



**Air Quality Permitting
Technical Memorandum**

Permit to Construct No. 079-00007

**MALLOY LUMBER CO. INC.
KINGSTON, IDAHO**

Prepared By:

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Permit Writer

Project No. 020102

Date Prepared:

May 28, 2002

Permit Status:

FINAL

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, *Rules for the Control of Air Pollution in Idaho*, for issuing permits to construct (PTC).

PROJECT DESCRIPTION

Malloy Lumber Co. Inc. (Malloy) operates a lumber mill in Kingston, Idaho, and is proposing to modify the mill. The mill was not previously permitted. The proposed modifications require issuance of a PTC.

SUMMARY OF EVENTS

- January 28, 2002 The Department of Environmental Quality (DEQ) received an application from Malloy for a 15-day pre-permit construction approval.
- April 10, 2002 The application was determined complete and the facility was granted preconstruction approval.

DISCUSSION

1. Process Description

Malloy recently purchased a lumber mill in Kingston, Idaho, that was never issued a PTC. Malloy is modifying the Kingston facility and is subject to PTC requirements (IDAPA 58.01.01.201).

Logs are delivered to the Kingston facility where they are loaded onto the log deck and taken into the sawmill. At the sawmill, logs are debarked, cut into rough stock, and stockpiled until they are sent to the dry kiln and planer mill. At the dry kiln, the lumber is dried out in a kiln that is heated to approximately 180°F by steam heat from a boiler. After the rough stock is dried, it is sent to the planer mill where it is planed and cut to length. Four high-efficiency cyclones are installed next to the planer building. One cyclone removes wood shavings and dust from the planing mill. The second cyclone will collect bark from the debarker at the sawmill and move it into the hog-fuel storage bin. The third cyclone will collect the sawdust from the trimming process and route it to the hog-fuel bin. The fourth cyclone will move the hogged trim ends to the hog-fuel bin.

2. Equipment Listing

Dry Kiln

Length: 104 feet (ft)
Width: 34 ft
Capacity: 180,000 board feet per batch (Annual throughput and retention times are dependent on the type of wood.)

Boiler

Heat input: 25.1 million British thermal units per hour (MMBtu/hr)
Fuel: Liquefied petroleum gas (LPG) or low-sulfur content diesel fuel (0.05% by weight or less)

Planer mill

Capacity: 490 thousand board feet per day (Mbf/day) and 178,700 million board feet per year (MMbf/yr)

Trim saw and wood-waste hog

Cyclones

Efficiency: 98% (This is the rated efficiency. The DEQ used an 80% efficiency to show that source testing is not necessary for the cyclones.)

3. Emission Estimates

Emissions were calculated using emissions factors from the following:

- DEQ's internal technical memorandum from Val Bohdan to DEQ permit engineers, dated June 30, 1997
- These supplied by the Olympic Air Pollution Control Authority in Washington (OAPCA)
- The EPA's AP-42, *Compilation of Air Pollutant Emissions Factors, Volume I: Stationary Point and Area Sources*

All of the emissions rates are based on 8,760 hours of production per year. To obtain a conservative emissions estimate for all processes, the wood species with the highest pound-per hour emissions rate was used to calculate emissions. A summary of emissions is included in Appendix A.

3.1 Boiler Emissions

Boiler emissions were calculated using AP-42 emission factors from Section 1.3, *Fuel Oil Combustion*, and Section 1.5, *Liquefied Petroleum Gas Combustion*.

The LPG emissions rates were calculated based on the input capacity of the boiler and the diesel emissions rates were calculated based on fuel consumption. The sulfur dioxide (SO₂) emissions rate associated with diesel combustion assumed that the boiler would burn low-sulfur diesel (0.05% sulfur content by weight or less). The toxic emissions indicate that arsenic was above the screening emissions level. Malloy's consultant, MFG Inc., performed a T-RACT analysis on the boiler to prove that no emissions control is the only reasonably available control technology for arsenic emissions. The allowable ambient concentration for carcinogens (AACC) limits without T-RACT was barely exceeded. The facility is in a remote area with very little chance for public exposure and the cost associated with removing arsenic is very high. Due to the remoteness of this facility there is very little health risk to the public. Therefore, a correction factor of 10 was used to adjust the AACC limit in accordance with IDAPA 58.01.01.210. The adjusted allowable ambient concentration for arsenic is 2.3E-03 micrograms per cubic meter (µg/m³), and the modeled concentration is 3.4E-04 µg/m³.

