



# **Air Quality Permitting Statement of Basis**

**February 11, 2005**

**Permit to Construct No. P-040521**

**Idaho Pacific Corporation, Ririe**

**Facility ID No. 051-00013**

**Prepared by:**

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AIR QUALITY DIVISION**

**FINAL PERMIT**

## Table of Contents

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURES .....	3
1. PURPOSE.....	4
2. FACILITY DESCRIPTION .....	4
3. FACILITY / AREA CLASSIFICATION.....	4
4. APPLICATION SCOPE.....	4
5. PERMIT ANALYSIS .....	4
6. PERMIT CONDITIONS .....	10
7. PUBLIC COMMENT.....	11
8. RECOMMENDATION.....	11
APPENDIX A - PROCESS WEIGHT ANALYSIS	
APPENDIX B - MODELING REVIEW	
APPENDIX C - AIRS DATABASE INFORMATION	

## Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
T/yr	tons per year
µg/m <sup>3</sup>	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

## 1. 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.

## 2. FACILITY DESCRIPTION

This PTC addresses the flake drying processes for potato products at the Idaho Pacific Corporation (Idaho Pacific) facility in Ririe, Idaho. At the beginning of the process, raw potatoes are cleaned, sorted, peeled, deskinning, and cooked. The heat/steam for these steps is provided by the boiler which is addressed under another PTC. The wet potato mash is spread in an even thin layer across the steam heated rotating drum. For each dryer, steam from the drying potatoes and a small amount of entrained particulate is collected and exhausted from the building. A pneumatic material conveyance system is used to transport dried potato product within the facility.

## 3. FACILITY / AREA CLASSIFICATION

Idaho Pacific is defined as a minor facility because, the facility's uncontrolled potential to emit (PTE) is less than 100 tons per year. The AIRS classification is "B."

The facility is located within AQCR 61 and UTM zone 12. The facility is located in Jefferson County which is designated as attainment or unclassifiable for all criteria pollutants (CO, NO<sub>x</sub>, PM<sub>10</sub>, SO<sub>2</sub>, lead, and ozone).

The AIRS information provided in Appendix C defines the classification for each regulated air pollutant at Idaho Pacific. This required information is entered into the EPA AIRs database.

## 4. APPLICATION SCOPE

This PTC addresses the following sources at the facility:

- Two existing drum dryers
- Two new/proposed drum dryers
- The existing Packaging Area and Silo pneumatic material transfer systems
- A new/proposed Dry Processing Area and Silo pneumatic material transfer systems

### 4.1 Application Chronology

August 16, 2004	The PTC application was received from Idaho Pacific
August 27, 2004	DEQ issued an incompleteness letter and requested additional information
October 27, 2004	Additional PTC application information was received from Idaho Pacific
November 4, 2004	Additional PTC application information was received from Idaho Pacific
November 8, 2004	DEQ issued a letter declaring the application complete

## 5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

## 5.1 Equipment Listing

Following is a list of the emissions units associated with the potato flake drying process at the Idaho Pacific facility. Included are operational specifications, as provided in the application, which were used as the basis for this permit:

Emissions Unit:	Drum Dryer
Manufacturer:	Idaho Steel
Model No. :	3525-96-1 #5
Rated Input Capacity:	3.5 tons/hr
Normal Maximum Output:	0.625 tons/hr
Stack Height:	34' 10"
Stack Exit Diameter:	2.79 ft
Exit Gas Volume:	14,400 acfm
Exit Gas Temperature:	110° F
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Drum Dryer
Manufacturer:	Idaho Steel
Model No. :	3525-96-2 #6
Rated Input Capacity:	3.5 tons/hr
Normal Maximum Output:	0.625 tons/hr
Stack Height:	34' 10"
Stack Exit Diameter:	2.79 ft
Exit Gas Volume:	14,400 acfm
Exit Gas Temperature:	110° F
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Drum Dryer
Manufacturer:	Idaho Steel
Model No. :	5175-96-1 #7
Rated Input Capacity:	3.4 tons/hr
Normal Maximum Output:	0.6 tons/hr
Stack Height:	34' 10"
Stack Exit Diameter:	2.79 ft
Exit Gas Volume:	14,400 acfm
Exit Gas Temperature:	110° F
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Drum Dryer
Manufacturer:	Idaho Steel
Model No. :	5175-96-2 #8
Rated Input Capacity:	3.4 tons/hr
Normal Maximum Output:	0.6 tons/hr
Stack Height:	34' 10"
Stack Exit Diameter:	2.79 ft
Exit Gas Volume:	14,400 acfm
Exit Gas Temperature:	110° F
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Material Transfer System, Packaging Area
Particulate Control Type:	Baghouse
Throughput Capacity:	1.25 tons/hr
Stack Height:	29.2 ft
Stack Exit Dimensions:	12" by 11" rectangular
Exit Gas Volume:	2300 acfm (estimated)
Exit Gas Temperature:	80° F (estimated)
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Material Transfer System, Dry Processing Area
Particulate Control Type:	Baghouse
Throughput Capacity:	1.2 tons/hr
Stack Height:	29.2 ft
Stack Exit Dimensions:	12" by 11" rectangular
Exit Gas Volume:	2300 acfm (estimated)
Exit Gas Temperature:	80° F (estimated)
Stack Exit Design:	Vertical, uncovered

Emissions Unit:	Material Transfer System, Silos
Particulate Control Type:	Baghouse
Throughput Capacity:	2.45 tons/hr
Silo Height:	72 ft
Silo Diameter:	26 ft
Stack Height:	84 ft
Stack Exit Dimensions:	12" by 11" rectangular
Exit Gas Volume:	4400 acfm (estimated)
Exit Gas Temperature:	80° F (estimated)
Stack Exit Design:	Vertical, uncovered

## 5.2 Emissions Inventory

The only regulated air pollutants emitted from the potato drying process and material transfer systems are particulate matter (PM) and PM with an aerodynamic diameter of 10 micrometers or less (PM<sub>10</sub>). Emissions from the four drum dryers and the material transfer systems are estimated based on the emission factors used for similar equipment within the industry, as follows: the drum dryer emission factors are 0.86 lb/ton for PM and 0.60 lb/ton for PM<sub>10</sub>; emission factors for the material transfer systems, with consideration for the baghouse controls, are 0.15 lb/ton for PM and 0.075 lb/ton for PM<sub>10</sub>. For the dryers, conservative throughput values are used which correspond to the maximum production rates of the dryers. For the material transfer systems, conservative throughput estimates are obtained based on the combined maximum production rates of the dryers while operating simultaneously. Estimated emissions from each emissions source regulated by this PTC are provided as follows:

### Each Existing Dryer:

$$PM = (0.86 \text{ lb/ton})(0.625 \text{ tons/hr}) = 0.54 \text{ lb/hr}$$

$$PM = (0.54 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 2.4 \text{ tons/yr}$$

$$PM_{10} = (0.60 \text{ lb/ton})(0.625 \text{ tons/hr}) = 0.38 \text{ lb/hr}$$

$$PM_{10} = (0.38 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 1.6 \text{ tons/yr}$$

