Statement of Basis

Permit to Construct No. P-2010.0061
Project ID 61437

Idahoan Foods, LLC - Lewisville
Lewisville, Idaho

Facility ID 051-00017

Final

November 3, 2016
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The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
Idahoan	Idahoan Foods, LLC – Lewisville Plant
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards

O&M	operation and maintenance
O_2	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Idahoan Foods, LLC – Lewisville Plant (Idahoan) consists of various boilers, dryers, material handling, packaging, and other process equipment used to manufacture dehydrated potato products.

Trucks deliver potatoes to the plant; the potatoes are unloaded into storage areas after much of the rock and silt is removed. The potatoes are transported and washed using cold water and are then conveyed to a raw sort table where rot, sticks, and other debris are removed.

The washed and cleaned potatoes enter a steam peeler where they are exposed to steam for a brief period of time. This loosens the peel before the brush peeling and washing stage. Revolving brushes are used to fully remove

peels by dry and wet scrubbing. The steam from the steam peeler is exhausted and quenched in a water bath. The peeled potatoes are sorted and transported to one of two flake lines or one of five belt dryers.

In the flaker lines, the potatoes are sent to a pre-cooker to be blanched. The blanching process conditions the starch cells. The potatoes are then cooled and water transported into cookers where they are exposed to steam to be fully cooked. The potatoes are riced by being forced through slots and broken into smaller pieces like mash and conveyed to the drum dryers of Flaker Line 1 and Flaker Line 2, each has three drum dryers. Each drum dryer has its own main exhaust stack, as well as multiple sniffer vents with a cyclone for each flaker line. The mashed potatoes are spread across the surface of the drum dryers with applicator rolls. The steam heated drum dryers rotate and drive the moisture out of the potato cells. The removed moisture is exhausted through the drum dryer (a.k.a., flaker) stacks, as well as the sniffer vents cyclone stacks.

The dried potato sheet is peeled from the drum and is broken into smaller pieces. Flakes are pneumatically transferred to one of the two flake bins through a drum dryer cyclone for each of the three drum dryers followed by a Flaker Line 1 baghouse and a drum dryer cyclone for each of the three drum dryers followed by a Flaker Line 2 baghouse. From the flake bins, the flake is transferred to the packaging area to be packed per customer requirements, or is pneumatically transferred to Real Lines where further processing takes place. Real Lines used to be called 92 Lines.

Two Vaculifts (a brand name of cyclone) and two baghouses convey flakes from flake bins to Real Lines. The Vaculifts on Real Lines 1 and 2 directly exhaust air to the atmosphere, while Real Lines 3 and 4 exhaust air through their respective baghouses. After the addition of various ingredients, flakes are dried in four fluidized bed dryers. Each dryer has its own cyclone.

Correctly sized potatoes may also be pumped to the belt drying operation line where they are sliced, diced, shredded, and blanched. After blanching, the potato pieces are sent to one of five belt dryers where the potato pieces are distributed across a large belt conveyor that moves through the heated oven. The potato pieces are dehydrated. The moisture driven from the potato is exhausted to atmosphere. The products are transferred by bins to the packaging areas.

The packaging department receives potato flakes where additives can be added to flakes prior to packaging. Baghouses and cyclone are in place to reduce dust emissions from packaging. They are:

- Crusher Vaculift over a small flake crusher,
- Flaker baghouse controlling dust associated with bagging flakes,
- Packaging baghouse to provide indoor air quality in the bagging room,
- Mixing room baghouse No .6.

All finished potato product is shipped to distribution warehousing, customers, or other plants.

Idahoan operates three boilers to provide steam to the process. They are limited to burn natural gas only. Idahoan uses a number of natural gas-fired space heaters in the facility; they vent into the buildings.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

Permit Type	Permit Number	Issue Date	Expiration Date	Project	Status	History Explanation
PTC	P-2010.0061	6/30/2010	N/A	Replacing baghouses	A (Will be S after issuance of the permit)	Replaced Permit No. P-2009.0194
PTC	P-2008.0194	6/10/2009	N/A	Faciltiy-wide PTC limiting the facility to a synthetic minor classification	S	Replaced Permit No. P-2009.0028

Permit Type	Permit Number	Issue Date	Expiration Date	Project	Status	History Explanation
PTC	P-2009.0028	4/7/2009	N/A	Facility name change	S	Replaced Permit No. P-060504
PTC	P-060504	5/8/2007	N/A	Facility-wide PTC	S	Replaced Permit No. P-040512
PTC	P-040512	10/22/2004	N/A	Initial permit for new proctor and cyclone	S	
T1	T1-9505-052-1	11/26/2002	11/26/2007	Initial Tier 1 permit	Terminated	Terminated with reclassification to synthetic minor and issuance of PTC No. P-2008.0194

Application Scope

This PTC is for a minor modification at an existing minor facility. The applicant has proposed to:

- Remove one existing belt dryer (Belt Dryer #3) from belt drying operation,
- Add one impingement dryer for belt drying operation,
- Add one additional drum dryer on Flaker Line 1,
- Include existing sniffer vents of Flaker Lines in the permit,
- Install cyclones for control particulate emissions from Flaker Lines sniffer vents,
- Cease fuel oil and biofuel combustion in Boiler No. 1,
- Install economizers on Boilers No. 1, No. 2 and No. 3, and
- Increase in boiler stacks height as a result of installing economizers on all three boilers.

Application Chronology

October 8, 2014	DEQ received an application.
October 9, 2014	DEQ received an application fee.
October 10, 2014	DEQ received the permit processing fee.
October 22 - November 6, 2014	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
November 3, 2014	DEQ determined that the application was incomplete.
December 3, 2014	DEQ received supplemental information from the applicant.
January 2, 2015	DEQ determined that the application was complete.
February 17, 2015	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 13, 2015	DEQ made available the draft permit and statement of basis for applicant review.
June 22, 2016	DEQ received a revised application, including new air impact analyses as the applicant could not operate the facility based on the permit condition developed using original application and air impact analyses.
October 12, 2016	DEQ made available the 2nd draft permit and statement of basis for applicant review.
November 3, 2016	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Emission Unit /ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description (Refer to modeler memo for more details)
Boiler No. 1	Make/Model: Erie City Serial No: 97804 Capacity: 54.56 MMBtu/hr Fuel: natural gas Manufactured: 1968 Boilers 1, 2, 3 combined fuel limit: 725 MMscf/yr	None	Boiler #1 stack
Boiler No. 2	Make/Model: Cleaver Brooks/DL-76 Serial No.: WL 1335 Capacity: 84.456 MMBtu/hr and 82.8 MMcf/hr Fuel: natural gas Manufactured: 1968	None	Boiler #2 stack
Boiler No. 3	Make/Model: Cleaver Brooks/DL-76 Serial No.: WL 1334 Capacity: 84.456 MMBtu/hr and 82.8 MMcf/hr Fuel: natural gas Manufactured: 1969	None	Boiler #3 stack
Proctor No.1 (Belt Dryer, formerly No.5)	Manufacturer: Proctor & Schwartz Model: K22523 Heat Source: natural gas Rated Heat Input: 7.44 MMBtu/hr Capacity: 291.7 lb/hr output Manufactured: 1980	None	Belt Dryer 1 stack (BLTDRY 1a & 1b)
Proctor No.2 (Belt Dryer)	Manufacturer: Proctor & Schwartz Model: K97106 Heat Source: natural gas Rated Heat Input: 6.99 MMBtu/hr Capacity: 291.7 lb/hr output Manufactured: 1998	None	Belt Dryer 2 stack (BLTDRY 2a & 2b)
Proctor No.4 (Belt Dryer)	Manufacturer: Proctor & Schwartz Model: K17777 Heat Source: steam Heat Capacity: 291.7 lb/hr output and 550 lb/hr steam Manufactured: 1968	None	Belt Dryer 4 stack (BLTDRY 4)
Proctor No.5 (Belt Dryer, formerly No. 6)	Manufacturer: Wolverine Proctor and Schwartz Model: 37005 Heat Source: natural gas Rated Heat Input: 10.0 MMBtu/hr Capacity: 1.17 T/hr Input Manufactured: 2003	None	Belt Dryer 5 stack (BLTDRY 5a & 5b)

Emission Unit /ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description (Refer to modeler memo for more details)
Impingement Dryer #1 (Belt Dryer)	Make/Model: CPM Wolverine Proctor Serial No.: NA Maximum Capacity: 7 MMBtu/hr burner, 0.3125 T/hr output Fuel: natural gas Manufactured: 2014	None	Impingement Dryer stacks #1, 2, and 3
Flaker Line 1 with Three Drum Dryers (also known as Flaker 1a, 1b, and 1c)	Heat Source: steam heat Manufacturer: Hartzell Model: 35-36-ewe Maximum Capacity: 2.41 tons/hr output, as finished product	None	Flaker Line 1 drum dryer stacks FLAKER 1A FLAKER 1B FLAKER 1C (new)
	Three Flaker Line 1 sniffer vents	One Cyclone Manufacturer: Idaho Steel, ISP6000HR Installation Date: 2016 PM_{10} Control Efficiency: 49.5%	Flaker Line 1 sniffer vent cyclone
Flaker Line 2 with Three Drum Dryers (also known as Flaker 2a, 2b, and 2c)	Heat Source: Steam Heat Manufacturer: Hartzell Model: 35-36-ewe Maximum Capacity: 2.41 tons/hr output, as finished product	None	Flaker Line 2 drum dryer stacks FLAKER 2A FLAKER 2B FLAKER 2C
	Three Flaker Line 2 sniffer vents	One Cyclone Manufacturer: Idaho Steel, ISP6000HR Installation Date: 2016 PM_{10} Control Efficiency: 49.5%	Flaker Line 2 sniffer vent cyclone
Flaker line 1 bins		<u>One Drum Dryer Cyclone for Each of Three Drum Dryers of Flaker Line 1 Prior to the Baghouse</u> <u>Flaker Line 1 Baghouse</u> Manufacturer: MAC Equipment, Inc. Model: 98-almd-04-007	
Flaker line 2 bins		<u>One Drum Dryer Cyclone for Each of Three Drum Dryers of Flaker Line 2 Prior to the Baghouse</u> <u>Flaker Line 2 Baghouse</u> Manufacturer: MAC Equipment, Inc. Model: 98-almd-04-006	
Real Line [a] 1 Vaculift (a brand name of cyclone)	Manufacturer: MAC Equipment Inc.	None	Real Line 1 stack

Emission Unit /ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description (Refer to modeler memo for more details)
Real Line 2 Vaculift (a brand name of cyclone)	Manufacturer: MAC Equipment, Inc.	None	Real Line 2 stack
Real Line 3 Vaculift		Real Line 3 Baghouse Manufacturer: MAC Equipment, Inc. Model: 39frtc21 s/n 99frtf02004	Real Line 3 baghouse stack (Real-3 Baghouse)
Real Line 4 Vaculift		Real Line 4 Baghouse Manufacturer: MAC Equipment, Inc. Model: 39rtc21sty3cg50660-001-1	Real Line 4 baghouse stack (Real-4 Baghouse)
Real Line 1 Dryer with Cyclone	Manufacturer: Idaho Steel Type: fluidized bed dryer Rated Heat Input: 3.7 MMBtu/hr Fuel: natural gas Manufactured: 1992	None (Cyclone is process equipment.)	Real Line 1 dryer stack (92DRY 1a & 1b)
Real Line 2 Dryer with Cyclone	Manufacturer: Idaho Steel Type: fluidized bed dryer Rated Heat Input: 3.6 MMBtu/hr Fuel: natural gas Manufactured: 1993	None (Cyclone is process equipment.)	Real Line 2 dryer stack (92DRY 2)
Real Line 3 Dryer with Cyclone	Manufacturer: Idaho Steel Type: fluidized bed dryer Rated Heat Input: 7.0 MMBtu/hr Fuel: natural gas Manufactured: 1999	None (Cyclone is process equipment.)	Real Line 3 dryer stack (92DRY 3)
Real Line 4 Dryer with Cyclone	Manufacturer: Idaho Steel Type: fluidized bed dryer Rated Heat Input: 7.0 MMBtu/hr Fuel: natural gas Manufactured: 2003	None (Cyclone is process equipment.)	Real Line 4 dryer stack (Real DRY 4)
Bagroom Dust Vaculift (a brand name of cyclone)	Manufacturer: Idaho Fresh-Pak	None	
A Small Flake Crusher	Vaculift (also known as the Crusher Vaculift) Manufacturer: MAC Equipment, Inc. Model: 39FRTC21	None	
Flaker Bagger Vaculift	Manufacturer: Vaculift hg15-18-1-42sp Model: 5-668-3	Flaker Bagger Baghouse Manufacturer: Saunco Mfg Model: b326/6sfsb36	
Mixing Room		Mixing Room Baghouse (also known as baghouse package 6 or packaging baghouse No. 6) Manufacturer: Saunco Mfg Model: 6sfsb36/296	Packaging baghouse 6 stack (BH-PKG6)

Emission Unit /ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description (Refer to modeler memo for more details)
Packaging		Packaging Baghouse Manufacturer: MAC Environment, Inc. Model: 144MCF361w Installed date: 2010	Packaging baghouse stack/outlet

[a] Real Line used to be called 92 Line.

