Statement of Basis

Permit to Construct No. P-2013.0015
Project ID 61162

Idaho State University
Pocatello, Idaho

Facility ID 005-00029

Final

January 28, 2014

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Permit Writer

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
BACT	Best Available Control Technology
CAA	Clean Air Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO_2e	CO_2 equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
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
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
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_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
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
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Idaho State University (ISU) primary campus is located in Pocatello, Idaho. The facility is comprised of educational instruction buildings, research buildings, various student housing units, activity centers, and infrastructure to support day-to-day operations at ISU.

ISU operates the following equipment: 26 boilers (25 boilers are fired exclusively on natural gas fuel; one boiler [boiler No. 4] is fired on natural gas fuel but has the capability to burn diesel fuel as an emergency fuel in the event the natural gas supply to the campus is disrupted), nine emergency generator engines, pathological waste incinerator, three spray paint booths, diesel and gasoline storage tanks, small biodiesel production source, and two small natural gas fired kilns.

Boiler No. 1 was decommissioned. Boiler No. 2 is exclusivel y operates on natural gas. ISU will no longer use coal as an alternative fuel in boiler No. 2. The boiler exhaust baghouse previously used to control coal-burning particulate emissions is decommissioned.

Permitting History

This is a permit to construct (PTC) revision to convert the existing combo Tier II operating permit T2-030317, issued August 2, 2006 to facility-wide PTC.

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).

August 2, 2006	Operating permit No. T2-030317, renewed T2 permit. Permit status (A, but will become S upon issuance of this permit.)
November 1, 2005	PTC No. P-050306, a PTC for new gas-fired boiler (Boiler No. 4). Permit status, S.
January 13, 2004	PTC No. P-020328, a PTC for a pathological waste incinerator. Permit status, S.
November 16, 1999	PTC No. 005-00029, a PTC for an ash barrel. Permit status, S.
June 6, 1997	Tier II OP No. 005-00029, initial T2 operating permit. Permit status, S.

Application Scope

Purpose

The purpose of this permitting action is to convert the facility's Tier II operating permit (Tier II OP) No.T2-030317, issued August 2, 2006 to a permit to construct (PTC) and to revise the PTC to incorporate the following:

- Remove Boiler No. 1 from the Tier II OP/PTC, issued August 2, 2006
- Remove the use of coal in Boiler No. 2. The baghouse in Boiler No. 2 is also removed.
- Increase the annual natural gas use limit for Boiler No. 3 to 203 million standard cubic feet per year (MMscf/yr).
- Increase the annual natural gas use limit for Boiler No. 4 to 498 MMscf/yr. In addition, a diesel fuel annual limit of 75,000 gallons is included in the permit to use in the boiler as an emergency fuel in the event that natural gas supply to the campus is disrupted.
- The natural gas Boiler No. 18 existing in the Tier II OP/PTC is being replaced with a Laars, or equivalent boiler, with the same design capacity of 1.2 MMbtu/hr.
- Boilers Nos. 36 and 37 with designed rated capacities of 1.6 and 2.5 MMBtu/hr, respectively are included in this PTC.
- Pathological waste incinerator requirements existed in T2-030317 and are carried over to this PTC.

- Seven diesel fuel emergency generator engines and two natural gas fuel emergency engine are included in the PTC.
- Biodiesel production source that uses cooking oil from the food service facilities in the campus is included in Table 1.1 (Regulated Sources) of the PTC.
- A diesel and a gasoline storage tanks with a capacity of 5,000 gallons each are included in Table 1.2 (Other Air Pollution Emissions Units at the Facility) of the PTC.
- Two automotive spray paint booths and one maintenance coating spray paint booth are included in the PTC.

Application Chronology

March 4, 2013	DEQ received an application and an application fee.
March 12 – March 27, 2013	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
April 3, 2013	DEQ determined that the application was incomplete.
May 2, 2013	DEQ received additional information from the applicant.
June 4, 2013	DEQ determined that the application was incomplete for the second time.
July 2, 2013	DEQ received additional information from the applicant
August 1, 2013	DEQ determined that the application was complete.
November 8, 2013	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 19, 2013	DEQ made available the draft permit and statement of basis for applicant review.
January 28, 2014	DEQ received the processing fees from the applicant.
February 6, 2014	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units

Table 1 Regulated Sources

Source Description
Boiler No. 2 Manufacturer: Babcock & Wilcox Company; Model: H-1329; Manufactured date: 1947; Rating: 23 MMBtu/hr Allowable fuel type: Exclusively on natural gas. Coal is no longer allowed to be burned in the boiler.
Boiler No. 3 Manufacturer: Superior Company; Model: Not available; Manufactured date: 1957; Rating: 26.92 MMBtu/hr Allowable fuel type: Natural gas
Boiler No. 4 Manufacturer: Keystone; Model: Victory; Manufactured date: 2005; Rating: 72.84 MMBtu/hr - 60,000 lbs steam/hr; Control Equipment: Coen low-NOx burner; Allowable fuel type: Natural gas

Pathological Waste Incinerator Manufacturer: National Incinerator; Model: 2H46M; Incinerator type: Dual chamber; Burner type: Axial firing; Waste retention time: 60 minutes; Rated heating capacity: 1.6 MMBtu/hr; Max. hourly combustion rate: 0.8 MMBtu/hr; Fuel type: Natural gas; Control Equipment: Secondary combustion chamber
Three Paint Booths Paint booth No. 1: Overspray filter – Manufacturer: GFS Wave Media filter or equivalent; Model: FL-ERP or equivalent Coating spray gun(s): Manufacturer: ANEST IWATA, Sata Jet, Devil Bliss or equivalent; transfer efficiency: 65% Paint booth No. 2: Overspray filter– Manufacturer: GFS Wave Media filter or equivalent; Model: FL-ERP or equivalent Coating spray gun(s): Manufacturer: ANEST IWATA, Sata Jet, Devil Bliss or equivalent; transfer efficiency: 65% Paint booth No. 3: Manufacturer: Graco or equivalent; Model: FL-ERP or equivalent; Coating spray gun(s): Manufacturer - Pro-Finish CSA or equivalent; Spray Gun Transfer Efficiency: 65%; PM Control Efficiency: 99 %; Filter Manufacturer: GFS or equivalent
Nine Emergency Generator Engines Engine No. 1: Manufacturer: Generac; Model 2000; Manufactured date: N/A; Construction date: before 6/12/2006; Rated capacity (bhp):211.7; Fuel: Natural gas; EPA certification: None; Location at ISU: Bldg. 60 Engine No. 2: Manufacturer: Spectrum; Model 400DS60; Manufactured date: N/A; Construction date: before 6/12/2006; Rated capacity (bhp):542; Fuel: Diesel; EPA certification: None; Location at ISU: Bldg. 3 Engine No. 3: Manufacturer: Generac; Model: 6.8GN; Manufactured date: N/A; Construction date: before 6/12/2006; Rated capacity (bhp):347.2; Fuel: Natural gas; EPA certification: None; Location at ISU: Bldg. 27 Engine No. 4: Manufacturer: Kohler; Model: 60REOZJB; Manufactured date: N/A; Construction date: before 6/12/2006; Rated capacity (bhp):1,631.5; Fuel: Diesel; EPA certification: None; Location at ISU: Bldg. 88 Engine No. 5: Manufacturer: Generac; Model: SC400; Manufactured date: 3/24/2005; Construction date: 5/302007; Rated capacity (bhp):600; Fuel: Diesel; EPA certification: None; Location at ISU: Bldg. 38 Engine No. 6: Manufacturer: Generac; Model: SD135; Manufactured date: 6/3/2008; Construction date: 7/14/2008; Rated capacity (bhp):197; Fuel: Diesel; EPA certification: Tier 3; Location at ISU: Bldg. 50 Engine No.:7: Manufacturer: Generac; Model: SD135; Manufactured date: 5/26/2008; Construction date: 8/12/2008; Rated capacity (bhp):197; Fuel: Diesel; EPA certification: Tier 3; Location at ISU: Bldg. 8 Engine No. 8: Manufacturer: Generac; Model: SD135; Manufactured date: 6/3/2008; Construction date: 8/13/2008; Rated capacity (bhp):197; Fuel: Diesel; EPA certification: Tier 3; Location at ISU: Bldg. 65 Engine No. 9: Manufacturer: Generac; Model: SD600; Manufactured date: 10/22/2008; Construction date: 11/25/2008; Rated capacity (bhp):954; Fuel: Diesel; EPA certification: Tier 2; Location at ISU: Bldg. 5
Diesel and Gasoline Storage Tanks The capacity of each tank is 5,000 gallons. None is subject to NSPS subpart Kb. According to PTC application received on March 1, 2013, the ISU is planning on installing a vapor recovery system on each tank in 2013 which will result in reduction in VOC emissions.
Biodiesel Production Process The biodiesel production process is exempt from PTC – see Trim record # 2013AAG753

