Technical Support Document
Notice of Construction Approval Order No. 23AQ-C264 First Revision
SDS Lumber Company
AQPID No. B0390002
Bingen, WA

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1. Project Summary

SDS Lumber Company (the source) is an existing lumber manufacturing facility, classified as a Title V source with multiple existing emissions units. This review is for the modification of two existing lumber drying kilns (the proposed project).

An initial Notice of Construction (NOC) application dated March 25, 2025 was submitted by GeoEngineers for the kiln operations modification project. The Washington State Department of Ecology (Ecology) reviewed the initial application and found it incomplete per Washington Administrative Code (WAC) 173-400-111 on May 12, 2025. A petition for second-tier review was submitted on May 14, 2025. The source requested that Ecology waive the second-tier review application fee; Ecology approved the request in an email dated May 20,2025. A revised SEPA checklist was received on June 16, 2016. Additional NOC application information was received by Ecology on June 24, 2025; Ecology found the first-tier review portion of the NOC application to be complete on the same date.

2. Application Processing

a. Public Notice

This project is subject to a mandatory 30-day public comment period per WAC 173-400-171(3)(b) for an increase of acetaldehyde above the acceptable source impact level (ASIL) for that pollutant. The comment period is scheduled for August 7, 2025 through September 9, 2025. If any comments are received, responses will be addressed in a separate document.

b. State Environmental Policy Act (SEPA)

An environmental checklist was submitted with the NOC Application which considered environmental impacts of the project as required by Chapter 43.21C RCW, also known as the State Environmental Policy Act (SEPA). Ecology reviewed the checklist and made a Determination of Non-significance which was issued on August 7, 2025 and will be made available for public comment at the same time as the NOC Approval Order.

3. Applicable Regulations

a. State Regulations

i. Minor New Source Review Applicability

Per WAC 173-400-110, an NOC application and an order of approval must be issued by the permitting authority prior to the establishment of a new source or modification.

A "modification" means any physical change in, or change in the method of operation of, a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emissions of any air contaminant not previously emitted. The term modification must be construed consistent with the definition of modification in 42 U.S.C. 7411, and with the rules implementing that section.

As stated in the NOC application and consistent with Ecology's review, Kiln No.3 and Kiln No.4 are being modified this project and therefore are subject to minor new source review (NSR).

A. Exempt Equipment

No exempt emission units were proposed as part of this project.

B. Potential to Emit (Potential Emissions)

The potential emissions from the project are greater than the exemption levels listed under WAC 173-400-110(5) as shown below in Tables 1 and 2 (in bold). Potential emissions are specified here, instead of an increase in actual emissions, because the total emissions from the kilns were reanalyzed.

Table 1. Potential emissions for pollutants listed under WAC 173-400-110(5), versus the Minor NSR Exemption Levels

Pollutant	Modified Units (tons/year)	Minor NSR Exemption (tons/year)
PM_{10}	**1.1**	**0.75**
$PM_{2.5}$	**1.1**	**0.5**
Total Suspended Particulates (TSP)	1.1	1.25
Volatile Organic Compounds, total (VOC)	**34**	**2.0**

Table 2. Potential Toxic Air Pollutant (TAP) emissions increase and de minimis emission values

Pollutant	Potential Emissions from Project	De Minimis Emission Values	Averaging Period
Acetaldehyde	**3.4E+03**	**3.0E+00**	**year**
Acrolein	**2.0E-01**	**1.3E-03**	**24-hr**
Formaldehyde	**1.4E+02**	**1.4E+00**	**year**
Methyl alcohol (methanol)	1.5E+01	7.4E+01	24-hr
Propionaldehyde	**2.3E-01**	**3.0E-02**	**24-hr**

ii. Prevention of Significant Deterioration (PSD)

According to the application, the proposed project does not trigger PSD permitting requirements. The basis of the non-applicability determination was that the proposed project does not result in a significant emissions increase (SEI). The source did not submit a PSD Applicability Determination application; therefore, Ecology's PSD program did not issue a PSD Applicability Determination for this project.

