established as proper work practices of controlling the drying temperature to under 200F and controlling TAPs by limiting the throughput by tree species.

Spray Coating Operations
MFA did not identify any BACT determination for the spray coating operations or glue lines. The only permit for a glue line the agency issued in the last 10 years is Pacific Crest Industries in 2018. The key take aways is that VOC's and TAPs need to be recorded and possibly reported for VOC's and HAPs. These are tracked through purchase records, safety data sheets or product data sheets.

The spray booth also requires a BACT review. An SDS for Hydro-oil for wooden flooring and furniture – Clear was included with the application. This product has no TAPs listed. It is noted to have up to 2.35% volatile carbons, which should be included in the annual emission reports. Starting with the general requirements of PSCAA Regulation I, Article 9, this process will need to take place inside an enclosed spray area, which will need to employ either a properly seated paint arrester or water-wash curtains with a continuous water curtain to control the overspray. All emissions from the spray-coating operation need to be vented to atmosphere through an unobstructed vertical exhaust stack. Looking at the last 3 permits for spray coating wood products issued by PSCAA are in the following table:

NOC 12173 - King County Parks and Recreation - 1/21/2022	• Using material containing di-2-Ethylhexyl phthalate (DEHP), chromium, lead, manganese, nickel, or cadmium is prohibited. • Tracking VOC usage • Spray area equipped with a minimum initial overspray arrestance of 98% and a minimum of Merv 13 filters • Filters equipped with gauge to measure pressure drop across filter, checked daily • Spray technology must meet a minimum transfer efficiency of 65%, as measured by South Coast Air Quality Management District's "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989" and "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns, September 26, 2002," or equivalent • All VOC containers shall be kept closed
12195- Superior Cabinets – 9/28/2022	• A system that meets a minimum initial efficiency reporting value (MERV) of 13 as determined by ASHRAE Method 52.2. • spray application of any individual material containing Cadmium, Chromium, Lead, Manganese, or Nickel is prohibited. • Spray-coating of material shall be confined to an agency-approved booth equipped with a filtration system that always covers the openings of the exhaust plenum including the edges of the filter bank. Compliance demonstration with this requirement must, at least, include daily inspections of the filter system on days when the booth is in operation. Operation of the booth must cease if it is determined the filter system does not completely cover the openings of the exhaust plenum and corrective action must be taken prior to operation of the booth. • All spray application of material must be applied with an air-assisted airless spray gun, airless spray gun, electrostatic applicator, or high-volume low-pressure (HVLP) spray gun. Alternative spray technology must meet a minimum transfer efficiency of 65 percent. The procedure used to demonstrate a spray technology's transfer efficiency must be equivalent to South Coast Air Quality Management District's "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24,

	1989" and "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns, September 26, 2002." A plan describing the test procedure must be developed and submitted to the Agency 30 days prior to conducting any spray technology transfer efficiency test.
11947-Aero-Lac-Inc – 6/26/2017	• A system with a minimum initial overspray arrestance of 98 percent. Overspray arrestance must be determined using the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Method 52.1 procedure and substituting the synthetic test dust feed with a high solids bake enamel delivered at a rate of at least 135 grams per minute from a conventional (non-HVLP) air-atomized spray gun operating at 40 pounds per square inch (psi) air pressure with an air flow rate across the filter of 150 feet per minute. A system that complies with 40 CFR Part 63, Subpart HHHHHH meets this requirement. • A system that meets a minimum initial efficiency reporting value (MERV) of 13 as determined by ASHRAE Method 52.2. • A system that meets a minimum initial filtration efficiency of 98 percent over the particle diameter range from 0.3 to 10 microns. The particle size dependent filtration efficiencies must be determined using either Environmental Protection Agency (EPA) Method 319 or an Agency approved method.

After reviewing permits, application of coating should be done with applicators that have at least a 65% efficiency and should be performed in an enclosure equipped with filters that are rated to at least MERV 13 or have a 98% efficiency. The pressure drop across these filters should be monitored daily. Cadmium, Chromium, Lead, Manganese and Nickel should also be prohibited.

G. EMISSION ESTIMATES

Proposed Project Emissions

Actual Emissions &Potential Emissions
This estimate is for a new facility, there for all emissions for this project constitute under Facility wide emissions. Operations were considered for 8,760 hours of operations per year.

Facility-wide Emissions

Actual Emissions
Maul Foster Alongi put together emission calculations for all units, with calculation explanations. These tables are included in the following PDF:

12246 Emission Inventory.pdf

The following table shows the summary of facility wide total emissions, which also represent potential emissions.

Pollutant	Total Hourly (lb/hr)	Daily (lb/day)	Annual (tons/yr)
PM	2.58	58.2	10.3
PM_{10}	2.03	46	8.09
$PM_{2.5}$	1.81	41.3	7.22
NO_X	6.89	155	27.0
CO	17.0	405	73.6
SO_2	0.70	16.8	3.07
Pb	0.021	0.49	0.090
VOC	3.69	88.1	11.0
CO_2e	6,693	149,088	25,725

Individual HAPs were looks at, and summarized in the table below. The total HAP would be 3.79 tons total HAPs per year. The highest single HAP is methanol at 1.25 tons year. The TAP analysis for SQERs was provided in the table below. Arsenic, Cadmium, Chromium VI, Manganese, Nickle, Acetaldehyde, Acrolein, Benzene, Chlorine, Ethyl Benzene, Formaldehyde, Hydrochloric Acid, Benzo(a)pyrene and Naphthalene all exceeded SQER rates and needed modeling.

TAP Emissions Threshold Evaluation

Darrington Wood Innovation Center CLT Modular Facility—Darrington, Washington

Toxic Air Contaminant	CAS	Emissions Estimate			Averaging Period [1]	De Minimis [1] (lb/avg-period)	SQER [1] (lb/avg-period)	Threshold Evaluation (Yes/No)	
		Hourly (lb/hr)	Daily (lb/day)	Annual (lb/yr)				Exceed De Minimis?	Exceed SQER?
CRITERIA POLLUTANTS									
CO	630-08-0	17.0	405	147,177	1-hr	1.10	43.0	Yes	No
NO_2 (2)	10102-44-0	0.32	7.48	2,699	1-hr	0.46	0.87	No	No
SO_2	2025-88-4	0.70	16.8	6,132	1-hr	0.46	1.20	Yes	No
METALS									
Arsenic	7440-38-2	1.1E-04	1.8E-03	0.46	Year	2.5E-03	0.049	Yes	Yes
Beryllium	7440-41-7	8.4E-07	2.0E-05	7.4E-03	Year	3.4E-03	0.068	Yes	No
Cadmium	7440-43-9	6.5E-05	7.9E-04	0.093	Year	1.9E-03	0.039	Yes	Yes
Chromium VI	18540-29-9	1.1E-05	2.2E-04	0.067	Year	3.3E-05	6.5E-04	Yes	Yes
Cobalt	7440-48-4	6.6E-05	1.6E-03	0.58	24-hr	3.7E-04	7.4E-03	Yes	No
Copper and compounds	7440-50-8	2.9E-04	4.8E-03	1.23	1-hr	9.3E-03	0.19	No	No
Lead	7439-92-1	4.5E-04	6.5E-03	1.29	Year	10.0	14.0	No	No
Manganese	7439-96-5	2.7E-03	0.062	22.4	24-hr	1.1E-03	0.022	Yes	Yes
Mercury	7439-97-6	1.0E-04	1.4E-03	0.26	24-hr	1.1E-04	2.2E-03	Yes	No
Nickel	7440-02-0	2.2E-04	3.3E-03	0.69	Year	0.031	0.62	Yes	Yes
Selenium	7782-49-2	1.3E-04	1.9E-03	0.40	24-hr	0.074	1.50	No	No
Vanadium (fume or dust)	7440-62-2	1.7E-05	4.0E-04	0.15	24-hr	3.7E-04	7.4E-03	Yes	No
ORGANICS									