Modeled formaldehyde concentrations are 4.0E-2 µg/m³, which is below the AACC limit of 7.7E-1 µg/m³.

3.2 Dry Kiln Emissions

The formaldehyde emissions rates were calculated by MFG Inc. on behalf of Malloy using emissions factors from a September 2000, Oregon State University Department of Forestry Products study.

Emissions of particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀) were calculated using lumber-specific emissions factors from the OAPCA. Douglas fir was used in the emissions estimate because it has the highest hourly potential emissions for PM₁₀.

Emissions of volatile organic compounds (VOCs) were calculated from emission factors from DEQ's technical memorandum to permit engineers dated June 30, 1997. The highest possible VOC emissions rate for the kiln was used to determine annual VOC emissions. The maximum calculated emissions for VOCs is 45 tons per year (T/yr). A summary of the emissions and emissions factors is included in Appendix A.

3.3 Cyclone Emissions

PM₁₀ emissions rates for the cyclones was based upon the maximum amount of sawdust created in processing, using an 80% efficiency rating for removing sawdust. Although Malloy used an efficiency of 98% in their application, the DEQ reran the modeling using an 80% efficiency for the cyclones. At this lower, more conservative, efficiency the emissions from the cyclones do not violate any NAAQS standard. Since the ambient concentrations are acceptable using this conservative efficiency, source testing for the cyclones is not necessary. Sawdust from the wood-waste hog was calculated assuming that 7% of the lumber processed per year is trimmed off. The sawdust from the other emissions sources are calculated by the volume of board cut during the planing and trimming process.

3.4 Bin Unloading

Bin unloading emissions were calculated by MFG Inc. and included in the modeling.

3.5 Sawmill Emissions

Sawdust particles created in the sawmill are generally large particles that do not stay airborne, unlike the dry sawdust created in the planing operation. The moisture content of the wood keeps potential PM₁₀ particles bound to larger particles, which fall into a conveyor that sends them into a waste bin. In addition to being a small source of PM₁₀, the sawmill is in a building, which helps to contain the sawdust. Therefore, the sawmill is a negligible PM₁₀ source.

4. Modeling

Modeling was conducted by MFG Inc. on behalf of Malloy using ISC Prime. The modeling was reviewed and approved by Mary Anderson of DEQ. Modeling results indicate that the pollutant concentrations are within the National Ambient Air Quality Standards (NAAQS) and AACCS. Modeling results are shown in a technical memorandum from Mary Anderson in Appendix B.

5. Facility Classification

This facility is classified as a natural minor (B) facility, since its potential to emit is less than the following:

- 100 T/yr of any regulated pollutant
- 10 T/yr of any single hazardous air pollutant
- 25 T/yr of any combination of hazardous air pollutants

6. Area Classification

This facility is located in Shoshone County and Air Quality Control Region 62, which is an area that is classified as unclassifiable for all criteria air pollutants.

7. Regulatory Review

IDAPA 58.01.01.201 Permit to Construct Required

This project involves constructing a new emissions unit; therefore, it is subject to PTC requirements.

IDAPA 58.01.01.210 Demonstration of Preconstruction Compliance with Toxic Standards

The Malloy facility has demonstrated pre-construction compliance with IDAPA 58.01.01.210.

IDAPA 58.01.01.577 Ambient Air Quality Standards for Specific Air Pollutants

The Malloy facility has demonstrated pre-construction compliance with IDAPA 58.01.01.577.

IDAPA 58.01.01.675 Fuel-burning Equipment - Particulate Matter

The boiler must meet the criteria listed in the requirements for new sources, which limits the grains per dry standard cubic foot of particulate.

40 CFR 60 New Source Performance Standards

The boiler is subject to 40 CFR 60, Subpart Dc.

8. Permit Requirements

8.1 Emissions Limits

Boiler

The boiler emissions rates are less than 10% of the significant rates and are not limited in this permit. The emissions were calculated at maximum capacity and the resulting ambient concentrations are far from the NAAQS. The boiler is to be operated only on LPG or low-sulfur-content diesel fuel (0.05% or less sulfur by weight) as specified by Malloy.