Since the source already has potential emissions of carbon monoxide in excess of 250 tons per year, it's a major source under the federal New Source Review (NSR) program. Therefore, the proposed project triggered a required NSR applicability analysis to determine if the project would be considered a major modification. The application presented the emissions increases for the proposed project, on an actual-to-projected-actual basis, for the modified kilns. However, since the original review was less than three years ago, I altered the spreadsheet to compare total kiln emissions and other affected sources. While the altered analysis includes throughput accommodated by the preview review, it's still sufficiently conservative due to historic throughput maxima in previous years. The total increased emissions did not exceed the SEI for any pollutant, as shown in the table below.

Table 3. Total Project Emissions and Significant Emission Increase (SEI)

Pollutant	**Total Project Emissions**	**SEI (tons/year)**
Carbon Monoxide (CO)	75	100
Nitrogen Oxides (NO_X)	19	40
PM_{10}	10	15
$PM_{2.5}$	8.2	10
Total Suspended Particulates (TSP)	14	N/A
Sulfur Dioxide (SO_2)	2.5	40
Volatile Organic Compounds, total (VOC)	39	40
Greenhouse Gases (GHG)	21,000	75,000 (as CO_2 equivalent)

iii. Other Applicable Requirements

In accordance with WAC 173-400-113, the proposed modified units must comply with all applicable emission standards adopted under Chapter 70A.15 RCW. The following applicable emission standards are associated with the proposed project:

A. General standards for maximum emissions.
WAC 173-400-040(2) specifies a visible emissions limit of 20 percent opacity, as determined by Ecology Method 9A. This standard applies to emissions from each kiln. However, Approval Condition 2.c.i specifies a more stringent limit of 10 percent opacity, as determined by 40 C.F.R. Part 60, Appendix A, Test Method 9. Therefore, the 20 percent limit was not included in the Approval Order.
WAC 173-400-040(4) specifies that the owner or operator of any emissions unit which is a source of fugitive emission shall take reasonable precautions to prevent the release of air contaminants from the operation. This standard applies to emissions from each kiln. Approval Condition 2.c.ii requires that there must be no visible emissions from the kilns at the property boundary.
WAC 173-400-040(5) requires the use of recognized good practice and procedures to reduce these odors to a reasonable minimum. This standard applies to emissions from each kiln. Approval Condition 6.i mirrors the standard.

B. Emission standards for general process units.
WAC 173-400-060 specifies no person shall cause or allow the emission of particulate material from any general process operation in excess of 0.23 grams per dry cubic meter at standard conditions (0.10 grain/dscf) of exhaust gas. While this standard applies to each kiln, the standard is not specified in the Approval Order. This is because of the diffuse nature of kiln emissions, which do not facilitate the typical forms of stack testing. Additionally, emissions from the proposed project are expected to be far less than the magnitude of the standard.

b. Federal Regulations

In accordance with WAC 173-400-113, the proposed modified units must comply with all applicable new source performance standards (NSPS) included in 40 C.F.R. Part 60, national emission standards for hazardous air pollutants (NESHAPs) included in 40 C.F.R. Part 61, and NESHAPs for source categories included in 40 C.F.R. Part 63. There are no applicable emission standards associated with the proposed project.

4. Emissions

a. Emission Factors

The source's consultant proposed use of emission factors from two sources. For $PM_{2.5}$, PM_{10}, and TSP emissions, they proposed retaining the emission factors utilized in the original review from Oregon Department of Environmental Quality (DEQ) publication

AQ-EF02[1]. For TAP and VOC, they proposed transitioning to factors specified by EPA Region 10's *HAP and VOC Emission Factors for Lumber Drying*[2] document.

Some of the Oregon DEQ TAP and VOC emission factors are higher than those specified in the EPA Region 10 document. The source is also urgently waiting approval for the modified use of the kilns. Therefore, I updated the emissions quantification spreadsheet to include both sets of emission factors, and updated select formulas to choose the maximum value between each per pollutant. This allowed for maximum expediency while maintaining sufficient conservatism for the analysis.

b. Best Available Control Technology | Best Available Control Technology for Toxics

In the original best available control technology (BACT) analysis, I accepted the "use of up-to-date software and technology to control various functions of the lumber drying process through integrated PC/PLC[3] controls" as BACT for VOC and best available control technology for toxics (tBACT) for the TAP emissions. This continues to qualify as BACT/tBACT for the modified kilns, as the industry and kiln technology do not appear to have changed in the two years since original review.

