

Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

APR 23 2019

Mr. Greg Jansen  
Vice-President  
Columbia Construction Corp.  
3630 Exchange Drive  
Cape Girardeau, MO 63701

RE: New Source Review Permit - Project Number: 2018-10-037

Dear Mr. Jansen:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



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Mr. Greg Jansen  
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If you have any questions regarding this permit, please do not hesitate to contact Chad Stephenson, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Susan Heckenkamp  
New Source Review Unit Chief

SH:csj

Enclosures

c: Southeast Regional Office  
PAMS File: 2018-10-037

Permit Number: 042019 - 013



### PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 042019-013

Project Number: 2018-10-037

Installation Number: 031-0136

Parent Company: Columbia Construction Corp.

Parent Company Address: 601 Larch Lane, Jackson, MO 63755

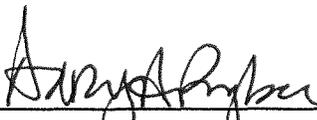
Installation Name: Columbia Construction Corp.

Installation Address: 601 Larch Lane, Jackson, MO 63755

Location Information: Cape Girardeau County, S19, T32N, R13E

Application for Authority to Construct was made for:  
Wood furniture manufacturing facility. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- 
- Standard Conditions (on reverse) are applicable to this permit.
  - Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

  
\_\_\_\_\_  
Director or Designee  
Department of Natural Resources

APR 23 2019

\_\_\_\_\_  
Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

Columbia Construction Corp.  
Cape Girardeau County, S19, T32N, R13E

1. VOC and HAPs Emission Limitations
  - A. Columbia Construction Corp. shall emit less than 40.0 tons of VOCs in any consecutive 12-month period from emission points listed below.
    - 1) EP-3 Gluing
    - 2) EP-4 Surface Coating (A,B,C,D)
    - 3) EP-6 Natural Gas Boiler
  - B. Columbia Construction Corp. shall emit less than the SMAL given in Appendix B for each individual HAP and 25.0 tons of combined HAPs in any consecutive 12-month period from emission points listed below.
    - 1) EP-3 Gluing
    - 2) EP-4 Surface Coating (A,B,C, and D)
    - 3) EP-6 Natural Gas Boiler
  - C. Attachment A, Attachment B and Attachment C or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A and 1.B
2. Capture Device Requirement- Sawdust Collection system.
  - A. Columbia Construction Corp. shall capture emissions from the equipment listed below using the sawdust collection system hooked from the saw or sander directly to the baghouse as specified in the permit application.
    - 1) EP-1 Cutting
    - 2) EP-2 Sanding
  - B. The dust collector system shall be operated and maintained in accordance with the manufacturer's specifications.
  - C. Columbia Construction Corp. shall maintain an operating and maintenance log for the dust collector system which shall include the following:
    - 1) Incidents of malfunctions, with impacts on emissions, duration of events, probable causes, and corrective actions; and
    - 2) Maintenance activities, with inspection schedules, repair actions, and replacements, etc.

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

3. **Control Device Requirement-Baghouse**
  - A. Columbia Construction Corp. shall control emissions from the equipment listed below using baghouses as specified in the permit application.
    - 1) EP-1 Cutting
    - 2) EP-2 Sanding
  - B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
  - C. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
  - D. Columbia Construction Corp. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - E. Columbia Construction Corp. shall maintain a copy of the baghouse manufacturer's performance warranty on site.
  - F. Columbia Construction Corp. shall maintain an operating and maintenance log for the baghouses which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. **Control Device Requirement- Particulate Filter (99% Control Efficiency)**
  - A. Columbia Construction Corp. shall control particulate matter emissions from all paint guns (EP-4) using particulate filters as specified in the permit application. The filter(s) shall be operated and maintained in accordance with the manufacturer's specifications.
  - B. Replacement particulate filters for the paint booths shall be kept on hand at all times. The particulate filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
- C. Columbia Construction Corp. shall maintain a copy of the filters manufacturer's performance warranty on site.
- D. Columbia Construction Corp. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
- E. Columbia Construction Corp. shall maintain an operating and maintenance log for the paper filters which shall include the following:
- 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
  - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
5. Capture Device Requirement – Booth
- A. Columbia Construction Corp. shall capture emissions from surface coating using all booths (EP- 4 A, B, C, and D) with not more than 1 inlet face opening (e.g. 3-sided or totally enclosed booth).
- B. All coatings shall be applied inside the booth and sprayed in a direction away from the inlet face opening.
- C. The inlet face opening shall be equipped with a visual indicator, such as streamers, that show air flow into the booth whenever surface coating is applied.
- D. Inward air velocity shall be maintained at least 100 fpm at all points across the inlet face opening.
- 1) Air velocity shall be monitored and recorded at initial startup with an anemometer.
  - 2) Air velocity shall be monitored and recorded once per calendar quarter following initial startup.
  - 3) Each monitoring event shall be conducted immediately prior to filter replacement and with substrate located inside the booth.
- E. Columbia Construction Corp. shall maintain an operating and maintenance log for the booths which shall include the following:
- 1) Incidents of malfunction, with impact on emissions, duration of event,