Dryer Kiln

Kiln emissions limits were established since the calculated emissions from it result in an ambient concentration of PM₁₀ that is close to the NAAQS limit. The emissions limits for the kiln are shown in Table 8.2. Kiln emissions limits are the calculated emissions rates.

Table 8.2 DRYER KILN EMISSIONS LIMITS

Pollutant	Annual Emission Limit (T/yr)	Hourly Emission Limit (lb/hr)
PM ₁₀	6.1	1.40
VOC	50	--

lb/hr - pounds per hour

Cyclone

Emissions from each cyclone are below 10% of the significant rates. The cyclones were included in the facility model and do not cause a NAAQS violation. Since the emissions from the cyclones were calculated using the conservative 80% efficiency and the emissions are still below 10% of significant rates, there is no established emissions limit. Proper operation of the cyclone will assure compliance with NAAQS.

8.2 Operating Requirements

Boiler

The boiler must operate in accordance with 40 CFR 60, Subpart Dc. This includes limits on fuel oil sulfur content, opacity, and SO₂ emissions, as well as additional testing, monitoring, and recordkeeping requirements. The permittee shall develop an Operations and Maintenance (O&M) manual for the boiler and operate the boiler in accordance with O&M manual specifications.

Kiln

The kiln throughput is restricted to 490 Mbf/day, which is the maximum capacity of the kiln. The permittee shall develop an O&M manual and operate the kiln in accordance with the O&M manual specifications.

Cyclone

The permittee shall develop an O&M manual for the cyclones and operate the cyclones in accordance with O&M manual specifications. Since the throughput of the cyclones is dependent on the planer operations, the throughput of the planer is restricted.

9. Permit Coordination

The boiler is subject to 40 CFR 60 requirements; therefore, Malloy must apply for a Tier I operating permit in accordance with IDAPA 58.01.01.301, or register the source in accordance with IDAPA 58.01.01.313.01.

10. AIRS Information

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP ^c	PSD ^d	NSPS ^e (Part 60)	NESHAP ^f (Part 61)	MACT ^g (Part 63)	TITLE V	AREA CLASSIFICATION
POLLUTANT							A – Attainment U – Unclassifiable N – Nonattainment
SO ₂ ^h	B		B				U
NO _x ⁱ	B						U
CO ^j	B						U
PM ₁₀ ^k	B		B				U
PT (Particulate) ^l	B						
VOC ^m	B						U
THAP (Total HAPs) ⁿ	B						
			APPLICABLE SUBPART				
			Dc				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

^c State Implementation Plan

^d Prevention of Significant Deterioration

^e New Source Performance Standards

^f National Emission Standards for Hazardous Air Pollutants

^g Maximum Achievable Control Technology

^h sulfur dioxide

ⁱ nitrogen oxides

^j carbon monoxide

^k particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^l particulate matter

^m volatile organic compounds

ⁿ hazardous air pollutants

FEES

The Malloy facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration fees are not applicable in accordance with IDAPA 58.01.01.527.

RECOMMENDATION

Based on the review of application materials and all applicable state and federal rules and regulations, staff recommends Malloy be issued PTC No. 079-00007 for the lumber mill in Kingston, Idaho. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

cc: Tom Harman, Coeur d'Alene Regional Office
Joan Lechtenberg, Air Quality Division
Sherry Davis, Technical Services Division
Sean Williams, MFG Inc.

APPENDIX A

EMISSION ESTIMATES

Emission Estimates

Table A.1 - CRITERIA POLLUTANT EMISSIONS RATES FOR THE KINGSTON FACILITY

Emissions Unit	PM ₁₀		SO _x		NO _x		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Dry kiln	1.4	6.1	--	--	--	--	--	50
Planer shavings bin	0.4	1.8	--	--	--	--	--	--
Hog-fuel bin	0.8	3.4	--	--	--	--	--	--
Boiler	0.34	1.47	1.19	5.21	3.35	14.67	--	--
Debarker cyclone	0.21	0.91	--	--	--	--	--	--
Trim saw cyclone	1.24E-03	5.42E-03	--	--	--	--	--	--
Hog-fuel cyclone	0.16	0.68	--	--	--	--	--	--
Planer cyclone	0.4	1.75	--	--	--	--	--	--