Toxic Air Contaminant	CAS	Emissions Estimate			Averaging Period [1]	De Minimis [1] (lb/avg-period)	SQER [1] (lb/avg-period)	Threshold Evaluation (Yes/No)	
		Hourly (lb/hr)	Daily (lb/day)	Annual (lb/yr)				Exceed De Minimis?	Exceed SQER?
1,2-Dichloropropane	78-87-5	4.7E-04	0.011	4.12	Year	0.81	16.0	Yes	No
1,3-Butadiene	106-99-0	5.4E-04	5.4E-03	0.027	Year	0.27	5.40	No	No
Acetaldehyde	75-07-0	0.35	8.22	1,362	Year	3.00	60.0	Yes	Yes
Acrolein	107-02-8	0.025	0.42	84.5	24-hr	1.3E-03	0.026	Yes	Yes
Benzene	71-43-2	0.028	0.66	240	Year	1.00	21.0	Yes	Yes
Carbon tetrachloride	56-23-5	5.6E-04	0.014	4.93	Year	1.40	27.0	Yes	No
Chlorine	7782-50-5	0.034	0.82	299	24-hr	5.6E-04	0.011	Yes	Yes
Chlorobenzene	108-90-7	4.6E-04	0.011	4.07	24-hr	3.70	74.0	No	No
Chloroform	67-66-3	5.6E-04	0.014	4.93	Year	0.35	7.10	Yes	No
Ethyl benzene	100-41-4	0.011	0.27	96.9	Year	3.20	65.0	Yes	Yes
Formaldehyde	50-00-0	0.048	0.98	302	Year	1.40	27.0	Yes	Yes
Hexane	110-54-3	8.2E-03	0.19	70.6	24-Hr	2.60	52.0	No	No
Isopropyl alcohol	67-63-0	0.10	2.45	893	1-Hr	0.30	5.90	No	No
Methanol	67-56-1	0.33	7.95	2,504	24-Hr	74.0	1,500	No	No
Methyl bromide	74-83-9	3.2E-04	7.7E-03	2.80	24-Hr	0.019	0.37	No	No
Methyl chloride	74-87-3	1.1E-03	0.025	9.27	24-Hr	0.33	6.70	No	No
Methyl chloroform	71-55-6	1.6E-03	0.039	14.2	24-Hr	19.0	370	No	No
Methylene chloride	75-09-2	0.015	0.37	134	Year	490	9,800	No	No
Methyl ethyl ketone	78-93-3	4.4E-04	0.010	3.83	24-Hr	19.0	370	No	No
Phenol	108-95-2	4.5E-03	0.11	39.2	24-Hr	0.74	15.0	No	No
Phosphorus	7723-14-0	8.7E-03	0.21	76.0	24-Hr	0.074	1.50	Yes	No
Propionaldehyde	123-38-6	0.010	0.25	82.2	24-Hr	0.030	0.59	Yes	No
Styrene	100-42-5	0.013	0.32	117	24-Hr	3.20	65.0	No	No
Toluene	108-88-3	7.5E-04	0.016	5.18	24-Hr	19.0	370	No	No
m-Xylene	108-38-3	9.9E-05	2.4E-03	0.87	24-Hr	0.82	16.0	No	No
p-Xylene	106-42-3	9.9E-05	2.4E-03	0.87	24-Hr	0.82	16.0	No	No
o-Xylene	95-47-6	3.2E-04	7.6E-03	2.77	24-Hr	0.82	16.0	No	No
Xylene (mixture)	1330-20-7	5.8E-05	5.8E-04	2.9E-03	24-Hr	0.82	16.0	No	No
INORGANICS									
Hydrogen fluoride	7664-39-3	6.6E-03	0.16	57.6	24-Hr	0.052	1.00	Yes	No
Hydrochloric acid	7647-01-0	0.13	3.00	1,070	24-Hr	0.033	0.67	Yes	Yes
Ammonia	7664-41-7	0.11	1.06	5.29	24-Hr	1.90	37.0	No	No
PAHS									
Benz[a]anthracene	56-55-3	2.3E-06	5.5E-05	0.020	Year	0.045	0.89	No	No
Benzo[a]pyrene	50-32-8	7.8E-05	1.8E-03	0.67	Year	8.2E-03	0.16	Yes	Yes
Benzo[b]fluoranthene	205-99-2	4.0E-06	9.5E-05	0.035	Year	0.045	0.89	No	No
Benzo[j]fluoranthene	205-82-3	4.4E-06	1.0E-04	0.038	Year	0.045	0.89	No	No
Benzo[k]fluoranthene	207-08-9	1.5E-06	3.5E-05	0.013	Year	0.045	0.89	No	No
Chrysene	218-01-9	2.2E-06	5.3E-05	0.019	Year	0.45	8.90	No	No
Dibenzo[a,h]anthracene	53-70-3	2.7E-07	6.4E-06	2.3E-03	Year	4.1E-03	0.082	No	No
Indeno[1,2,3-cd]pyrene	193-39-5	2.9E-06	6.9E-05	0.025	Year	0.045	0.89	No	No
Naphthalene	91-20-3	3.0E-03	0.069	24.4	Year	0.24	4.80	Yes	Yes
Dioxans & Furans									
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.8E-11	4.3E-10	1.6E-07	Year	2.1E-07	4.3E-06	No	No
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.9E-11	9.3E-10	3.4E-07	Year	2.1E-07	4.3E-06	Yes	No
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.6E-11	6.2E-10	2.3E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.2E-11	1.5E-09	5.4E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.4E-11	1.5E-09	5.6E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2.8E-10	6.6E-09	2.4E-06	Year	2.1E-05	4.3E-04	No	No
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7.0E-10	1.7E-08	6.1E-06	Year	7.4E-04	0.015	No	No

Toxic Air Contaminant	CAS	Emissions Estimate			Averaging Period [1]	De Minimis [1] (lb/avg-period)	SQER [1] (lb/avg-period)	Threshold Evaluation (Yes/No)	
		Hourly (lb/hr)	Daily (lb/day)	Annual (lb/yr)				Exceed De Minimis?	Exceed SQER?
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.3E-10	5.6E-09	2.0E-06	Year	2.1E-06	4.3E-05	No	No
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.1E-10	2.7E-09	1.0E-06	Year	7.4E-06	1.5E-04	No	No
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.6E-10	3.8E-09	1.4E-06	Year	7.4E-07	1.5E-05	Yes	No
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.0E-10	2.4E-09	8.9E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.9E-11	2.1E-09	7.8E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.9E-11	4.4E-10	1.6E-07	Year	2.1E-06	4.3E-05	No	No
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	7.5E-11	1.8E-09	6.6E-07	Year	2.1E-06	4.3E-05	No	No
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.6E-10	3.9E-09	1.4E-06	Year	2.1E-05	4.3E-04	No	No
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.6E-11	6.3E-10	2.3E-07	Year	2.1E-05	4.3E-04	No	No
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	1.4E-10	3.5E-09	1.3E-06	Year	7.4E-04	0.015	No	No

NOTES:
SQER = small quantity emission rate. TAC = toxic air contaminant.