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- probable cause, and corrective actions; and
  - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
6. **Operational Requirement – VOC Containing Materials**  
Columbia Construction Corp. shall keep all coatings and thinners in closed containers whenever the materials are not in use. Columbia Construction Corp. shall provide and maintain suitable, easily read, permanent markings on coating and thinner containers used with this equipment.
7. **Alternative Coating and Chemicals**
- A. All alternative coatings and chemicals associated with EP-3 and EP-4 the shall comply with Special Conditions 1.A and 1.B.
  - B. Columbia Construction Corp. shall seek approval from the Air Pollution Control Program before use of the alternative material in the following cases:
    - 1) If the potential individual HAP emissions for the alternative material is equal to or greater than the Screening Model Action Levels (SMAL) for any compound listed in Appendix B.
8. **Record Keeping and Reporting Requirements**
- A. Columbia Construction Corp. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.
  - B. Columbia Construction Corp. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (6) REVIEW

Project Number: 2018-10-037  
Installation ID Number: 031-0136  
Permit Number: 042019-013

Installation Address:

Columbia Construction Corp.  
601 Larch Lane  
Jackson, MO 63755

Parent Company:

Columbia Construction Corp.  
601 Larch Lane  
Jackson, MO 63755

Cape Girardeau County, S19, T32N, R13E

REVIEW SUMMARY

- Columbia Construction Corp. has applied for authority to construct a wood furniture manufacturing facility that operates four paint booths with two spray guns per booth.
- The application was deemed complete on November 21, 2018.
- Hazardous air pollutants (HAP) emissions are expected from the gluing and painting equipment.
- None of the New Source Performance Standards (NSPS) apply to the project.
- None of the NESHAPs apply to this installation.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart JJ, National Emission Standards for Wood Furniture Manufacturing Operations does not apply to this project as this is not a major source.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart HHHHHH National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources applies to this project as the paint, stain and varnish remover contains Methylene Chloride
  - Refer to the regulation for all applicable requirements.
- A baghouse/dust collection system is being used to control the particulate matter emissions from the cutting and sanding equipment in this permit.
- A 3-sided paint booth and filter is being used to control the particulate emissions from the spray booth equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule

10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC and HAPs are limited below de minimis levels.

- This installation is located in Cape Girardeau County, an attainment/unclassifiable area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are limited below de minimis levels.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- No Operating Permit is required for this installation as the emissions are limited below de minimis.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

Columbia Construction Corp. is a wood furniture manufacturing company located in Jackson, Missouri. The activities that occur at this facility include wood cutting, sanding, staining, varnishing, and sealing. Columbia Construction Corp. will be considered a de minimis source for construction permit purposes and will not require a basic operating permit.

No permits have been issued to Columbia Construction Corp. from the Air Pollution Control Program.

Table 1: Emission Points

Emission Point:	Description:
EP-1 Cutting	CNC, Edge Bander (2), Table Saw( 4), Double Head Chopsaw, Chopsaw (5)
EP-2 Sanding	36" sanders (2), Hand sanders (10)
EP-3 Gluing	2 glue stations
EP-4 Surface Coating (Booth A, B, C,D)	Four Spray Booths (3-sided) (2 guns per booth)
EP-5 Haul Roads	Paved haul road
EP-6 Boiler (Natural Gas)	Boiler for floor heat only (750,000 BTU/hr)

## PROJECT DESCRIPTION

Columbia Construction Corp. is an existing wood manufacturing facility that has applied for construction permit as a result of an air inspection done by the South East Regional Office. No permits have been issued to Columbia Construction Corp., therefore, this permit will cover the entire installation. The wood cutting and sanding operations are controlled by a baghouse dust collector. The staining, varnishing, and sealing operations occur inside four paint booths that use a particulate filter to control PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions. The particulate filter was given 99% percent control efficiency. The four paint booths will have two spray guns per booth. All 8 spray guns are air assisted airless and have a bottlenecked maximum design rate (MHDR) of 0.5 gallon per hour each. The MHDR was calculated using actual data provided in the application. The spray guns were given a transfer efficiency of 65 percent based on the average performance of an HVLP/air assist airless spray gun. Columbia Construction Corp. uses multiple stains, varnishes, and sealers to finish their products. This information was provided with the application.

## EMISSIONS/CONTROLS EVALUATION

The project's potential emissions are primarily VOCs and HAPs that are associated with the spray booths, wiping stains and wood glues/adhesives. Emissions from the spray booths were calculated using the maximum paint/primer usage and MSDS sheets supplied by Columbia Construction Corp. The coating transfer rate and filter capture efficiency for the finishing line was also provided by Columbia Construction Corp. The coating transfer efficiency of 65 percent and the enclosure capture efficiency is 75 percent. The booths control efficiency media was assigned 99 percent for PM and PM<sub>10</sub> and 95 percent for PM<sub>2.5</sub>.

All available VOCs and HAPs were considered to be emitted. The potential emissions are the highest per pollutant regardless of the paint/primer type, which represents the most conservative method. The potential emissions of any paint/primer in the permit application, if sprayed at potential usage, would exceed the HAP and VOC de minimis level.

The MHDR of each spray gun was determined to be 0.5 gallons/ hour by using actual material usage data from 2015 submitted with the applicant and giving a 50% safety factor to be conservative. This is the bottlenecked rate, not the spray gun flow rate.

The density and weight percent of VOC for each paint or primer was taken from the MSDS. The VOC unconditioned potential emissions were determined by multiplying the MHDR by this density and weight. The 40.0 tpy VOC limit and the 10.0/25.0 tpy HAP limit allow usage of coatings other than those submitted with the permit application.

Emissions from haul roads and vehicular activity areas were calculated using the predictive equation from AP-42 Section 13.2.1 "Paved Roads," January 2011.

Emissions from a 0.8 MMBtu/hr natural gas boiler were calculated using emission factors obtained from AP-42 Section 1.4 "Natural Gas Combustion," July 1998.