Emissions Inventories

Potential to Emit

The pre- and post-project Potential to Emit (PTE) are discussed in this section. Emission rates for new sources were calculated based upon a combination of past source testing results, manufacturer data, and AP-42 factors for fuel combustion. A summary of the pre- and post-project PTE is presented in Table 2. The post-project PTE are the total facility emissions considering the modifications listed under Application Scope Section. The pre-project PTE reflects emissions as listed in the statement of basis for PTC No. P-2010-0061, issued 6/30/2010. The net change reflects the emissions difference between the pre- and post-project PTE. The facility will remain a minor source of HAP, with total HAP emissions less than 25 T/yr and no single HAP emissions greater than 10 T/yr. Refer to Appendix A for detailed emissions calculations. Total greenhouse gases emissions are 84,209 T/yr.

Table 2 PRE- AND POST-PROJECT PTE AND PTE CHANGES FOR CRITERIA POLLUTANTS

Pollutants	$PM_{2.5}$		PM_{10}		SO_2		NOx		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Post Project Potential to Emit	15.56	63.54	15.56	63.54	0.15	0.43	29.2	68.2	26.38	65.2	1.64	3.88
Pre- Project Potential to Emit	20.72	69.87	20.88	70.15	27.69	44.68	31.39	84.11	24.34	61.6	1.6	4.07
Changes in Potential to Emit	-5.16	-6.33	-5.32	-6.60	-27.54	-44.25	-2.19	-15.91	2.04	3.6	0.04	-0.2

TAP Emissions

As required by IDAPA 58.01.01.210, an analysis has been performed to determine compliance with the TAPs Increments found in IDAPA 58.01.01.585 and 586. Methodology E of the Guideline for Performing Air Quality impact Analyses was used. The net toxic emission rates from the proposed modification were compared to demonstrate compliance with the screening emission levels (ELs) in IDAPA58.01.01.585 and 586. Increases in TAP emissions come from natural gas combustion in the proposed impingement dryer and Boiler #1. Decreases in TAP emissions come from the cessation of fuel oil combustion in Boiler #1. The proposed net changes to this facility do not result in any exceedance of the ELs. Refer to Appendix A of the statement of basis for details.

Ambient Air Quality Impact Analyses

The ambient air impact analyses submitted with the PTC application, combined with DEQ verification and sensitivity analyses, demonstrated to DEQ's satisfaction that emissions from the proposed modifications to the Idahoan facility will not cause or significantly contribute to a violation of any ambient air quality standard. Refer to Appendix B for details.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Jefferson County which is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$,

CO, NO_2, SO_X, and Ozone. Reference 40 CFR 81.313.

Facility Classification

The facility classification was SM80 because its NO_x PTE was great than 80 T/yr, 80% of the major source threshold. However, the classification will be SM upon issuance of this permit because the post project NO_x PTE will be less than 80% of the major source threshold.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 ..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed modification as described under Application Scope section. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 ..... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 ..... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.7 and 2.8.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 ..... Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Conditions 2.11 and 3.4.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701 ..... Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

The calculation in the application has demonstrated that the emissions from all processes are well below the process weight limitations.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 ..... Requirement to Obtain Tier I Operating Permit

The facility is a minor source and is not subject to Title V program.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

The facility is a minor source and is not subject to PSD program.

NSPS Applicability (40 CFR 60)

The facility is not subject to NSPS.

NESHAP Applicability (40 CFR 61)

The facility is not subject to NESHAP.

MACT Applicability (40 CFR 63)

The facility will not be subject to 40 CFR 63 upon issuance of this permit.

The facility will not be subject to requirements in 40 CFR 63, Subpart JJJJJJ - National Emission Standards For Hazardous Air Pollutants for Source Categories upon issuance of this permit because Boilers No. 2 and No. 3 are currently permitted to burn natural gas only and Boiler No. 1 will be limited to burn natural gas only through this permitting action. Boilers burning natural gas are exempt from this subpart.

Permit Conditions Review

This section describes only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action. The new text shows as bold text; the deleted text shows as struck out text.

PERMIT SCOPE

Permit Condition 1.1

Permit Condition 1.1 states the purpose of this permitting action.

Table 1.1

Table 1.1 lists regulated sources in this permit. Changes are made to the table to reflect the proposed modifications.

FACILITY-WIDE CONDITIONS

Permit Condition 2.11

As a result of this permitting action, Boiler No. 1 is limited to burn natural gas exclusively. The grain loading standard for burning liquid is removed from PC 2.11:

2.11 The permittee shall not discharge to the atmosphere from any fuel-burning equipment PM in excess of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when burning gaseous fuels ~~for gas and 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid~~.

Old Permit Conditions 2.12 and 2.13

According to the applicant's comments on the draft permit, old PCs 2.12 and 2.13 are no longer applicable because the facility is not permitted to burn fuel oil and biofuel.

~~**2.12** The permittee shall not sell, distribute, use, or make available for use any distillate fuel oil containing more than the following percentages of sulfur:~~

- ~~ASTM Grade 1 fuel oil - 0.3% by weight.~~
- ~~ASTM Grade 2 fuel oil - 0.5% by weight.~~

~~**2.13** The permittee shall maintain documentation of supplier verification of distillate fuel oil sulfur content on an as-received basis.~~

BOILERS NO. 1, NO. 2, AND NO. 3

Old Permit Condition 3.3

Boiler No. 1 is not allowed to burn distillate fuel oil or biofuel after this permitting action. The limits for the boiler to burn distillate fuel oil or biofuel are obsolete and deleted.

~~"3.3 Emission Limits~~

~~The emissions from the boiler No.1 stack shall not exceed any corresponding emissions rate limits listed in Table 3.1.~~

~~Table 3.1 BOILER No. 1 EMISSIONS LIMITS~~

~~Source Description~~	~~PM_{10}~~		~~Nickel~~
	~~lb/hr[a]~~	~~T/yr~~	~~lb/yr~~
~~Boiler No. 1 while combusting distillate or bio-fuel~~	~~6.83~~	~~11.5~~	~~106~~

~~[a] Average hourly rate over any consecutive 24-hour period~~"

New Permit Condition 3.3

All three boilers are required to increase stack height as a result of installing economizers on all three boilers. The required boiler stack heights are taken from the modeling memo. New PC 3.3 reads as follows:

"3.3 **Boiler Stack Parameters**

Boiler stack height, from ground level, shall be at least

- **75 feet for Boiler No. 1,**
- **70 feet for Boiler No. 2, and**
- **70 feet for Boiler No. 3.**"

Permit Condition 3.4

Boiler No. 1 is added to PC 3.4 because it is limited to burn natural gas exclusively.

"3.4 Boiler ~~No. 2 and No. 3~~ Fuel Restrictions

Boilers **No. 1**, No. 2 and No. 3 shall only combust natural gas."

Old Permit Condition 3.6

Old PC 3.6 regarding Boiler No. 1 fuel types is deleted because Boiler No. 1 is only allowed to burn natural gas after this permitting action.

~~"3.6 Boiler No. 1 Fuel Restrictions~~

~~Boiler No. 1 shall only combust the following fuels:~~

- ~~Natural gas~~
- ~~No. 1 distillate~~
- ~~No. 2 distillate~~
- ~~Bio-fuel (yellow grease)~~

~~Boiler No. 1 shall not combust any No. 4, 5, or 6 residual fuel oil or used oil.~~"

New Permit Condition 3.6

A new permit condition is added to the permit based on the discussion the revised application and new air impact analyses submitted on June 22, 2016. It reads as follows:

"**3.6 Boiler No. 2 and No. 3 operation requirement**

The permittee shall not operate Boiler No. 2 and Boiler No. 3 simultaneously unless the economizers of Boiler No. 2 and Boiler No. 3 are bypassed."

Old Permit Condition 3.9

Old PC 3.9 is obsolete and deleted because Boiler No. 1 is permitted to burn natural gas exclusively after this permitting action.

"~~3.9 Maximum Distillate Fuel and Bio-Fuel Use~~

~~Total fuel usage of No. 1 distillate fuel, No. 2 distillate fuel, and bio-fuel for Boiler No. 1 shall not exceed the following rates:~~

- ~~1,247,069 gallons per consecutive 12-month period~~
- ~~369 gallons per hour averaged over any consecutive 24-hour period~~"

Old Permit Conditions 3.12 and 3.14

Old PCs 3.12 and 3.14 regarding fuel oil consumption monitoring and performance testing when burning fuel oil are obsolete and deleted because Boiler No. 1 is permitted to burn natural gas exclusively after this permitting action.

New Permit Condition 3.10

New PC 3.10 is a monitoring requirement to demonstrate compliance that the economizers of Boiler No. 2 and Boiler No. 3 are bypassed when Boiler No. 2 and Boiler No. 3 are operating simultaneously.

BELT DRYING OPERATION

Permit Condition 4.1

PC 4.1 is revised to reflect the addition of the new impingement dryer and removing of the old Proctor No. 3 conveyor dryer. It reads:

"4.1 **Five dryers are used to dry potato pieces**. Proctors No. 1, No. 2, and No. 5 are natural gas-fired conveyor dryers ~~used to dry potato pieces~~. Proctors ~~No. 3 and~~ No. 4 is a ~~are~~ steam-heated conveyor dryers ~~used to dry potato pieces~~. **CPM Wolverine Proctor impingement dryer is a natural gas-fired belt type dryer.**"

Permit Condition 4.3

Emission limits in PC 4.3 are revised to reflect the change of the dryers. They are taken from the EI spreadsheet submitted by the applicant on February 17, 2014. The revised PC 4.3 reads as follows:

"4.3 Emission Limits

The **total** PM_{10} emissions from **the dryers** ~~Proctors No. 1, No. 2, No. 3, No. 4, and No. 5~~ shall not exceed **49.3** ~~51.6~~ pounds per calendar day for all **dryers** ~~Proctors~~ combined."

Permit Condition 4.4

PC 4.4 is revised to reflect the production change. The total production limit is the sum of the production limits for the four Proctor conveyor dryers and the new impingement dryer. The production limit for the four Proctor conveyor dryers and the new impingement dryer are calculated by multiplying 24 hr/day and 2,000 lb/T with the maximum hourly production rate of 1.536 T/hr for four Proctor conveyor dryers and 0.3125 T/hr for the impingement dryer, respectively. Revised PC 4.3 reads as follows:

"4.4 Production Limit

The **toal** maximum production rate of all dryers ~~Proctors No. 1, No. 2, No. 3, No. 4, and No. 5~~ combined shall not exceed **88,728** ~~92,904~~ pounds per calendar day of output, as total finished product."

Permit Condition 4.5

Revised Permit Condition 4.5 limits the fuel type of the new impingement dryer to natural gas exclusively.

"4.5 Proctors No. 1, No. 2, No. 5 and **CPM Wolverine Proctor impingement dryer** shall only burn natural gas."

Permit Condition 4.6

To keep the 1-hr NOx impact below the modeling significant level of 7.5 $\mu g/m^3$, the applicant has proposed, for each of the three stacks of the impingement dryer, to have a minimum stack height of 80 feet. Minor edits are made to PC 4.6 so that it is easier to follow. The revised PC 4.6 reads as follows:

"4.6 ~~Proctor~~ **Dryers** Stack Parameters

4.6.1 Each ~~All of the facility's proctor~~ stacks **of Proctors No. 1, No. 2, No. 4, and No. 5 dryers** shall meet the following specifications:

- Vertical, uncapped release
- Minimum height of 35 feet

4.6.2 Each of the three stacks of the CPM Wolverine Proctor impingement dryer shall meet the following specifications:

- **Vertical, uncapped release**
- **Minimum height of 80 feet**

Permit Condition 4.7

A minor change is made to PC 4.7 as follows:

"4.7 The permittee shall monitor and record the daily output, each calendar day, as total finished product, in pounds, of all **dryers** ~~proctors~~ combined. A compilation of the most recent five years of monitoring data shall be maintained on-site and made available to DEQ representatives upon request."