References:

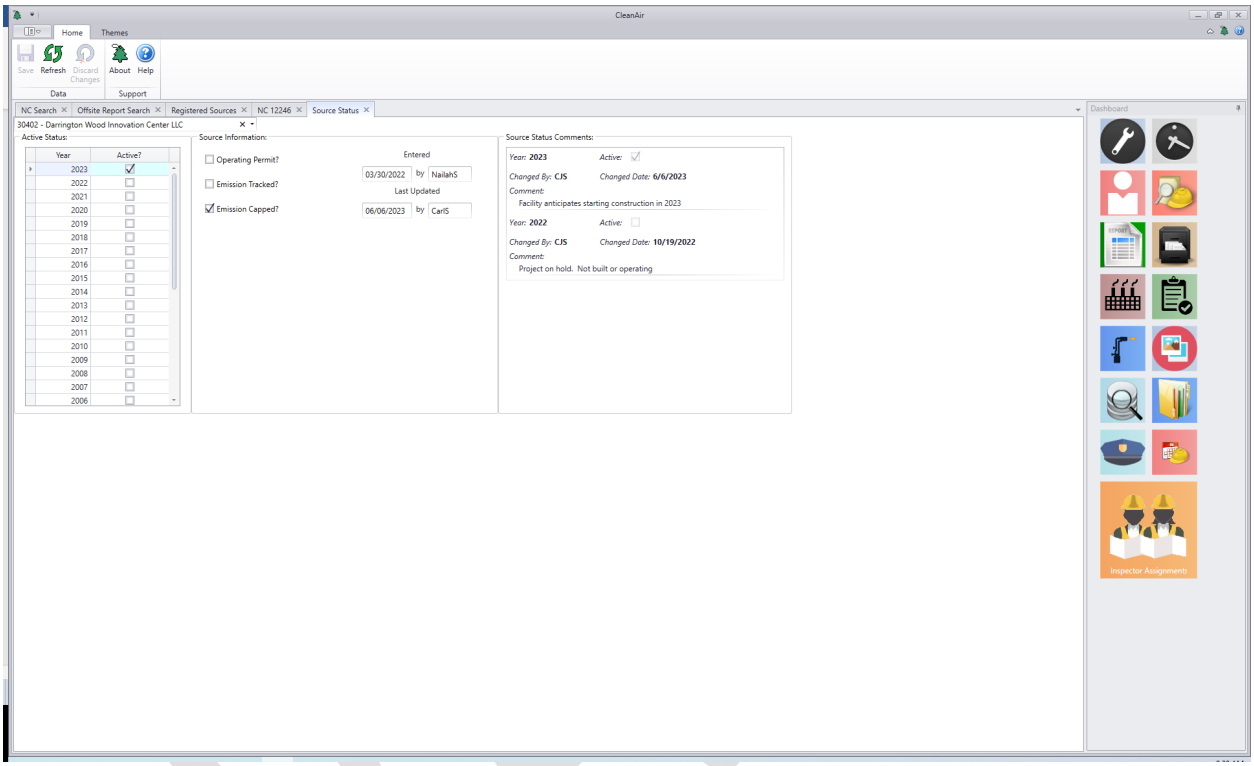
[1] Washington Administrative Code 173-460-150, "Table of ASIL, SQER, and De Minimis Emission Values."

[2] An NO_2:NO_X ratio of 0.012 was applied to the fossil fuel boiler NO_X emission rate for comparison to the NO_2 thresholds. The NO_2:NO_X ratio of 0.012 was derived from the US EPA In Stack Ratio Database for boilers firing on fossil fuel. An NO_2:NO_X ratio of 0.05 was applied to the biomass-fired boiler NO_X emission rate for comparison to the NO_2 thresholds. The NO_2:NO_X ratio of 0.05 is the recommended ISR from Section 2.1 of "Evaluation of Bias in AERMOD-PVMRM" Final Report (MACTEC, 2005) prepared for

the Alaska Department of Environmental Conservation - Division of Air Quality.

The Highest single HAP will be Methanol at 1.25 tons per year, with an expected total HAPS of 3.79 tons per year.

Reporting Source? Yes. DWIC will be a reporting source for CO, and NOx



H. OPERATING PERMIT OR PSD

The Title V Air Operating Permit (AOP) program applicability for the entire source has been reviewed.

The facility is not a Title V air operating permit source because post project PTE remains below Title V applicability thresholds and criteria. The source is considered a "**natural minor**". The facility suggested that it would be a Title V Air Operating Permit, as the operating permit requirements under Section 7.03 of Regulation I apply to all sources subject to WAC 173-401. Per WAC 173-401-300(1)(a), provisions under Division 401 apply to any source, including area sources, subject to a standard, limitation, or other requirement under section 111 (NSPS regulations) or section 112 (NESHAP regulations) of the Federal Clean Air Act. However, WAC 173-401-300(2)(a) lists the following exemption:

> *(a) All sources listed in subsection (1)(a) of this section that are not major sources, affected sources, or solid waste incineration units required to obtain a permit pursuant to section 129(e) of the FCAA, are exempted from the obligation to obtain a chapter 401 permit until such time that: The administrator completes a rule making to determine how the program should be structured for nonmajor sources and determines that such sources must obtain operating permits and ecology completes a rule making to adopt EPA's revised applicability criteria.*

As long as Darrington does not become a major source for a criteria pollutant or hazardous pollutants, it will not be in the title V program.

I. AMBIENT TOXICS IMPACT ANALYSIS

The estimated potential toxic air pollutant (TAP) emissions at operating at 100% rated capacity and 8760 hour per year for each new or modified emission unit. The table below includes estimated potential emissions of all TAP and compares those to the Small Quantity Emission Rates (SQER) in WAC 173-460-150.

Maul Foster & Alongi, inc performed the modeling in Aermod. The results are shown below with the files needed for review imbedded in the supporting documents section. Predictions were made on continuous operations and should not need a limit beyond the production proposed in this permit.

ASIL Modeling Results

Darrington Wood Innovation Center CLT Modular Facility—Darrington, Washington

Toxic Air Pollutant	CAS	Maximum Predicted Model Concentration [1] (ug/m^3)	ASIL [2] (ug/m^3)	Maximum Predicted Model Concentration Exceed ASIL? (Yes/No)
24-Hour				
Manganese	7439-96-5	0.009	0.30	*No*
Acrolein	107-02-8	0.07	0.35	*No*
Chlorine	7782-50-5	0.125	0.15	*No*
Hydrochloric acid	7647-01-0	0.45	9.00	*No*
Annual				
Arsenic	7440-38-2	2.60E-05	3.00E-04	*No*
Cadmium	7440-43-9	5.16E-05	2.40E-04	*No*
Chromium VI	18540-29-9	3.75E-06	4.00E-06	*No*
Acetaldehyde	75-07-0	0.34	0.37	*No*
Benzene	71-43-2	1.35E-02	0.13	*No*
Ethyl benzene	100-41-4	5.43E-03	0.40	*No*
Formaldehyde	50-00-0	0.025	0.17	*No*
Nickel	7440-02-0	3.88E-05	3.80E-03	*No*
Benzo[a]pyrene	50-32-8	3.75E-05	1.00E-03	*No*
Naphthalene	91-20-3	1.37E-03	0.03	*No*

NOTES:

ug/m^3 = microgram per cubic meter. ASIL = Acceptable Source Impact Level.