5. Ambient Air Quality Standards

As specified in WAC 173-400-113, the proposed new or modified source(s) must not cause or contribute to a violation of any ambient air quality standard. This includes the ambient air quality standards for both criteria and toxic air pollutants.

a. Pollutants Listed Under WAC 173-400-110 (Except TAPs)

For VOC, dispersion modeling to demonstrate compliance with the National Ambient Air Quality (NAAQS) was not conducted because VOC is not a criteria air pollutant. While, under the right conditions, VOC is a precursor for ozone and secondary $PM_{2.5}$ (criteria pollutants), this source's VOC emissions are not expected to contribute to NAAQS exceedances.

For $PM_{2.5}$ and PM_{10}, modeling performed for TAPs (see below) was adapted to satisfy the requirements of WAC 173-400-113(3). The demonstration is conservative because the modeling is in the form of maximum 24-hour and annual concentrations, instead of the three-year averaged form allowed by the particulate NAAQS. The modeling demonstrates that the emissions increase as a result of the project will not exceed the ambient air quality standards. The modeling results are included in the table below.

[1] https://www.oregon.gov/deq/FilterPermitsDocs/AQ-EF02.pdf
[2] https://www.epa.gov/system/files/documents/2021-07/epa-region-10-lumber-drying-ef-january-2021.pdf
[3] PC/PLC means personal computer and programable logic controller.

Table 4. Criteria Pollutant Modeling Results

Criteria Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Ambient Air Quality Standard ($\mu g/m^3$)
$PM_{2.5}$	24-hr	27	35
$PM_{2.5}$	annual	7.4	9.0
PM_{10}	24-hr	72	150

b. Toxic Air Pollutants (TAPs)

In accordance with WAC 173-460-040, modified TAP sources must meet the requirements of Chapter 173-460 WAC, unless they are exempt by WAC 173-400-110(5).

As shown in Table 2, minor NSR is required for acetaldehyde, acrolein, and formaldehyde. As such, the modified emission units must comply with WAC 173-460-070 (ambient impact requirement). The source may demonstrate compliance with the ambient impact requirement by either showing that the emissions increase is less than the small quantity emissions rates (SQER) or through dispersion modeling. The table below includes the estimated emissions increases associated with the project and the applicable SQER.

Table 5. TAP Analysis (lb/averaging period)

TAP	Estimated Increase	SQER	Modeling Required?
Acetaldehyde	**3.4E+03**	**6.0E+01**	**yes**
Acrolein	**2.0E-01**	**2.6E-02**	**yes**
Formaldehyde	**1.4E+02**	**2.7E+01**	**yes**
Propionaldehyde	2.3E-01	5.9E-01	no

For acetaldehyde, acrolein, and formaldehyde, modeling was performed to satisfy the requirements of Washington's state toxics rule in Chapter 173-460 WAC. The modeling demonstrates that the emission increases as a result of the project will not exceed the acceptable source impact level (ASIL) screening thresholds, with the exception of acetaldehyde. The modeling results are included in the table below.

Table 6. TAP Modeling Results

TAP	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	ASIL ($\mu g/m^3$)	Percent of ASIL
Acetaldehyde	**year**	**2.2E+00**	**3.7E-01**	**604 percent**
Acrolein	24-hr	2.8E-01	3.5E-01	79 percent
Formaldehyde	year	8.8E-02	1.7E-01	52 percent

As shown in the table above, all TAPs except acetaldehyde are below the associated ASIL. A Second Tier Health Impact Assessment (HIA) was conducted for acetaldehyde as part of the NOC application. Ecology reviewed the assessment and recommended approval of the project. Ecology's analysis and recommendations are included in the document titled, "DRAFT SDS-2 Risk Approval Recommendation Decision Letter", July 1, 2025.