Table A.2 - TOXIC AIR POLLUTANT EMISSIONS FACTORS

Emissions Unit	Arsenic (lb/10 ¹² Btu)	Beryllium (lb/10 ¹² Btu)	Cadmium (lb/10 ¹² Btu)	Chromium VI (lb/10 ¹² Btu)	Formaldehyde (lb/10 ³ gal)	Nickel (lbs/10 ¹² Btu)
Boiler	4.0	3.0	3.0	0.5	5.53E-3	3.0
Kiln	--	--	--	--	0.0128	--

Table A.3 - SUMMARY OF EMISSIONS FACTORS AND SOURCES

Emissions Unit	PM ₁₀	SO ₂	NO _x	VOC	CO	Source
Kiln lb/MMbf	0.11	--	--	0.81	--	PM ₁₀ rate is from OAPCA and VOC rate from DEQ internal memo.
Boiler ^{1,2}	2.0	7.1	0.208	--	0.035	AP-42
Debarker lb/ton handled	0.011	--	--	--	--	Assumes maximum weight per MMbf of 8,216 lb.
Trim saw lb/ton handled	0.36	--	--	--	--	From DEQ internal memo (sawdust handling).
Hog-fuel lb/ton handled	0.36	--	--	--	--	From DEQ internal memo (sawdust handling).
Planer lb/ton handled	0.36	--	--	--	--	From DEQ internal memo (sawdust handling).
Hog-fuel bin lb/ton handled	0.36	--	--	--	--	From DEQ internal memo (sawdust handling).
Planer-shavings bin lb/ton handled	0.36	--	--	--	--	From DEQ internal memo (sawdust handling).

¹ PM₁₀ and SO₂ rates are in lb/103 gal of fuel; NO_x and CO rates are in lb/MMBtu.

² The SO₂ rate is calculated for low-sulfur content (0.05% by weight or less) No. 2 diesel fuel.

APPENDIX B

Modeling Results

MEMORANDUM

TO: Dustin Holloway, Technical Services Division

FROM: Mary Anderson, ^{MP} Modeling Coordinator, Air Quality Division

SUBJECT: Modeling Review for the Permit to Construct Application for Malloy Lumber Company, Inc. Near Kingston, Idaho

DATE: July 17, 2002

1. SUMMARY:

Malloy Lumber Company, Inc. (Malloy) submitted an application for an expedited Permit to Construct (PTC) for the facility near Kingston, Idaho on January 28, 2001. This is an existing facility that is proposing modifications. The proposed modification includes the addition of the following emission sources:

- Planer cyclone
- Debarker cyclone
- Trim saw sawdust cyclone
- Hog fuel cyclone
- Kiln
- Boiler (operates with both fuel oil and liquefied petroleum gas)
- Planer shavings bin
- Hog fuel bin

The modeling analysis was completed by MFG, Inc. (MFG) for Malloy. The following criteria pollutants were included in the modeling analysis: Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), carbon monoxide (CO), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂). The following six toxic air pollutants (TAPs) have emissions rates that exceed the screening level emission rates listed in IDAPA 58.01.01.586: arsenic, beryllium, cadmium, chromium VI, formaldehyde, and nickel. The modeling analysis submitted by MFG, and reviewed by DEQ, demonstrates compliance with all applicable regulatory limits.

2. DISCUSSION:

2.1 Applicable Air Quality Impact Limits

This facility is located in Shoshone County, which is designated as unclassifiable for all criteria pollutants. This facility is approximately 2 miles northwest of the Pinehurst PM₁₀ nonattainment area. Therefore, total ambient impacts, including background and nearby sources, for the criteria pollutants must be below the National Ambient Air Quality Standards (NAAQS), listed in Table 1.

Table 1. Applicable regulatory limits.