References:

[1] Represents the highest first high modeled concentration for the identified averaging period.

[2] Washington Administrative Code 173-460-150, "Table of ASIL, SQER, and De Minimis Emission Values".

From this analysis, Manganese, Acrolein, Chlorine, Hydrochloric Acid,, Arsenic, Cadmium, Hexavalent Chromium, Acetaldehyde, Benzene, Ethyl Benzene, Formaldehyde, Nickel, Benzo(a)pyrene, and Naphthalene were all above the SQER and had to be modelled. Manganese, Acrolein, Chlorine and HCl are all have more restrictive 24-hour averages. Acrolein is also expected from the boiler, diesel boiler and the kiln.

To ensure the applicability of the modelling, the assumptions used should be carried forward.

For the kiln, acetaldehyde is the most problematic TAP, which has an annual averaging period. This will be directly affected by through put. The model assumed the following:

4,240 Annual kiln throughput of Western Hemlock
16948 Annual kiln throughput of other species

The Glue Line is another source of acetaldehyde. This was modeled with a maximum of 84,894 lb/year of glue (PR 3105) applied and any glue used should not exceed 10 % volatiles by weight.

The Hog Fuel Boiler is the most significant source of the majority of other pollutants. This was modelled to operate 24/7 at full load of 28 MMBTU/hr. No limitations besides BACT need to be applied.

Startup and Shutdown procedures were looked at. A tank of Liquid Propane Gas will be installed onsite for startup and shutdown. According to AP-42, natural gas should have TAP emissions than wood for most TAPs. I analyzed all the 24 hour TAPs, and Vanadium is the only one that would increase which has an hour or 24 hour limit. With an emission factor of 2.25E-6 lb/mmBTU, it would be expected that 24 hours of burning natural gas would release 0.00152 lbs/day, less than the SQER of 0.0074 lbs/day. 40 CFR Part 63 Subpart JJJJJJ also has requirements for start up and shutdown found here: https://www.ecfr.gov/current/title-40/part-63/subpart-JJJJJJ#p-63.11223(g), which reads:

If you own or operate a boiler subject to emission limits in Table 1 of this subpart, you must minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. You must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.

The emergency boiler is assumed to operate at a maximum of 10 hours per day and 50 hours per year.

J. APPLICABLE RULES & REGULATIONS

Puget Sound Clean Air Agency Regulations

SECTION 5.05 (c): The owner or operator of a registered source shall develop and implement an operation and maintenance plan to ensure continuous compliance with Regulations I, II, and III. A copy of the plan shall be filed with the Control Officer upon request. The plan shall reflect good industrial practice and shall include, but not be limited to, the following:
(1) Periodic inspection of all equipment and control equipment;
(2) Monitoring and recording of equipment and control equipment performance;
(3) Prompt repair of any defective equipment or control equipment;
(4) Procedures for startup, shut down, and normal operation;
(5) The control measures to be employed to ensure compliance with Section 9.15 of this regulation; and
(6) A record of all actions required by the plan.
The plan shall be reviewed by the source owner or operator at least annually and updated to reflect any changes in good industrial practice.

SECTION 6.09: Within 30 days of completion of the installation or modification of a stationary source subject to the provisions of Article 6 of this regulation, the owner or operator or applicant shall file a Notice of Completion with the Agency. Each Notice of Completion shall be submitted on a form provided by the Agency and shall specify the date upon which operation of the stationary source has commenced or will commence.

SECTION 9.03: (a) It shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour, which is:
(1) Darker in shade than that designated as No. 1 (20% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or
(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Section 9.03(a)(1).
(b) The density or opacity of an air contaminant shall be measured at the point of its emission, except when the point of emission cannot be readily observed, it may be measured at an observable point of the plume nearest the point of emission.
(c) This section shall not apply when the presence of uncombined water is the only reason for the failure of the emission to meet the requirements of this section.

SECTION 9.09: General Particulate Matter (PM) Standard. It shall be unlawful for any person to cause or allow the emission of particulate matter in excess of the following concentrations:
Burning wood and installed after March 1, 1986: 0.02 gr/dscf @ 7% O2

SECTION 9.11: It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.

SECTION 9.13: It shall be unlawful for any person to cause or allow the installation or use of any device or use of any means designed to mask the emission of an air contaminant which causes detriment to health, safety or welfare of any person.

SECTION 9.15: It shall be unlawful for any person to cause or allow visible emissions of fugitive dust unless reasonable precautions are employed to minimize the emissions. Reasonable precautions include, but are not limited to, the following:
(1) The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;
(2) Surfacing roadways and parking areas with asphalt, concrete, or gravel;
(3) Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and cleaning vehicle undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or
(4) Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

SECTION 9.16(c): General Requirements for Indoor Spray-Coating Operations. It shall be unlawful for any person subject to the provisions of this section to cause or allow spray-coating inside a structure, or spray-coating of any motor vehicles or motor vehicle components, unless all of the following requirements are met:
(1) Spray-coating is conducted inside an enclosed spray area;
(2) The enclosed spray area employs either properly seated paint arresters, or water-wash curtains with a continuous water curtain to control the overspray; and
(3) All emissions from the spray-coating operation are vented to the atmosphere through an unobstructed vertical exhaust vent.

REGULATION I, SECTION 9.20(a): It shall be unlawful for any person to cause or allow the operation of any features, machines or devices constituting parts of or called for by plans, specifications, or other information submitted pursuant to Article 6 of Regulation I unless such features, machines or devices are maintained in good working order.

Washington State Administrative Code

WAC 173-400-040(2): No person shall cause or allow the emission for more than three minutes, in any one hour, of an air contaminant from any emissions unit which at the emission point, or within a reasonable distance of the emission point, exceeds twenty percent opacity as determined by ecology method 9A. The following are exceptions to this standard:

(a) Soot blowing or grate cleaning alternate visible emission standard.

(i) This provision is in effect until the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. The opacity emission standard in subsection (2) of this section shall apply except when the emissions occur due to soot blowing/grate cleaning and the operator can demonstrate that the emissions will not exceed twenty percent opacity for more than fifteen minutes in any eight consecutive hours. The intent of this provision is to allow the soot blowing and grate cleaning necessary to the operation of boiler facilities. This practice, except for testing and troubleshooting, is to be scheduled for the same approximate times each day and the permitting authority must be advised of the schedule.

(ii) This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur due to soot blowing or grate cleaning of a hog fuel or wood-fired boiler: Visible emissions (as determined by ecology method 9A) shall not exceed twenty percent opacity; except that opacity shall not exceed forty percent for up to a fifteen minute period in any eight consecutive hours. For this provision to apply, the owner or operator must:

(A) Schedule the soot blowing and/or grate cleaning for the same approximate time(s) each day;

(B) Notify the permitting authority in writing of the schedule before using the forty percent standard; and

(C) Maintain contemporaneous records sufficient to demonstrate compliance. Records must include the date, start time, and stop time of each episode, and the results of opacity readings conducted during this time.