Other Emissions Units

Table 2 identifies all other air pollution emissions units existing at the facility. The only requirements that apply to the emissions units listed in Table 2 are in the facility-wide conditions located in Section 2 of this permit.

Table 2 Other Air Pollution Emissions Units at the Facility

Source Description		
Boiler B8 Manufacturer: Monitor, or equivalent Model: M723-40 Rating: 1.674 MMBtu/hr Fuel type: Natural gas	**Boiler B9** Manufacturer: Cleaver Brooks, or equivalent Model: CB 80 HP Rating: 2.678 MMBtu/hr	**Boiler B10** Manufacturer: Monitor, or equivalent Model: M723-60 Rating: 2.511 MMBtu/hr Fuel type: Natural gas

	Fuel type: Natural gas	
Boiler B11 Manufacturer: Pacific National, or equivalent Model: PS-60GS Rating: 2.677 MMBtu/hr Fuel type: Natural gas	**Boiler B12** Manufacturer: Sellers, or equivalent Model: 77 Commodore Rating: 3.348 MMBtu/hr Fuel type: Natural gas	**Boiler B13** Manufacturer: National BD, or equivalent Model: H2-2100A-CEBRCAG Rating: 2.1 MMBtu/hr Fuel type: Natural gas
Boiler B14 Manufacturer: Laars, or equivalent Model: LC-2871 Rating: 2.87 MMBtu/hr Fuel type: Natural gas	**Boiler B15** Manufacturer: National, or equivalent Model: 10-66 Rating: 2.25 MMBtu/hr Fuel type: Natural gas	**Boiler B16** Manufacturer: Smith, or equivalent Model: N95-1075 Rating: 3.844 MMBtu/hr Fuel type: Natural gas
Boiler B17 Manufacturer: Weil McLain, or equivalent Model: LGB series 1 Rating: 1.3 MMBtu/hr Fuel type: Natural gas	**Boiler B18** Manufacturer: Laars, or equivalent Model: RHCH1200NACF2FXX Rating: 1.2 MMBtu/hr Fuel type: Natural gas	**Boiler B19** Manufacturer: Not available Model: Not available Rating: 0.299 MMBtu/hr, or equivalent Fuel type: Natural gas
Boiler B20 Manufacturer: Not available Model: 211-20-WT-1 Rating: 3.0 MMBtu/hr, or equivalent Fuel type: Natural gas	**Boiler B21** Manufacturer: HydroTherm Model: AM300 Rating: 0.299 MMBtu/hr, or equivalent Fuel type: Natural gas	**Boiler B22** Manufacturer: Raypak Model: Not available Rating: 0.726 MMBtu/hr, or equivalent Fuel type: Natural gas
Kiln K23 Rating: 0.0028 MMBtu/hr, or equivalent Fuel type: Natural gas	**Kiln K24** Rating: 0.1 MMBtu/hr, or equivalent Fuel type: Natural gas	**Burnoff Furnace F25** Manufacturer: Johnson burner Rating: 0.2 MMBtu/hr, or equivalent Fuel type: Natural gas
Melting Furnace F26 Manufacturer: Pyramid burner, or equivalent Rating: 0.1 MMBtu/hr Fuel type: Natural gas	**Boiler B27** Manufacturer: Crane, or equivalent Model: 66A series Rating: 1.75 MMBtu/hr Fuel type: Natural gas	**Boiler B28** Manufacturer: Crane, or equivalent Model: Sunnydale 302 Rating: 0.525 MMBtu/hr Fuel type: Natural gas
Boiler B29 Manufacturer: Laars, or equivalent Model: NB33854 Rating: 0.5 MMBtu/hr Fuel type: Natural gas	**Boiler B30** Manufacturer: Laars, or equivalent Model: NB 33978 Rating: 0.5 MMBtu/hr Fuel type: Natural gas	**Boiler B31** Manufacturer: A. O. Smith, or equivalent Model: TW225V-942 Rating: 0.225 MMBtu/hr Fuel type: Natural gas
Boiler B32 Manufacturer: A. O. Smith, or equivalent Model: BT365A BBO Rating: 0.365 MMBtu/hr Fuel type: Natural gas	**Boiler B33** Manufacturer: Lochinvar Corp. Model: CHN2070 Rating: 20.7 MMBtu/hr Fuel type: Natural gas	**Boiler B34** Manufacturer: Lochinvar Corp. , or equivalent Model: CFN0990PM Rating: 0.832 MMBtu/hr Fuel type: Natural gas
Boiler B35 Manufacturer: A. O. Smith, or equivalent Model: BTC197970/BTC275973 Rating: 0.275 MMBtu/hr Fuel type: Natural gas	**Boiler B36:** Manufacturer: Laars, or equivalent Model: RHCH1600NACF2Exx Manufactured date: 2009 Rating: 1.6 MMBtu/hr Allowable fuel type: Natural gas	**Boiler B37:** Manufacturer: Precision, or equivalent Model: FPS-58-60 equipped with a Power Flame Low-NOx burner or equivalent Manufactured date: 2013 Rating: 2.5 MMBtu/hr Allowable fuel type: Natural gas
Emergency Generator No. 1 Manufacturer: Intermountain Power Model: Generac 2000 Burner type: Not available Rating: 0.539 MMBtu/hr Fuel type: Natural gas	**Emergency Generator No. 2** Manufacturer: Spectrum Model: 400DS60 Burner type: Not available Rating: 1.38 MMBtu/hr Fuel type: No. 1 or No. 2 fuel oil	**Emergency Generator No. 3** Manufacturer: Generac Power System Model: Generac6.8GN Burner type: Not available Rating: 0.884 MMBtu/hr Fuel type: Natural gas
Emergency Generator No. 4 Manufacturer: Kohler Model: 60REOZJB Burner type: Not available Rating: 4.154 MMBtu/hr Fuel type: No. 1 or No. 2 fuel oil	**Emergency Generator No. 5** Manufacturer: Generac Model: SC400 Burner type: Not available Rating: 1.526 MMBtu/hr Fuel type: No. 1 or No. 2 fuel oil	There are also five diesel emergency generator engines (Nos. 5 through 9) existing at ISU. These engines are subject NSPS, Subpart IIII. Refer to Section 7 of this PTC.
Art Department Ash Barrel Burns wood chips and paper Burns less than 100 lb/hr and 1,000 lb/yr Located 100 meters from property line	**Biodiesel Production Process – Portable Unit** The process is exempt from permitting	

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of potential to emit an emission inventory was developed for all emissions units existing at the facility, including exempted sources and the sources that were either decommissioned (i.e., Boiler No. 1) or ceased combustion of coal as an alternative fuel (i.e., Boiler No. 2) at ISU. A complete emission inventory is shown in the PTC application that was received on March 4, 2013, and the supplemental information received by DEQ May 6, 2013 (see Trim Record # 2013AAG753).