FLAKER LINES NO. 1 AND NO. 2

Permit Condition 7.1

The facility has proposed to install an additional drum dryer to Flaker Line No. 1 and to install one cyclone to each Flaker Line to control particulate emissions from the sniffer vents of each Flaker Line. Permit Condition 7.1 is revised to reflect the changes and reads as follows:

"7.1 Emissions Control Description

Flaker Line No. 1 and No. 2, each consists of three drum dryers. The emissions from the Flaker Lines drum dryers are uncontrolled. **The particulate emissions from the sniffer vents of Flaker Lines are controlled by cyclones.** The **particulate** emissions from the Flaker Line bins are controlled using cyclones and baghouses in series. ~~Flaker line No. 1 consists of two drum dryers. Flaker line No. 2 consists of three drum dryers.~~"

Permit Conditions 7.2 and 7.3

As a result of installing an additional drum dryer, the total emissions from and production of the Flaker Lines are increased. PCs 7.2 and 7.3 are revised to reflect these changes and read as follows:

"7.2 Flaker Lines No. 1 and No. 2 Combined Emissions Limits

The PM_{10} emissions from Flaker Lines No. 1 and No. 2 shall not exceed **130.8** ~~109~~ pounds per calendar day for all dryers combined.

7.3 Flaker Line No. 1 and No. 2 Production Limits

The maximum production rate of Flaker Line No. 1 and Flaker Line No. 2 combined (**six** ~~five~~-drum dryers) shall not exceed **231,360** ~~193,000~~ pounds per calendar day of output, as finished product."

New Permit Condition 7.6

The requirement to use cyclones to control particulate emissions from sniffer vents of Flaker Lines is added to Permit Condition 7.6.

"7.6 Emissions Control of Flaker Lines Sniffer Vents

For Flaker Lines No. 1 and No. 2, the permittee shall install one cyclone to each Flaker Line to control particulate emissions from the sniffer vents of each Flaker Line."

GENERAL PROVISIONS

General Provisions of the existing PTC are replaced with the General Provisions in the most current PTC template.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

Table B-1: Pre-Project Potential to Emit for NSR Regulated Pollutants[a]

Emitting Unit ID	Emissions Unit	$PM_{2.5}$[b]		PM_{10}		SO2		NOX		CO		VOC	
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
N/A	Combined Boilers 1-3 Natural Gas Annual Emissions	0.00	2.76	0.00	2.76	0.00	0.22	0.00	36.25	0.00	30.45	0.00	1.99
1	Boiler 1 Maximum PTE, all fuels	6.67	11.22	6.83	11.50	27.57	44.27	7.79	17.01	4.49	5.35	0.29	0.36
2	Boiler 2	0.63	0.00	0.63	0	0.05	0	8.28	0	6.96	0	0.46	0
3	Boiler 3	0.63	0.00	0.63	0	0.05	0	8.28	0	6.96	0	0.46	0
4	Belt Dryer 1	0.43	1.86	0.43	1.86	0.004	0.02	0.73	3.2	0.61	2.59	0.04	0.18
5	Belt Dryer 2	0.43	1.86	0.43	1.86	0.004	0.02	0.69	3	0.58	2.52	0.04	0.17
N/A - Removed	Belt Dryer 3	0.43	1.86	0.43	1.86	0	0	0	0	0	0	0	0
6	Belt Dryer 4	0.43	1.86	0.43	1.86	0	0	0	0	0	0	0	0
7	Belt Dryer 5	0.43	1.86	0.43	1.86	0.01	0.02	0.93	4.08	0.78	3.43	0.05	0.22
8	Flaker Line 1	2.28	9.97	2.28	9.97	0	0	0	0	0	0	0	0
9	Flaker Line 2	2.28	9.97	2.28	9.97	0	0	0	0	0	0	0	0
10	Flaker Line 1 bin baghouse	0.20	0.86	0.2	0.86	0	0	0	0	0	0	0	0
11	Flaker Line 2 bin baghouse	0.23	1.01	0.23	1.01	0	0	0	0	0	0	0	0
12	92 Line vaculift 1	0.23	1.02	0.23	1.02	0	0	0	0	0	0	0	0
13	92 Line vaculift 2	0.31	1.37	0.31	1.37	0	0	0	0	0	0	0	0
14	92 Line 3 baghouse	0.20	0.88	0.2	0.88	0	0	0	0	0	0	0	0
15	92 Line 3 baghouse	0.15	0.64	0.15	0.64	0	0	0	0	0	0	0	0
16	92 Dryer 1 cyclone	0.75	3.29	0.75	3.29	0	0.01	0.36	1.6	0.31	1.34	0.02	0.09
17	92 Dryer 2 cyclone	0.75	3.29	0.75	3.29	0	0.01	0.35	1.55	0.3	1.3	0.02	0.09
18	92 Dryer 3 cyclone	0.75	3.29	0.75	3.29	0	0.02	0.69	3.01	0.58	2.52	0.04	0.17
19	92 Dryer 4 cyclone	0.75	3.29	0.75	3.29	0	0.02	0.69	3.01	0.58	2.52	0.04	0.17
20	Bagroom dust vaculift	0.19	0.85	0.19	0.85	0	0	0	0	0	0	0	0
21	Flaker bagger baghouse	0.10	0.43	0.1	0.43	0	0	0	0	0	0	0	0
22	Crusher vaculift	0.01	0.04	0.01	0.04	0	0	0	0	0	0	0	0
23	Packaging baghouse	1.20	5.26	1.2	5.26	0	0	0	0	0	0	0	0
24	Packaging baghouse 6	0.06	0.26	0.06	0.26	0	0	0	0	0	0	0	0
25	Space Heaters	0.20	0.87	0.2	0.87	0	0.07	2.6	11.4	2.19	9.58	0.14	0.63
Totals	**Totals**	**20.72**	**69.87**	**20.88**	**70.15**	**27.69**	**44.68**	**31.39**	**84.11**	**24.34**	**61.60**	**1.60**	**4.07**

[a]Emission rates obtained from the SOB for PTC No.P-2010-0061 issued in June, 2010

[b]PM2.5 assumed to be equal to PM10 for all sources except fuel oil combustion in Boiler #1.

Table B-2: Post-Project Potential to Emit for NSR Regulated Pollutants

Emitting Unit ID	Emissions Unit	$PM_{2.5}$[a]		PM_{10}		SO2		NOX		CO		VOC		CO2E
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
N/A	Combined Boilers 1-3 Natural Gas Annual Emissions		2.76		2.76		0.22		36.25		30.45		1.99	43603.29
1	Boiler 1 Natural Gas Only[c]	0.40		0.40		0.03		5.31		4.46		0.29		
2	Boiler 2	0.63		0.63		0.05		8.28		6.96		0.46		
3	Boiler 3	0.63		0.63		0.05		8.28		6.96		0.46		
4	Belt Dryer 1	0.43	1.86	0.43	1.86	0.00	0.02	0.73	3.20	0.61	2.59	0.04	0.18	3,813
5	Belt Dryer 2	0.43	1.86	0.43	1.86	0.00	0.02	0.69	3.00	0.58	2.52	0.04	0.17	3,582
N/A - Removed	Belt Dryer 3[b]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
6	Belt Dryer 4	0.43	1.86	0.43	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
7	Belt Dryer 5	0.43	1.86	0.43	1.86	0.01	0.02	0.93	4.08	0.78	3.43	0.05	0.22	5,125
8	Flaker Line 1	2.73	11.94	2.73	11.94	0.00	0	0	0	0	0	0	0	0
9	Flaker Line 2	2.73	11.94	2.73	11.94	0.00	0	0	0	0	0	0	0	0
10	Flaker Line 1 bin baghouse	0.20	0.86	0.20	0.86	0.00	0	0	0	0	0	0	0	0
11	Flaker Line 2 bin baghouse	0.23	1.01	0.23	1.01	0.00	0	0	0	0	0	0	0	0
12	92 Line vaculift 1	0.23	1.02	0.23	1.02	0.00	0	0	0	0	0	0	0	0
13	92 Line vaculift 2	0.31	1.37	0.31	1.37	0.00	0	0	0	0	0	0	0	0
14	92 Line 3 baghouse	0.20	0.88	0.20	0.88	0.00	0	0	0	0	0	0	0	0
15	92 Line 3 baghouse	0.15	0.64	0.15	0.64	0.00	0	0	0	0	0	0	0	0
16	92 Dryer 1 cyclone	0.75	3.29	0.75	3.29	0.00	0.01	0.36	1.6	0.31	1.34	0.02	0.09	1,896
17	92 Dryer 2 cyclone	0.75	3.29	0.75	3.29	0.00	0.01	0.35	1.55	0.3	1.3	0.02	0.09	1,845
18	92 Dryer 3 cyclone	0.75	3.29	0.75	3.29	0.00	0.02	0.69	3.01	0.58	2.52	0.04	0.17	3,587
19	92 Dryer 4 cyclone	0.75	3.29	0.75	3.29	0.00	0.02	0.69	3.01	0.58	2.52	0.04	0.17	3,587
20	Bagroom dust vaculift	0.19	0.85	0.19	0.85	0.00	0	0	0	0	0	0	0	0
21	Flaker bagger baghouse	0.10	0.43	0.10	0.43	0.00	0	0	0	0	0	0	0	0
22	Crusher vaculift	0.01	0.04	0.01	0.04	0.00	0	0	0	0	0	0	0	0
23	Packaging baghouse	1.20	5.26	1.20	5.26	0.00	0	0	0	0	0	0	0	0
24	Packaging baghouse 6	0.06	0.26	0.06	0.26	0.00	0	0	0	0	0	0	0	0
25	Space heaters	0.20	0.87	0.20	0.87	0.00	0.07	2.6	11.4	2.19	9.58	0.14	0.63	13,581
26	Impingement Dryer #1[c]	0.35	1.52	0.35	1.52	0.00	0.02	0.25	1.10	2.04	8.95	3.75E-02	1.64E-01	3,587
27	Flaker Line #1 Sniffer Vents[c]	0.15	0.65	0.15	0.65	0.00	0	0	0	0	0	0	0	0
28	Flaker Line #2 Sniffer Vents[c]	0.15	0.65	0.15	0.65	0.00	0	0	0	0	0	0	0	0
Totals	Totals	**15.56**	**63.54**	**15.56**	**63.54**	**0.15**	**0.43**	**29.16**	**68.20**	**26.35**	**65.20**	**1.64**	**3.88**	**84208.52**

[a]PM2.5 assumed to be equal to PM10 for all sources except fuel oil combustion in Boiler #1.

[b]Emitting unit will be removed from the facility.