(b) When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed twenty percent or an alternative opacity standard established in this section.

(c) When two or more emission units are connected to a common stack, the permitting authority may allow or require the use of an alternate time period if it is more representative of normal operations.

(d) When an alternative opacity limit has been established per RCW 70.94.331 (2)(c), WAC 173-400-081(4) or 173-400-082.

(e) Alternative visible emission standard for a hog fuel or wood-fired boiler in operation before January 24, 2018. This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur due to planned startup or shutdown of a hog fuel or wood-fired boiler with dry particulate matter controls, an owner or operator may use the alternative standard in this subsection when all of the following requirements are met.

Note:

This subsection does not apply to a combustion unit with wet particulate matter controls.

(i) A planned startup or shutdown means that the owner or operator notifies the permitting authority:

(A) At least twenty-four hours prior to the planned boiler startup or shutdown; or

(B) Within two hours after restarting the boiler for a startup within twenty-four hours after the end of an unplanned shutdown (i.e., malfunction or upset).

Note:

A shutdown due to a malfunction is part of the malfunction.

(ii) Startup begins when fuel is ignited in the boiler fire box.

(iii) Startup ends:

(A) When the boiler starts supplying useful thermal energy; or

(B) Four hours after the boiler starts supplying useful thermal energy if the facility follows the work practices in (e)(vi)(B) of this subsection.

(iv) Shutdown begins when the boiler no longer supplies useful thermal energy, or when no fuel is being fed to the boiler or process heater, whichever is earlier.

(v) Shutdown ends when the boiler or process heater no longer supplies useful thermal energy and no fuel is being combusted in the boiler.

(vi) The facility complies with one of the following requirements:

(A) Visible emissions during startup or shutdown shall not exceed forty percent opacity for more than three minutes in any hour, as determined by ecology method 9A; or
(B) During startup or shutdown, the owner or operator shall:
(I) Operate all continuous monitoring systems;
(II) In the boiler, use only clean fuel identified in 5.b. in Table 3 in 40 C.F.R. Part 63, Subpart DDDDD;
(III) Engage all applicable control devices so as to comply with the twenty percent opacity standard within four hours of the start of supplying useful thermal energy;
(IV) Engage and operate particulate matter control within one hour of first feeding fuels that are not clean fuels; and
(V) Develop and implement a written startup and shutdown plan. The plan must minimize the startup period according to the manufacturer's recommended procedure. In the absence of manufacturer's recommendation, the owner or operator shall use the recommended startup procedure for a unit of a similar design. The plan must be maintained on-site and available upon request for public inspection.
(vii) The facility maintains records sufficient to demonstrate compliance with (e)(i) through (v) of this subsection. The records must include the following:
(A) The date and time of notification of the permitting authority;
(B) The date and time when startup and shutdown began;
(C) The date and time when startup and shutdown ended;
(D) The compliance option in (e)(vi) of this subsection that was chosen (either (A) or (B)) and documentation of how the conditions of that option were met.
(f) Furnace refractory alternative visible emission standard. This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur during curing of furnace refractory in a lime kiln or boiler, visible emissions (as determined by ecology method 9A) shall not exceed forty percent opacity for more than three minutes in any hour, except when (b) of this subsection applies. For this provision to apply, the owner or operator must meet all of the following requirements:
(i) The total duration of refractory curing shall not exceed thirty-six hours; and
(ii) Use only clean fuel identified in 5.b. in Table 3 in 40 C.F.R. Part 63, Subpart DDDDD; and
(iii) The owner or operator provides a copy of the manufacturer's instructions on curing refractory to the permitting authority; and
(iv) The manufacturer's instructions on curing refractory must be followed, including all instructions on temperature increase rates and holding temperatures and time; and
(v) The emission controls must be engaged as soon as possible during the curing process; and
(vi) The permitting authority must be notified at least one working day prior to the start of the refractory curing process.
(g) Visible emissions reader certification testing. Visible emissions from the "smoke generator" used during testing and certifying visible emission readers are exempt from the twenty percent opacity limit. Testing must follow testing and certification requirements in 40 C.F.R. Part 60, Appendix A, Test Method 9 (in effect on the date in WAC 173-400-025) and Source Test Methods 9A and 9B in Source Test Manual - Procedures for Compliance Testing, state of Washington, department of ecology, as of September 20, 2004, on file at ecology.
(h) Military training exercises. Visible emissions during military obscurant training exercises are exempt from the twenty percent opacity limit when the following requirements are met:
(i) No visible emissions shall cross the boundary of the military training site/reservation.

(ii) The operation shall have in place methods, which have been reviewed and approved by the permitting authority, to detect changes in weather that would cause the obscurant to cross the site boundary either during the course of the exercise or prior to the start of the exercise. The approved methods shall include provisions that result in cancellation of the training exercise, cease the use of obscurants during the exercise until weather conditions would allow such training to occur without causing obscurant to leave the site boundary of the military site/reservation.
WAC 173-400-040(3): Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

WAC 173-400-040(4): Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition or other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

WAC173-400-111(7): Construction limitations.

(a) Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The permitting authority may extend the eighteen-month period upon a satisfactory showing by the permittee that an extension is justified.

Federal

40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Based on its size, this boiler is subject to the reporting and recordkeeping requirements of this subpart, shown below.
§ 60.48c Reporting and recordkeeping requirements.

(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup, as provided by § 60.7 of this part. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

(2) If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under § 60.42c, or § 60.43c.

(3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

(4) Notification if an emerging technology will be used for controlling SO_2 emissions. The Administrator will examine the description of the control device and will determine whether the technology qualifies as an emerging technology. In making this determination, the

Administrator may require the owner or operator of the affected facility to submit additional information concerning the control device. The affected facility is subject to the provisions of § 60.42c(a) or (b)(1), unless and until this determination is made by the Administrator.

(b) The owner or operator of each affected facility subject to the SO_2 emission limits of § 60.42c, or the PM or opacity limits of § 60.43c, shall submit to the Administrator the performance test data from the initial and any subsequent performance tests and, if applicable, the performance evaluation of the CEMS and/or COMS using the applicable performance specifications in appendix B of this part.

(c) In addition to the applicable requirements in § 60.7, the owner or operator of an affected facility subject to the opacity limits in § 60.43c(c) shall submit excess emission reports for any excess emissions from the affected facility that occur during the reporting period and maintain records according to the requirements specified in paragraphs (c)(1) through (3) of this section, as applicable to the visible emissions monitoring method used.

(1) For each performance test conducted using Method 9 of appendix A-4 of this part, the owner or operator shall keep the records including the information specified in paragraphs (c)(1)(i) through (iii) of this section.

(i) Dates and time intervals of all opacity observation periods;

(ii) Name, affiliation, and copy of current visible emission reading certification for each visible emission observer participating in the performance test; and

(iii) Copies of all visible emission observer opacity field data sheets;

(2) For each performance test conducted using Method 22 of appendix A-4 of this part, the owner or operator shall keep the records including the information specified in paragraphs (c)(2)(i) through (iv) of this section.

(i) Dates and time intervals of all visible emissions observation periods;

(ii) Name and affiliation for each visible emission observer participating in the performance test;

(iii) Copies of all visible emission observer opacity field data sheets; and

(iv) Documentation of any adjustments made and the time the adjustments were completed to the affected facility operation by the owner or operator to demonstrate compliance with the applicable monitoring requirements.