Each Proposed Dryer:

$$PM = (0.86 \text{ lb/ton})(0.6 \text{ tons/hr}) = 0.52 \text{ lb/hr}$$

$$PM = (0.52 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 2.3 \text{ tons/yr}$$

$$PM_{10} = (0.60 \text{ lb/ton})(0.6 \text{ tons/hr}) = 0.36 \text{ lb/hr}$$

$$PM_{10} = (0.36 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 1.6 \text{ tons/yr}$$

Packaging Area Baghouse:

$$PM = (0.15 \text{ lb/ton})(0.625 + 0.625 \text{ tons/hr}) = 0.19 \text{ lb/hr}$$

$$PM = (0.19 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.82 \text{ tons/yr}$$

$$PM_{10} = (0.075 \text{ lb/ton})(0.625 + 0.625 \text{ tons/hr}) = 0.094 \text{ lb/hr}$$

$$PM_{10} = (0.094 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.41 \text{ tons/yr}$$

Dry Processing Area Baghouse:

$$PM = (0.15 \text{ lb/ton})(0.6 + 0.6 \text{ tons/hr}) = 0.18 \text{ lb/hr}$$

$$PM = (0.18 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.79 \text{ tons/yr}$$

$$PM_{10} = (0.075 \text{ lb/ton})(0.6 + 0.6 \text{ tons/hr}) = 0.090 \text{ lb/hr}$$

$$PM_{10} = (0.090 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.39 \text{ tons/yr}$$

Silo Baghouses:

$$PM = (0.15 \text{ lb/ton})(0.625 + 0.625 + .6 + .6 \text{ tons/hr}) = 0.37 \text{ lb/hr}$$

$$PM = (0.37 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 1.6 \text{ tons/yr}$$

$$PM_{10} = (0.075 \text{ lb/ton})(0.625 + 0.625 + .6 + .6 \text{ tons/hr}) = 0.18 \text{ lb/hr}$$

$$PM_{10} = (0.18 \text{ lb/hr})(8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.80 \text{ tons/yr}$$

Proposed Project Estimated Emissions Increase:

The estimated emissions increases resulting from the installation of two new drum dryers, the dry packaging area material transfer system/baghouse, and the additional silo material transfer system/baghouse are determined as follows:

$$PM \text{ PTE} = 2.3 + 2.3 + 0.79 + 1.6 = 7.0 \text{ tons/yr}$$

$$PM_{10} \text{ PTE} = 1.6 + 1.6 + 0.39 + 0.80 = 4.4 \text{ tons/yr}$$

Facility-wide Estimated Emissions:

The worst case PM/PM<sub>10</sub> emissions limit specified in the PTC issued on 10/17/01 for the facility's boiler is 2.9 tons/yr. On this basis, the facility-wide potential to emit (PTE) for Idaho Pacific is determined as follows:

$$PM \text{ PTE} = 2.4 + 2.4 + 2.3 + 2.3 + 0.82 + 0.79 + 1.6 + 1.6 + 1.6 + 2.9 = 19 \text{ tons/yr}$$

$$PM_{10} \text{ PTE} = 1.6 + 1.6 + 1.6 + 1.6 + 0.41 + 0.39 + 0.80 + 0.80 + 0.80 + 2.9 = 13 \text{ tons/yr}$$

### 5.3 Modeling

Compliance with the NAAQS has been demonstrated. To accomplish this task, a conservative approach was taken by using the EPA approved SCREEN3 model. The results of this analysis are presented in

Table 5.3 below and the modeling data is provided in Appendix B.

DEQ determined that a full impact analysis was necessary for this PTC since the model shows the increased concentration from the two new dryers will exceed the PM-10 significant contribution levels (see Table 5.1). A full impact analysis for attainment area pollutants involves adding ambient impacts from each emissions source at the facility to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location. In particular, the ambient impact of each source listed in Table 5.2, including the boiler previously permitted on October 17, 2001, was added to background concentration. The resulting maximum pollutant concentrations in ambient air, as shown in Table 5.3, are then compared to the NAAQS listed in Table 5.1 to show compliance.

**Table 5.1 APPLICABLE REGULATORY LIMITS**

Pollutant	Averaging Period	Significant Contribution Levels <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	NAAQS Regulatory Limit <sup>c</sup> ( $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub> <sup>d</sup>	Annual	1.0	50 <sup>e</sup>
	24-hour	5.0	150 <sup>f</sup>

The emission release parameters used in the modeling analysis are presented in Table 5.2.

**Table 5.2 POINT SOURCE EMISSION RELEASE PARAMETERS**

Source	Stack Exhaust Type	Stack Height (ft)	Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (ft)
Each Drum Dryer	Vertical	34.8	110	39.3	2.79
MTS <sup>a</sup> , Packaging Area	Vertical	29.2	80	41.8	1.08
MTS, Dry Processing Area	Vertical	29.2	80	41.8	1.08
MTS, Silos	Vertical	84	80	80.1	1.08
B & W Boiler <sup>b</sup>	Vertical	35	350	45.7	3.14

a. MTS = Material Transfer system.  
b. Boiler stack information is from the October 17, 2001 Technical Analysis for the boiler PTC.

For this PTC, PM<sub>10</sub> background concentrations for rural/agricultural areas are used as shown in Table 5.3 below. Background concentrations were revised for all areas of Idaho by DEQ in March 2003<sup>1</sup>. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Well over 50% of the land use of the surrounding area is rural. Therefore, rural dispersion coefficients were used in the modeling analyses. The fence lines of the facility were used as the boundary to ambient air.

**Table 5.3 PM<sub>10</sub> TOTAL AMBIENT CONCENTRATION**

Pollutant	Averaging Period	Total Ambient Impact <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Ambient Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS <sup>c</sup> ( $\mu\text{g}/\text{m}^3$ )	Percent of NAAQS
PM <sub>10</sub> <sup>d</sup>	24-hour	23	73	96	150	64 %
	Annual	4.6	26	31	50	61 %

- a. Based on model predictions
- b. Micrograms per cubic meter
- c. National Ambient Air Quality Standards
- d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

## 5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201..... Permit to Construct Required

Idaho Pacific has applied for a PTC to address the existing and proposed drying system equipment.

IDAPA 58.01.01.203.02..... Demonstration of Preconstruction Compliance with NAAQS

Compliance with the NAAQS has been demonstrated in the permit application. Refer to the modeling section above and Appendix B for details.

IDAPA 58.01.01.203.03, 210..... Demonstration of Preconstruction Compliance with Toxic Standards

The drying processes and material transfer systems do not emit any toxic air pollutants, therefore IDAPA 58.01.01.210 does not apply to the sources addressed by this permit.

IDAPA 58.01.01.700-703 ..... Particulate Matter – Process Weight Limitations

Compliance with the PM process weight limitations has been demonstrated. Refer to Appendix A for details. The estimated emissions are well below the allowable emission rates.

40 CFR 61 and 63..... National Emission Standards for Hazardous Air Pollutants (NESHAP) & MACT

This facility is not a major source of hazardous air pollutants (HAP) emissions since it does not emit or have the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year. Therefore, there are no requirements under 40 CFR Parts 61 and 63 which apply to this facility.