Appendix A of this statement of basis contains a detailed presentation of the calculations and assumptions used to determine the uncontrolled potential to emit (PTE), pre-project PTE, and post-project PTE for all criteria air pollutants, HAPs, TAPs, and GHGs.

Further, the processing emissions fees were estimated based on the pre-project PTE and post-project PTE that were submitted by the applicant and verified by DEQ staff in the PTC application. These emissions are presented in Appendix A of this SoB. The PTC fee calculation sheet is shown in Appendix C of this memo.

The following table presents a summary of the uncontrolled PTE for regulated air pollutants as submitted by the applicant and verified by DEQ staff.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{2.5}$[a]/PM_{10}	SO_2[b]	NOx[c]	CO[d]	VOC[e]	HAPs[f]	CO_2e[g]
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Boiler No. 1	0	0	0	0	0	0	-
Boiler No. 2	0.75	0.06	9.88	8.30	0.54	0.19	11,786.9
Boiler No. 3	0.88	0.069	5.78	9.71	0.64	0.22	13,797.5
Boiler No. 4	2.38	0.19	15.6	26.3	1.72	0.60	37,328.3
Boiler No. 36 (Bldg 65)	0.052	0.004	0.69	0.58	0.038	0.013	820.1
Boiler No. 37 (Bldg 38)	0.082	0.006	0.87	0.90	0.059	0.021	1,280.9
Fuel Tank No. 1 - Diesel	0.000	0	0	0	0.001	0.001	-
Fuel Tank No. 2 - Gasoline	0.000	0	0	0	0.58	0.583	-
Paint Booth No. 1 (Bldg 48)	2.95	0	0	0	7.09	7.4	-
Paint Booth No. 2 (Bldg 48)	2.95	0	0	0	7.09	7.4	-
Paint Booth No. 3 & Maintenance Shop (Bldg 22)	3.46	0	0	0	3.28	1.2	-
Emergency Generators Nos. 1-4	0.43	0.40	6.89	2.64	0.37	0.018	863.1
Emergency Generators Nos. 5-9	0.18	0.007	5.68	1.03	0.25	0.25	
Pathological Waste Incinerator	0.30	0.320	1.17	0.090	0.040	1.3	1,531.1
Boilers (items 8-22, 27-34, and 35 in Table 2; Kilns & Furnaces (Items 23-26 in Table 2)	0.98	0.080	12.89	10.83	0.710	0.5	27,843
Total Point Source Emissions	**15.5**	**1.1**	**59.5**	**60.4**	**22.4**	**19.7**	**95,250.90**

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers

b. Sulfur dioxide
c. Oxides of nitrogen
d. Carbon monoxide
e. Volatile organic compounds
f. Hazardous air pollutants
g. Carbon dioxide emissions and its equivalent

Ambient Air Quality Impact Analyses

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the ambient air impact analyses for TAP document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

It should be noted that the ISU did not model for any criteria air pollutant emissions from the facility for this permitting action. For more information regarding the reasons for not modeling for the criteria pollutants emissions, the reader can refer to the DEQ's modeling protocol letter that was sent to ISU by Kevin Schilling, DEQ's Dispersion Modeling Coordinator, on 10/16/2012 *RE: Modeling protocol for ISU Permit to Construct for Proposed Modification to various sources*. The DEQ's modeling protocol letter is included in Appendix B of this SoB.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Bannock County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The previous facility classification for T2 OP/PTC No. T2-030317, issued to ISU on August 2, 2006, was "SM80" because the potential to emit (PTE) for the SO_2 and NOx from the facility were above major source thresholds of100 T/yr, each. However, for this permitting action, the uncontrolled PTE from the entire facility for SO_2 and NOx are reduced to below 100T/yr, each due to the decommissioning of the natural gas-fired Boiler No. 1 and that the ISU will no longer use coal as an alternative fuel in Boiler No. 2. The uncontrolled PTE for other criteria air pollutants (i.e., PM_{10}, $PM_{2.5}$, CO, and VOC) each falls below the applicable major source threshold. Also, the PTE for one HAP is less than 10 T/yr and for the combination of two HAPs or more is less than 25 T/yr and that make the HAP emissions fall to below major source thresholds. In addition the uncontrolled PTE for the greenhouse gases (GHG) is below the major source thresholds of 100,000 T/yr. Therefore, the new classification for the facility for this permitting action is now "B."

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 to renew the existing Tier II operating permit that is expiring and modifications to boilers and paint booths existing at the facility. 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 applicant did not apply for a Tier II operating permit in accordance with IDAPA 58.01.01.401. As a substitute the applicant requested, in writing, that the existing/expiring Tier II operating permit be replaced by a PTC to avoid recurring renewals and fees. This request is consistent with current permitting practice. Therefore, the requirements under IDAPA 58.01.01.400-410 do not apply and a PTC will be issued instead.

Other Rules as Applicable

IDAPA 58.01.01.625 ..... Visible Emissions

The sources of PM_{10} 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, 2.8, and 2.9.

IDAPA 58.01.01.676-677 ..... Standards for New and Existing Sources

The fuel burning equipment located at this facility, with a maximum rated input of less than ten (10) million BTU per hour, 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 in the facility-wide section of the permit. IDAPA 58.01.01.676 applies to 26 natural gas-fired boilers existing at the facility – refer to Tables 1 and 2 of this statement of basis. This requirement is assured by Permit Conditions 2.12.

Also, the fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, is subject to a particulate matter limitation of 0.05 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting liquid fuels. IDAPA 58.01.01.676 applies to Boiler No. 4 at the facility in which the facility requested the option of firing the boiler with diesel as an emergency fuel in the event that the natural gas supply to the campus is disrupted. This requirement is assured by Permit Condition 2.12.

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

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

Facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for criteria pollutants (i.e., PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO, VOC, and lead) or 10 tons per year for any one HAP or 25 tons per year for all HAPs combined as demonstrated for previously issued permits or in Table 3 in this statement of basis. Also, the PTE for greenhouse gases (GHG, or CO_2 equivalent) is estimated by the permittee to be equal to 95,251 T/yr, which is below the major source thresholds of 100,000 T/yr. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply. To see a list of previously issued permits, refer to the Permit History section above.

PSD Classification (40 CFR 52.21)

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

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

40 CFR 60 Subpart Dc ..... Standards of Performance for Small Industrial-commercial-Institutional steam Generating Units

40 CFR 60.40c, Applicability and delegation of authority

In accordance with 40 CFR 60.40c(a), this subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989, and that has a maximum design heat input capacity greater than 10 MMBtu/hr and less than or equal to 100 MMBtu/hr.

The Heat Plant boilers (Boilers Nos. 1, 2, 3, and 4) at ISU all fall within the applicable heat input capacity range but only Boiler No. 4 was constructed after the applicability date. Boilers Nos. 2 and 3 were constructed in 1947 and 1957, respectively and were not modified or reconstructed since their construction dates.

With regard to Boiler No. 1 (rated capacity: 32.05 MMBtu/hr) there was no information in Tier II OP No. T2-030317, issued to ISU on August 2, 2006 to determine if the boiler was not subject to NSPS Subpart Dc. Nevertheless, Boiler No. 1 has been decommissioned by ISU, and therefore, the boiler is not included in this permitting action.

It should be noted that the coal combustion capability in Boiler No. 2 is eliminated. The boiler will be operated exclusively on natural gas. Also, the baghouse that is associated with Boiler No. 2 has been decommissioned.

Boiler No. 3 (rated capacity: 26.92 MMBtu/hr) annual allowable natural gas throughput limitation was increased by 30 MMscf/yr to 203 MMscf/yr. This increase in the annual fuel consumption will not trigger the definition of modification under 40 CFR 60.2; and therefore, Boiler No. 3 is still not subject to 40 CFR 60, Subpart Dc.