(3) For each digital opacity compliance system, the owner or operator shall maintain records and submit reports according to the requirements specified in the site-specific monitoring plan approved by the Administrator

(d) The owner or operator of each affected facility subject to the SO_2 emission limits, fuel oil sulfur limits, or percent reduction requirements under § 60.42c shall submit reports to the Administrator.

(e) The owner or operator of each affected facility subject to the SO_2 emission limits, fuel oil sulfur limits, or percent reduction requirements under § 60.42c shall keep records and submit reports as required under paragraph (d) of this section, including the following information, as applicable.

(1) Calendar dates covered in the reporting period.

(2) Each 30-day average SO_2 emission rate (ng/J or lb/MMBtu), or 30-day average sulfur content (weight percent), calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance with the emission standards; and a description of corrective actions taken.

(3) Each 30-day average percent of potential SO_2 emission rate calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance with the emission standards; and a description of the corrective actions taken.

(4) Identification of any steam generating unit operating days for which SO_2 or diluent (O_2 or CO_2) data have not been obtained by an approved method for at least 75 percent of the operating hours; justification for not obtaining sufficient data; and a description of corrective actions taken.

(5) Identification of any times when emissions data have been excluded from the calculation of average emission rates; justification for excluding data; and a description of corrective actions taken if data have been excluded for periods other than those during which coal or oil were not combusted in the steam generating unit.

(6) Identification of the F factor used in calculations, method of determination, and type of fuel combusted.

(7) Identification of whether averages have been obtained based on CEMS rather than manual sampling methods.

(8) If a CEMS is used, identification of any times when the pollutant concentration exceeded the full span of the CEMS.

(9) If a CEMS is used, description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specifications 2 or 3 of appendix B of this part.

(10) If a CEMS is used, results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1 of this part.

(11) If fuel supplier certification is used to demonstrate compliance, records of fuel supplier certification as described under paragraph (f)(1), (2), (3), or (4) of this section, as applicable. In addition to records of fuel supplier certifications, the report shall include a certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.

(f) Fuel supplier certification shall include the following information:

(1) For distillate oil:

(i) The name of the oil supplier;

(ii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in § 60.41c; and

(iii) The sulfur content or maximum sulfur content of the oil.

(4) For other fuels:

(i) The name of the supplier of the fuel;

(ii) The potential sulfur emissions rate or maximum potential sulfur emissions rate of the fuel in ng/J heat input; and

(iii) The method used to determine the potential sulfur emissions rate of the fuel.

(g)

(1) Except as provided under paragraphs (g)(2) and (g)(3) of this section, the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.

(2) As an alternative to meeting the requirements of paragraph (g)(1) of this section, the owner or operator of an affected facility that combusts only natural gas, wood, fuels using fuel certification in § 60.48c(f) to demonstrate compliance with the SO_2 standard, fuels not subject to an emissions standard (excluding opacity), or a mixture of these fuels may elect to record and maintain records of the amount of each fuel combusted during each calendar month.

(3) As an alternative to meeting the requirements of paragraph (g)(1) of this section, the owner or operator of an affected facility or multiple affected facilities located on a contiguous property unit where the only fuels combusted in any steam generating unit (including steam generating units not subject to this subpart) at that property are natural gas, wood, distillate oil meeting the most current requirements in § 60.42C to use fuel certification to demonstrate compliance with the SO_2 standard, and/or fuels, excluding coal and residual oil, not subject to an emissions standard (excluding opacity) may elect to record and maintain records of the total amount of each steam generating unit fuel delivered to that property during each calendar month.

(h) The owner or operator of each affected facility subject to a federally enforceable requirement limiting the annual capacity factor for any fuel or mixture of fuels under § 60.42c or § 60.43c shall calculate the annual capacity factor individually for each fuel combusted. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of the calendar month.

(i) All records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record.

(j) The reporting period for the reports required under this subpart is each six-month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

DWIC is responsible for complying with this subpart. This section is to highlight critical clauses.

From Table 1:

4. New biomass fired boilers with heat input capacity of between 10 and 30 MMBtu/hr that do not meet the definition of seasonal boiler or limited-use boiler - PM (Filterable) 7.0E–02 lb per MMBtu of heat input.

From Table 2: this boiler meets item number 7:

7. New biomass-fired boilers that do not meet the definition of seasonal boiler or limited-use boiler, or use an oxygen trim system that maintains an optimum air-to-fuel ratio so it must conduct a tune-up of the boiler biennially as specified in § 63.11223

§ 63.11223 How do I demonstrate continuous compliance with the work practice and management practice standards?

(a) For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in § 63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.

(b) Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler.

(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection.

(2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.

(3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection.

(4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject.

(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer.

(6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of this section.

(i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler.

(ii) A description of any corrective actions taken as a part of the tune-up of the boiler.

(iii) The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.

(7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup

From Table 3:

If you demonstrate compliance with applicable emission limits using …, you must meet these operating limits except during periods of startup and shutdown:

2. Electrostatic Precipitator

a. Maintain opacity to less than or equal to 10 percent opacity (daily block average); OR
b. Maintain the 30-day rolling average total secondary electric power of the electrostatic precipitator at or above the minimum total secondary electric power as defined in § 63.11237.

7. Performance stack testing

For boilers that demonstrate compliance with a performance stack test, maintain the operating load of each unit such that it does not exceed 110 percent of the average operating load recorded during the most recent performance stack test.

From Table 4:

To conduct a performance test for the following pollutant …., you must ….

1. Particulate Matter

a. *a. Select sampling ports location and the number of traverse points, using Method 1 in appendix A–1 to part 60 of this chapter*
b. *. Determine velocity and volumetric flow-rate of the stack gas, using Method 2, 2F, or 2G in appendix A–2 to part 60 of this chapter.*
c. *Determine oxygen and carbon dioxide concentrations of the stack gas, using Method 3A or 3B in appendix A–2 to part 60 of this chapter, or ASTM D6522–00 (Reapproved 2005),a or ANSI/ASME PTC 19.10–1981.a*
d. *d. Measure the moisture content of the stack gas using Method 4 in appendix A–3 to part 60 of this chapter.*
e. *e. Measure the particulate matter emission concentration using Method 5 or 17 (positive pressure fabric filters must use Method 5D) in appendix A–3 and A–6 to part 60 of this chapter and a minimum 1 dscm of sample volume per run.*
f. *f. Convert emissions concentration to lb/MMBtu emission rates using Method 19 F-factor methodology in appendix A–7 to part 60 of this chapter.*

Table 5 is applicable as it outlines how to do fuel analysis for record keeping and for method 19.

Table 6 explains how to set operating limits if you have an applicable emission limit.