## 5.5 Fee Review

Idaho Pacific paid a \$1,000 PTC application fee on August 16, 2004 and a PTC processing fee of \$2,500 on February 11, 2005 in accordance with IDAPA 58.01.01.224-225. The processing fee is based on the modification to an existing source with an emissions increase of more than one and less than 10 tons per year.

**Table 5.3 PTC PROCESSING FEE TABLE**

<b>Emissions Inventory</b>			
<b>Pollutant</b>	<b>Annual Emissions Increase (T/yr)</b>	<b>Annual Emissions Reduction (T/yr)</b>	<b>Annual Emissions Change (T/yr)</b>
NO <sub>x</sub>	0.0	0	0.0
SO <sub>2</sub>	0.0	0	0.0
CO	0.0	0	0.0
PM <sub>10</sub>	4.1	0	4.1
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
<b>Total:</b>	<b>4.4</b>	<b>0</b>	<b>4.4</b>
<b>Fee Due</b>	<b>\$ 2,500.00</b>		

## 5.6 Regional Review of Draft Permit

A copy of the draft permit was made available to the Idaho Falls Regional Office for review on January 20, 2005. The Regional Office provided a response on January 21, 2005 with no changes requested.

## 5.7 Facility Review of Draft Permit

A copy of the draft permit was made available to Idaho Pacific for review on November 17, 2004. Comments were received from Cascade Earth Sciences on behalf of Idaho Pacific on January 19, 2005. Changes to the draft PTC were then made in cooperation with the Idaho Falls Regional Office as follows:

- In Permit Condition 2.9, periodic monitoring was added to demonstrate compliance with the visible emissions standard.
- An additional 30 days was provided for installation of baghouse pressure drop monitoring equipment in Condition 2.7.
- Text was added to Condition 2.8 to clarify that the total output of the four Drum Dryers may be obtained by adding the total daily output of each dehydration production line. In this way, since each production line contains two dryers, the total output of all four dryers will be obtained.
- Because the projected NAAQS impacts from this facility are low, it was determined that monthly pressure drop monitoring is adequate for the baghouses in Condition 2.10.
- An additional 60 days was provided for development of a baghouse O&M manual in Condition 2.11.

## PERMIT CONDITIONS

This section summarizes and explains the reasoning behind the permit conditions in the PTC.

### Permit Conditions 2.3, 2.5 and 2.9

An emission limit is established in the permit which corresponds to the emission rates for which compliance with all applicable rules has been demonstrated. In particular, a  $PM_{10}$  emission rate limit is established for purposes of maintaining compliance with the NAAQS. The emission rate limit is equal to the sum of the  $PM_{10}$  PTE for each dryer at the facility for which compliance with the NAAQS has been demonstrated, and it is determined as follows:  $PM_{10} = 0.38 + 0.38 + 0.36 + 0.36 \text{ lb/hr} = 1.5 \text{ lb/hr}$ . A limitation is established only for the dryers because it is recognized that the production rates of all other processing units at this facility are inherently limited by the dryer production rate limit.

Compliance with the dryer emission rate limit is demonstrated by maintaining compliance with the dryer production throughput limit that is established as an operating requirement in the permit. This production limit is based on the dryer production rates used in the permit analysis to demonstrate compliance with all applicable requirements, and it was determined as follows:  $(0.625 + 0.625 + 0.6 + 0.6 \text{ tons/hr})(24 \text{ hr/day})(2000 \text{ lb/ton}) = 117,600 \text{ lb/day}$ . To demonstrate compliance with the throughput limit, a separate monitoring requirement is established to maintain records of the total dryer production on a daily basis.

### Permit Conditions 2.3, 2.8

The opacity rule specified under IDAPA 58.01.01.625 applies to all point sources of emissions at all times. Therefore, it is included in the PTC. Compliance is demonstrated by performing periodic visible emission inspections and recording the results.

**Permit Conditions 2.6, 2.7, 2.10 and 2.11**

The emission rates used in the NAAQS analysis for the material transfer systems are low because baghouses are utilized by those systems. For purposes of maintaining these low emission rates, proper operation and maintenance of the baghouses is critical. Therefore, to demonstrate ongoing compliance with the information used in the NAAQS analysis, operating, periodic monitoring, and recordkeeping requirements which are appropriate for these baghouse systems have been included in the PTC.

**6. PUBLIC COMMENT**

An opportunity for public comment on the PTC application was provided from November 17, 2004 through December 17, 2004, in accordance with IDAPA 58.01.01.209.01.c. No comments on the application and no requests for a public comment period on DEQ's proposed action were received.

**7. RECOMMENDATION**

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Idaho Pacific Corporation be issued PTC No. P-040521 for the Ririe facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

KH/sd Permit No. P-040521

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## **APPENDIX A**

### **Process Weight Analysis**

## Process Weight Analysis

PM - Process Weight Limitations for Operations Commenced after 10-1-79, IDAPA 58.01.01.701				
Facility: Idaho Pacific, Ririe, PTC P-040521				
Date: 11/5/04				
Process	Process Weight (lb/hr)	Allowable PM Emissions (lb/hr)	Estimated PM Emissions (lb/hr)	Compliance Demonstrated? (Y/N)
Processes with Process Weight less than 9,250 lb/hr				
Dryer, drum type, one of four	1250	3.25	0.54	Y
Packaging Area Baghouse	2500	4.92	0.19	Y
Dry Processing Area Baghouse	2400	4.80	0.18	Y
Silos	4900	7.37	0.37	Y
		0		
Processes with Process Weight greater than 9,250 lb/hr				
None				
Conservative Dryer process weight rates are based on the maximum dryer throughput rates presented in the PTC application forms = 0.625 tons/hr = 1250 lb/hr				
Packaging Area Baghouse process weight rate = 0.625 + 0.625 tons/hr = 1.25 tons/hr = 2500 lb/hr				
Dry Processing Area Baghouse process weight rate = 0.6 + 0.6 tons/hr = 1.2 tons/hr = 2400 lb/hr				
Silo Baghouse process weight rate = 1.25 + 1.2 tons/hr = 2.45 tons/hr = 4900 lb/hr				

## **APPENDIX B**

### **Modeling Review**

## Modeling Review

### PM<sub>10</sub> NAAQS Analysis: Idaho Pacific, Ririe

#### For Each Existing Dryer:

1-hr Average Modeled Concentration at a 1 lb/hr emission rate = 24 µg/m<sup>3</sup>

PM<sub>10</sub> estimated emission rate for each existing dryer = 0.38 lb/hr

$$(24 \mu\text{g}/\text{m}^3)/(1 \text{ lb}/\text{hr}) = (x)/(0.38 \text{ lb}/\text{hr}) \quad \text{where } x = \text{1-hr Average Modeled Concentration}$$
$$x = (0.38)(24 \mu\text{g}/\text{m}^3)$$

1-hr Average Modeled Concentration = x = 9.2 µg/m<sup>3</sup>

24-hr Average Modeled Concentration = (9.2 µg/m<sup>3</sup>)(0.4) = 3.7 µg/m<sup>3</sup>

Annual Average Modeled Concentration = (9.2 µg/m<sup>3</sup>)(0.08) = 0.74 µg/m<sup>3</sup>