The MHDR of the wood processing is estimated to be 0.34 tons/ hr. of wood. The MHDR includes a 25% safety factor since it is based on production numbers from 2015. The 2015 production numbers were divided by the actual hours of operation in order to determine the MHDR. A wood processing emission factor of 0.35 pounds of PM per ton of wood processed was used for the saws and sanders. The emission factor is from EPA Memorandum entitled, "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country." This document provides a PM emission factor but assumes the PM<sub>10</sub> emission factor and PM<sub>2.5</sub> emission factor will be 50% and 25% of the total particulate, however, for the calculations in this permit PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions were all calculated conservatively using the PM emission factor of 0.35 pounds of PM per ton of wood processed. A combined 99% control/capture efficiency was applied for the sawdust collection system and baghouse.

The following table provides an emissions summary for this project. Existing potential emissions were not determined as Columbia Construction Corp. has no previous permits. Potential emissions of the project represent the potential emissions of the project equipment assuming continuous operation (8760 hours per year). New installation conditioned potential represents the potential emissions using the control devices and voluntary limits to respective de minimis levels

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions	Controlled Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/A	N/A	3.82	N/A
PM <sub>10</sub>	15.0	N/A	N/A	3.75	N/A
PM <sub>2.5</sub>	10.0	N/A	N/A	4.17	N/A
SO <sub>x</sub>	40.0	N/A	N/A	N/A	N/A
NO <sub>x</sub>	40.0	N/A	N/A	0.32	N/A
VOC	40.0	N/A	N/A	>40.0	<40.0
CO	100.0	N/A	N/A	0.27	N/A
GHG (CO <sub>2</sub> e)	N/A	N/A	N/A	388.77	N/A
GHG (mass)	N/A	N/A	N/A	386.49	N/A
Combined HAPs	25.0	N/A	N/A	>25.0	<25.0
Individual HAP	10.0	N/A	N/A	>SMAL	<SMAL

N/A = Not Applicable; N/D = Not Determined; SMAL Values located in Appendix B

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are limited below de minimis levels.

## APPLICABLE REQUIREMENTS

Columbia Construction Corp. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

## GENERAL REQUIREMENTS

- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
  - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

## SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *MACT Regulations*, 10 CSR 10-6.075
  - *40 CFR Part 63, Subpart HHHHHH National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*
  - Refer to the regulation for all applicable requirements.

## STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 17, 2018, received October 22, 2018, designating Columbia Construction Corp. as the owner and operator of the installation.







## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....percent	<b>Mgal</b> .....1,000 gallons
<b>°F</b> .....degrees Fahrenheit	<b>MW</b> .....megawatt
<b>acfm</b> ..... actual cubic feet per minute	<b>MHDR</b> .....maximum hourly design rate
<b>BACT</b> .....Best Available Control Technology	<b>MMBtu</b> ....Million British thermal units
<b>BMPs</b> .....Best Management Practices	<b>MMCF</b> .....million cubic feet
<b>Btu</b> .....British thermal unit	<b>MSDS</b> .....Material Safety Data Sheet
<b>CAM</b> .....Compliance Assurance Monitoring	<b>NAAQS</b> ....National Ambient Air Quality Standards
<b>CAS</b> .....Chemical Abstracts Service	<b>NESHAPs</b> National Emissions Standards for Hazardous Air Pollutants
<b>CEMS</b> .....Continuous Emission Monitor System	<b>NO<sub>x</sub></b> .....nitrogen oxides
<b>CFR</b> .....Code of Federal Regulations	<b>NSPS</b> .....New Source Performance Standards
<b>CO</b> .....carbon monoxide	<b>NSR</b> .....New Source Review
<b>CO<sub>2</sub></b> .....carbon dioxide	<b>PM</b> .....particulate matter
<b>CO<sub>2e</sub></b> .....carbon dioxide equivalent	<b>PM<sub>2.5</sub></b> .....particulate matter less than 2.5 microns in aerodynamic diameter
<b>COMS</b> .....Continuous Opacity Monitoring System	<b>PM<sub>10</sub></b> .....particulate matter less than 10 microns in aerodynamic diameter
<b>CSR</b> .....Code of State Regulations	<b>ppm</b> .....parts per million
<b>dscf</b> .....dry standard cubic feet	<b>PSD</b> .....Prevention of Significant Deterioration
<b>EIQ</b> .....Emission Inventory Questionnaire	<b>PTE</b> .....potential to emit
<b>EP</b> .....Emission Point	<b>RACT</b> .....Reasonable Available Control Technology
<b>EPA</b> .....Environmental Protection Agency	<b>RAL</b> .....Risk Assessment Level
<b>EU</b> .....Emission Unit	<b>SCC</b> .....Source Classification Code
<b>fps</b> .....feet per second	<b>scfm</b> .....standard cubic feet per minute
<b>ft</b> .....feet	<b>SDS</b> .....Safety Data Sheet
<b>GACT</b> .....Generally Available Control Technology	<b>SIC</b> .....Standard Industrial Classification
<b>GHG</b> .....Greenhouse Gas	<b>SIP</b> .....State Implementation Plan
<b>gpm</b> .....gallons per minute	<b>SMAL</b> .....Screening Model Action Levels
<b>gr</b> .....grains	<b>SO<sub>x</sub></b> .....sulfur oxides
<b>GWP</b> .....Global Warming Potential	<b>SO<sub>2</sub></b> .....sulfur dioxide
<b>HAP</b> .....Hazardous Air Pollutant	<b>tph</b> .....tons per hour
<b>hr</b> .....hour	<b>tpy</b> .....tons per year
<b>hp</b> .....horsepower	<b>VMT</b> .....vehicle miles traveled
<b>lb</b> .....pound	<b>VOC</b> .....Volatile Organic Compound
<b>lbs/hr</b> .....pounds per hour	
<b>MACT</b> .....Maximum Achievable Control Technology	
<b>µg/m<sup>3</sup></b> .....micrograms per cubic meter	
<b>m/s</b> .....meters per second	