[c]Emitting unit is a proposed new or modified unit at the facility

Table B-3: Change in Emission Rates from Pre-project to Post-project[a]

Emitting Unit ID	Emissions Unit	$PM_{2.5}$[a]		PM_{10}		SO2		NOX		CO		VOC		CO2E
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
N/A	Combined Boilers 1-3 Natural Gas Annual Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43603.29
1	Boiler 1 [c]	-6.26	-11.22	-6.43	-11.50	-27.54	-44.27	-2.48	-17.01	-0.03	-5.35	0.00	-0.36	0.00
2	Boiler 2	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
3	Boiler 3	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
4	Belt Dryer 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3812.99
5	Belt Dryer 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3582.36
N/A - Removed	Belt Dryer 3[b]	-0.43	-1.86	-0.43	-1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Belt Dryer 4	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
7	Belt Dryer 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5124.98
8	Flaker Line 1	0.45	1.97	0.45	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Flaker Line 2	0.45	1.97	0.45	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Flaker Line 1 bin baghouse	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
11	Flaker Line 2 bin baghouse	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
12	92 Line vaculift 1	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
13	92 Line vaculift 2	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
14	92 Line 3 baghouse	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
15	92 Line 3 baghouse	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
16	92 Dryer 1 cyclone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1896.24
17	92 Dryer 2 cyclone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1844.99
18	92 Dryer 3 cyclone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3587.49
19	92 Dryer 4 cyclone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3587.49
20	Bagroom dust vaculift	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
21	Flaker bagger baghouse	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
22	Crusher vaculift	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
23	Packaging baghouse	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
24	Packaging baghouse 6	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
25	Space Heaters	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13581.20
26	Impingement Dryer #1[c]	0.35	1.52	0.35	1.52	0.00	0.02	0.25	1.10	2.04	8.95	0.04	0.16	3587.49
27	Flaker Line #1 Sniffer Vents[c]	0.15	0.65	0.15	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	Flaker Line #2 Sniffer Vents[c]	0.15	0.65	0.15	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals Net Change		-5.16	-6.33	-5.32	-6.60	-27.53	-44.25	-2.23	-15.91	2.01	3.60	0.04	-0.20	N/A
Total Increase Only		1.53	6.76	1.53	6.76	0.00	0.02	0.25	1.10	2.04	8.95	0.04	0.16	3587.49
Level I Thresholds		0.054	0.35	0.22	—	0.21	1.2	0.2	1.2	—	—	15	—	—
Level II Thresholds		0.63	4.1	2.6	—	2.5	14	2.4	14	—	—	175	—	—
Over Level I Threshold?		Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	No	N/A
Over Level II Threshold?		Yes	Yes	No	No	No	No	No	No	No	No	No	No	N/A

[a] PM2.5 emissions were not speciated out from PM10 emissions. To be conservative, they are assumed to be 100% of PM10 emissions.

[b] Emitting unit will be removed from the facility.

[c] Emitting unit is a proposed new unit at the facility

Idahoan Foods, LLC - Lewisville Plant
Plant-wide Natural Gas Combustion

NG Emission Factors

NOx	100	lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84	lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM_{10}	7.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Impingement Dryer NOx	0.036	lb/MMBtu	Manufacturer
Impingement Dryer CO	0.292	lb/MMBtu	Manufacturer

NG heating value	1,028	MMBtu/10^6 scf	40 CFR 98 Table C-1
No.2 fuel oil heating value	138	MMBtu/10^3gal	40 CFR 98 Table C-1

Source ID No.	Description	Capacity (MMBtu/hr)	Throughput (10^3 gal/hr) or (10^6 scf/hr)	Hour/yr	$PM/PM_{10}/PM_{2.5}$ Emissions (lb/hr)[1]	$PM/PM_{10}/PM_{2.5}$ Emissions (ton/yr)	NOx Emissions (lb/hr)	NOx Emissions (ton/yr)	SOx Emissions (lb/hr)	SOx Emissions (ton/yr)	CO Emissions (lb/hr)	CO Emissions (ton/yr)	VOC Emissions (lb/hr)	VOC Emissions (ton/yr)	Lead Emissions (lb/hr)	Lead Emissions (ton/yr)
1	Boiler 1	54.56	5.31E-02	8760	0.40		5.31		3.18E-02		4.46		2.92E-01		1.55E-02	
2	Boiler 2	84.46	8.22E-02	8760	0.62		8.22		4.93E-02		6.90		4.52E-01		2.40E-02	
3	Boiler 3	84.46	8.22E-02	8760	0.624		8.22		4.93E-02		6.90		4.52E-01		2.40E-02	
N/A	Combine Boiler Fuel Usage[3]		8.28E-02	8760		2.76		36.25		0.22		30.45		1.99		0.11
4	Belt Dryer 1	7.44	7.24E-03	8760	—[2]	—[2]	0.72	3.17	4.34E-03	0.02	0.61	2.66	3.98E-02	1.74E-01	2.11E-03	9.26E-03
5	Belt Dryer 2	6.99	6.80E-03	8760	—[2]	—[2]	0.68	2.98	4.08E-03	0.02	0.57	2.50	3.74E-02	1.64E-01	1.99E-03	8.70E-03
6	Belt Dryer 5	10.00	9.73E-03	8760	—[2]	—[2]	0.97	4.26	5.84E-03	0.03	0.82	3.58	5.35E-02	2.34E-01	2.84E-03	1.24E-02
16	92 Dryer 1 cyclone	3.70	3.60E-03	8760	—[2]	—[2]	0.36	1.58	2.16E-03	0.01	0.30	1.32	1.98E-02	8.67E-02	1.05E-03	4.60E-03
17	92 Dryer 2 cyclone	3.60	3.50E-03	8760	—[2]	—[2]	0.35	1.53	2.10E-03	0.01	0.29	1.29	1.93E-02	8.44E-02	1.02E-03	4.48E-03
18	92 Dryer 3 cyclone	7.00	6.81E-03	8760	—[2]	—[2]	0.68	2.98	4.09E-03	0.02	0.57	2.51	3.75E-02	1.64E-01	1.99E-03	8.71E-03
19	92 Dryer 4 cyclone	7.00	6.81E-03	8760	—[2]	—[2]	0.68	2.98	4.09E-03	0.02	0.57	2.51	3.75E-02	1.64E-01	1.99E-03	8.71E-03
25	Space Heaters	26.50	2.58E-02	8760	0.196	0.86	2.58	11.29	1.55E-02	0.07	2.17	9.48	1.42E-01	6.21E-01	7.53E-03	3.30E-02
26	Impingement Dryer[4]	7.00	6.81E-03	8760	—[2]	—[2]	0.25	1.10	4.09E-03	0.02	2.04	8.95	3.75E-02	1.64E-01	1.99E-03	8.71E-03
Total		302.702	**2.94E-01**		**1.85**	**3.61**	**29.02**	**68.13**	**0.18**	**0.42**	**26.21**	**65.25**	**1.62**	**3.85**	**0.09**	**0.20**

[1] Assume $PM=PM_{10}=PM_{2.5}$

[2] It has been counted under "Dryers."

[3] Combined boiler emissions based on permit condition 3.8 of PTC No. P-2010.0061, the combined Boiler 1-3 fuel limit of 725,000,000 cf/year

[4] NOx & CO emission factors were provided by the manufacturer and are included in Appendix E

Idahoan Foods, LLC - Lewisville Plant
Dryer Emissions

Source ID number	Status	Sources	Production rate (T/hr, output)	PM/PM_{10} Emissions Factor (EF, lb PM/T output)	Annual Operating Hours	Control Efficiency	Condensable PM Ratio, %	$PM_{2.5}$ Emission lb/hr	$PM_{2.5}$ Emission lb/day	$PM_{2.5}$ Emission Ton/yr	PM_{10} Emission lb/hr	PM_{10} Emission lb/day	PM_{10} Emission Ton/yr	EF Reference and Notes
4	Existing	Belt Dryer 1	1.536 Max	1.11	8760	0.00%	---	1.70	40.92	7.47	1.70	40.92	7.47	Permit to Construct No. P-2010.0061 Statement of Basis, double source test emission factor
5	Existing	Belt Dryer 2				0.00%	---							
6	Existing	Belt Dryer 4				0.00%	---							
7	Existing	Belt Dryer 5				0.00%	---							
N/A - Removed	Existing	Belt Dryer 3 (Removed)	0.4 Max	1.11	8760	0.00%	---	0.44	10.66	1.94	0.44	10.66	1.94	Permit to Construct No. P-2010.0061 Statement of Basis, double source test emission factor
8	Existing	Flaker Line 1	4.02 Max	1.13	8760	0.00%	---	4.54	109.02	19.90	4.54	109.02	19.90	Permit to Construct No. P-2010.0061 Statement of Basis, Source test factor plus 50%
9	Existing	Flaker Line 2				0.00%	---							
8	New	Additional Flaker Line 1 increase	0.804 Max	1.13	8760	0.00%	---	0.91	21.80	3.98	0.91	21.80	3.98	Permit to Construct No. P-2010.0061 Statement of Basis, Source test factor plus 50%
16	Existing	92 Dryer 1 Cyclone	5.66 Max	0.5	8760	0.00%	---	2.83	67.92	12.40	2.83	67.92	12.40	Permit to Construct No. P-2010.0061 Statement of Basis, Source test factor plus 50%
17	Existing	92 Dryer 2 Cyclone				0.00%	---							
18	Existing	92 Dryer 3 Cyclone				0.00%	---							
19	Existing	92 Dryer 4 Cyclone				0.00%	---							
27	Existing	Flaker Line 1 Sniffer Vents	4.824 Max	0.122	8760	49.50%	---	0.30	7.13	1.30	0.30	7.13	1.30	March, 2014 Idaho Falls Plant sniffer vent average source test factor plus 50%, with cyclone PM10 control efficiency applied
28	Existing	Flaker Line 2 Sniffer Vents					---							
26	New	Impingement Dryer #1	0.3125 Max	1.11	8760	0.00%	---	0.35	8.33	1.52	0.35	8.33	1.52	Per DEQ instruction, utilized belt dryer emission factor for Permit to Construct No. P-2010.0061 Statement of Basis, double source test emission factor.
Total from new dryers								1.26	30.13	5.50	1.26	30.13	5.50	

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: October 31, 2016

TO: Shawnee Chen, Permit Writer, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2010.0061 PROJ 61437, PTC for Proposed Modification of Idahoan Foods Processing Facility in Lewisville, ID

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

1.0 Summary

Idahoan Foods, LLC (Idahoan) submitted a Permit to Construct (PTC) application for modifications to their potato processing facility in Lewisville, ID. The original PTC application was received on October 10, 2014. DEQ determined the application was incomplete because of deficiencies in the air impact analyses. Revised air impact analyses were received on December 3, 2014, and the application was determined complete on January 2, 2015. Revised emissions inventory information and air impact analyses were submitted on February 17, 2015. A draft permit was issued to Idahoan in October 2015. Idahoan then determined that certain operational restrictions in the draft permit would not be workable for the facility. To support changing these restrictions, DEQ indicated that the air impact analyses must be modified to support a different operational scenario. A revised permit application and air impact analyses were submitted to DEQ on June 22, 2016.

This memorandum provides a summary of the revised ambient air impact analyses submitted in 2016. It also describes DEQ's review of those analyses, DEQ's verification analyses, additional clarifications, and conclusions.

Project-specific ambient air quality impact analyses, involving atmospheric dispersion modeling of estimated emissions associated with the facility, were submitted to DEQ to demonstrate that the modification would not cause or significantly contribute to a violation of any ambient air quality standard as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03).

Bison Engineering, Inc. (Bison), on behalf of Idahoan, prepared the PTC application and performed the air impact analyses for this project to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Toxic Air Pollutants (TAPs). The DEQ review of submitted data and analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with the modification of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emissions estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emissions calculation methods were not evaluated in this modeling review memorandum.

The submitted information and analyses, in combination with DEQ's verification analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

Idaho Air Rules require air impact analyses be conducted according to methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses, in combination with DEQ's analyses, demonstrated to the satisfaction of the Department that operation of the proposed modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure the requirements of Appendix W are met with regard to emissions representing design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Operational Restrictions. Boiler No. 2 and Boiler No. 3 will not operate simultaneously unless the economizers are bypassed.	Operation of the economizers reduces the stack gas temperature and flow rate. Compliance with NAAQS has not been demonstrated for simultaneous operation of Boiler No. 2 and Boiler No. 3 while the economizer is operating. Compliance has been demonstrated for simultaneous operation without operating the economizers.
Stack Heights. Impingement Dryer Stacks 1-3 have a height of 80 feet. The stack height of Boiler No. 1, No. 2, and No. 3 will be increased to 75 feet, 70 feet, and 70 feet, respectively.	Stack heights were increased to assure project impacts remain below SILs. NAAQS compliance has not been demonstrated for stack heights lower than those specified in this memorandum.

2.0 Background Information

This section provides background information applicable to the project and the site where the facility is located. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

Idahoan is proposing to modify their existing potato processing facility. The modification will involve the following:

1. Addition of an impingement dryer.
2. Addition of a drum dryer on Flaker Line #1.
3. Inclusion of the existing sniffer vents.
4. Restricting allowable fuel use in Boiler #1 to natural gas (no longer allowing the use of fuel oil and biofuel).
5. Removal of existing Belt Dryer #3.
6. Installation of cyclones on sniffer vents to control particulate emissions.
7. Installation of economizers on Boilers #1, #2, and #3.