#### For Each New Dryer:

1-hr Average Modeled Concentration at a 1 lb/hr emission rate = 24 µg/m<sup>3</sup>

PM<sub>10</sub> estimated emission rate for each existing dryer = 0.36 lb/hr

$$(24 \mu\text{g}/\text{m}^3)/(1 \text{ lb}/\text{hr}) = (x)/(0.36 \text{ lb}/\text{hr}) \quad \text{where } x = \text{1-hr Average Modeled Concentration}$$
$$x = (0.36)(24 \mu\text{g}/\text{m}^3)$$

1-hr Average Modeled Concentration = x = 8.7 µg/m<sup>3</sup>

24-hr Average Modeled Concentration = (8.7 µg/m<sup>3</sup>)(0.4) = 3.5 µg/m<sup>3</sup>

Annual Average Modeled Concentration = (8.7 µg/m<sup>3</sup>)(0.08) = 0.70 µg/m<sup>3</sup>

#### For the Packaging Area Baghouse:

1-hr Average Modeled Concentration at a 1 lb/hr emission rate for the Baghouse = 98 µg/m<sup>3</sup>

PM<sub>10</sub> estimated emission rate for the baghouse = 0.094 lb/hr

$$(98 \mu\text{g}/\text{m}^3)/(1 \text{ lb}/\text{hr}) = (x)/(0.094 \text{ lb}/\text{hr}) \quad \text{where } x = \text{1-hr Average Modeled Concentration}$$
$$x = (0.094)(98 \mu\text{g}/\text{m}^3)$$

1-hr Average Modeled Concentration = x = 9.2 µg/m<sup>3</sup>

24-hr Average Modeled Concentration = (9.2 µg/m<sup>3</sup>)(0.4) = 3.7 µg/m<sup>3</sup>

Annual Average Modeled Concentration = (9.2 µg/m<sup>3</sup>)(0.08) = 0.74 µg/m<sup>3</sup>

#### For the New Dry Processing Area Baghouse:

1-hr Average Modeled Concentration at a 1 lb/hr emission rate for the Baghouse = 95 µg/m<sup>3</sup>

PM<sub>10</sub> estimated emission rate for the baghouse = 0.090 lb/hr

$$(95 \mu\text{g}/\text{m}^3)/(1 \text{ lb}/\text{hr}) = (x)/(0.090 \text{ lb}/\text{hr}) \quad \text{where } x = \text{1-hr Average Modeled Concentration}$$
$$x = (0.090)(95 \mu\text{g}/\text{m}^3)$$

1-hr Average Modeled Concentration = x = 8.6 µg/m<sup>3</sup>

24-hr Average Modeled Concentration = (8.6 µg/m<sup>3</sup>)(0.4) = 3.4 µg/m<sup>3</sup>

Annual Average Modeled Concentration = (8.6 µg/m<sup>3</sup>)(0.08) = 0.68 µg/m<sup>3</sup>

#### For all of the Silo Baghouses:

The following estimates are based on the conservative assumption that the maximum throughput of the silo baghouses, regardless of which one operates, is equal to the combined maximum output of all of the dryers:

1-hr Average Modeled Concentration at a 1 lb/hr emission rate for each Baghouse = 9.2 µg/m<sup>3</sup>

PM<sub>10</sub> estimated emission rate for each silo baghouse = 0.18 lb/hr

$$(9.2 \mu\text{g}/\text{m}^3)/(1 \text{ lb}/\text{hr}) = (x)/(0.18 \text{ lb}/\text{hr}) \quad \text{where } x = \text{1-hr Average Modeled Concentration}$$
$$x = (0.18)(9.2 \mu\text{g}/\text{m}^3)$$

1-hr Average Modeled Concentration =  $x = 1.6 \mu\text{g}/\text{m}^3$

24-hr Average Modeled Concentration =  $(1.6 \mu\text{g}/\text{m}^3)(0.4) = 0.66 \mu\text{g}/\text{m}^3$

Annual Average Modeled Concentration =  $(1.6 \mu\text{g}/\text{m}^3)(0.08) = 0.13 \mu\text{g}/\text{m}^3$

**Facility-wide Modeled Concentration:**

The appropriate modeled concentrations for the two existing dryers, two new dryers, packaging area baghouse, dry processing area baghouse, silos and the facility's boiler are added together below to obtain the facility-wide modeled impacts below. Maximum modeled impacts for the boiler are given in the technical analysis for the PTC issued on October 17, 2001 as  $0.93 \mu\text{g}/\text{m}^3$  for the 24-hr average and  $0.2 \mu\text{g}/\text{m}^3$  for the annual average.

24-hr Average Modeled Concentration =  $3.7 + 3.7 + 3.5 + 3.5 + 3.7 + 3.4 + 0.66 + 0.93 \mu\text{g}/\text{m}^3 = 23 \mu\text{g}/\text{m}^3$

Annual Average Modeled Concentration =  $0.74 + 0.74 + 0.70 + 0.70 + 0.74 + 0.68 + 0.13 + 0.2 \mu\text{g}/\text{m}^3 = 4.6 \mu\text{g}/\text{m}^3$

Screen3 each dryer.OUT

11/05/04  
14:24:28

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Each Drum Dryer

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 10.6070  
STK INSIDE DIAM (M) = 0.8504  
STK EXIT VELOCITY (M/S) = 11.9655  
STK GAS EXIT TEMP (K) = 316.4833  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 1.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 8.1077  
MIN HORIZ BLDG DIM (M) = 84.7344  
MAX HORIZ BLDG DIM (M) = 193.8528

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 1.564 M\*\*4/S\*\*3; MOM. FLUX = 23.977 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
250.	24.25	4	4.0	4.0	1280.0	12.80	19.12	11.28	SS
300.	21.59	4	3.5	3.5	1120.0	13.91	22.61	12.35	SS
400.	17.40	4	3.0	3.0	960.0	15.67	29.45	15.27	SS
500.	14.46	4	2.5	2.5	800.0	18.45	36.15	18.30	SS
600.	12.75	4	1.5	1.5	480.0	27.34	42.72	21.21	SS
700.	11.74	4	1.5	1.5	480.0	27.34	49.19	24.03	SS
800.	10.57	4	1.5	1.5	480.0	27.34	55.57	26.78	SS
900.	9.449	4	1.5	1.5	480.0	27.34	61.88	29.47	SS
1000.	8.431	4	1.5	1.5	480.0	27.34	68.13	32.09	SS
1100.	7.696	4	1.0	1.0	320.0	40.86	74.81	35.20	NO
1200.	7.222	4	1.0	1.0	320.0	40.86	80.90	37.11	NO
1300.	6.771	4	1.0	1.0	320.0	40.86	86.95	38.97	NO
1400.	6.348	4	1.0	1.0	320.0	40.86	92.95	40.79	NO
1500.	5.955	4	1.0	1.0	320.0	40.86	98.92	42.56	NO
1600.	5.910	6	1.0	1.0	10000.0	38.93	52.62	20.45	NO
1700.	6.074	6	1.0	1.0	10000.0	38.93	55.53	21.13	NO
1800.	6.195	6	1.0	1.0	10000.0	38.93	58.43	21.79	NO
1900.	6.281	6	1.0	1.0	10000.0	38.93	61.32	22.45	NO
2000.	6.334	6	1.0	1.0	10000.0	38.93	64.19	23.09	NO
2100.	6.320	6	1.0	1.0	10000.0	38.93	67.05	23.64	NO
2200.	6.291	6	1.0	1.0	10000.0	38.93	69.89	24.18	NO
2300.	6.249	6	1.0	1.0	10000.0	38.93	72.73	24.70	NO
2400.	6.196	6	1.0	1.0	10000.0	38.93	75.55	25.22	NO
2500.	6.135	6	1.0	1.0	10000.0	38.93	78.37	25.73	NO
2600.	6.067	6	1.0	1.0	10000.0	38.93	81.17	26.23	NO