Boiler No. 4 (rated capacity: 72.84 MMBtu/hr) is subject to 40 CFR 60, Subpart Dc. ISU will normally operate the boiler with natural gas as main fuel but is pursuing with this permitting action the use of diesel fuel only during emergency. Diesel fuel falls under the definitions of distillate oil in 40 CFR 60.41c. The boiler annual allowable natural gas throughput limitation was increased by 30 MMscf/yr to 498 MMscf/yr. Also, when the boiler was purchased, it had the potential capability to burn diesel fuel oil, but the facility did not burn diesel in the boiler. However, the applicable requirements for burning diesel fuel oil at the affected facility in Subpart Dc were not addressed in permit No. T2-030317, issued on August 2, 2006. For this permitting action, the Subpart Dc requirements that are associated with burning fuel oil in the boiler (i.e., PM, SO_2, and opacity limits) are included in the PTC. There is no provision in Subpart Dc that exempt these requirements on the affected facility (Boiler No. 4) during periods of emergency in which the permittee requested to use the diesel fuel oil in the boiler.

The permit conditions associated with the fuel oil usage in Boiler No. 4 are included in the permit. These permit conditions are: Permit Condition 5.3 (PM standard of 0.030 lb/MMBtu heat input, per 40 CFR 60.43c(e)(1)); Permit Condition 5.4 (SO_2 standard of 0.50 lb/MMBtu heat input, per 40 CFR 60.42c(d); and Permit Condition 5.5 (Opacity standard of 20% [6-minute average], except for one 6-minute period per hour of not more than 27% opacity, per 40 CFR 60.43c(c)).

The permittee requested to revise Permit Condition 5.10 (Compliance and Performance Test Methods), which requires the permittee to conduct a PM performance test when the boiler is operating on diesel fuel. The request is to revise that permit condition to include a requirement to perform the test until such time when ISU actually operates the boiler on diesel fuel. DEQ revised Permit Condition 5.10 to read as follows:" In accordance with 40 CFR 60.45c(a), the operator of an affected facility shall conduct an initial performance test as required under 40 CFR 60.8 after startup with diesel fuel to demonstrate compliance with the particulate matter standards of 40 CFR 60.43c (i.e., Permit Condition 5.3)." The revision made to Permit Condition 5.10 was based on the requirements on 40 CFR 60.8 (Performance Tests), which states "*In accordance with 40 CFR 60.8 (Performance Tests), "(a) Except as specified in paragraphs (a)(1), (a)(2), (a)(3), and (a)(4) of this section, within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, or at such other times specified by this subpart, and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s).*"

Therefore, DEQ determined that the PM performance tests will not be required until the facility actually starts combusting diesel fuel in the boiler. The tests will be performed in accordance with 40 CFR 60.8.

It should be noted that Boiler No. 4 is equipped with Coen low-NOx burner. The permit does not include NOx emissions limits because modeling for any criteria air pollutants emissions was not triggered for this permitting action. For more information regarding modeling for criteria air pollutants, please refer to Appendix B of this SoB.

40 CFR 60 Subpart Kb ..... Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984

The ISU has one 5,000 gallons diesel fuel storage tank and one 5,000 gallons gasoline storage tank and both were constructed in 1998.

In accordance with 40 CFR 60.110b (Applicability and designation of affected facility) the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) or approximately 19,813 gallons that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. The capacity of the storage tanks at ISU each is less than 19,813 gallons threshold, and therefore, Subpart Kb does not apply to the tanks.

40 CFR 60 Subpart Ce ..... Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators

ISU has one pathological incinerator installed at the Life Science Building (#65) used to incinerate animal tissue and cadavers.

In accordance with the definition of 40 CFR 60 of Subpart Ce (§ 60.31e Definitions), "terms used but not defined in this subpart have the meaning given them in the Clean Air Act and in subparts A, B, and Ec of this part." In accordance with Subpart Ec (§ 60.51c Definitions) "*pathological waste* means waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable)."

In accordance with 40 CFR Part 60.32e(2) of Subpart Ce (Designated facilities), for incinerators built between 6/20/96 and 12/1/08, a combustor is not subject to this subpart when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned, provided the owner or operator of the combustor notifies the administrator of an exemption claim; and keeps records on a calendar quarter basis of the periods of time when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned.

ISU only burns pathological waste in the incinerator so it is not subject to Subpart Ce.

All permit conditions for the pathological waste incinerator that existed in permit No. T2-030317, issued August 2, 2006, are carried over into this PTC.

40 CFR 60 Subpart IIII ..... Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

ISU has nine emergency generator engines (No. 1 through No. 9) with various capacities at the Pocatello campus. Seven of which (i.e., Nos. 2, 4, 5, 6, 7, 8, and 9) are powered by diesel fuel oil; the rest (i.e., Nos. 1 and 3) is powered by natural gas fuel.

Generators Nos. 1-4 were included in Table 1.2 (Other Air Pollution Sources at the Facility) in the Permit No. T2-030317, issued August 2, 2006. Generator engines Nos. 5-9 were installed since 2006 and were exempt from a PTC, pursuant to IDAPA 58.01.01.222.01.d. Exemption documentations for the generator engines Nos. 5-9 are provided in Appendix B of the PTC application No. P-2013.0015, received by DEQ on March 1, 2013.

However, the NSPS Subpart IIII applies to the generators Nos. 6-9 because they were constructed after 7/11/05 and were manufactured after 4/1/06.

40 CFR 60.4200 Am I subject to this subpart?

In accordance with 40 CFR 60.4200(a)(2)(i), the provision of this subpart are applicable to owners and operators of a stationary CI ICE that commenced construction after July 11, 2005 where the stationary CI ICE are manufactured after April 1, 2006. At ISU, this includes emergency generator engines Nos. 6-9.

This section of the permit addresses the requirements of Subpart IIII that are applicable to the emergency engines Nos. 6-9.

§ 60.4201 — What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

ISU is not an engine manufacturer. Therefore, this section does not apply to the generator engines at the facility.

§ 60.4202 — What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

This section of the subpart applies to the engines manufacturer; so it is not applicable to ISU.

§ 60.4202 — What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

This section of the subpart applies to the manufacturer.

§ 60.4204 — What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

Not applicable since all of the ISU's stationary CI ICE are emergency engines.

§ 60.4205 — What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with § 60.4205(b), owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in § 60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

In accordance with § 60.4202(a)(2), for stationary CI ICE with a maximum engine power between 37 and 2,237 kW and a displacement of less than 10 liters per cylinder the certification emission standards are those listed in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year.

These sections of the subpart are applicable to the manufacturers for Tier 2 and Tier 3 emission standards.

§ 60.4206 — How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

The emission standards of § 60.4205 must be met over the entire life of the engines that are subject to this section of the subpart at ISU.

§ 60.4207 — What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

In accordance with § 60.4207(b), all diesel fuel must meet the requirements of 40 CFR 80.510(b). In accordance with 40 CFR 80.510(b), the diesel fuel will have a maximum sulfur content of 15 ppm and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. This requirement is assured by Permit Condition 7.4.

§ 60.4208 — What is the deadline for importing or installing stationary CI ICE produced in previous model years?

The generator engines at the facility are existing engines; therefore, this section does not apply to the engines at ISU.

§ 60.4209 — What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with § 60.4209(a), each engine that does not meet the standards applicable to non-emergency engines must be equipped with a non-resettable hour meter. All ISU emergency engines that are subject to subpart IIII meet the non-emergency emission standards (Tier 2 or Tier 3 certification). The installation of non-resettable hour meter(s) is/are included as a requirement in this PTC and is assured by Permit Condition 7.6.

§ 60.4209(b) is not applicable since none of the ISU's generator engines are subject to the emission standards of § 60.4204.

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

This section does not apply to ISU since the facility is not an engine manufacturer.

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with § 60.4211(a), the engines that are subject to Subpart IIII at the facility must be operated and maintained according to the manufacturer's written instructions and only emission-related setting changes are permitted by the manufacturer are allowed. This requirement is assured by Permit Condition 7.5.