## Appendix B- Air Pollution Control Program

### Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM	Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N	CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N
ACETAMIDE	60-35-5	1		Y	N	CHLOROPRENE	126-99-8	1		Y	N
ACETONITRILE	75-05-8	4		Y	N	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y
ACETOPHENONE	98-86-2	1		Y	N	CHROMIUM COMPOUNDS		5	L	N	Y
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y	CHRYSENE	218-01-9	0.01	V	Y	N
ACROLEIN	107-02-8	0.04		Y	N	COBALT COMPOUNDS		0.1	M	N	Y
ACRYLAMIDE	79-06-1	0.02		Y	N	COKE OVEN EMISSIONS	8007-45-2	0.03	N	Y	N
ACRYLIC ACID	79-10-7	0.6		Y	N	CRESOL, [META-]	108-39-4	1	B	Y	N
ACRYLONITRILE	107-13-1	0.3		Y	N	CRESOL, [ORTHO-]	95-48-7	1	B	Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N	CRESOL, [PARA-]	106-44-5	1	B	Y	N
AMINOBIIPHENYL, [4-]	92-67-1	1	V	Y	N	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N
ANILINE	62-53-3	1		Y	N	CUMENE	98-82-8	10		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N	CYANIDE COMPOUNDS		0.1	O	Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N	DDE	72-55-9	0.01	V	Y	Y
ANTIMONY COMPOUNDS		5	H	N	Y	DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y	DIAZOMETHANE	334-88-3	1		Y	N
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y	DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	DIOXINS/FURANS		6E-07	D,V	Y	N
ARSENIC COMPOUNDS		0.005	I	N	Y	DIBENZOFURAN	132-64-9	5	V	Y	N
ASBESTOS	1332-21-4	0	A	N	Y	DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N	DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N
BENZENE	71-43-2	2		Y	N	DIBUTYL PHTHALATE	84-74-2	10		Y	Y
BENZIDINE	92-87-5	0.0003	V	Y	N	DICHLOROENZENE, [1,4-]	106-46-7	3		Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N	DICHLOROENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N	DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N	DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N	DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N	DICHLOROMETHANE	75-09-2	10		N	N
BERYLLIUM COMPOUNDS		0.008	J	N	Y	DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y
BERYLLIUM SALTS		2E-05	J	N	Y	DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N	DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N	DICHLORVOS	62-73-7	0.2		Y	N
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N	DIETHANOLAMINE	111-42-2	5		Y	N
BROMOFORM	75-25-2	10		Y	N	DIETHYL SULFATE	64-67-5	1		Y	N
BROMOMETHANE	74-83-9	10		Y	N	DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N	DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N	DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N	DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y	DIMETHYL FORMAMIDE	68-12-2	1		Y	N
CALCIUM CYANAMIDE	156-62-7	10		Y	Y	DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
CAPROLACTAM (Delisted)	105-60-2					DIMETHYL PHTHALATE	131-11-3	10		Y	N
CAPTAN	133-06-2	10		Y	Y	DIMETHYL SULFATE	77-78-1	0.1		Y	N
CARBARYL	63-25-2	10	V	Y	Y	DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
CARBON DISULFIDE	75-15-0	1		Y	N	DIMETHYLANILINE, [N-N-]	121-69-7	1		Y	N
CARBON TETRACHLORIDE	56-23-5	1		Y	N	DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
CARBONYL SULFIDE	463-58-1	5		Y	N	DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
CATECHOL	120-80-9	5		Y	N	DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
CHLORAMBEN	133-90-4	1		Y	Y	DIOXANE, [1,4-]	123-91-1	6		Y	N
CHLORDANE	57-74-9	0.01		Y	Y	DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
CHLORINE	7782-50-5	0.1		N	N	DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
CHLOROACETIC ACID	79-11-8	0.1		Y	N	EPICHLOROHYDRIN	106-89-8	2		Y	N
CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N	ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
CHLOROBENZENE	108-90-7	10		Y	N	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
CHLOROBENZILATE	510-15-6	0.4	V	Y	Y	ETHYL ACRYLATE	140-88-5	1		Y	N
CHLOROFORM	67-66-3	0.9		Y	N	ETHYL BENZENE	100-41-4	10		Y	N