Pollutant	Averaging Period	Significant Contribution Level ^a ($\mu\text{g}/\text{m}^3$) ^b	Regulatory Limit ^c ($\mu\text{g}/\text{m}^3$)
Criteria Pollutants			
Nitrogen dioxide	Annual	1	100
Sulfur dioxide	Annual	1	80
	24-hour	5	365
	3-hour	25	1300
PM ₁₀ ^d	Annual	1	50
	24-hour	5	150
Carbon monoxide	8-hour	500	10,000
	1-hour	2000	40,000
Toxic Air Pollutants			
Arsenic	Annual		2.3E-04
Beryllium	Annual		4.2E-03
Cadmium	Annual		5.6E-04
Chromium (VI)	Annual		8.3E-05
Formaldehyde	Annual		7.7E-02
Nickel	Annual		4.2E-03

a. IDAPA 58.01.01.006.93

b. Micrograms per cubic meters

c. For the criteria pollutants IDAPA 58.01.01.577 and 58.01.01.586 for carcinogens.

d. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

2.2 Current Air Quality

No ambient air quality data is available for the Kingston, Idaho area. The Pinehurst area is designated as a PM₁₀ nonattainment area. Therefore, statewide background concentrations are used to determine the current air quality for the area of concern. Table 2 presents the data for the current air quality in the Kingston area.

Table 2. Current air quality in the Kingston area.

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$) ^a
Nitrogen dioxide	Annual	40
Sulfur dioxide	3-hour	374
	24-hour	120
	Annual	18.3
PM ₁₀ ^b	24-hour	86
	Annual	32.7
Carbon monoxide	1-hour	11,450
	8-hour	5,130

a. Micrograms per cubic meters

b. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

2.3 Modeling Impact Assessment

MFG initially submitted a modeling analysis January 28, 2002. After an initial review DEQ requested additional information. On March 26, 2002, MFG submitted additional information and a new modeling analysis. This second submittal included the following information:

- Justification for not including PM10 emissions from the existing sawmill;
- Corrected emissions for the lumber dry kiln;
- Justification for using the property boundary as the ambient air boundary;
- Included a facility plot plan;
- Added two sources, hog fuel bin and the planer shavings bin;
- Used Spokane meteorological data instead of screening data;
- Included receptors on the county road that bisects facility's property, for criteria pollutant analysis only.

2.3.1 Emission and Source Data

Tables 3 and 4 present the source parameters and emissions rates, respectively.

Table 3. Source parameters

Source	Identifier	Flow Rate (acfm) ^a	Diameter (feet)	Temperature (°F) ^b	Height (feet)
Boiler	BOILER	8,500	4.5	300	25.0
Dry Kiln (each vent)	KV1 – KV14	2,143	1.16	180	19.0
Debarker Cyclone	CYCLONE3	16,000	2.0	47	74.0
Planer Cyclone	CYCLONE	16,000	2.0	47	74.0
Hog Fuel Cyclone	CYCLONE2	16,000	2.0	47	74.0
Trim Saw Cyclone	CYCLONE4	16,000	2.0	47	74.0
Planer Shavings Bin	PLANERBI	48	0.56	47	41
Hog Fuel Bin	HOGBI	48	0.56	47	35

a. Actual cubic feet per minute
b. Degrees Fahrenheit

Table 4. Emission rates (pounds per hour)

Pollutant	Boiler	Dry Kiln (total)	Debarker Cyclone	Planer Cyclone	Hog Fuel Cyclone	Trim Saw Cyclone	Planer Shavings Bin	Hog Fuel Bin
Criteria Pollutants								
Nitrogen dioxide	5.2	NA	NA	NA	NA	NA	NA	NA
Sulfur dioxide	1.2	NA	NA	NA	NA	NA	NA	NA
PM ₁₀ ^a	0.34	1.4	0.2	.4	0.15	0.00125	0.4	0.8
Carbon monoxide	0.88	NA	NA	NA	NA	NA	NA	NA
Toxic Air Pollutants								
Arsenic	1.00E-04	NA	NA	NA	NA	NA	NA	NA
Beryllium	7.53E-05	NA	NA	NA	NA	NA	NA	NA
Cadmium	7.53E-05	NA	NA	NA	NA	NA	NA	NA
Chromium VI	1.36E-05	NA	NA	NA	NA	NA	NA	NA
Formaldehyde	5.53E-03	.0128	NA	NA	NA	NA	NA	NA
Nickel	7.53E-05	NA	NA	NA	NA	NA	NA	NA

a. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

2.3.2 Model Description and Justification

MFG chose ISCST3-Prime as the appropriate model for this application. MFG based their decision on the characteristics of the source being modeled. MFG stated that downwash is an important factor. DEQ staff agrees that ISCST3-Prime is the appropriate model for this application.