In accordance with § 60.4211(c), all emergency engines of 2007 model year and later must be certified to meet the emission standards of § 60.4205(b). All engines must be installed and configured according to the manufacturer's specifications. This requirement is assured by Permit Condition 7.5.

In accordance with § 60.4211(f), operation of emergency engines for maintenance checks, readiness testing, emergency demand response or voltage/frequency deviations is limited to 100 hours/year. There is no time limit on the use of emergency engines in emergency situations. The emergency engines maybe operated up to 50 hours/year in certain non-emergency situations, but the 50 hours is counted against the 100 hours per year for maintenance testing and emergency demand response. This requirement is assured by Permit Condition 7.5.

In accordance with § 60.4211(g), if any engine is not installed, configured, operated and maintained according to the manufacturer's emission-related instructions, compliance must be demonstrated by keeping a maintenance plan and records and by conducting an initial performance test to demonstrate with the applicable emission standards. For engines greater than 500 HP, the performance test must be repeated every 3 years or 8,760 hours of operations, whichever comes first.

This section of the subpart does not apply to the emergency engines at ISU. All emergency engines must be installed and configured according to the manufacturer's specifications and must be certified to meet the emission standards of § 60.4205(b). Also, the compliance requirements of § 60.4211(b), (d), and (e) are not applicable to the engines existing at ISU because the manufacturers must certify these requirements for the engines.

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

The emergency engines installed at ISU are not subject to emission testing under this subpart.

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with § 60.4214(b), owners or operators of emergency CI ICE are not required to submit initial notification. None of the ISU emergency engines are subject to the operational recordkeeping of § 60.4214(b) or the diesel particulate filter recordkeeping requirements of § 60.4214(c).

§ 60.4217 What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

Not applicable to ISU.

MACT Applicability (40 CFR 63)

40 CFR 63 Subpart ZZZZ .....NESHAP for Stationary Reciprocating Internal Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

As stated above, the ISU has nine emergency generator engines (No. 1 through No. 9) with various capacities at the Pocatello campus. Seven of which (Nos. 2, 4, 5, 6, 7, 8, and 9) are powered by diesel fuel oil; the rest (Nos. 1 and 3) is powered by natural gas fuel. Generators Nos. 1-4 were included in Table 1.2 (Other Air Pollution Sources at the Facility) in Permit No. T2-030317, issued August 2, 2006. Permit No. T2-030317 did not have any PTC requirements for the generator engines Nos. 1-4. In this permitting action, the permit conditions that apply to the emergency generator engines are found in the Facility-wide condition of this PTC.

§ 63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585 Am I subject to this subpart?

In accordance with 40 CFR 63.6585, ISU is subject to this subpart since it owns and operates stationary RICE at an area source of HAP emissions.

In accordance with 40 CFR 63.6590(a)(1)(iii), the stationary RICE located at area sources constructed before 6/12/2006 are considered existing RICE. At ISU, this includes emergency generator engines Nos. 1-4. However, in accordance with 40 CFR 63.6585(f)(3), the existing institutional emergency RICE at ISU are not subject to this subpart.

§ 63.6675 What definitions apply to this Subpart?

Institutional emergency stationary Rice means an emergency stationary RICE used in institutional establishments such as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police stations, and fire stations.

The only requirements that apply to the emergency generator engines Nos. 1 through 4 are in the facility-wide conditions located in Section 2 of this permit.

40 CFR 63 Subpart JJJJJJ .....NESHAP for Industrial, Commercial and Institutional Boilers Area Sources

§ 63.11193 Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in § 63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in § 63.2, except as specified in § 63.11195.

The requirements of this subpart do not apply to ISU because the facility is an area source that owns or operates boilers that meet the excluded definitions in 40 CFR 63.11195.

§ 63.11195 Are any boilers not subject to this subpart?

The types of boilers listed in paragraphs (a) through (k) of this section are not subject to this subpart and to any requirements in this subpart.

The ISU's boilers fall under a category included in this section and; therefore, are not subject to this subpart and to any requirements in this subpart.

(e) A gas-fired boiler as defined in this subpart

(f) A hot water heater as defined in this subpart

§ 63.11237 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in § 63.2 (the General Provisions), and in this section as follows. The definition in this section that apply to ISU is as follows:

Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

Hot water heater means a closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous, liquid, or biomass fuel and hot water is withdrawn for use external to the vessel. Hot water boilers (*i.e.,* not generating steam) combusting gaseous, liquid, or biomass fuel with a heat input capacity of less than 1.6 million. Btu per hour are included in this definition. The 120 U.S. gallon capacity threshold to be considered a hot water heater is independent of the 1.6 million Btu per hour heat input capacity threshold for hot water boilers. Hot water heater also means a tankless unit that provides on-demand hot water.

According to the PTC application that DEQ received from ISU on March 1, 2013, all of the boilers at ISU are included in the definitions above. All boilers at the facility are fired with natural gas fuel. Boiler No. 4, however, has the ability to fire diesel fuel, but this option will only be used in an emergency situation if the natural gas supply to the campus is disrupted. Any operational testing ISU does with Boiler No. 4 operating with diesel fuel will be limited to less than 48 hours during any calendar year. Pursuant to 40 CFR 63.11237, Permit Condition 5.8 limits ISU for the hour of operations during testing the boiler on diesel fuel oil. Permit Condition 5.9 is to monitor and record the hours of operations of the boiler during operational testing on diesel fuel.

40 CFR 63 Subpart CCCCCC .....NESHAP for Source Category: Gasoline Dispensing Facilities

ISU operates a 5,000 gallon gasoline storage tank for refueling university vehicles.

§ 63.11110 What is the purpose of this subpart?

This subpart establishes national emission limitations and management practices for HAP emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices.

§ 63.11111 Am I subject to the requirements in this subpart?

(a) The affected source to which this subpart applies is each GDF that is located at an area source. The affected source includes each gasoline cargo tank during the delivery of product to a GDF and also includes each storage tank.

(b) If your GDF has a monthly throughput of less than 10,000 gallons of gasoline, you must comply with the requirements in § 63.11116. In the PTC application, the permittee indicates that a monthly throughput of GDF will be less than 10,000 gallons in which the facility requested to comply with. Therefore, this requirement is included in the PTC and is assured in Permit Condition 8.2.

(e) An affected source shall, upon request by the Administrator, demonstrate that their monthly throughput is less than the 10,000-gallon threshold level, as applicable. Records required under this paragraph shall be kept for a period of 5 years. This requirement is assured by Permit Condition 8.7.

§ 63.11112 Am I subject to the requirements in this subpart?

In accordance with 40 CFR 63.11112(a), this subpart applies to gasoline storage tanks and associated equipment components in vapor or liquid service at ISU (the affected source at ISU is an existing source because it was constructed before 11/9/06). This requirement is assured in Permit Condition 8.2.

§ 63.11113 When do I have to comply with this subpart?

In accordance with 40 CFR 63.11113(b), if you have an existing affected source, you must comply with the standards in this subpart no later than January 10, 2011. This requirement is assured in Permit Condition 8.5.

§ 63.11115 What are my general duties to minimize emissions?

Each owner or operator of an affected source under this subpart must comply with the requirements of paragraphs (a) and (b) of this section.

In accordance with 40 CFR 63.11115(a), each owner or operator must operate and maintain each affected source in a manner consistent with safety and good air pollution control practices for minimizing emissions. This requirement is set in Permit Condition 8.3.

§ 63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.

(a) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:

(1) Minimize gasoline spills;

(2) Clean up spills as expeditiously as practicable;

(3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;

(4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

(b) You are not required to submit notifications or reports as specified in § 63.11125, § 63.11126, or subpart A of this part, but you must have records available within 24 hours of a request by the Administrator to document your gasoline throughput.

(c) You must comply with the requirements of this subpart by the applicable dates specified in § 63.11113.