## Appendix B- Air Pollution Control Program

### Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM	Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM
ETHYL CHLORIDE	75-00-3	10		Y	N	NITROBENZENE	98-95-3	1		Y	N
ETHYLENE GLYCOL	107-21-1	10		Y	N	NITROBIPHENYL, [4-]	92-93-3	1	V	Y	N
ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2					NITROPHENOL, [4-]	100-02-7	5		Y	N
ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N	NITROPROPANE, [2-]	79-46-9	1		Y	N
ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003		Y	N	NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N
ETHYLENE OXIDE	75-21-8	0.1		Y	N	NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N
ETHYLENE THIOUREA	96-45-7	0.6		Y	Y	NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N
FORMALDEHYDE	50-00-0	2		Y	N	OCTACHLORONAPHTHALENE	2234-13-1	0.01	V	Y	N
GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N	PARATHION	56-38-2	0.1		Y	Y
GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N	PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009	X	Y	Y
HEPTACHLOR	76-44-8	0.02		Y	N	PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N
HEXACHLOROBENZENE	118-74-1	0.01		Y	N	PENTACHLOROPHENOL	87-86-5	0.7		Y	N
HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N	PHENOL	108-95-2	0.1		Y	N
HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N	PHENYLENEDIAMINE, [PARA-]	106-50-3	10		Y	N
HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N	PHOSGENE	75-44-5	0.1		Y	N
HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N	PHOSPHINE	7803-51-2	5		N	N
HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N	PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N	PHTHALIC ANHYDRIDE	85-44-9	5		Y	N
HEXACHLOROETHANE	67-72-1	5		Y	N	POLYCYLIC ORGANIC MATTER		0.01	V	Y	N
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		Y	N	PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N	PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N
HEXANE, [N-]	110-54-3	10		Y	N	PROPIONALDEHYDE	123-38-6	5		Y	N
HYDRAZINE	302-01-2	0.004		N	N	PROPOXUR [BAYGON]	114-26-1	10		Y	Y
HYDROGEN CHLORIDE	7647-01-0	10		N	N	PROPYLENE OXIDE	75-56-9	5		Y	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N	PROPYLENEIMINE, [1,2-]	75-55-8	0.003		Y	N
HYDROQUINONE	123-31-9	1		Y	N	QUINOLINE	91-22-5	0.006		Y	N
INDENO(1,2,3CD)PYRENE	193-39-5	0.01	V	Y	N	QUINONE	106-51-4	5		Y	N
ISOPHORONE	78-59-1	10		Y	N	RADIONUCLIDES		Note 1	Y	N	Y
LEAD COMPOUNDS		0.01	Q	N	Y	SELENIUM COMPOUNDS		0.1	W	N	Y
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N	STYRENE	100-42-5	1		Y	N
MALEIC ANHYDRIDE	108-31-6	1		Y	N	STYRENE OXIDE	96-09-3	1		Y	N
MANGANESE COMPOUNDS		0.8	R	N	Y	TETRACHLORODIBENZO-P-DIOXIN, [2,3,7,8]	1746-01-6	6E-07	D,V	Y	Y
MERCURY COMPOUNDS		0.01	S	N	N	TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N
METHANOL	67-56-1	10		Y	N	TETRACHLOROETHYLENE	127-18-4	10		N	N
METHOXYCHLOR	72-43-5	10	V	Y	Y	TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N	TOLUENE	108-88-3	10		Y	N
METHYL CHLORIDE	74-87-3	10		Y	N	TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N
METHYL ETHYL KETONE (Delisted)	78-93-3					TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N
METHYL HYDRAZINE	60-34-4	0.06		Y	N	TOXAPENE	8001-35-2	0.01		Y	N
METHYL IODIDE	74-88-4	1		Y	N	TRICHLOROBENZENE, [1,2,4-]	120-82-1	10		Y	N
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N	TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N
METHYL ISOCYANATE	624-83-9	0.1		Y	N	TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N
METHYL METHACRYLATE	80-62-6	10		Y	N	TRICHLOROETHYLENE	79-01-6	10		Y	N
METHYL TERT-BUTYL ETHER	1634-04-4	10		Y	N	TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		Y	N
METHYLCYCLCOPENTADIENYL MANGANESE	12108-13-3	0.1	R	N	Y	TRICHLOROPHENOL, [2,4,6-]	88-06-2	6		Y	N
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y	TRIETHYLAMINE	121-44-8	10		Y	N
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N	TRIFLURALIN	1582-09-8	9		Y	Y
METHYLNAPHTHALENE, [2-]	91-57-6	0.01	V	Y	N	TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		Y	N
MINERAL FIBERS		0	T	N	Y	URETHANE [ETHYL CARBAMATE]	51-79-6	0.8		Y	N
NAPHTHALENE	91-20-3	10	V	Y	N	VINYL ACETATE	108-05-4	1		Y	N
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N	VINYL BROMIDE	593-60-2	0.6		Y	N
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N	VINYL CHLORIDE	75-01-4	0.2		Y	N
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y	XYLENE, [META-]	108-38-3	10	G	Y	N
NICKEL COMPOUNDS		1	U	N	Y	XYLENES (MIXED ISOMERS)	1330-20-7	10	G	Y	N
NICKEL REFINERY DUST		0.08	U	N	Y						
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	Y						

## Appendix B- Air Pollution Control Program Table of Hazardous Air Pollutants and Screening Model Action Levels

Legend	
Group ID	
A	Asbestos
B	Cresols/Cresylic Acid (isomers and mixtures)
C	2,4 - D, Salts and Esters
D	Dibenzofurans, Dibenzodioxins
E	4, 6 Dinitro-o-cresol, and Salts
F	Lindane (all isomers)
G	Xylenes (all isomers and mixtures)
H	Antimony Compounds
I	Arsenic Compounds
J	Beryllium Compounds
K	Cadmium Compounds
L	Chromium Compounds
M	Cobalt Compounds
N	Coke Oven Emissions
O	Cyanide Compounds
P	Glycol Ethers
Q	Lead Compounds (except elemental Lead)
R	Manganese Compounds
S	Mercury Compounds
T	Fine Mineral Fibers
U	Nickel Compounds
V	Polycyclic Organic Matter
W	Selenium Compounds
X	Polychlorinated Biphenyls (Aroclors)
Y	Radionuclides
Notes	The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million

Total PTE  
2018-10-037  
Columbia Construction Corp.