2.2 Project Chronology

- June 11, 2014 – DEQ received modeling protocol.
- June 26, 2014 – DEQ issues conditional approval of modeling protocol.
- October 8, 2014 – DEQ received application.
- November 13, 2014 – DEQ determined application was incomplete. Receptor spacing was too coarse along the property boundary. Addition of receptors resulted in impacts exceeding the 1-hour NO_2 Significant Impact Level.
- December 3, 2014 – Revised analyses and supplemental information was submitted to DEQ.
- January 2, 2015 – DEQ determined application was complete.
- February 9, 2015 – DEQ identified potential errors in the submitted analyses.
- February 17, 2015 – DEQ received revised emissions inventory data and revised air impact modeling analyses.
- October 6, 2015 – DEQ modeling review memorandum is issued. Draft permit and statement of basis was then provided to Idahoan for review and comment.
- June 22, 2016 – A revised application was submitted to DEQ, including new air impact analyses.

2.3 Project Location and Area Classification

The facility is located near Lewisville, within Jefferson County, Idaho. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

2.4 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS.*** *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.*** *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***02. Estimates of Ambient Concentrations.*** *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.5 *Significant Impact Level and Cumulative NAAQS Impact Analyses*

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Idaho Air Rules state that air impact analyses must be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that impact analyses use emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a "significant contribution" in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts from facility-wide potential/allowable emissions and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. The modeled value used for comparison to the applicable standard is referred to as the "design value" and is consistent with the statistical form of the standard. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. As an example, consider a hypothetical case where the SIL analysis indicates the project (new source or modification) has impacts exceeding the SIL and the cumulative impact analysis indicates a violation of the NAAQS. If project-specific impacts are below the SIL at the specific receptors showing the violations during the time periods when modeled violations occurred, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emissions increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation[1]; or b) modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance at all receptor locations; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis resulted in modeled NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] ($\mu g/m^3$)[b]**	**Regulatory Limit[c] ($\mu g/m^3$)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years. The O_3 standard was revised (the notice was signed by the EPA Administrator on October 1, 2015) to 70 ppb. However, this standard will not be applicable for permitting purposes until it is incorporated by reference *sine die* into Idaho Air Rules.

2.6 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or the U.S. Environmental Protection Agency (EPA) under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions rate increases of criteria pollutants and TAPs resulting from the proposed modification of the Idahoan facility were provided by Bison for various applicable averaging periods.

Review and approval of estimated emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emissions estimates is not addressed in this modeling memorandum. DEQ air impact analyses review included verification that the potential emissions rates provided in the emissions inventory were properly used in the air impact analyses. The emission rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emissions inventory. All modeled criteria air pollutant and TAP emissions rates must be equal to or greater than the modification's

or facility's potential emissions as calculated in the PTC emissions inventory or proposed permit allowable emissions rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emissions Rates

An air impact analysis must be performed for pollutant emissions increases that do not qualify for a BRC exemption from the requirement to perform an air impact analysis. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.[1]" The interpretation policy also states that the exemption criteria of uncontrolled Potential to Emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year.

The proposed modifications to the Idahoan facility do not qualify for a BRC permit exemption as per Idaho Air Rules Section 221, even though some emissions increases are below the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant. The proposed modifications require changes in the existing permit, and such changes cannot be performed under a BRC exemption.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling thresholds, below which a site-specific modeling analysis is not required. DEQ generic modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*[1]. These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If project-specific total emissions rate increases of a pollutant are below Level 1 Modeling Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level 2 Modeling Thresholds are conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emissions sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Site-specific air pollutant impact analyses were not performed for CO, SO_2, annual NO_2, nor Pb. Bison asserted that emissions increases of these pollutants associated with the project were below Level 1 Modeling Thresholds. Determining a representative emissions increase for the project is complicated for the Idahoan project because the project involves modification of sources, removal of sources, and changed location of sources. A project that results in altered release characteristic (horizontal location, stack height, stack temperature, and stack flow rate) could cause a significant change in ambient impacts even if emissions rates do not change.

Table 3 provides the emissions-based site-specific modeling applicability summary for the proposed modification. DEQ review of the project with regard requiring site-specific air impact analyses concluded the following:

- SO_2 - Facility-wide post-project SO_2 PTE of 0.43 ton/year is well below the BRC level of 4.0 ton/year and can be confidently excluded from the need to perform an air impact analysis.

- Pb - Emissions only occur from natural gas combustion and were considered negligible for the project.

- CO - Facility-wide post-project PTE of 26 pounds/hour is above the 15 pound/hour Level 1 Modeling Threshold but below the 175 pound/hour Level 2 Modeling Threshold. Also, the CO PTE of sources subject to the project is 20 pounds/hour, with a net project-specific CO emissions increase of 2.0 pounds/hour. On this basis, DEQ is confident that the project will not cause of significantly contribute to a violation of the CO NAAQS.

- NO_2 - The proposed project only involves the addition of one new emissions sources, the impingement dryer. This source will have a PTE of 0.25 pounds/hour and 1.10 tons/year. Boilers No. 1, 2, and 3 are also involved with the project. The addition of economizers will alter stack release parameters in a manner that decreases the effective dispersion. The allowable emissions from these boilers will not change, and the stack heights will be increased, thereby somewhat offsetting the decrease in effective dispersion resulting from operation of the economizers. Furthermore, because the issued permit will restrict simultaneous operation of Boilers 2 and 3 while the economizers are in operation, it is very unlikely that changes in the release parameters of the boilers could substantially contribute to increased impacts. Bison performed an air impact analysis for 1-hour NO_2 but not for annual NO_2. DEQ concurs that annual NO_2 impact modeling is not necessary given the new source has emissions below the Level 1 Modeling Threshold and changes in the boiler release parameters would not be expected to cause a significant increase in annual averaged NO_2 at any receptors.

- PM_{10} and $PM_{2.5}$ - Bison performed air impact analyses for 24-hour $PM_{2.5}$, annual $PM_{2.5}$, and 24-hour PM_{10} because calculated emissions increases exceeded Level 1 Modeling Thresholds.

Table 3. SITE-SPECIFIC MODELING APPLICABILITY ANALYSIS RESULTS

Pollutant	Averaging Period	Emissions Increase	Level I Modeling Thresholds	Level II Modeling Thresholds[a]	Site-Specific Modeling Required
PM_{10}	24-hour	1.5 lb/hr	0.22	2.6	Yes
$PM_{2.5}$	24-hour	1.5 lb/hr (2.8 lb/hr)[b]	0.054	0.63	Yes
	Annual	6.76 ton/yr	0.35	4.1	Yes
CO	1-hour, 8-hour	2.04 lb/hr (20.4 lb/hr)[b]	15	175	No
SO_2	1-hour	Not Applicable[c]	0.21	2.5	No
	Annual	Not Applicable[c]	1.2	14	No
NOx	1-hour	0.25 lb/hr (22 lb/hr)[b]	0.20	2.4	Yes
	Annual	1.1 ton/yr (37.4 ton/yr)[b]	1.2	14	No
Pb	monthly	<14 lb/month	14	14	No

a. Level II Modeling Thresholds were not approved by DEQ for this project.
b. Includes total emissions from sources where emissions did not increase, but stack parameters changed.
c. SO_2 facility-wide allowable emissions after permit issuance will be below BRC levels.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis because allowable emissions increases of VOCs and NOx are below the 100 tons/year threshold.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NOx, SO_2, and/or VOCs was assumed by DEQ to be negligible on the basis of the magnitude of emissions and the short distance from emissions sources to locations where maximum PM_{10} and $PM_{2.5}$ impacts are anticipated.

Emissions Rates Used in Impact Analyses

The SIL analysis assesses the impact of the project, modeling the change in emissions associated with the project. The baseline from which the allowable emissions increase is calculated is based on a maximum level of emissions that can be achieved within the legal restrictions of the existing permit. Because of the change in stack parameters of the boilers, the change in emissions from boilers was handled by modeling existing allowable emissions as a negative value, using the current parameters associated with the existing stack, and then modeling post-project allowable emissions as a positive value, using the estimated future parameters of the stack.

The current permit limits emissions from the boilers as follows:

- Fuel use limit of 725 million standard cubic feet/year (MMscf/yr) of natural gas for Boiler No. 1, Boiler No. 2, and Boiler No. 3 combined.

- Fuel use limit for Boiler No. 1 of 1,247,069 gallons/year, consisting of No. 1 distillate fuel, No. 2 distillate fuel, and bio-fuel.

- Fuel oil use limit for Boiler No. 1 of 369 gallons/hour averaged over 24 hours.

- PM_{10} Emissions limit of 6.83 pounds/hour and 11.5 ton/year when combusting fuel oil in Boiler No. 1.

The proposed project includes the following changes to boiler operations:

- Eliminating the use of fuel oil as an option for Boiler No. 1.

- Maintaining the combined limit of 725 MMscf/yr of natural gas for Boiler No. 1, Boiler No. 2, and Boiler No. 3.

- Boiler 2 and Boiler 3 will not operate simultaneously unless the economizers on both boilers are bypassed.

The submitted analyses used the 6.83 pound/hour PM_{10} emissions limit as the current base for calculating the allowable emissions increase associated with the project for 24-hour and annual PM_{10} and $PM_{2.5}$. DEQ reviewed all the applicable permit constraints and calculated a more accurate scenario of the annual $PM_{2.5}$ emissions increase that could be realized by the proposed permit changes. These revised emissions rates were then used in DEQ verification analyses to provide additional assurance of NAAQS compliance. Attachment 1 provides a detailed description of how emissions for the DEQ annual $PM_{2.5}$ verification analysis were calculated.

Bison indicated that existing allowable emissions from the No. 3 Boiler were based on the existing PM_{10} emissions limits in the permit of 6.83 pounds/hour and 11.5 ton/year (equal to 2.63 pounds/hour over 8,760 hours/year) when combusting fuels other than natural gas. Review of the submitted modeling files revealed that annual $PM_{2.5}$ modeling was performed using a current allowable rate from Boiler No. 3 of 6.83 pounds/hour (equal to 29.9 ton/year). Since this value is modeled as a negative value, it will substantially overstate the emissions reduction, resulting in underestimating the change in emissions and resulting ambient impact.

Further review of the current allowable rates for Boiler No. 1 revealed that the existing PM_{10} emissions rate of 6.83 pounds/hour and 11.5 ton/year was the rate associated with the combustion of No. 6 residual or used oil, at 369 gallon/hour and 1,247,069 gallon/year, rather than the emissions of 3.6 ton/year (0.82 pounds/hour over 8,760 hours/year) associated with the current allowable use of distillate or biofuel (combustion of biofuel results in the maximum emissions rate per gallon of any currently allowed fuels). The ability to combust No. 6 residual or used oil in the No. 3 Boiler was removed from the applicable permit in 2007 because the grain-loading standard could not be met when combusting No. 6 residual oil; however, the emissions limit was carried forward in the permit with the following explanation: "The permit limit will remain the same because that amount was modeled and showed compliance with PM_{10} NAAQS, the application did not request that limit to be changed, and the emission estimates for this permit action are less than that limit." Since the restriction from combusting No. 6 residual oil first occurred with the issuance of the 2007 permit, the reduction occurred within the 10-year period for creditable emissions decreases (as per 40 CFR 52.21.b.21.iv) and is therefore considered appropriate within the calculation of "net emissions increase."

Table 4 lists emissions rates used for SIL analyses. Bison performed a SIL analysis for three general scenarios:

- Scenario B12: Boiler No. 1 and Boiler No. 2 operating, and Boiler No. 3 not operating.
- Scenario B13: Boiler No. 1 and Boiler No. 3 operating, and Boiler No. 2 not operating.
- Scenario NOECON23: Boiler No. 1, Boiler No. 2, and Boiler No. 3 operating, with the economizer bypassed for Boiler No. 2 and Boiler No. 3.

DEQ review of the emissions used in the submitted analyses of the three operational scenarios for both short-term and annual averaging periods revealed the following concerns:

1. Bison used the same existing allowable rates for short-term and annual emissions from Boiler No. 1. This will result in overstating the reduction associated with discontinuing the use of fuel oil for the annual averaging period.

2. Bison apparently inadvertently neglected to include several sources in the operational SIL analyses groups: BELTDRY-3 (credit for removal of Belt Dryer No. 3), FLAKER1_3 (addition of Dryer No. 3 on Flaker Line 1), SNIFFER1 (addition of Flaker Line 1 Sniffer), and SNIFFER2 (addition of Flaker Line 2 Sniffer).