(d) Portable gasoline containers that meet the requirements of 40 CFR part 59, subpart F, are considered acceptable for compliance with paragraph (a)(3) of this section.

The requirements of 40 CFR 63.11116(a)(1)-(4) are addressed in Permit Condition 8.4. Sections (b), (c), and (d) of § 63.11116 are addressed in Permit Conditions 8.4, 8.5, 8.7, and 8.8.

§ 63.11117- § 63.11124 Requirements, Notifications and Reports

These sections of the subpart only apply to affected facilities with monthly gasoline throughput of more than 10,000 gallons. Therefore, they are not applicable to ISU.

§ 63.11125 What are my recordkeeping requirements?

In accordance with 40 CFR 63.11115(b), you must keep applicable records and submit reports as specified in 40 CFR 63.11125(d) and 40 CFR 63.11126(b).

In accordance with 40 CFR 63.11125(d), each owner or operator of an affected source under this subpart shall keep records as specified in paragraphs (d)(1) and (2) of this section.

(1) Records of the occurrence and duration of each malfunction of operation (*i.e.,* process equipment) or the air pollution control and monitoring equipment.

(2) Records of actions taken during periods of malfunction to minimize emissions in accordance with § 63.11115(a), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

These requirements are included Permit Condition 8.6.

In accordance with 40 CFR 63.11126(b), each owner or operator of an affected source under this subpart shall report, by March 15 of each year, the number, duration, and a brief description of each type of malfunction which occurred during the previous calendar year and which caused or may have caused any applicable emission

limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with § 63.11115(a), including actions taken to correct a malfunction. No report is necessary for a calendar year in which no malfunctions occurred. This requirement is addressed in Permit Condition 8.9.

It should be noted that 40 CFR 63.11126(a) does not apply to the facility because this section of the subpart is for facilities with monthly throughput of 100,000 gallons of gasoline or more.

§ 63.11131 Who implements and enforces this subpart?

In accordance with 40 CFR 63.11131, this subpart can be implemented and enforced by the U.S. EPA or a delegated authority such as the Idaho DEQ. As of July 1, 2013, the EPA had not delegated authority of this subpart to Idaho DEQ.

§ 63.11132 What definitions apply to this subpart?

The definitions of this subpart apply to the facility.

40 CFR 63 Subpart HHHHHH .....NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

ISU applies paints and coatings in the automotive spray booths Nos. 1 and 2 that may contain one or more of the target HAPs of chromium, lead, manganese, nickel or cadmium. Therefore, NESHAP Subpart HHHHHH: Paint Stripping and Miscellaneous Surface Coating Operations does apply.

§ 63.11169 What is the purpose of this subpart?

In accordance with § 63.11169 , this subpart establishes national emission standards for HAP for area sources involved in any of the activities in paragraphs (a) through (c) of this section, such as autobody refinishing operations that encompass motor vehicle and mobile equipment spray-applied surface coating operations. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission standards contained herein.

§ 63.11170 Am I subject to this subpart?

In accordance with § 63.11170(a)(1), you are subject to this subpart if the owner or operator performs paint stripping using methylene chloride (MeCl) for the removal of dried paint (including, but not limited to, paint, enamel, varnish, shellac, and lacquer) from wood, metal, plastic, and other substrates. In accordance with the PTC application received on March 1, 2013, the MeCl is not used at the automotive paint booths; therefore, this section of the subpart does not apply to the facility. Permit Condition 9.4, however, prohibits the permittee from using MeCl to remove paint at the facility, as a State reasonable permit condition in accordance with the Rules.

In accordance with § 63.11170(a)(2), you are subject to this subpart if the owner or operator performs spray application of coatings, as defined in § 63.11180, to motor vehicles and mobile equipment including operations that are located in stationary structures at fixed locations, and mobile repair and refinishing operations that travel to the customer's location, except spray coating applications that meet the definition of facility maintenance in § 63.11180. However, if you are the owner or operator of a motor vehicle or mobile equipment surface coating operation, you may petition the Administrator for an exemption from this subpart if you can demonstrate, to the satisfaction of the Administrator, that your spray apply no coatings that contain the target HAP, as defined in § 63.11180. Petitions must include a description of the coatings that you spray apply and your certification that you do not spray apply any coatings containing the target HAP. If circumstances change such that you intend to spray apply coatings containing the target HAP, you must submit the initial notification required by 63.11175 and comply with the requirements of this subpart. This section of the MACT applies to ISU because the facility uses one or more of the target HAPs.

§ 63.11171 How do I know if my source is considered a new source or an existing source?

(a) This subpart applies to each new and existing affected area source engaged in the activities listed in § 63.11170, with the exception of those activities listed in § 63.11169(d) of this subpart.

(b) The affected source is the collection of all of the items listed in paragraphs (b)(1) through (6) of this section. Not all affected sources will have all of the items listed in paragraphs (b)(1) through (6) of this section.

(1) Mixing rooms and equipment;

(2) Spray booths, ventilated prep stations, curing ovens, and associated equipment;

(3) Spray guns and associated equipment;

(4) Spray gun cleaning equipment;

(5) Equipment used for storage, handling, recovery, or recycling of cleaning solvent or waste paint; and

(6) Equipment used for paint stripping at paint stripping facilities using paint strippers containing MeCl.

In accordance with § 63.11171(b), the painting operation at ISU is a collection of mixing equipment; spray booths and associated equipment; spray guns and associated equipment; spray gun cleaning equipment; and equipment used for storage, handling, recovery, or recycling of cleaning solvent or waste paint. Paint stripping is not proposed as an activity.

(c) An affected source is a new source if it meets the criteria in paragraphs (c)(1) and (c)(2) of this section.

(1) You commenced the construction of the source after September 17, 2007 by installing new paint stripping or surface coating equipment. If you purchase and install spray booths, enclosed spray gun cleaners, paint stripping equipment to reduce MeCl emissions, or purchase new spray guns to comply with this subpart at an existing source, these actions would not make your existing source a new source.

(2) The new paint stripping or surface coating equipment is used at a source that was not actively engaged in paint stripping and/or miscellaneous surface coating prior to September 17, 2007.

In accordance with § 63.11171(c), this coating operation at ISU is an existing source because it commenced construction prior to September 17, 2007, by installing new surface coating equipment, and the new surface coating equipment will be used at a source that was actively engaged in miscellaneous surface coating prior to September 17, 2007.

(d) An affected source is reconstructed if it meets the definition of reconstruction in § 63.2.

(e) An affected source is an existing source if it is not a new source or a reconstructed source.

In accordance with § 63.11171(d) and (e), the ISU painting operation is not a new facility, therefore, these sections of the subpart don't apply.

§ 63.11172 When do I have to comply with this subpart?

The date by which you must comply with this subpart is called the compliance date. The compliance date for each type of affected source is specified in paragraphs (a) and (b) of this section.

(a) For a new or reconstructed affected source, the compliance date is the applicable date in paragraph (a)(1) or (2) of this section:

(1) If the initial startup of your new or reconstructed affected source is after September 17, 2007, the compliance date is January 9, 2008.

(2) If the initial startup of your new or reconstructed affected source occurs after January 9, 2008, the compliance date is the date of initial startup of your affected source.

(b) For an existing affected source, the compliance date is January 10, 2011.

Because the coating operation is an existing affected source, the compliance date is January 10, 2011. This requirement is assured in Permit Conditions 9.9 and 9.10.

§ 63.11173 What are my general requirements for complying with this subpart?

The requirements of § 63.11173(a) through (d) don't apply to painting operations at ISU because the facility has not proposed paint stripping operations. However, since the facility is a painting operation facility, the permittee is required to meet the requirements of paragraphs (e)(1) through (e)(5) of section § 63.11173. These requirements are assured in Permit Condition 9.9.

In accordance with § 63.11173(e)(1), the students in ISU's painting operation program are not subject to the training and certification requirements of § 63.11173(f) as long as they are under the direct supervision of an instructor who does meet the requirements of § 63.11173(f). This requirement is assured in Permit Condition 9.9.