\*\*Paint both calcs showing emmissions from HAP sexceed de minimis level on separate attached page:

3.69 tpy of PM/PM10      controlled  
4.13 tpy PM2.5            controlled

	uncontrolled	controlled
Pollutant	tons/year	tons/year
PM	N/D	3.82
PM10	N/D	3.75
PM 2.5	N/D	4.17
NOx	0.32	0.32
HAPS	0.01	0.01
VOC	0.02	0.02
CO	0.27	0.27

\*HAPs, NOx, VOC from this table are only emmissions from the natural Gas Boiler

Installation: Columbia Construction Corp.  
 County-Plant ID: 031-0136  
 Project No. 2018-10-037

Project: 4 paint booths with 8 guns each

Emission Point	Description	Product Name	Flow Rate Spray Tip (gal/hr)	Number of Guns	MHDR (gals/hr)	Density of Material (lb/gal)	% By Weight PM	% By Weight VOC	VOC Emissions (lb/hr)	VOC Emissions (ton/yr)	PM and PM 10 Emissions (ton/yr)	PM2.5 Emissions (ton/yr)
EP-4	Paint thinner	All Pro Paint thinner	0.5	8	4	6.52	0.00%	100.0%	26.08	114.2	0.00	0.00
EP-4	denatured alcohol	All Pro Denatured alcohol	0.5	8	4	6.7	0.00%	100.0%	26.80	117.4	0.00	0.00
EP-4	methyl ethyl ketone	All pro methyl ethyl ketone	0.5	8	4	6.72	0.00%	100.0%	26.88	117.7	0.00	0.00
EP-4	lacquer thinner	All Pro Lacquer Thinner	0.5	8	4	6.46	0.00%	100.0%	25.84	113.2	0.00	0.00
EP-4	Xylol	All Pro Xylene	0.5	8	4	7.25	0.00%	100.0%	29.00	127.0	0.00	0.00
EP-4	Toner	Brazilian Bean Toner	0.5	8	4	7.45	25.00%	60.3%	17.97	78.7	2.94	3.28
EP-4	Stain	Brazilian Bean Stain	0.5	8	4	8.02	13.01%	87.0%	27.91	122.2	1.65	1.84
EP-4	Solvent degreaser	C-60 solvent degreaser	0.5	8	4	12.26	0.00%	100%	49.04	214.7952	0.00	0.00
EP-4	Solids	Duralaq Nitrocellulose Lacquer Satin	0.5	8	4	7.8	30%	80%	24.96	109.3	3.69	4.13

Transfer Efficiency 65%      Capture Efficiency 75%      Control Efficiencies PM and PM10 99%  
 PM2.5 95%

Flow rate: The MHDR of each spray gun was determined to be 0.5 gallons/ hour by using actual material usage data from 2015 submitted with the applicant and giving a 50% safety factor to be conservative. Nitrocellulose Lacquer had the worst case PM emissions of the product  
 Guns: amount on each line  
 HAPS: must use highest weight percent listed on MSDS. Not all materials used by applicant were evaluated; however, evaluated materials show PTE exceeds SMAL/de Minimis levels so permit includes limits

Pollutant	Regulatory De Minimis Levels (tpy)				Controlled Potential Emissions of the Unconditioned Paint Booth
PM	25.0				3.695
PM10	15.0				3.695
PM2.5	10.0				4.125
SOx	40.0				N/A
NOx	40.0				N/A
VOC	40.0				>40
CO	100.0				N/A
Combined HAPs	25.0				127.0
Xylene	10.0				127.0
Ethyl Benzene	10.0				38.11

\*Xylene and Ethyl Benzene present in All Pro Xylene. SDS says up to 100% xylene and 30% ethyl benzene



Columbia Construction corp.  
 Project number 2018-10-037  
 MHDR wood processing 0.341827  
cutting

**Lumber** unit  
 88,552 bdft/year in 2015 (from company)  
 354208 lbs/year  
 177.104 tons/year  
 0.09730989 tons/hr  
 emissions  
 298.352123 lb PM 10/year  
 0.14917606 tons pm 10/ year  
 0.18647008 tons/year with fudge factor

assumptions:  
 1 bdft is equivalent to 4 lbs  
 1 sqft is equivalent to 1 bdft (1 inch thick)

Estimated Actual Hours of Operat  
 7 hours per day  
 52 weeks per year  
 5 days per week  
 1820 hours operated per ye

fudge factor: 1.25

Emission factors  
 cutting/sanding: 0.35 lb PM 10/ton logs

Dust collect/baghouse: 99%

**Sheeting** unit  
 222,511 sqft=bdft @1 in thinckness (from Company)  
 890044 lbs  
 445.022 tons/year  
 0.24451758 tons/hr  
 emissions  
 749.690908 lbs/year  
 0.37484545 tons/ year  
 0.46855682 tons/ year with fudge factor

Total  
 cutting= 0.655027  
 sanding= 0.655027  
 1.310054 tons pm 10/ year \* with 25% fudge factor

0.013101 with 99 percent control

Sanding

**lumber** 0.18647 tpy

**sheeting** 0.468557 tpy

Activity	MHDR		Truck Types				We*	Wf*
	(tons/hr)	(trips/hr)	truck 1	truck 2	type	type		
Paved Roads	2.0	0.125	100%				24	40
title		0.000					0	0
title		0.000					0	0
title		0.000					0	0
title		0.000					0	0
title		0.000					0	0
title		0.000					0	0
title		0.000					0	0