1. *PM or Mercury and your operating limits are based on an electrostatic precipitator operating parameters, you must Establish a site-specific minimum total secondary electric power operating limit according to § 63.11211(b), using data from the secondary electric power monitors and the PM or mercury performance stack tests according these requirements:*
    a. *collect secondary electric power data every 15 minutes during the entire period of the performance stack tests;*
    b. *Determine the average total secondary electric power for each individual test run in the three-run performance stack test by computing the average of all the 15-minute readings taken during each test run.*

4. Any pollutant for which compliance is demonstrated by a performance stack test and your operating limits are based on boiler load, you must establish a unit specific limit for maximum operating load according to § 63.11212(c) using data from the operating load monitors (fuel feed monitors or stream generation monitors) according to the following requirements:

    a. *You must collect operating load data (fuel feed rate or steam generation data) every 15 minutes during the entire period of the performance test.*

b. *Determine the average operating load by computing the hourly averages using all of the 15-minute readings taken during each performance test.*
c. *Determine the average of the three test run averages during the performance test, and multiply this by 1.1 (110 percent) as your operating limit.*

Table 7 describes how to demonstrate continuous compliance. *If you must meet the following operating limits…., you must demonstrate continuous compliance by*

5. Electrostatic Precipitator Total Secondary Electric Power

a. *Collecting the total secondary electric power monitoring system data for the electrostatic precipitator according to § 63.11224 and 63.11221; and*
b. *Reducing the data to 30-day rolling averages: and*
c. *Maintaining the 30 day rolling average total secondary electric power according to § 63.11211.*

6. Fuel Pollutant Content

a. *Only burning the fuel types and fuel mixtures used to demonstrate compliance with the applicable emission limit according to § 63.11213 as applicable; and*
b. *Keeping monthly records of fuel use according to §§ 63.11222(a)(2) and 63.11225(b)(4).*

Table 8 highlights general provisions that would apply to this subpart, including but not limited to performing testing requirements, monitoring requirements, notification requirements, written procedures for CMS, record keeping and reporting requirements and maintenance requirements.

K. PUBLIC NOTICE

This project does meet the criteria for mandatory public notice under WAC 173-400-171(3). Criteria requiring public notice includes, but is not limited to, a project that exceeds emission threshold rates as defined in WAC 173-400-030 (e.g. 40 tpy NOx, VOC, or SO_2, 100 tpy CO, 15 tpy PM_{10}, 10 tpy $PM_{2.5}$, 0.6 tpy lead), has a toxic air pollutant emission increase above the acceptable source impact level in WAC 173-460-150, or has significant public interest. A notice of application was posted on the Agency's website for 15 days. No requests or responses were received. A copy of the website posting is below:

The applicant requested a public comment period and hearing upon application.

New Construction Projects

Company	Address	Project Description	Date Posted	Contact Engineer
Darrington Wood Innovation Center LLC	1300 Block of SR 530, Darrington, WA 98241	Forterra Darrington Wood Innovation Center LLC (DWIC) is proposing to construct a forest-to housing manufacturing facility that will include a sawmill, lumber kilns, a natural gas boiler, a Glulam Beam and cross laminated timber panel assembly process and a modular unit construction operation.	4/1122	Carl Slimp

L. RECOMMENDED APPROVAL CONDITIONS

Standard Conditions:

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the installation address in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.

2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.

Specific Conditions:

Biomass Boiler

3. The owner/operator shall maintain an O&M Plan per Puget Sound Clean Air Agency Regulation I, Section 5.05. The O&M Plan shall also contain:
   a. Equations, conversion calculations, and any assumptions used to demonstrate compliance and to reasonably assure continuous compliance with emissions standards;
   b. Procedures and blank log forms to record all actions taken in order to prevent visible emissions of fugitive dust in accordance with Puget Sound Clean Air Agency Regulation I, Section 9.15(a).
   c. A site-specific fuel analysis plan for chlorine content as described in paragraphs (b)(2)(i) through (vi) of 40 CFR Section 63.7521. The term "fuel type" shall be taken to mean a new batch of hog fuel, with unknown chlorine content, from a new supplier.

4. All emissions from the biomass boiler shall be sent through an ESP. The Hog Fuel boiler shall not operate if the ESP is offline.
   a. The owner/operator must establish the minimum total secondary electric power (secondary voltage and secondary current) as operating limits determined during the three-run performance stack test required in condition 15.
   b. Maintain the 30-day rolling average total secondary electric power of the electrostatic precipitator at or above the minimum total secondary electric power determined in 4(a).
   c. Minimum total secondary electric power means the lowest hourly average total secondary electric power determined from the values of secondary voltage and secondary current to the electrostatic precipitator.

5. For each startup period, you must maintain records of the hourly steam temperature, hourly steam pressure, hourly steam flow, hourly flue gas temperature, and all hourly average CMS data (ESP total secondary electric power input) collected during each startup period to confirm that the control devices are engaged. For the electrostatic precipitator, record the number of fields in service, as well as each field's secondary voltage and secondary current during each hour of startup.

6. Total PM emissions shall be limited to 0.02 gr/dscf @ 7% O_2 as measured by EPA method 5 as modified by PSCAA board resolution 540.

7. Filterable PM emissions shall be limited to 0.07 lb/MMBtu by EPA method 5. These runs shall be at least 120 minutes in duration and a minimum sampling volume of 60 dry standard cubic feet (dscf). The temperature of the sample gas in the probe and filter holder shall be monitored and maintained at 160 ±14 °C (320±25 °F).

8. The boiler must maintain opacity less than or equal to 20% for all consecutive 6-minute periods and no greater than 5% for any hour average as measured by EPA Method 9.

9. NOx emissions from the biomass boiler shall be limited to 6.16 lb/hr as measured by EPA methods 1, 2,3,4 and 7E.

10. CO emissions from the biomass boiler shall be limited to 20.6 lbs/hr as measured by EPA methods 1, 2, 3, 4 and 10.

11. SO_2 emissions from the biomass boiler shall be limited to 1.2 lb/hr as measured by EPA methods 1, 2, 3, 4 and EPA method 6C.

12. HCl emissions from the biomass boiler shall not exceed 100 ppm on a dry basis, 1-hour average corrected to 7% oxygen or 0.13 lbs/hr or 0.0046 lb HCl/MMBtu as measured by EPA method 26, EPA method 26a or EPA method 321.

13. The Owner/Operator shall develop and implement the following plans prior to plant startup unless otherwise approved in writing by the Control Officer. A site-specific fuel analysis plan for chlorine content as described in paragraphs (b)(2)(i) through (vi) of 40 CFR Section 63.7521. The term "fuel type" shall be taken to mean a new batch of hog fuel, with unknown chlorine content, from a new supplier.

14. Cl_2 emissions from the biomass boiler shall not exceed 0.034 lbs/hr as measured by EPA method 26, or EPA method 26a.

15. Biomass Boiler Performance Testing
    a. The Owner and/or Operator shall conduct performance tests on the biomass boiler within 60 days after startup of the applicable equipment. The testing deadline may be extended for good cause if preapproval is obtained in writing by the Agency, but in no case shall the testing deadline extend beyond 180 days after startup of the new applicable equipment.
    b. The Owner and/or Operator shall conduct a performance test of the biofuel boiler while operating at a minimum of 90% of maximum load. If testing occurs at a load less than 90% of maximum load, then the boiler may not be operated at a load higher than the load achieved during the performance test, plus 10%.
    c. The Owner and/or Operator shall measure the concentrations of Total PM, Filterable PM, NO_X, CO, Cl_2 and HCl in the exhaust stream.
    d. Following the initial performance test for this permit, The Owner and/or Operator shall conduct a performance test every year no more than 14 months from the last respective test for all pollutants listed in conditions 6-12.

e. Testing of sources for compliance with emission standards shall be performed in accordance with Regulation 1, Article 3, Section 3.07. The Owner and/or Operator shall notify the Agency in writing at least 21 days in advance of the actual date and time of each performance test as required by Regulation 1, Section 3.07(b). The Owner and/or Operator shall complete and submit a separate test report for each performance test to the Department within 60 days after the completion of testing in accordance with the requirements specified in Regulation 1, Section 3.07(c)
f. Each performance test shall consist of three separate test runs with each test run being at least 60 minutes in duration unless otherwise specified in the applicable standard. The same test methods shall be conducted for both the inlet and outlet measurements, if applicable and technically feasible, which must be conducted simultaneously. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond The Owner and/or Operator's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.
g. The following production data must be collected at a minimum of every 15 minutes during the source test period:
    i. Electrostatic Precipitator operating data including secondary electric power data
    ii. Oxygen data
    iii. Boiler load data (fuel feed rate or steam generation data)

Lumber Kilns

16. Annual throughput shall be limited to a 12 month rolling total of 4,240 thousand-board feet (Mbdft) of Western Hemlock and 16,948 Mbdft of other species. Production records shall be maintained for at least 2 years and made available to Puget Sound Clean Air Agency personnel upon request.