DEQ addressed these concerns by performing verification analyses with corrected and adjusted sources and emissions. Attachment A provides a description of adjustments made to modeled emissions rates. The DEQ verification scenarios were as follows:

- **Scenario B12 short term**: Boilers No. 1 and No. 2 operating, and Boiler No. 3 not operating (sources include: IMPINGE1, IMPINGE2, IMPINGE3, B1_OLD, B1_MOD, B2_OLD, B2_MOD, B3_OLD, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2).
- **Scenario B12 annual**: Boilers No. 1 and No. 2 operating, and Boiler No. 3 not operating (sources include: IMPINGE1, IMPINGE2, IMPINGE3, B1_OLD, B1_MOD, B2_OLD, B2_MOD, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2). Existing annual emissions of Boiler No. 1, modeled as a negative value, were adjusted to reflect the existing 11.5 ton/year PM_{10} limit for the source when combusting fuel oil. Source B3_OLD was not included because the existing allowed annual natural gas combustion was allocated entirely to Boiler No. 2.
- **Scenario B13 short term**: Boilers No. 1 and No. 3 operating, and Boiler No. 2 not operating (sources include: IMPINGE1, IMPINGE2, IMPINGE3, B1_OLD, B1_MOD, B2_OLD, B3_OLD, B3_MOD, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2).
- **Scenario B13 annual**: Boilers No. 1 and No. 3 operating, and Boiler No. 2 not operating (sources include: IMPINGE1, IMPINGE2, IMPINGE3, B1_OLD, B1_MOD, B3_OLD, B3_MOD, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2). Existing annual emissions of Boiler No. 1, modeled as a negative value, were adjusted to reflect the existing 11.5 ton/year PM_{10} limit for the source when combusting fuel oil. Source B2_OLD was not included because the existing allowed annual natural gas combustion was allocated entirely to Boiler No. 3.
- **Scenario NOECON short term**: Boiler No. 1, 2, and 3 operating, but the economizer will not be used with Boiler No. 2 and 3 (sources include: IMPINGE1, IMPINGE2, IMPINGE3,

B1_OLD, B1_MOD, B2_OLD, B2_NOECON, B3_OLD, B3_NOECON, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2).

- **Scenario NOECON annual**: Boiler No. 1, 2, and 3 operating, but the economizer will not be used with Boiler No. 2 and 3 (sources include: IMPINGE1, IMPINGE2, IMPINGE3, B1_OLD, B2_NOECON, B2_OLDNE, B3_NOECON, B3_OLDNE, BELTDRY_3, FLAKER1_3, SNIFFER1, SNIFFER2). Existing annual emissions of Boiler No. 1, modeled as a negative value, were adjusted to reflect the existing 11.5 ton/year PM_{10} limit for the source when combusting fuel oil. Allowable annual natural gas usage was evenly divided between Boiler No. 2 and Boiler No. 3 for both existing and future cases, and evenly divided existing emissions from Boiler No. 2 and 3 were designated as source B2_OLDNE and B3_OLDNE, respectively.

It is critical that the issued permit reflect the operational limitations represented in the modeled scenarios to ensure that project impacts of PM_{10} and $PM_{2.5}$ remain under the SIL.

Table 4. CRITERIA POLLUTANT EMISSIONS FOR SIGNIFICANT IMPACT LEVEL ANALYSES

Source ID	Description	Emission Rates (lb/hr[a])			
		PM_{10}[b] 24-hour	$PM_{2.5}$[c] 24-hour	$PM_{2.5}$ Annual	NOx 1-hour
IMPINGE1	Impingement Dryer – Stack #1	0.1157	0.1157	0.1157	0.0790
IMPINGE2	Impingement Dryer – Stack #2	0.1157	0.1157	0.1157	0.0790
IMPINGE3	Impingement Dryer – Stack #3	0.1157	0.1157	0.1157	0.0790
B1_OLD	Boiler No. 1 (Fuel Oil Reduction)	-6.830	-6.67	-6.67 (-2.563[g])	-7.79
B1_MOD	Boiler 1 – NG Economizer	0.410	0.410	0.410 (0.1470[h])	5.35
B2_OLD[d,e]	Boiler 2 – Existing	-0.630 (-	-0.630 (-0.624[i])	-0.630 (-0.482[j])	-8.22
B2_MOD[d,e]	Boiler 2 – NG Economizer	0.630 (0.624[i])	0.630 (0.624[i])	0.630 (0.482[j])	8.22
B3_OLD[e,f]	Boiler 3 – Existing	-0.630 (-	-0.630 (-0.624[i])	-0.630 (-0.482[j])	-8.22
B3_MOD[e,f]	Boiler 3 – NG Economizer	0.630 (0.624[i])	0.630 (0.624[i])	0.630 (0.482[j])	8.22
B2_NOECON[d,e]	Boiler 2 – Economizer not operating	0.630 (0.624[i])	0.630 (0.624[i])	0.630 (0.315[k])	8.22
B3_NOECON[d,e]	Boiler 3 – Economizer not operating	0.630 (0.624[i])	0.630 (0.624[i])	0.630 (0.315[k])	8.22
B2_OLDNE[d,e]	Boiler 2 – Existing, no Economizer scenario			(-0.241[l])	
B3_OLDNE[d,e]	Boiler 3 – Existing, no Economizer scenario			(-0.241[l])	
BELTDRY_3	Belt Dryer No. 3	-0.4247	-0.4247	-0.4247	
FLAKER1_3	Flaker Line 1 – Dryer #3	0.9048	0.9048	0.9048	
SNIFFER1	Flaker Line 1 – Sniffer	0.1484	0.1484	0.1484	
SNIFFER2	Flaker Line 2 - Sniffer	0.1484	0.1484	0.1484	

a. Pounds per hour.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Not included for operational Scenario B13.
e. Not included for operational Scenario NOECON23.
f. Not included for operational Scenario B12.
g. Value calculated for DEQ verification analysis (see Attachment 1). Based on 11.5 ton/yr PM_{10} limit, with 0.976 of $PM_{10} = PM_{2.5}$.
h. Value calculated for DEQ verification analysis (see Attachment 1). Based on natural gas use at a level equal to current allowed fuel oil use.
i. Value calculated for DEQ verification analysis (see Attachment 1).
j. Value calculated for DEQ verification analysis (see Attachment 1). Based on remaining allowable natural gas use with all emissions allocated to Boiler No. 2 or 3.
k. Value calculated for DEQ verification analysis (see Attachment 1). Based on allowable natural gas use divided equally between Boiler No. 2 and 3.
l. Value calculated for DEQ verification analysis (see Attachment 1). Based on remaining allowable natural gas use (after adjusting for the natural gas quantity not utilized in Boiler No. 1 when fuel oil is used) divided equally between Boiler No. 2 and 3.

Results from the SIL analyses indicated that 1-hour NO_2 impacts from the project could exceed the SIL. A cumulative impact analysis for 1-hour NO_2 was then necessary to demonstrate compliance with NAAQS at those receptors where the project had modeled impacts exceeding the SIL. A cumulative NAAQS impact analysis requires the assessment of facility-wide allowable emissions. Table 5 lists emissions rates used for the 1-hour NO_2 cumulative NAAQS impact analysis.

Table 5. CRITERIA POLLUTANT EMISSIONS FOR CUMULATIVE NO_2 NAAQS IMPACT ANALYSES

Source ID	Description	Emission Rates (lb/hr[a])
		NOx 1-hour
IMPINGE1	Impingement Dryer – Stack #1	0.0790
IMPINGE2	Impingement Dryer – Stack #2	0.0790
IMPINGE3	Impingement Dryer – Stack #3	0.0790
B1_MOD	Boiler 1 – NG Economizer	5.35
B2_MOD[b,c]	Boiler 2 – NG Economizer	8.22
B3_MOD[c,d]	Boiler 3 – NG Economizer	8.22
B2_NOECON[b,d]	Boiler 2 – Economizer not operating	8.22
B3_NOECON[b,d]	Boiler 3 – Economizer not operating	8.22
BELTDRY1A	Belt Dryer 1, stack A	0.365
BELTDRY1B	Belt Dryer 1, stack B	0.365
BELTDRY2A	Belt Dryer 2, stack A	0.345
BELTDRY2B	Belt Dryer 2, stack B	0.345
BELTDRY5A	Belt Dryer 5, stack A	0.465
BELTDRY5B	Belt Dryer 5, stack B	0.465
92DRY1A	92 Dryer 1 Cyclone, stack A	0.180
92DRY1B	92 Dryer 1 Cyclone, stack B	0.180
92DRY2	92 Dryer 2 Cyclone	0.350
92DRY3	92 Dryer 3 Cyclone	0.69
92DRY4	92 Dryer 4 Cyclone	0.69

a. Pounds per hour.
b. Not included for operational Scenario B13.
c. Not included for operational Scenario NOECON23.
d. Not included for operational Scenario B12.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. Bison asserted that net changes in applicable TAP emissions from the project were below associated ELs. Therefore, specific TAP air impact analyses were not required.

3.1.3 Emissions Release Parameters

Table 6 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for emissions sources modeled in the air impact analyses.

Documentation and justification of stack parameters were provided in the Modeling Report, submitted to DEQ as part of the PTC application. Bison indicated that parameters were based on manufacturer data, similar sources, or previous values used in analyses (for those sources that are removed or changing location). All parameters appear to be reasonable for the sources considered.

Table 6. POINT SOURCE STACK PARAMETERS USED IN MODELING							
Release Point	Description	UTM[a] Coordinates		Stack Height (ft)[c]	Stack Gas Flow Temp. (K)[d]	Stack Flow Velocity (ft/sec)[e]	Stack Dia. (ft)
		Easting (m)[b]	Northing (m)				
IMPINGE1	Impingement Dryer – Stack #1	418945	4839341	80	316.48	46.0	2.00
IMPINGE2	Impingement Dryer – Stack #2	418945	4839344	80	316.48	54.6	2.00
IMPINGE3	Impingement Dryer – Stack #3	418945	4839347	80	316.48	56.5	1.17
B1_OLD	Boiler No. 1 (Fuel Oil Reduction)	418917	4839389	40	472.04	36.0	3.50
B1_MOD	Boiler 1 – NG Economizer	418917	4839389	75	414.82	31.7	3.50
B2_OLD	Boiler 2 – Existing	418922	4839389	26	472.04	47.0	3.85
B2_MOD	Boiler 2 – NG Economizer	418922	4839389	70	414.82	41.4	3.85
B3_OLD	Boiler 3 – Existing	418925	4839389	36	472.04	47.2	3.85
B3_MOD	Boiler 3 – NG Economizer	418925	4839389	70	414.82	41.5	3.85
B2_NOECO	Boiler 2 – Economizer not	418925	4839389	70	472.04	47.0	3.85
B3_NOECO	Boiler 3 – Economizer not	418925	4839389	70	472.04	47.2	3.85
B2_OLDNE	Boiler 2 – Existing, no Economizer	418925	4839389	26	472.04	47.0	3.85
B3_OLDNE	Boiler 3 – Existing, no Economizer	418925	4839389	36	472.04	47.2	3.85
BELTDRY_3	Belt Dryer No. 3	418944	4839344	35	355.37	20.0	2.40
FLAKER1_3	Flaker Line 1 – Dryer #3	418923	4839377	65	322.04	50.0	3.50
SNIFFER1	Flaker Line 1 – Sniffer	418923	4839381	35	310.93	70.0	1.33
SNIFFER2	Flaker Line 2 - Sniffer	418923	4839350	35	310.93	70.0	1.33
NOx Emissions Sources at Facility that are not Associated with the Proposed Modification							
BELTDRY1	Belt Dryer 1, stack A	418914	4839377	10.668	355.37	4.8768	1.1247
BELTDRY1B	Belt Dryer 1, stack B	418916	4839377	10.668	355.37	4.8768	1.1247
BELTDRY2	Belt Dryer 2, stack A	418941	4839377	10.668	355.37	3.048	1.1247
BELTDRY2B	Belt Dryer 2, stack B	418943	4839377	10.668	355.37	3.048	1.1247
BELTDRY5	Belt Dryer 5, stack A	418962	4839330	10.668	355.37	4.8768	1.1247
BELTDRY5B	Belt Dryer 5, stack B	418964	4839330	10.668	355.37	4.8768	1.1247
92DRY1A	92 Dryer 1 Cyclone, stack A	418882	4839305	7.9248	316.48	35.6616	0.8352
92DRY1B	92 Dryer 1 Cyclone, stack B	418882	4839305	7.9248	316.48	0.001	0.001
92DRY2	92 Dryer 2 Cyclone	418882	4839300	7.9248	316.48	0.001	0.001
92DRY3	92 Dryer 3 Cyclone	418886	4839305	7.62	316.48	0.001	0.001
92DRY4	92 Dryer 4 Cyclone	418886	4839300	7.62	316.48	0.0	0.001

a. Universal Transverse Mercator.
b. Meters.
c. Feet.
d. Kelvin.
e. Feet per second.