Truck Type	We (tons)	Wf (tons)	VMT/Truck
truck 1	24	40	0.5
truck 2			0
type			
type			

truck type row must sum to 100% per each activity

1=empty  
2=full  
3=both

Road Segment ID	EP6		3	9	10	11	12	8	9	10	11	12	13	14
D one way (feet)	1320													
D one way (miles)	0.250		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Paved Roads	3													
title														
title														
title														
title														
title														
title														

Activities

Paved Roads	32.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface	Paved	Unpaved	Paved	Paved	Paved	Unpaved	Paved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Paved

W

	E(PM2.5) (lbs/VMT):	0.01763	0.17824	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	E(PM10) (lbs/VMT):	0.07181	1.78237	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	E(PM30) (lbs/VMT):	0.35906	6.26793	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	Eext(PM2.5) (lbs/VMT):	0.01636	0.12696	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	Eext(PM10) (lbs/VMT):	0.06665	1.26963	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	Eext(PM30) (lbs/VMT):	0.33323	4.46482	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	Paved Roads	0.0625	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MHDR	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MHDR	0.0625	0	0	0	0	0	0	0	0	0	0	0	0	0
PTE (lb/hr)	PTE PM2.5 (lb/hr)	0.001102	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM10 (lb/hr)	0.004488	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM30 (lb/hr)	0.022441	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM2.5 (lb/hr) w/ rain	0.001022	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM10 (lb/hr) w/ rain	0.004165	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM30 (lb/hr) w/ rain	0.020827	0	0	0	0	0	0	0	0	0	0	0	0	0
PTE (tons/yr)	PTE PM2.5 (tons/yr)	0.004825	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM10 (tons/yr)	0.019658	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM30 (tons/yr)	0.098291	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM2.5 (tons/yr) w/ rain	0.004478	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM10 (tons/yr) w/ rain	0.018244	0	0	0	0	0	0	0	0	0	0	0	0	0
	PTE PM30 (tons/yr) w/ rain	0.091222	0	0	0	0	0	0	0	0	0	0	0	0	0

	PM	PM10	PM2.5
Paved Roads	0.020827	0.004165	0.001022
0	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
Sum PTE (lb/hr)	0.020827	0.004165	0.001022
Sum PTE (Tons/yr)	0.091222	0.018244	0.004478

Haul Road BMP's	Control Efficiency %		
	PM	PM10	PM2.5
No Control	0	0	0

Totals

Emission Unit	Description	Installation's Designation	MHDR (MMBtu/hr input)	Combined MHDR (MMBtu/hr input)	MHDR (MMcf/hr)	Pollutant	CAS	HAP?	Emission Factor (lb / mmcf)	Emission Factor Source (SCC)	Available Pollutant (lb/hr)	Control Device	PTE (lb/hr)	PTE (tpy)
			0.8	0.75	0.001	PM filterable			1.9		0.0014	none	0.0014	0.01
						PM10			7.6		0.0056	none	0.0056	0.02
						PM2.5			7.6		0.0056	none	0.0056	0.02
						SOx			0.6		0.0004	none	0.0004	0.00
						NOx			100		0.0735	none	0.0735	0.32
						VOC			5.5		0.0040	none	0.0040	0.02
						CO			84		0.0618	none	0.0618	0.27
						Combined HAPs			1.888		0.0014	none	0.0014	0.01
						POM aggregate group			6.98E-04		5.13E-07	none	5.13E-07	2.25E-06
						2-Methylnaphthalene	91-57-6	y	2.40E-05		1.765E-08	none	1.76E-08	7.73E-08
						3-Methylchloranthrene	56-49-5	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						7,12-Dimethylbenzanthracene	57-97-6	y	1.60E-05		1.176E-08	none	1.18E-08	5.15E-08
						Acenaphthene	83-32-9	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Acenaphthylene	203-96-8	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Anthracene	120-12-7	y	2.40E-06		1.765E-09	none	1.76E-09	7.73E-09
						Benzanthracene	56-55-3	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Benzene	71-43-2	y	2.10E-03		1.544E-06	none	1.54E-06	6.76E-06
						Benzo(a)pyrene	50-32-8	y	1.20E-06		8.824E-10	none	8.82E-10	3.86E-09
						Benzo(b)fluoranthene	205-99-2	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Benzo(g,h,i)perylene	191-24-2	y	1.20E-06		8.824E-10	none	8.82E-10	3.86E-09
						Benzo(k)fluoranthene	205-82-3	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Butane	106-97-8		2.10E+00		1.544E-03	none	1.54E-03	6.76E-03
						Chrysene	218-01-9	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Dibenzo(a,h)anthracene	53-70-3	y	1.20E-06		8.824E-10	none	8.82E-10	3.86E-09
						Dichlorobenzene	25321-22-6	y	1.20E-03		8.824E-07	none	8.82E-07	3.86E-06
						Ethane	74-84-0		3.10E+00		2.279E-03	none	2.28E-03	9.98E-03
						Fluoranthene	206-44-0	y	3.00E-06		2.206E-09	none	2.21E-09	9.66E-09
						Fluorene	86-73-7	y	2.80E-06		2.059E-09	none	2.06E-09	9.02E-09
						Formaldehyde	50-00-0	y	7.50E-02		5.515E-05	none	5.51E-05	2.42E-04
						Hexane	110-54-3	y	1.80E+00		1.324E-03	none	0.0013	0.01
						Indeno(1,2,3-cd)pyrene	193-39-5	y	1.80E-06		1.324E-09	none	1.32E-09	5.80E-09
						Naphthalene	91-20-3	y	6.10E-04		4.485E-07	none	4.49E-07	1.96E-06
						Pentane	109-66-0		2.60E+00		1.912E-03	none	1.91E-03	8.37E-03
						Phenanathrene	85-01-8	y	1.70E-05		1.250E-08	none	1.25E-08	5.48E-08
						Propane	74-98-6		1.60E+00		1.176E-03	none	1.18E-03	5.15E-03
						Pyrene	129-00-0	y	5.00E-06		3.676E-09	none	3.68E-09	1.61E-08
						Toluene	108-88-3	y	3.40E-03		2.500E-06	none	2.50E-06	1.10E-05
						Arsenic	7440-38-2	y	2.00E-04		1.471E-07	none	1.47E-07	6.44E-07
						Barium	7440-39-3		4.40E-03		3.235E-06	none	3.24E-06	1.42E-05
						Beryllium	7440-41-7	y	1.20E-05		8.824E-09	none	8.82E-09	3.86E-08
						Cadmium	7440-43-9	y	1.10E-03		8.088E-07	none	8.09E-07	3.54E-06
						Chromium	7440-47-3	y	1.40E-03		1.029E-06	none	1.03E-06	4.51E-06
						Cobalt	7440-48-4	y	8.40E-05		6.176E-08	none	6.18E-08	2.71E-07
						Copper	7440-50-8		8.50E-04		6.250E-07	none	6.25E-07	2.74E-06
						Manganese	7439-96-5	y	3.80E-04		2.794E-07	none	2.79E-07	1.22E-06
						Mercury	7439-97-6	y	2.60E-04		1.912E-07	none	1.91E-07	8.37E-07
						Molybdenum	7439-98-7		1.10E-03		8.088E-07	none	8.09E-07	3.54E-06
						Nickel	7440-02-0	y	2.10E-03		1.544E-06	none	1.54E-06	6.76E-06
						Selenium	7782-49-2	y	2.40E-05		1.765E-08	none	1.76E-08	7.73E-08
						Vanadium	7440-62-2		2.30E-03		1.691E-06	none	1.69E-06	7.41E-06
						Zinc	7440-66-6		2.90E-02		2.132E-05	none	2.13E-05	9.34E-05
						CO2			120,000		88.2353	none	88.235	386.47
						Methane			2.3		0.0017	none	0.0017	0.01
						N2O			2.2		0.0016	none	0.0016	0.01
						GHG (mass)								386.485
						GHG (CO2e)								388.77