Screen3 each dryer.OUT									
2700.	5.993	6	1.0	1.0	10000.0	38.93	83.96	26.73	NO
2800.	5.915	6	1.0	1.0	10000.0	38.93	86.74	27.21	NO
2900.	5.833	6	1.0	1.0	10000.0	38.93	89.52	27.69	NO
3000.	5.749	6	1.0	1.0	10000.0	38.93	92.28	28.16	NO
3500.	5.274	6	1.0	1.0	10000.0	38.93	105.96	30.09	NO
4000.	4.838	6	1.0	1.0	10000.0	38.93	119.44	31.88	NO
4500.	4.447	6	1.0	1.0	10000.0	38.93	132.75	33.56	NO
5000.	4.100	6	1.0	1.0	10000.0	38.93	145.90	35.15	NO
5500.	3.793	6	1.0	1.0	10000.0	38.93	158.90	36.66	NO
6000.	3.520	6	1.0	1.0	10000.0	38.93	171.77	38.10	NO
6500.	3.277	6	1.0	1.0	10000.0	38.93	184.52	39.48	NO
7000.	3.061	6	1.0	1.0	10000.0	38.93	197.16	40.81	NO
7500.	2.869	6	1.0	1.0	10000.0	38.93	209.69	41.95	NO
8000.	2.697	6	1.0	1.0	10000.0	38.93	222.13	43.05	NO
8500.	2.543	6	1.0	1.0	10000.0	38.93	234.48	44.11	NO
9000.	2.403	6	1.0	1.0	10000.0	38.93	246.74	45.13	NO
9500.	2.277	6	1.0	1.0	10000.0	38.93	258.92	46.12	NO
10000.	2.161	6	1.0	1.0	10000.0	38.93	271.02	47.08	NO
15000.	1.408	6	1.0	1.0	10000.0	38.93	388.51	55.48	NO
20000.	1.038	6	1.0	1.0	10000.0	38.93	501.01	60.84	NO
25000.	0.8158	6	1.0	1.0	10000.0	38.93	609.80	65.36	NO
30000.	0.6685	6	1.0	1.0	10000.0	38.93	715.63	69.31	NO
40000.	0.4920	6	1.0	1.0	10000.0	38.93	920.26	74.93	NO
50000.	0.3873	6	1.0	1.0	10000.0	38.93	1117.45	79.60	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 250. M:  
 250. 24.25 4 4.0 4.0 1280.0 12.80 19.12 11.28 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* REGULATORY (Default) \*\*\*  
 PERFORMING CAVITY CALCULATIONS  
 WITH ORIGINAL SCREEN CAVITY MODEL  
 (BRODE, 1988)  
 \*\*\*\*\*

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 0.000	CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 8.11	CAVITY HT (M) = 8.11
CAVITY LENGTH (M) = 48.62	CAVITY LENGTH (M) = 41.04
ALONGWIND DIM (M) = 84.73	ALONGWIND DIM (M) = 193.85

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

\*\*\*\*\*  
 END OF CAVITY CALCULATIONS  
 \*\*\*\*\*

\*\*\* INVERSION BREAK-UP FUMIGATION CALC. \*\*\*  
 CONC (UG/M\*\*3) = 0.000  
 DIST TO MAX (M) = 497.98

DIST TO MAX IS < 2000. M. CONC SET = 0.0

Screen3 each dryer.OUT

\*\*\*\*\*  
\*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
\*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	24.25	250.	0.



**Maximum Concentrations**

Calculation Procedure	Maximum Conc. ( $\mu\text{g}/\text{m}^3$ )	Distance To Max. (m)
Simple Ter	24.25	250.00
Breakup Fum	0.00	497.98

Note: Distance to Max is cavity length and Terrain Height is cavity height for cavity concentrations.

[View Output File](#)

**Point Source**

	English	Metric
Emission Rate:	1.0000 (lb/hr)	0.1260 (g/s)
Stack Height:	34.7999 (ft)	10.6070 (m)
Stack Diameter:	2.7900 (ft)	0.8504 (m)
Exit Velocity:	39.2569 (fps)	11.9655 (mps)
Flow Rate:	14400.33 (acfm)	6.7962 ( $\text{m}^3/\text{s}$ )
Exit Temperature:	109.9999 ( $^{\circ}\text{F}$ )	316.4833 ( $^{\circ}\text{K}$ )

**Building**

Height:	26.6001 (ft)	8.1077 (m)
Length:	636.0000 (ft)	193.8528 (m)
Width:	278.0000 (ft)	84.7344 (m)

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Idaho Pacific - Packaging Area Baghouse

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 8.9002  
STK INSIDE DIAM (M) = 0.3292  
STK EXIT VELOCITY (M/S) = 12.7544  
STK GAS EXIT TEMP (K) = 299.8167  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 1.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 8.1077  
MIN HORIZ BLDG DIM (M) = 41.7576  
MAX HORIZ BLDG DIM (M) = 95.7072

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.075 M\*\*4/S\*\*3; MOM. FLUX = 4.309 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
263.	98.07	6	2.0	2.0	10000.0	11.14	9.95	8.19	SS
300.	90.54	6	2.0	2.0	10000.0	11.14	11.23	8.67	SS
400.	79.64	6	1.5	1.5	10000.0	12.42	14.64	9.11	SS
500.	70.24	6	1.5	1.5	10000.0	12.42	17.97	10.38	SS
600.	60.80	6	1.5	1.5	10000.0	12.42	21.24	11.15	SS
700.	53.39	6	1.5	1.5	10000.0	12.42	24.46	12.19	SS
800.	47.08	6	1.5	1.5	10000.0	12.42	27.63	13.19	SS
900.	41.91	6	1.5	1.5	10000.0	12.42	30.78	13.91	SS
1000.	38.67	6	1.0	1.0	10000.0	17.52	33.88	13.98	SS
1100.	36.46	6	1.0	1.0	10000.0	17.52	36.96	14.85	SS
1200.	34.26	6	1.0	1.0	10000.0	17.52	40.01	15.69	SS
1300.	32.15	6	1.0	1.0	10000.0	17.52	43.04	16.50	SS
1400.	30.15	6	1.0	1.0	10000.0	17.52	46.05	17.29	SS
1500.	28.29	6	1.0	1.0	10000.0	17.52	49.03	18.06	SS
1600.	26.57	6	1.0	1.0	10000.0	17.52	51.99	18.81	SS
1700.	24.99	6	1.0	1.0	10000.0	17.52	54.94	19.54	SS
1800.	23.53	6	1.0	1.0	10000.0	17.52	57.87	20.26	SS
1900.	22.19	6	1.0	1.0	10000.0	17.52	60.78	20.96	SS
2000.	20.97	6	1.0	1.0	10000.0	17.52	63.68	21.63	SS
2100.	19.87	6	1.0	1.0	10000.0	17.52	66.56	22.21	SS
2200.	18.86	6	1.0	1.0	10000.0	17.52	69.42	22.78	SS
2300.	17.93	6	1.0	1.0	10000.0	17.52	72.28	23.34	SS
2400.	17.07	6	1.0	1.0	10000.0	17.52	75.12	23.89	SS
2500.	16.28	6	1.0	1.0	10000.0	17.52	77.95	24.42	SS
2600.	15.55	6	1.0	1.0	10000.0	17.52	80.76	24.95	SS