In accordance with § 63.11173(f), each owner or operator of an affected coating operation facility must ensure and certify that all new and existing personnel, including contract personnel, who spray apply surface coatings, as defined in § 63.11180, are trained in the proper application of surface coatings as required by paragraph (e)(1) of this section. The training program must include at a minimum, the items in paragraphs (f)(1) through (f)(3) of this section. This requirement is addressed in Permit Condition 9.9.

In accordance with § 63.11173(g), as required by paragraph (e)(1) of this section, all new and existing personnel at an affected equipment surface coating source, including contract personnel, who spray apply surface coatings, as defined in § 63.11180, must be trained by the dates specified in paragraphs (g)(1) and (2) of this section. This requirement is assured in Permit Condition 9.9.

§ 63.11174 What parts of the General Provisions apply to me?

In accordance with § 63.11174(a), Table 1 of this subpart shows which parts of the General Provisions in Subpart A apply. This requirement is assured in Table 9.2 of the PTC.

In accordance with § 63.11174(b), an owner or operator of an area source subject to this subpart is exempt from the obligation to obtain a permit under 40 CFR part 70 or 71 provided that a permit under 40 CFR 70.3 (a) or 71.3(a) is not required for a reason other than becoming an area source subject to this subpart. This permit application and permitting action involve a PTC, and will not utilize the requirements and procedures in in the State Tier I operating permit under IDAPA 58.01.01.300-399.

§ 63.11175 What notifications must I submit?

In accordance with § 63.11175(a), because the facility is a surface coating operation subject to this subpart, the initial notification required by § 63.9(b) must be submitted. For this operation at ISU, the initial notification must be submitted no later than on or before March 11, 2011. This requirement is assured in Permit Condition 9.11 and in Table 9.2 of the PTC.

In accordance with § 63.11175(b), because the facility is an existing source, the permittee is not required to submit a separate notification of compliance status in addition to the initial notification specified in paragraph (a) of this subpart provided the permittee was able to certify compliance on the date of the initial notification, as part of the initial notification, and the permittee's compliance status has not since changed. The permittee is required to submit the information specified in paragraphs (b)(1) through (4) of this section with the Notification of Compliance Status. This requirement is assured in Permit Condition 9.11.

§ 63.11176 What reports must I submit?

In accordance with § 63.11176(a), because the permittee is an owner or operator of a surface coating equipment affected source, the permittee is required to submit a report in each calendar year in which information previously submitted in either the initial notification required by § 63.11175(a), Notification of Compliance, or previous annual notification of changes report submitted under this paragraph, has changed. Deviations from the

relevant requirements in § 63.11173(a) through (d) or § 63.11173(e) through (g) on the date of the report will be deemed to be a change. The annual notification of changes report must be submitted prior to March 1 of each calendar year when reportable changes have occurred and must include the information specified in paragraphs (a)(1) through (2) of this section. These requirements are addressed in Permit Conditions 9.11 and 9.12.

Because the facility has not proposed to conduct paint stripping operations, the MeCl minimization plan, in accordance with § 63.11173(b), requirements are not applicable to ISU.

§ 63.11177 What records must I keep?

In accordance with § 63.11177, because the permittee is the owner or operator of a surface coating operation, the permittee must keep the records specified in paragraphs (a) through (d) and (g) of this section. Because the permittee has not proposed to conduct paint stripping operations, the requirements of paragraphs (e) and (f) of this section are not applicable. The following paragraphs of this section are applicable

(a) Certification that each painter has completed the training specified in § 63.11173(f) with the date of initial training and most recent refresher.

(b) Booth exhaust filter efficiency documentation.

(c) Spray gun HVLP-equivalent transfer efficiency documentation.

(d) Copies of any notification submitted as required by § 63.11175 and copies of any report submitted as required by § 63.11176.

(g) Records of any deviation from the requirements in § 63.11173, § 63.11174, § 63.11175, or § 63.11176. These records must include the date and time period of the deviation, and a description of the nature of the deviation and the actions taken to correct the deviation.

These requirements are addressed in Permit Condition 9.10.

§ 63.11178 In what form and for how long must I keep my records?

In accordance with 40 CFR 63.11178(a), because the permittee is an owner or operator of an affected source, the permittee must maintain copies of the records specified in 40 CFR 63.11177 for a period of at least five years after the date of each record. Copies of records must be kept on site and in a printed or electronic form that is readily accessible for inspection for at least the first two years after their date, and may be kept off-site after that two year period. This requirement is assured in Permit Condition 9.10.

§ 63.11179 Who implements and enforces this subpart?

In accordance with § 63.11179(a), this subpart can be implemented and enforced by U.S. Environmental Protection Agency (EPA), or a delegated authority. At the time of this permitting action, the EPA has not delegated authority to the State of Idaho. However, IDAPA 58.01.01.107.03 incorporates by reference all Federal Clean Air Act requirements including 40 CFR 63, Subpart HHHHHH. Therefore, the requirements of this subpart have been placed in the permit. This requirement is assured in Permit Conditions 9.12 and 9.13.

§ 63.11180 What definitions do I need to know?

Terms used in this subpart are defined in accordance with § 63.11180. Some of the definitions in subpart are applicable to the facility at ISU, as applicable.

Paint booth No. 3 (Maintenance Shop) is not subject 40 CFR 63, Subpart HHHHHH. In accordance with 40 CFR 63.11169(c), the maintenance shop spray booth is not subject to this subpart since per the PTC application none of the coatings used at the paint booth No. 3 contain any of the Target HAPs (i.e., chromium [Cr], lead [Pb], manganese [Mn], nickel [Ni] or cadmium [Cd]); and the facility does not use methylene chloride (MeCl) at the shop. Coatings are generally applied to wood surfaces. In addition, the shop falls under the definition of *Facility Maintenance*, as defined in 40 CFR 63.11180. These requirements are included in Permit Conditions 9.17 and 9.18 as reasonable permit conditions.

Permit conditions associated with paint booth No. 3 are addressed in Permit Conditions Review section of this SoB.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements in 40 CFR 61.

Permit Conditions Review

This section describes the permit conditions for this PTC or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Facility-Wide Conditions:

All reasonable precautions shall be taken to prevent PM from becoming airborne in accordance with the fugitive dust requirements of Permit Condition 6 and IDAPA 58.01.01.650-651. This is assured by Permit Condition 2.1.

Compliance with the fugitive requirements under Permit Condition 2.1 is assured by following the operating, monitoring and recordkeeping requirements listed in Permit Conditions 2.2, 2.3, and 2.4.

The permittee shall not allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution in accordance with the odor requirements of Permit Condition 10 and IDAPA 58.01.01.775-776. This is assured by Permit Condition 2.5.

Compliance with the odor requirements under Permit Condition 2.5 is assured by following the operating, monitoring and recordkeeping requirements in Permit Condition 2.6.

Visible emissions (opacity) standards apply to any stack, vent or other equivalent opening at the facility in accordance with Permit Condition 12 and IDAPA 58.01.01.625. This is assured by Permit Condition 2.7.

Compliance with the visible emissions requirements under Permit Condition 2.7 is assured by following the operating, monitoring and recordkeeping requirements in Permit Conditions 2.8 and 2.9. The requirements in Permit Conditions 2.8 and 2.9 were updated to match the latest version being used in the air permits template.

If open burning is conducted at the facility, the open burning requirements apply per Permit Condition 2.10 and IDAPA 58.01.01.600-624 (Rules for Control of Open Burning).

All reporting and certifications required by this permit shall be in accordance with Permit Condition 2.11. The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

The fuel burning equipment of IDAPA 58.01.01.675 applies to boilers existing at the facility. The PM emissions limits shall not be in excess of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume for gas and 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid. Since the boilers are combusting only natural gas (except Boiler No. 4, which may burn No. 2 fuel oil during emergency), this permit condition will be assured.