MFG applied ISCST3-Prime using the recommended defaults for rural conditions, as specified in the *Guideline on Air Quality Models* (40 CFR 51, Appendix W). DEQ staff agrees that these assumptions are appropriate

2.3.3 Receptor Network

MFG used a 2 kilometer (km) by 2 km, 50 meter resolution grid centered on the facility. The outer course grid used a 500 meter spacing and covers a 10 km by 10 km domain centered on the facility. Additional receptors were placed at 50 meter spacing along a county road that bisects the Malloy property. The receptors along the county road are only applicable to the criteria pollutant analysis. According to IDAPA 58.01.01.210.03.b, public roads that transect the facility's property are not considered for pollutants regulated under IDAPA 58.01.01.586 (carcinogens). The property is not fenced. However, the Malloy Lumber facility is located in a remote location between the Coeur d'Alene River and a rugged ridge line. The property boundary will be posted as "No Trespassing" at 500 foot intervals along the entire length of the property boundary. According to the guidance in the State of Idaho Air Quality Guideline, based on this information, the property boundary can be determined to be the ambient air boundary. DEQ staff has determined that this receptor network is sufficient to identify the maximum estimated pollutant concentration for each applicable averaging period.

2.3.4 Elevation Data

MFG used terrain elevations from the USGS 1:24,000 Digital Elevation Model (DEM). These data have a horizontal spatial resolution of about 30 meters and a vertical resolution of about 15 meters. This data is appropriate for use in the application.

2.3.5 Meteorological Data

Initially, MFG used screening meteorological data. However, since the facility is in complex terrain, DEQ requested that the National Weather Service data from Spokane be used. The years 1984 – 1988 were used. Because DEQ normally uses the years 1987 – 1991 for Spokane meteorological data, DEQ verified that the maximum concentration was still accounted for by analyzing 1989 – 1991. This meteorological data is appropriate for this minor source permit to construct.

2.4 Modeling Results

The ambient impacts and the comparison to the NAAQS are listed in Table 4. The maximum annual average concentration was taken and the highest second highest concentration was used for averaging periods of 24-hour or less.

Table 5. Ambient impacts for the entire facility

Pollutant	Averaging Period	Ambient Concentrations ($\mu\text{g}/\text{m}^3$) ^a				Exceeds the Standard (Y or N)
		Malloy Lumber	Background Concentration	Total Ambient Concentration	Regulatory Limit ^a	
Criteria Pollutants						
Nitrogen dioxide	Annual	7.2	40	47.2	100	N
	3-hour	69.9	374	443.9	1,300	N
Sulfur dioxide	24-hour	20.8	120	140.8	375	N
	Annual	3.9	18.3	22.2	80	N
PM ₁₀ ^b	24-hour	50.2	86	136.2	150	N
	Annual	8.3	32.7	41	50	N
Carbon monoxide	1-hour	74.1	11,450	11,524.1	40,000	N
	8-hour	35.5	5,130	5,162.5	10,000	N
Toxic Air Pollutants						
Arsenic	Annual	3.4E-04	NA	3.4E-04	2.4E-03 ^c	N
Beryllium	Annual	2.5E-04	NA	2.5E-04	4.2E-03	N
Cadmium	Annual	2.5E-04	NA	2.5E-04	5.6E-04	N
Chromium VI	Annual	4.0E-05	NA	4.0E-05	8.3E-05	N
Formaldehyde	Annual	4.0E-02	NA	4.0E-02	7.7E-02	N
Nickel	Annual	2.5E-04	NA	2.5E-04	4.2E-03	N

a. For the criteria pollutants IDAPA 58.01.01.577 and 58.01.01.586 for carcinogens.

b. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

c. According to IDAPA 58.01.01.210.12, applies a factor of 10 to the AACC for Arsenic because the facility demonstrated T-RACT (toxic air pollutant reasonably available control technology).

Electronic copies of the modeling analysis are saved on disk. Dustin Holloway reviewed this modeling memo to ensure consistency with the permit and Technical Memorandum.

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