Screen3 Pkg Area Baghouse.OUT

2700.	14.87	6	1.0	1.0	10000.0	17.52	83.57	25.47	SS
2800.	14.23	6	1.0	1.0	10000.0	17.52	86.36	25.98	SS
2900.	13.64	6	1.0	1.0	10000.0	17.52	89.15	26.48	SS
3000.	13.09	6	1.0	1.0	10000.0	17.52	91.92	26.98	SS
3500.	10.91	6	1.0	1.0	10000.0	17.52	105.65	28.98	SS
4000.	9.284	6	1.0	1.0	10000.0	17.52	119.17	30.84	SS
4500.	8.039	6	1.0	1.0	10000.0	17.52	132.50	32.57	SS
5000.	7.057	6	1.0	1.0	10000.0	17.52	145.67	34.21	SS
5500.	6.267	6	1.0	1.0	10000.0	17.52	158.69	35.76	SS
6000.	5.619	6	1.0	1.0	10000.0	17.52	171.58	37.23	SS
6500.	5.079	6	1.0	1.0	10000.0	17.52	184.34	38.64	SS
7000.	4.623	6	1.0	1.0	10000.0	17.52	196.99	40.00	SS
7500.	4.246	6	1.0	1.0	10000.0	17.52	209.54	41.16	SS
8000.	3.921	6	1.0	1.0	10000.0	17.52	221.98	42.28	SS
8500.	3.637	6	1.0	1.0	10000.0	17.52	234.34	43.36	SS
9000.	3.388	6	1.0	1.0	10000.0	17.52	246.61	44.40	SS
9500.	3.168	6	1.0	1.0	10000.0	17.52	258.79	45.41	SS
10000.	2.972	6	1.0	1.0	10000.0	17.52	270.90	46.38	SS
15000.	1.788	6	1.0	1.0	10000.0	17.52	388.43	54.88	SS
20000.	1.273	6	1.0	1.0	10000.0	17.52	500.95	60.29	SS
25000.	0.9778	6	1.0	1.0	10000.0	17.52	609.75	64.86	SS
30000.	0.7882	6	1.0	1.0	10000.0	17.52	715.59	68.84	SS
40000.	0.5691	6	1.0	1.0	10000.0	17.52	920.22	74.49	SS
50000.	0.4422	6	1.0	1.0	10000.0	17.52	1117.42	79.19	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 263. M:  
 263. 98.07 6 2.0 2.0 10000.0 11.14 9.95 8.19 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* REGULATORY (Default) \*\*\*  
 PERFORMING CAVITY CALCULATIONS  
 WITH ORIGINAL SCREEN CAVITY MODEL  
 (BRODE, 1988)  
 \*\*\*\*\*

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 0.000	CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 8.11	CAVITY HT (M) = 8.11
CAVITY LENGTH (M) = 42.39	CAVITY LENGTH (M) = 31.94
ALONGWIND DIM (M) = 41.76	ALONGWIND DIM (M) = 95.71

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

\*\*\*\*\*  
 END OF CAVITY CALCULATIONS  
 \*\*\*\*\*

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION MAX CONC DIST TO TERRAIN

Screen3 Pkg Area Baghouse.OUT

PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	98.07	263.	0.



**Maximum Concentrations**

Calculation Procedure	Maximum Conc. ( $\mu\text{g}/\text{m}^3$ )	Distance To Max. (m)
Simple Ter	98.07	263.00

Note: Distance to Max is cavity length and Terrain Height is cavity height for cavity concentrations.

[View Output File](#)

**Point Source**

	English	Metric
Emission Rate:	1.0000 (lb/hr)	0.1260 (g/s)
Stack Height:	29.2001 (ft)	8.9002 (m)
Stack Diameter:	1.0801 (ft)	0.3292 (m)
Exit Velocity:	41.8451 (fps)	12.7544 (mps)
Flow Rate:	2300.26 (acfm)	1.0856 (m <sup>3</sup> /s)
Exit Temperature:	80.0001 (°F)	299.8167 (°K)

**Building**

Height:	26.6001 (ft)	8.1077 (m)
Length:	314.0000 (ft)	95.7072 (m)
Width:	137.0000 (ft)	41.7576 (m)

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Idaho Pacific - Dry Processing Area Baghouse

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 8.9002  
STK INSIDE DIAM (M) = 0.3292  
STK EXIT VELOCITY (M/S) = 12.7544  
STK GAS EXIT TEMP (K) = 299.8167  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 1.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 8.1077  
MIN HORIZ BLDG DIM (M) = 41.7576  
MAX HORIZ BLDG DIM (M) = 95.7072

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = 0.075 M\*\*4/S\*\*3; MOM. FLUX = 4.309 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
279.	94.72	6	2.0	2.0	10000.0	11.14	10.51	8.40	SS
300.	90.54	6	2.0	2.0	10000.0	11.14	11.23	8.67	SS
400.	79.64	6	1.5	1.5	10000.0	12.42	14.64	9.11	SS
500.	70.24	6	1.5	1.5	10000.0	12.42	17.97	10.38	SS
600.	60.80	6	1.5	1.5	10000.0	12.42	21.24	11.15	SS
700.	53.39	6	1.5	1.5	10000.0	12.42	24.46	12.19	SS
800.	47.08	6	1.5	1.5	10000.0	12.42	27.63	13.19	SS
900.	41.91	6	1.5	1.5	10000.0	12.42	30.78	13.91	SS
1000.	38.67	6	1.0	1.0	10000.0	17.52	33.88	13.98	SS
1100.	36.46	6	1.0	1.0	10000.0	17.52	36.96	14.85	SS
1200.	34.26	6	1.0	1.0	10000.0	17.52	40.01	15.69	SS
1300.	32.15	6	1.0	1.0	10000.0	17.52	43.04	16.50	SS
1400.	30.15	6	1.0	1.0	10000.0	17.52	46.05	17.29	SS
1500.	28.29	6	1.0	1.0	10000.0	17.52	49.03	18.06	SS
1600.	26.57	6	1.0	1.0	10000.0	17.52	51.99	18.81	SS
1700.	24.99	6	1.0	1.0	10000.0	17.52	54.94	19.54	SS
1800.	23.53	6	1.0	1.0	10000.0	17.52	57.87	20.26	SS
1900.	22.19	6	1.0	1.0	10000.0	17.52	60.78	20.96	SS
2000.	20.97	6	1.0	1.0	10000.0	17.52	63.68	21.63	SS
2100.	19.87	6	1.0	1.0	10000.0	17.52	66.56	22.21	SS
2200.	18.86	6	1.0	1.0	10000.0	17.52	69.42	22.78	SS
2300.	17.93	6	1.0	1.0	10000.0	17.52	72.28	23.34	SS
2400.	17.07	6	1.0	1.0	10000.0	17.52	75.12	23.89	SS
2500.	16.28	6	1.0	1.0	10000.0	17.52	77.95	24.42	SS
2600.	15.55	6	1.0	1.0	10000.0	17.52	80.76	24.95	SS