Bison adjusted stack gas exit temperatures of modified boilers downward to account for the effects of proposed economizers on the exhaust gas stream. With a decreased exhaust gas temperature, the flow will be reduced by a proportional value. Bison did not account for this decrease in flow or flow velocity in the initially submitted analyses. DEQ calculated the resulting flow velocity based on the stated temperature decrease as follows:

Given constant pressure:

$$\frac{V_c}{T_c} = \frac{V_m}{T_m} \rightarrow \frac{V_m}{V_c} = \frac{T_m}{T_c}$$

where:

V_c and V_m are volumes at the current (c) and modified (m) state;
T_c and T_m are absolute temperatures at the current (c) and modified (m) state.

Since the stack diameter is fixed, flow velocities can also be used for V_c and V_m.

Bison stated that T_c = 472.04 K and T_m = 414.82 K, giving:

$$\frac{V_m}{V_c} = \frac{414.82\ \text{K}}{470.04\ \text{K}} = 0.88$$

$$V_m = 0.88\ V_c$$

The final submitted analyses used flows from the modified boilers adjusted by a factor of 0.88.

3.2 Background Concentrations

Background concentrations are used when a cumulative NAAQS air impact modeling analysis is needed to demonstrate compliance with applicable NAAQS. DEQ provided Bison with appropriate background concentrations for 1-hour averaged NO_2.

Background concentrations were determined by DEQ using the following web-based design value concentration tool: Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) Lookup 2009-2011 Design Values of Criteria Pollutants (http://lar.wsu.edu/nw-airquest/lookup.html). These design value air pollutant levels are based on regional scale air pollution modeling of Washington, Oregon, and Idaho, with values influenced by monitoring data as a function of distance from the monitor. The background concentration tool estimated the following background value for the Idahoan Foods site near Lewisville: 1-hour NO_2 = 26.3 $\mu g/m^3$.

3.3 NAAQS Impact Modeling Methodology

This section describes the modeling methods used by the applicant and DEQ to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of NAAQS Analyses

Bison performed project-specific air impact analyses that were determined by DEQ to reasonably represent the proposed facility modifications as described in the application. Results of the submitted analyses, in combination with DEQ's verification analyses, demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 7 provides a brief description of parameters used in the modeling analyses.

Table 7. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Lewisville, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 15181.
Meteorological Data	Rexburg surface data, Boise upper air data	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Meteorological Options	LOWWIND1	Non-default LOWWIND1 used. LOWWIND1 increases $\sigma_{v\text{-}min}$ from 0.2 meters/second to 0.5 meters/second, and turns off horizontal meander.
Terrain	Considered	3-dimensional receptor coordinates were obtained from USGS National Elevation Dataset (NED) files and were used to establish elevations of ground level receptors. AERMAP was used to determine each receptor elevation and hill height scale.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
NOx Chemistry	ARM	1-hour NO_2 ARM of 0.8 used in submitted analyses.
Receptor Grid	**Significant Impact Analyses and Cumulative NAAQS Impact Analyses**	
	Grid 1	25-meter spacing along the property boundary
	Grid 2	100-meter spacing out to 1,000 meters.
	Grid 3	250-meter spacing out to 3,000 meters.
	Grid 4	500-meter spacing out to 10,000 meters.

3.3.2 Modeling protocol and Methodology

A modeling protocol, describing data and methods proposed for the project, was submitted to DEQ on June 11, 2014. The protocol was submitted by Bison on behalf of Idahoan. Conditional protocol approval was provided to Bison on June 26, 2014. Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the protocol and in the *Idaho Air Quality Modeling Guideline*[1].

The proposed project involves adding new sources, removing some existing sources, and modifying other existing sources. Modifications to emissions sources did not increase emissions rates but changed other parameters such as stack height, stack gas temperature, and stack gas flow rate. The resulting change in air pollution impacts resulting from the project was accomplished by modeling new or post-modification sources as a positive value and modeling pre-modification sources as a negative emissions value.

NAAQS compliance was demonstrated with the assumption that Boiler No. 2 and Boiler No. 3 would not be operated simultaneously unless the economizers on both boilers are bypassed, as described in Section 3.1.1. Modeling was performed using three scenarios of boiler operations.

3.3.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 15181 was used by Bison for the modeling analyses to evaluate impacts of the proposed project in the final version submitted to DEQ. This version was the current version at the time the application was received by DEQ. DEQ verification analyses were also performed using AERMOD version 15181.

3.3.4 Meteorological Data

DEQ provided Bison with model-ready meteorological data processed from the Madison County/Rexburg National Weather Service (NWS) surface station data and Boise upper air data for 2008-2012. These data were processed by DEQ using AERMET version 12345, AERMINUTE version 11325, and AERSURFACE version 13016. DEQ determined these data were reasonably representative for the Idahoan site.

Bison also used the AERMOD BETA LOWWIND1 option, which adjusts $\sigma_{v\text{-}min}$ from 0.2 meters/second to 0.5 meters/second and turns off meander. This option helps account for AERMOD's tendency to overestimate impacts under low wind conditions. DEQ approved use of the BETA option in a July 25, 2014, email from Cheryl Robinson of DEQ to Derek Fleming of Bison.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the WGS84 datum (approximately equal to the NAD83 datum). Bison used 1/3 arc-second (about 10-meter resolution) data files.

The terrain preprocessor AERMAP Version 11103 was used to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

3.3.6 Facility Layout

DEQ verified proper identification of buildings on the site by comparing a graphical representation of the modeling input file to aerial photographs on Google Earth. Buildings and the ambient air boundary were properly represented by the model input files.

3.3.7 Effects of Building Downwash on Modeled Impacts

Potential downwash effects on emissions plumes were accounted for in the model by using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD.

3.3.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." Ambient air was considered areas external to the Idahoan property boundary. The application asserts that access to the Idahoan property will be precluded by periodic monitoring of the area by Idahoan personnel. DEQ concurred with this interpretation and determined public access to areas excluded from ambient air is adequately precluded.

3.3.9 Receptor Network

Table 7 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[1]. During initial review of the receptor grid used in an earlier version of the submitted application, DEQ identified substantial terrain features about 6,000 meters northeast of the plant. Because the modeled sources are tall stacks, such a terrain feature was important to properly characterize impacts. The initial 500-meter receptor spacing used in this area was potentially inadequate to resolve maximum modeled concentrations. Bison, in the latest version of the air impact analyses submitted to DEQ, added a finer resolution receptor grid to the area of complex terrain. This assured that maximum modeled concentrations resulting from the project would be adequately resolved.

3.3.10 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

All Idahoan sources are below GEP stack height. Therefore, it is important to account for plume downwash caused by structures at the facility.

3.3.11 NOx Chemistry

Bison used the Tier 2 Ambient Ratio Method (ARM) approach for handling NOx chemistry in the 1-hour NO_2 SIL analysis and cumulative NAAQS impact analyses, using the 0.8 default ambient NO_2/NOx ratio for 1-hour NO_2.

All modeling methods available for 1-hour NO_2 (full NO to NO_2 conversion, ARM, and PVMRM or OLM) are considered by EPA to be screening methods, as they will generally overestimate impacts. EPA guidance has generally indicated that negative emissions modeling, to account for emissions decreases at certain sources, should not be used with screening methods. Bison used negative emissions modeling in the 1-hour NO_2 SIL analysis to account for decreases in allowable emissions of some sources and changes

in stack parameters. DEQ determined the negative emissions modeling used for the Idahoan project was acceptable because of the following:

- EPA guidance focuses on major source permit applications, where proposed modifications evaluate the change from actual emissions to future potential emissions, and impacts over the SIL trigger more extensive analyses, including evaluation of PSD increment consumption. DEQ minor source impact modeling for modifications addresses the change between current allowable emissions and future allowable emissions. The potential consequences of overstating impacts of reduced emissions in minor source permitting is less critical than for major source permitting.

- The negative emissions modeled for the Idahoan sources are nearly identical to the emissions increasing sources. For example, the difference between B1_OLD (Boiler No. 1 prior to the proposed modification – modeled as negative NOx values) and B1_MOD (Boiler No. 1 after the modification – modeled as positive NOx values) is that the boiler will no longer be permitted to use fuel oil, the boiler will be equipped with an economizer, and the stack height will be increased. Since any overestimation of NO_2 impacts would be nearly the same for the negative-emissions modeled source as the positive-emissions modeled source, DEQ determined that negative NO_2 emissions modeling would be acceptable.

4.0 NAAQS Impact Modeling Results

4.1 Results for Significant Impact Level Analyses

Table 8 summarizes the results from the Idahoan SIL analyses. A SIL analysis is performed to determine whether the proposed project will impact the surrounding ambient air to a level that requires a cumulative NAAQS analysis. In most instances, a cumulative NAAQS analysis will not be required for a project if impacts from the project are below the SIL value.

Table 8. RESULTS OF SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration[a] ($\mu g/m^3$)[b]	Significant Contribution Level ($\mu g/m^3$)	Cumulative NAAQS Analysis Required	Impact Percentage of Significant Contribution Level
$PM_{2.5}$[c]	24-hour	0.7	1.2	No	58
	Annual	0.0[f]	0.3	No	0
PM_{10}[d]	24-hour	1.32	5.0	No	26
NO_2[e]	1-hour	11.5	7.5	Yes	153

a. Values are modeling results presented by Bison in the submitted application.
b. Micrograms per cubic meter.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Nitrogen dioxide.
f. Project resulted in a net decrease in ambient impacts at all receptor locations.

4.2 Results for Cumulative NAAQS Impact Analysis

Table 9 summarizes the results for the 1-hour NO_2 cumulative NAAQS impact analysis, which was required because project impacts were shown to potentially exceed the SIL. Maximum design value concentrations for 1-hour NO_2 are less than 30 percent of the 188 $\mu g/m^3$ NAAQS, and the conservative background value used in the analysis is twice the modeled design impact value from the Idahoan facility.

Table 9. RESULTS FOR SUBMITTED AIR IMPACT ANALYSES

Pollutant	Modeled Design Value Impact ($\mu g/m^3$)[a]	Background Value ($\mu g/m^3$)	Total Maximum Concentration ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
1-hour NO_2	21.3	26.3	47.6	188	25

a. micrograms per cubic meter. Modeled value is the 5-year mean of 8th highest daily maximum 1-hour NO_2 concentrations of each year.

b. National Ambient Air Quality Standard.

4.3 Results for DEQ Verification Analyses

DEQ verification analyses focused on 1-hour PM_{10} and $PM_{2.5}$ impacts, since modeled impacts were very close to the SIL, and a cumulative impact analysis would be required if impacts exceeded the SIL. The verification analyses also addressed the following:

1. Correction of error in allocating applicable sources in identified source groups in the modeling files.

2. Correction of annual allowable emissions rates used for boilers in the impact analysis modeling.

3. Adjusting the B12 and B13 boiler operations scenarios that account for negative emissions resulting from the existing configuration of simultaneous operation of Boiler No. 2 and Boiler No. 3.

Table 10 shows results of various DEQ verification and sensitivity analyses.

4.4 Results for TAPs Impact Analyses

TAPs analyses were not required because all net emissions increases of TAPs were below applicable ELs.

5.0 Conclusions

The ambient air impact analyses submitted with the PTC application, combined with DEQ verification and sensitivity analyses, demonstrated to DEQ's satisfaction that emissions from the proposed modifications to the Idahoan facility will not cause or significantly contribute to a violation of any ambient air quality standard.