Natural Gas HHV (Btu/cf)  
1,020

100yr GWP 40 CFR 98  
Table A-1, Jan 1 2014

CO2	1
CH4	25
N2O	298

Natural gas HHV of 1,020 Btu/cf cited from AP-42 Section 1.4, July 1998.  
Dichlorobenzene group CAS 25321-22-6 conservatively assumed as 100% 1,4-dichlorobenzene CAS 106-46-7.  
HAPs updated per "Air Pollution Control Program Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels" Revision 10, 5/3/2012

Haul Road/Haul Truck/Material Hauled Information														
Haul Road ID No.:	EP6	EP7	3	9	10	11	12	8	9	10	11	12	13	14
W (tons):	28.00	9.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sL (g/m <sup>2</sup> ):	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
P:	105	105	105	105	105	105	105	105	105	105	105	105	105	105
N:	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Haul Roads - Max Hourly VMT Rate and Emission Factor Calculations														
E(PM <sub>2.5</sub> )(lbs/VMT):	0.0176	0.0057	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM <sub>10</sub> )(lbs/VMT):	0.0718	0.0231	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM <sub>30</sub> )(lbs/VMT):	0.3591	0.1154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>2.5</sub> )(lbs/VMT):	0.0164	0.0053	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>10</sub> )(lbs/VMT):	0.0666	0.0214	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>30</sub> )(lbs/VMT):	0.3332	0.1071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

E = k(sL)<sup>0.91</sup> \* (W)<sup>1.02</sup> where:

E = particulate emission factor (having units matching the units of k)

k = particle size multiplier for particle size range and units of interest

sL = road surface silt loading (grams per square meter) (g/m<sup>2</sup>)

W = average weight (tons) of the vehicles traveling the road

Table 13.2.1-1 PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Size range	k (lb/VMT)
PM2.5	0.00054
PM10	0.0022
PM15	0.0027
PM30	0.011

Eext = [k(sL)<sup>0.91</sup> \* (W)<sup>1.02</sup>](1-P/(4N)) where:

k, sL, W and S are as defined above and

Eext = annual average emission factor in the same units as k

P = number of "wet" days with at least 0.01 inch of precipitation during the averaging period

N = number of days in the averaging period (365 for annual)

The equations retain the quality rating of A (D for PM2.5), if applied within the range of source conditions that were

Silt loading:

0.03-400 g/m<sup>2</sup>

0.04-570 grains/square foot (ft<sup>2</sup>)

Mean vehicle weight:

1.8-38 megagrams (Mg)

2.0-42 tons

Mean vehicle speed:

1-88 kilometers per hour (kph)

1-55 miles per hour (mph)

The upper 95% confidence levels of equation 1 for PM10 is best described with equations using an exponent of 1.14

E95% = k(sL)<sup>1.14</sup> \* (W)<sup>1.19</sup>

E95%(PM<sub>2.5</sub>)(lbs/VMT): 0.0317 0.0084 0.0000 0.0000 0.0000 0.0000

E95%(PM<sub>10</sub>)(lbs/VMT): 0.1293 0.0344 0.0000 0.0000 0.0000 0.0000