17. At no time shall any kiln dry-bulb temperature setpoint or the actual dry-bulb temperature in any dry kiln exceed 200 degrees F. This temperature shall be continuously monitored.

CLT Facility Wood Handling Equipment

18. The baghouse receiving particulate laden exhaust from the CLT Facility Wood Handling Equipment shall be equipped with an operable gauge to indicate the pressure drop across the exhaust filtration system. The acceptable pressure drop range shall be established using the manufacturer's recommendations, specifications, or instruction; or shall be established based on operator experience to maintain filter integrity. The established pressure drop minimum and maximum values must be clearly marked on or nearby the gauge.

19. Once per day the dust collector is in operation, the facility shall record the pressure drop across the exhaust filters and determine if it is in the acceptable range. If the pressure drop is not within the acceptable range, the facility shall shut down the dust collector and the equipment vented to the dust collector upon discovery of the problem until corrective action has been taken.

20. The owner or operator shall conduct visual inspections of the dust collectors and associated ductwork at least once per week when they are used for visible emissions and fallout. Records shall be maintained of these inspections. If visible emissions or fallout are observed, the facility shall either initiate repairs or shut down the dust collector and the equipment vented to the dust collector until corrective action has been taken.

Glue Line

21. Production shall be limited to a 12 month rolling total of 84,894 lb/year of adhesive applied, and adhesives may not exceed 10% volatiles by weight. Within 30 days of the end of each month, the owner or operator shall record the gallons of adhesive used during the previous month. Purchase records may be used as a surrogate for usage.

22. Production shall be limited to a 12 month rolling total of 84,894 lb/year of primer applied. Within 30 days of the end of each month, the owner or operator shall record the gallons of primer used during the previous month. Purchase records may be used as a surrogate for usage.

23. Shavings and sand materials that contain glue may not be used as fuel for the Hog Fuel Boiler.

Coating Applications

24. Spray coating operations shall be contained to a spray booth. This booth shall be operated so that all exhaust air passes through a filter system that meets one of the following standards:

    a. A system with a minimum initial overspray arrestance of 98 percent. Overspray arrestance must be determined using the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Method 52.1 procedure and substituting the synthetic test dust feed with a high solids bake enamel delivered at a rate of at least 135 grams per minute from a conventional (non-HVLP) air-atomized spray gun operating at 40 pounds per square inch (psi) air pressure with an air flow rate across the filter of 150 feet per minute. A system that complies with 40 CFR Part 63, Subpart HHHHHH meets this requirement.

    b. A system that meets a minimum initial efficiency reporting value (MERV) of 13 as determined by ASHRAE Method 52.2.

    c. A system that meets a minimum initial filtration efficiency of 98 percent over the particle diameter range from 0.3 to 10 microns. The particle size dependent filtration efficiencies must be determined using either Environmental Protection Agency (EPA) Method 319 or an Agency approved method.

25. Spray application of any individual material containing methylene chloride, lead, Chrome (VI), nickel, or cadmium is prohibited. If the chemical is not listed on the SDS or other data sheet it will be presumed the coating material does not contain the chemical.

26. All spray application of material must be applied with an air-assisted airless spray gun, electrostatic applicator, or high-volume low-pressure (HVLP) spray gun or the Model 40-25 Easy ASB Airless

tested on 3.23.2022. Alternative spray technology must meet a minimum transfer efficiency of 65 percent. The procedure used to demonstrate a spray technology's transfer efficiency must be equivalent to South Coast Air Quality Management District's "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989" and "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns, September 26, 2002." A plan describing the test procedure must be developed and submitted to the Agency 30 days prior to conducting any spray technology transfer efficiency test.

27. The spray areas permitted under this order shall always be operated within the acceptable pressure drop range across the exhaust filter bank. Compliance demonstration with this requirement must at a minimum include daily pressure drop inspections on days when the booths are in operation. Operation of the booths must cease when the pressure drop across the filter bank deviates from the established range and corrective action must be taken prior to operation of the booth.

28. All materials from which VOCs can evaporate to the open air shall be disposed of in closed containers or bags. This includes rags, wipes, paper towels, and absorbents that become laden, soaked, or covered in VOC-containing material.

29. All containers used for mixing, storing, or disposing VOC-containing materials shall be kept closed at all times except during the following situations:
    a. Cleaning of containers.
    b. Depositing of materials in containers or removing of materials from containers.

30. The spray areas permitted under this order must be equipped with an operable gauge to indicate the pressure drop across the exhaust filtration system. The acceptable pressure drop range shall be established using the manufacturer's recommendations, specifications, or instruction; or shall be established based on operator experience to maintain filter integrity and compliance with Conditions #26. The established pressure drop minimum and maximum values must be clearly marked on or nearby the gauge.

31. The owner or operation shall inspect the spray area at least once per day of operation, with each inspection to include the following:
    a. Check of differential pressure across the filters in the spray area to ensure operation within the acceptable range, and
    b. Visual checks of filter condition and fit to ensure complete coverage over the exhaust plenum.

32. The following records shall be kept onsite and up-to-date, and always made readily available to Agency personnel upon request at all times:
    a. Safety Data Sheets (SDS) and formulation data for each VOC-containing material used inside the booths, including VOC content (minus water and exempt compounds) in pounds per gallon or gram per liter.
    b. Documentation to demonstrate compliance with filter requirements in Condition #24.
    c. Documentation to demonstrate compliance with spray gun requirements in Condition #26.

d. The Operation and Maintenance (O&M) plan. The O&M plan shall be developed and implemented per Agency's Regulation I. At a minimum, the following shall be included in the O&M plan:
    i. Filter maintenance.
    ii. Filter inspection procedures.
    iii. Procedures to correct operation of the booths when the pressure drop across the filter bank deviates from the established range.

Records

33. Records to be maintained by this Order of Approval shall be kept for at least two years and made available to Puget Sound Clean Air Agency personnel upon request.

M. CORRESPONDENCE AND SUPPORTING DOCUMENTS

12246 BACT.pdf

12246 Modeling Input.pdf

12246 modeling figures.pdf

N. REVIEWS

Reviews	Name	Date
Engineer:	Carl Slimp	2/26/2024, 3/15/2024
Inspector:	Rain Yates	
Second Review:	John Dawson	2/26/2024
Applicant Name:	Mary Ganz	3/5/2024