Screen3 Dry Process Area Baghouse.OUT

2700.	14.87	6	1.0	1.0	10000.0	17.52	83.57	25.47	SS
2800.	14.23	6	1.0	1.0	10000.0	17.52	86.36	25.98	SS
2900.	13.64	6	1.0	1.0	10000.0	17.52	89.15	26.48	SS
3000.	13.09	6	1.0	1.0	10000.0	17.52	91.92	26.98	SS
3500.	10.91	6	1.0	1.0	10000.0	17.52	105.65	28.98	SS
4000.	9.284	6	1.0	1.0	10000.0	17.52	119.17	30.84	SS
4500.	8.039	6	1.0	1.0	10000.0	17.52	132.50	32.57	SS
5000.	7.057	6	1.0	1.0	10000.0	17.52	145.67	34.21	SS
5500.	6.267	6	1.0	1.0	10000.0	17.52	158.69	35.76	SS
6000.	5.619	6	1.0	1.0	10000.0	17.52	171.58	37.23	SS
6500.	5.079	6	1.0	1.0	10000.0	17.52	184.34	38.64	SS
7000.	4.623	6	1.0	1.0	10000.0	17.52	196.99	40.00	SS
7500.	4.246	6	1.0	1.0	10000.0	17.52	209.54	41.16	SS
8000.	3.921	6	1.0	1.0	10000.0	17.52	221.98	42.28	SS
8500.	3.637	6	1.0	1.0	10000.0	17.52	234.34	43.36	SS
9000.	3.388	6	1.0	1.0	10000.0	17.52	246.61	44.40	SS
9500.	3.168	6	1.0	1.0	10000.0	17.52	258.79	45.41	SS
10000.	2.972	6	1.0	1.0	10000.0	17.52	270.90	46.38	SS
15000.	1.788	6	1.0	1.0	10000.0	17.52	388.43	54.88	SS
20000.	1.273	6	1.0	1.0	10000.0	17.52	500.95	60.29	SS
25000.	0.9778	6	1.0	1.0	10000.0	17.52	609.75	64.86	SS
30000.	0.7882	6	1.0	1.0	10000.0	17.52	715.59	68.84	SS
40000.	0.5691	6	1.0	1.0	10000.0	17.52	920.22	74.49	SS
50000.	0.4422	6	1.0	1.0	10000.0	17.52	1117.42	79.19	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 279. M:  
 279. 94.72 6 2.0 2.0 10000.0 11.14 10.51 8.40 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* REGULATORY (Default) \*\*\*  
 PERFORMING CAVITY CALCULATIONS  
 WITH ORIGINAL SCREEN CAVITY MODEL  
 (BRODE, 1988)  
 \*\*\*\*\*

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 0.000	CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 8.11	CAVITY HT (M) = 8.11
CAVITY LENGTH (M) = 42.39	CAVITY LENGTH (M) = 31.94
ALONGWIND DIM (M) = 41.76	ALONGWIND DIM (M) = 95.71

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

\*\*\*\*\*  
 END OF CAVITY CALCULATIONS  
 \*\*\*\*\*

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION            MAX CONC            DIST TO TERRAIN  
 Page 2

PROCEDURE	Screen3 (UG/M**3)	Dry Process MAX (M)	Area Baghouse. OUT HT (M)
SIMPLE TERRAIN	94.72	279.	0.



**Maximum Concentrations**

Calculation Procedure	Maximum Conc. ( $\mu\text{g}/\text{m}^3$ )	Distance To Max. (m)
Simple Ter	94.72	279.00

Note: Distance to Max is cavity length and Terrain Height is cavity height for cavity concentrations.

[View Output File](#)

**Point Source**

	English	Metric
Emission Rate:	1.0000 (lb/hr)	0.1260 (g/s)
Stack Height:	29.2001 (ft)	8.9002 (m)
Stack Diameter:	1.0801 (ft)	0.3292 (m)
Exit Velocity:	41.8451 (fps)	12.7544 (mps)
Flow Rate:	2300.26 (acfm)	1.0856 ( $\text{m}^3/\text{s}$ )
Exit Temperature:	80.0001 ( $^{\circ}\text{F}$ )	299.8167 ( $^{\circ}\text{K}$ )

**Building**

Height:	26.6001 (ft)	8.1077 (m)
Length:	314.0000 (ft)	95.7072 (m)
Width:	137.0000 (ft)	41.7576 (m)

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Idaho Pacific - Silo Baghouses

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 0.126000  
STACK HEIGHT (M) = 25.6032  
STK INSIDE DIAM (M) = 0.3292  
STK EXIT VELOCITY (M/S) = 24.3997  
STK GAS EXIT TEMP (K) = 299.8167  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 1.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 21.9456  
MIN HORIZ BLDG DIM (M) = 7.9248  
MAX HORIZ BLDG DIM (M) = 7.9248

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.144 M\*\*4/S\*\*3; MOM. FLUX = 15.771 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
296.	8.980	2	1.5	1.6	480.0	32.52	51.57	29.75	SS
300.	8.892	2	1.5	1.6	480.0	32.52	52.20	30.14	SS
400.	8.997	3	1.5	1.6	480.0	34.06	44.65	26.45	SS
500.	7.894	3	1.5	1.6	480.0	34.06	54.77	32.43	SS
600.	7.071	4	2.0	2.3	640.0	30.01	42.72	21.21	SS
700.	6.758	4	2.0	2.3	640.0	30.01	49.19	24.03	SS
800.	6.538	4	1.5	1.7	480.0	35.33	55.57	26.78	SS
900.	6.206	4	1.5	1.7	480.0	35.33	61.88	29.47	SS
1000.	5.804	5	1.5	2.1	10000.0	32.12	50.94	21.63	SS
1100.	5.675	5	1.5	2.1	10000.0	32.12	55.56	22.97	SS
1200.	5.492	5	1.5	2.1	10000.0	32.12	60.15	24.26	SS
1300.	5.360	6	1.5	2.5	10000.0	28.93	43.04	17.40	SS
1400.	5.376	6	1.5	2.5	10000.0	28.93	46.05	18.17	SS
1500.	5.348	6	1.5	2.5	10000.0	28.93	49.03	18.91	SS
1600.	5.286	6	1.5	2.5	10000.0	28.93	51.99	19.64	SS
1700.	5.201	6	1.5	2.5	10000.0	28.93	54.94	20.36	SS
1800.	5.098	6	1.5	2.5	10000.0	28.93	57.87	21.06	SS
1900.	4.899	6	1.5	2.5	10000.0	28.93	60.78	21.29	SS
2000.	4.786	6	1.5	2.5	10000.0	28.93	63.68	21.92	SS
2100.	4.662	6	1.5	2.5	10000.0	28.93	66.56	22.50	SS
2200.	4.537	6	1.5	2.5	10000.0	28.93	69.42	23.06	SS
2300.	4.413	6	1.5	2.5	10000.0	28.93	72.28	23.62	SS
2400.	4.291	6	1.5	2.5	10000.0	28.93	75.12	24.16	SS
2500.	4.172	6	1.5	2.5	10000.0	28.93	77.95	24.69	SS
2600.	4.117	6	1.0	1.7	10000.0	36.32	80.76	24.95	SS