Table 10. DEQ 1-HOUR NO_2 VERIFICATION AND SENSITIVITY ANALYSES		
DEQ Analysis	**Description of Analysis**	**All Impacts Below SIL?**
DEQScenario 12 short term: Verification for 24-hour PM_{10} and 24-hour $PM_{2.5}$ (files DEQ24hrVerAdjBoilers2.ext)	Corrected sources included in scenario. Slightly corrected natural gas emissions. Maximum PM_{10} = 1.29. Maximum $PM_{2.5}$ = 1.00 $\mu g/m^3$	Yes
DEQScenario 13 short term: Verification for 24-hour PM_{10} and 24-hour $PM_{2.5}$ (files DEQ24hrVerAdjBoilers2.ext)	Corrected sources included in scenario. Slightly corrected natural gas emissions. Maximum PM_{10} = 1.29. Maximum $PM_{2.5}$ = 1.00 $\mu g/m^3$	Yes
DEQScenario NOECON short term: Verification for 24-hour PM_{10} and 24-hour $PM_{2.5}$ (files DEQ24hrVerAdjBoilers2.ext)	Corrected sources included in scenario. Slightly corrected natural gas emissions. Maximum PM_{10} = 1.29. Maximum $PM_{2.5}$ = 1.00 $\mu g/m^3$	Yes
DEQScenario 12 annual: Verification for annual $PM_{2.5}$ (files DEQVerAdjBoilers3.ext)	Corrected sources included in scenario. Corrected Boiler No. 1 current and future emissions. Corrected Boiler No. 2 current and future emissions. Maximum $PM_{2.5}$ = 0.14 $\mu g/m^3$	Yes
DEQScenario 13 annual: Verification for annual $PM_{2.5}$ (files DEQVerAdjBoilers3.ext)	Corrected sources included in scenario. Corrected Boiler No. 1 current and future emissions. Corrected Boiler No. 3 current and future emissions. Maximum $PM_{2.5}$ = 0.15 $\mu g/m^3$	Yes
DEQScenario NOECON annual: Verification for annual $PM_{2.5}$ (files DEQVerAdjBoilersNoEcon.ext)	Corrected sources included in scenario. Corrected Boiler No. 1 current and future emissions. Allocated all allowable natural gas use to Boiler No. 2 and 3. Maximum $PM_{2.5}$ = 0.14 $\mu g/m^3$	Yes

References

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

2. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for 1-hour NO_2 National Ambient Air Quality Standard*, Tyler Fox, Air Quality Modeling Group, C439-01, Environmental Protection Agency, March 1, 2011.

3. Design value concentration tool became available through the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST). The tool provides *Lookup 2009-2011 Design Values of Criteria Pollutants*, based on both monitoring results and regional scale modeling of pollutants in Washington, Oregon, and Idaho. The tool is available at: http://lar.wsu.edu/nw-airquest/lookup.html.

Attachment 1: Boiler Emissions Changes

Existing Permitted Limits:

- Fuel use limit is 725 MMscf/yr of natural gas for Boiler 1, Boiler 2, and Boiler 3 combined.
- Fuel use limit for Boiler 1 is 1,247,069 gal/yr of No. 1 distillate fuel, No. 2 distillate fuel, and bio-fuel.
- Fuel oil use limit for Boiler 1 of 369 gal/hr averaged over 24 hours.
- Emissions limit of 11.5 ton/yr PM_{10} when combusting fuel oil in Boiler 1.
- Emissions limit of 6.83 lb/hr PM_{10} averaged over 24 hours.

Proposed Permitted Limits:

- Fuel use limit is combustion of 725 MMscf/yr of natural gas for Boiler 1, Boiler 2, and Boiler 3 combined.
- Boiler 2 and Boiler 3 will not operate simultaneously unless the economizers on those boilers are bypassed.

Boiler Specifications:

- Boiler 1: 54.56 MMbtu/hr
- Boiler 2: 84.456 MMbtu/hr
- Boiler 3: 84.456 MMbtu/hr

Conversions:

- 1,020 btu/scf for natural gas
- 140 MMbtu/1000 gal for distillate oil.
- Assume all PM_{10} is $PM_{2.5}$ for natural gas combustion related emissions.
- $PM_{2.5}$ is 0.976 of PM_{10} for oil combustion, as specified in the application.

Scenario for Modeling Existing Allowable Emissions:

- Maximum allowable emissions from combusting oil in Boiler 1 are 11.5 ton/yr
- Assume natural gas is not combusted for the remaining operational hours for Boiler 1.
- The remaining allowable natural gas usage was assumed to occur in Boiler 2 or Boiler 3.

Emissions Calculation for Existing Configuration:

Short Term Emissions from Boiler 1:

- PM_{10} = 6.83 lb/hr 24-hour average. Emissions limit in permit.
- $PM_{2.5}$ = (6.83 lb/hr)(0.976) = 6.67 lb/hr 24-hour average.

Annual Emissions from Boiler 1:

$$\frac{PM_{2.5}}{yr} = \frac{11.5 \text{ ton } PM_{10}}{yr} \left| \frac{0.976\ PM_{2.5}}{PM_{10}} \right| \frac{2000 \text{ lb}}{\text{ton}} \left| \frac{yr}{8760 \text{ hr}} \right. = \frac{2.563 \text{ lb } PM_{2.5}}{hr}$$

Short Term Emissions from Boiler 2 or 3 (natural gas only):

- $\frac{PM_{10}}{hr} = \frac{84.456\ MMbtu}{hr} \left| \frac{MMscf\ NG}{1028\ MMbtu} \right| \frac{7.6\ lb\ PM_{10}}{MMscf\ NG} = \frac{0.6244\ lb\ PM_{10}}{hr}$
- $PM_{2.5} = PM_{10} = 0.6244$ lb/hr

Annual Emissions from Boilers 2 or 3 (natural gas only)

- Hours on allowable natural gas. Limited to 725 MMscf NG/yr. However, the facility has adequate allowable NG use such that combustion of fuel oil is not needed to meet needs. Therefore, an equivalent heat value (equal to the allowed oil combustion) of natural gas should be subtracted from existing allowable NG use.

  Heat value of allow oil use: $\frac{1247069\ gal\ oil}{yr} \left| \frac{0.1397\ MMbtu}{gal} \right. = \frac{1.742E5\ MMbtu}{yr}$

  Natural gas equivalent use: $\frac{1.742E5\ MMbtu}{yr} \frac{MMscf}{1028\ MMbtu} = \frac{169.5\ MMscf}{yr}$

  Remaining natural gas use for boilers 2 and 3:

  725 MMscf/yr – 169.5 MMscf/yr = 555.6 MMscf/yr

  Hours of natural gas use in Boiler 2 or 3:

  $\frac{555.6\ MMscf\ NG}{yr} \frac{1028\ MMbtu}{MMscf} \left| \frac{hr}{84.456\ MMbtu} \right. = \frac{6762\ hr}{yr}$

- $PM_{2.5}$ emissions associated with remaining natural gas use in Boiler 2 or 3:

  $\frac{555.6\ MMscf\ NG}{yr} \frac{7.6\ lb\ PM_{2.5}}{MMscf} = \frac{4223\ lb\ PM_{2.5}}{yr}$

  (4223 lb $PM_{2.5}$/yr)(yr/8760 hr) = 0.4820 lb/hr

Scenario of all Boilers Operating (with Boilers No. 2 and 3 bypassing the economizer).

- Short-Term:
  Boiler No. 1 at 6.83 lb/hr PM10, 6.67 lb/hr $PM_{2.5}$.
  Boilers No. 2 and 3 at maximum 0.624 lb/hr PM_{10} and $PM_{2.5}$
- Annual:
  11.5 ton/yr PM_{10} from Boiler 1 = 2.563 lb/hr $PM_{2.5}$
  555.6 MMscf/yr equally divided between Boiler No. 2 and 3

  $\frac{555.6\ MMscf\ NG}{yr} \left| \frac{1}{2\ boilers} \right| \frac{7.6\ lb\ PM_{2.5}}{MMscf} = \frac{2111\ lb\ PM_{2.5}}{yr}$

  (2111 lb $PM_{2.5}$/yr)(yr/8760 hr) = 0.2410 lb/hr

Emissions Calculation for Modified Configuration:

Short Term Emissions from Boiler 1:

$$\frac{54.56 \text{ MMbtu}}{\text{hr}} \left| \frac{\text{MMscf}}{1{,}028 \text{ MMbtu}} \right| \frac{7.6 \text{ lb } PM_{2.5}}{\text{MMscf}} = \frac{0.4034 \text{ lb } PM_{10}/PM_{2.5}}{\text{hr}}$$

Annual Emissions from Boiler 1:

- Assume hours on NG are equivalent to hours they could operate on fuel oil.
- Equivalent emissions value of natural gas

$$\frac{1247069 \text{ gal oil}}{\text{yr}} \left| \frac{0.1397 \text{ MMbtu}}{\text{gal}} \right| \frac{\text{hr}}{54.56 \text{ MMbtu}} = \frac{3193 \text{ hr}}{\text{yr}}$$

$$\frac{3193 \text{ hr NG}}{\text{yr}} \left| \frac{54.56 \text{ MMbtu}}{\text{hr}} \right| \frac{\text{MMscf}}{1028 \text{ MMbtu}} \left| \frac{7.6 \text{ lb } PM_{10}/PM_{2.5}}{\text{MMscf}} \right. = \frac{1288 \text{ lb } PM_{10}/PM_{2.5}}{\text{yr}}$$

(1288 lb $PM_{2.5}$/yr)(yr/8760 hr) = 0.1470 lb/hr

Short Term Emissions from Boiler 2 or 3:

$$\frac{84.456 \text{ MMbtu}}{\text{hr}} \left| \frac{\text{MMscf}}{1{,}028 \text{ MMbtu}} \right| \frac{7.6 \text{ lb } PM_{2.5}}{\text{MMscf}} = \frac{0.6244 \text{ lb } PM_{10}/PM_{2.5}}{\text{hr}}$$

Annual Emissions from Boiler 2 and 3:

Equal to existing allowables – no change

$PM_{2.5}$ = 0.4820 lb/hr annual average

Boiler No. 2 and No. 3 Operating Simultaneously without Economizer. Assumes no natural gas combustion in Boiler No. 1.

$$\frac{725 \text{ MMscf NG}}{\text{yr}} \left| \frac{1}{2 \text{ boilers}} \right| \frac{7.6 \text{ lb } PM_{2.5}}{\text{MMscf}} = \frac{2755 \text{ lb } PM_{2.5}}{\text{yr}}$$

(2755 lb $PM_{2.5}$/yr)(yr/8760 hr) = 0.3145 lb/hr

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments on the 1st draft permit were received from the facility on October 23 and 26, 2015:

Facility Comment: Page 6. New date for installation of Three Flaker Line 1 Sniffer Vents and Three Flaker Line 2 Sniffer Vents are 2016.

DEQ Response: Changes are made to Table 1.1 of the permit and Table 1 of the SOB.

Facility Comment: Page 6. Flaker Line 1&2 Bins, A cyclone has been added for each of the 6 drums prior to going to the line baghouse.

DEQ Response: Changes are made to Table 1.1 of the permit, Permit Condition 7.1, and Table 1 of the SOB.

Facility Comment: Flaker Line 1&2 Bins, The 2 baghouse's, one on each line has been replace with a more efficient model. See Bison Engineering information.

DEQ Response: Could not locate Bison Engineering information in the original application and has requested the information.

Facility Comment: Page 9. **Sulfur Content 2.12 and 2.13** are not applicable, the new permit does not allow oil burning.

DEQ Response: Old PCs 2.12 and 2.13 are removed.

Facility Comment: Page 10. **3.6 Boiler No. 2 and No. 3 BACT Requirement** Idahoan challenges this requirement. Bison Engineering will handle details.

Idahoan also discussed the intent to remove this permit condition in the 10/26/2015 email.

DEQ Response: PC 3.6 in the 1st draft permit was developed based on the original application. In Idahoan's modeling report (pg. 8) of the original application, it stated that "Boilers #2 and #3 do not operate concurrently". The change could not be made without new air impact analyses. (Note: a revised application, including air impact analyses was received on 6/22/2016, changes are made, and 2nd draft permit is sent to the applicant for review on 10/12/2016).

APPENDIX D – PROCESSING FEE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	---	---	-15.9
SO_2	---	---	-44.3
CO	---	---	3.6
PM10	---	---	-6.6
VOC	---	---	-0.2
TAPS/HAPS	---	---	negative
Total:	---	---	**-63.4**
Fee Due	**$ 1,000.00**		