Screen3 Silo Baghouses.OUT

2700.	4.068	6	1.0	1.7	10000.0	36.32	83.57	25.47	SS
2800.	4.014	6	1.0	1.7	10000.0	36.32	86.36	25.98	SS
2900.	3.957	6	1.0	1.7	10000.0	36.32	89.15	26.48	SS
3000.	3.898	6	1.0	1.7	10000.0	36.32	91.92	26.98	SS
3500.	3.562	6	1.0	1.7	10000.0	36.32	105.65	28.98	SS
4000.	3.253	6	1.0	1.7	10000.0	36.32	119.17	30.84	SS
4500.	2.976	6	1.0	1.7	10000.0	36.32	132.50	32.57	SS
5000.	2.731	6	1.0	1.7	10000.0	36.32	145.67	34.21	SS
5500.	2.516	6	1.0	1.7	10000.0	36.32	158.69	35.76	SS
6000.	2.326	6	1.0	1.7	10000.0	36.32	171.58	37.23	SS
6500.	2.158	6	1.0	1.7	10000.0	36.32	184.34	38.64	SS
7000.	2.009	6	1.0	1.7	10000.0	36.32	196.99	40.00	SS
7500.	1.878	6	1.0	1.7	10000.0	36.32	209.54	41.16	SS
8000.	1.762	6	1.0	1.7	10000.0	36.32	221.98	42.28	SS
8500.	1.657	6	1.0	1.7	10000.0	36.32	234.34	43.36	SS
9000.	1.563	6	1.0	1.7	10000.0	36.32	246.61	44.40	SS
9500.	1.478	6	1.0	1.7	10000.0	36.32	258.79	45.41	SS
10000.	1.401	6	1.0	1.7	10000.0	36.32	270.90	46.38	SS
15000.	0.9011	6	1.0	1.7	10000.0	36.32	388.43	54.88	SS
20000.	0.6603	6	1.0	1.7	10000.0	36.32	500.95	60.29	SS
25000.	0.5169	6	1.0	1.7	10000.0	36.32	609.75	64.86	SS
30000.	0.4224	6	1.0	1.7	10000.0	36.32	715.59	68.84	SS
40000.	0.3098	6	1.0	1.7	10000.0	36.32	920.22	74.49	SS
50000.	0.2433	6	1.0	1.7	10000.0	36.32	1117.42	79.19	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 296. M:  
 360. 9.152 3 1.5 1.6 480.0 34.06 40.64 24.08 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*

\*\*\* REGULATORY (default) \*\*\*  
 PERFORMING CAVITY CALCULATIONS  
 WITH ORIGINAL SCREEN CAVITY MODEL  
 (BRODE, 1988)

\*\*\*\*\*

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 483.0	CONC (UG/M**3) = 483.0
CRIT WS @10M (M/S) = 1.10	CRIT WS @10M (M/S) = 1.10
CRIT WS @ HS (M/S) = 1.33	CRIT WS @ HS (M/S) = 1.33
DILUTION WS (M/S) = 1.00	DILUTION WS (M/S) = 1.00
CAVITY HT (M) = 43.90	CAVITY HT (M) = 43.90
CAVITY LENGTH (M) = 23.01	CAVITY LENGTH (M) = 23.01
ALONGWIND DIM (M) = 7.92	ALONGWIND DIM (M) = 7.92

\*\*\*\*\*

END OF CAVITY CALCULATIONS

\*\*\*\*\*

\*\*\* INVERSION BREAK-UP FUMIGATION CALC. \*\*\*

CONC (UG/M\*\*3) = 0.000  
 DIST TO MAX (M) = 318.00

DIST TO MAX IS < 2000. M. CONC SET = 0.0

\*\*\*\*\*

Screen3 Silo Baghouses.OUT  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	9.152	360.	0.
BLDG. CAVITY-1	483.0	23.	-- (DIST = CAVITY LENGTH)
BLDG. CAVITY-2	483.0	23.	-- (DIST = CAVITY LENGTH)

Distance from silos to nearest receptor (fenceline) = 296m

Distance from fenceline to maximum concentration point =  $360 - 296 = 64$  meters

To be conservative, the silo maximum concentration of  $9.2 \mu\text{g}/\text{m}^3$  will be applied at the point of maximum concentration of the other sources (i.e., at the fenceline).



**Maximum Concentrations**

Calculation Procedure	Maximum Conc. ( $\mu\text{g}/\text{m}^3$ )	Distance To Max. (m)
Simple Ter	9.15	360.00
Breakup Furn.	0.00	318.00
Cavity 1	483.00	23.01
Cavity 2	483.00	23.01

Note: Distance to Max is cavity length and Terrain Height is cavity height for cavity concentrations.

View Output File

**Point Source**

	English	Metric
Emission Rate:	1.0000 (lb/hr)	0.1260 (g/s)
Stack Height:	84.0000 (ft)	25.6032 (m)
Stack Diameter:	1.0801 (ft)	0.3292 (m)
Exit Velocity:	80.0515 (fps)	24.3997 (mps)
Flow Rate:	4400.49 (acfm)	2.0768 ( $\text{m}^3/\text{s}$ )
Exit Temperature:	80.0001 ( $^{\circ}\text{F}$ )	299.8167 ( $^{\circ}\text{K}$ )

**Building**

Height:	72.0000 (ft)	21.9456 (m)
Length:	26.0000 (ft)	7.9248 (m)
Width:	26.0000 (ft)	7.9248 (m)

## **APPENDIX C**

### **AIRS Database Information**

## AIRS Database Information

### AIRS/AFS<sup>a</sup> FACILITY-WIDE CLASSIFICATION<sup>b</sup> DATA ENTRY FORM – IDAHO PACIFIC, RIRIE

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION
POLLUTANT							A – Attainment U – Unclassifiable N – Nonattainment
SO <sub>2</sub>	B						U
NO <sub>x</sub>	B						U
CO	B						U
PM <sub>10</sub>	B						U
PT (Particulate)	B						U
VOC	B						U
THAP (Total HAPs)	B			---	---		---
			<b>APPLICABLE SUBPART</b>				
			none	none	none		

<sup>a</sup> Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

<sup>b</sup> 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).