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. This is assured by Permit Condition 2.13.

Compliance with this Permit Condition 2.13 is assured by the permittee to maintain documentation on site of supplier verification of distillate fuel oil sulfur content on as-received basis. This is assured by Permit Condition 2.14.

NSPS/NESHAP General Provisions - NSPS 40 CFR 60, Subpart A-General Provisions; NESHAP 40 CFR 63, Subpart A-General Provisions)

New NSPS and NESHAP General Provisions Permit Conditions 2.15 and 2.16: The permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A—"General Provisions"—in accordance with 40 CFR 60.1. A summary of requirements for affected facilities is provided in Table 2.1 of the PTC.

In addition, the permittee shall comply with the requirements of 40 CFR 63, Subpart A—"General Provisions." A summary of applicable requirements for affected sources is provided in Table 2.2 of the PTC.

Boiler No. 2

It should be noted that Boiler No. 2 shared a common stack with Boiler No. 1. However, in accordance with PTC application received by DEQ on March 1, 2013, Boiler No. 1 is decommissioned by ISU.

Existing Permit Condition 3.3 in T2-030317, issued to the facility on 8/2/06, contains emissions limits for SO_2 and NOx in lbs/hr and T/yr from the boiler stack due to burning coal in the boiler. Since ISU will no longer burn coal as an alternative fuel in the boiler, the SO_2 and NOx emissions limits existed in that permit are deleted. In addition, all permit conditions associated with burning coal in the boiler and for those conditions which refer in that permit to the boiler exhaust baghouse (is decommissioned too) previously used to control coal-burning particulate emissions are also deleted for this permitting action.

Permit Conditions 3.3 (Natural Gas Throughput Limits) and 3.5 (Natural Gas Throughput Monitoring) existed in T2-030317 are carried over into this PTC.

New Permit Condition 3.4 sets the fuel type that is used in the boiler and requires the permittee to fire the boiler on natural gas exclusively.

Boiler No. 3

New Permit Condition 4.3 limits the natural gas throughput used by Boiler No. 3 to 203 MMscf per any consecutive 12-month period (yr) from the limited amount of 173 MMscf/year existed in T2-030317, issued on 8/2/06.

New Permit Condition 4.4 sets the fuel type that is used in the boiler and requires the permittee to fire the boiler on natural gas exclusively.

Permit Condition 4.5 requires the permittee to monitor the amount of natural gas combusted in the boiler to determine compliance with Permit Condition 4.3.

Boiler No. 4

Existing Permit Conditions 6.3 in PTC No. T2-030317, issued on 8/2/2006 limits the CO emissions from Boiler No. 4 stack to 7.2 lb/hr; and Permit Condition 6.9 requires the permittee to conduct a performance test to measure CO emissions from the boiler stack. Both permit conditions are not carried over into this PTC. The required CO performance test was conducted on1/31/08. DEQ reviewed the submitted test report and determined that Boiler No. 4 demonstrated compliance with the emission limit contained in existing Permit Condition 6.3. This testing also satisfies the requirement of Permit Condition 6.9.

The average CO emissions were demonstrated to be 0.612 lbs/hr, which is well below the permitted limit. A steam production rate limit was not included in this PTC because a CO emissions limit is not required for this PTC.

No emissions limits for PM_{10}, NO_x, and SO_2 are included in the PTC because none of these pollutants triggered NAAQS analysis for this permitting action. For more information regarding the reasons for not modeling for the criteria pollutants emissions, the reader can refer to the DEQ's modeling protocol letter that was sent to ISU by Kevin Schilling, DEQ's Dispersion Modeling Coordinator, on 10/16/2012 (see Appendix B).

New Permit Condition 5.6 limits the natural gas throughput used by Boiler No. 4 to 498 MMscf per any consecutive 12-month period (yr) from the limited amount of 468 MMscf/year existed in T2-030317, issued on 8/2/06. Also Permit Condition 5.6 limits the amount of diesel fuel used by Boiler No. 4 to 75,000 gallons/yr that shall be used in the boiler only in emergency situation.

New Permit Condition 5.7 sets the fuel type that is used in the boiler and requires the permittee to fire the boiler on natural gas exclusively except in emergency situations in which the boiler is required to be fired by diesel fuel.

New Permit Condition 5.8 limits the hours of operation when burning No. 2 fuel oil. In accordance with 40 CFR 63 Subpart JJJJJJ any periodic testing of diesel fuel oil shall not exceed a combined total of 48 hours during any calendar year. For more information on the applicability of 40 CFR Subpart JJJJJJ to Boiler No. 4, the reader can

refer to the "NESHAP for Industrial, Commercial and Institutional Boilers Area Sources" section of this statement of basis.

Permit Condition 5.9 that addresses the natural gas throughput monitoring for the boiler in accordance with 40 CFR 60.48c(g) is carried over from the existing T2-030317 to this PTC.

Also, this permit condition requires the permittee to monitor the amount of natural gas and diesel fuel oil combusted in the boiler to determine compliance with Permit Condition 5.6.

Additionally, Permit Condition 5.9 requires the permittee to monitor the annual hours of periodic testing on the boiler when it operates on diesel fuel to determine compliance with Permit Condition 5.6.

Permit Condition 5.10 requires the permittee to conduct an initial performance test as required under 40 CFR 60.8 to demonstrate compliance with the particulate matter standards of 40 CFR 60.43c (i.e., Permit Condition 5.3).

Pathological Waste Incinerator

All permit conditions existed in T2-030317, issued to ISU on 8/2/06 for the Pathological Waste Incinerator are carried over to this PTC.

The applicability of NSPS 40 CFR 60 Subpart Ce (Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators) to the Pathological Waste Incinerator is addressed in NSPS section of this SoB.

Paint Booths Nos. 1 and 2

Note: ISU applies paints and coatings in the automotive spray booths Nos. 1 and 2 that may contain one or more of the target HAPs of chromium, lead, manganese, nickel or cadmium. Therefore, NESHAP Subpart HHHHHH: Paint Stripping and Miscellaneous Surface Coating Operations applies to Paint Booths Nos. 1 and 2. Subpart HHHHHH requirements are addressed in the PTC in Permit Conditions 9.9 through 9.13. The applicability of NESHAP Subpart HHHHH is included in the MACT section of this SoB.

New Permit Condition 9.3 sets coating materials use limit for booths nos. 1& 2 for 5.0 gallons/booth/day and 1,000 gallons per booth per any consecutive 12-month period. These coating materials limits were established because the facility proposed to use 5 gallons/booth/day and 1,000 gallons per booth per year for the emissions inventory of $PM_{10}/PM_{2.5}$, VOC, and TAPs in Table 4-1 (Paint Booths Emissions Analysis) of the application received by DEQ on 3/1/2013. Compliance with this permit condition is set by the monitoring and recordkeeping requirements in Permit Conditions 9.6, 9.7, and 9.8.

New Permit Condition 9.4, the permittee shall not use Methylene Chloride (MeCl) to remove paint at this facility. This permit condition establishes that the facility will not use MeCl to remove paint from vehicles at the facility. This was done because MeCl was not proposed to be used at this facility by the permittee and the painting booths emissions inventory did not include MeCl in the permittee's PTC application. In addition, Subpart HHHHHH has additional requirements for facilities that use MeCl to remove paint as mentioned previously in the discussion of Subpart HHHHHH in the MACT Applicability Section.

New Permit Condition 9.5 establishes that the permittee conduct all automotive coating operations in the paint booth or preparation station with the filters in place, exhaust fan(s) operating, and door(s) or curtain(s) closed, that the operation shall use a HVLP spray gun, and that the permittee shall maintain and operate the paint booth and preparation station exhaust filter system in accordance with the manufacturer's specifications. This condition also defines what a booth and preparation station used for applying coating is.

Paint Booth No. 3

Note: In accordance with § 63.11169(c), the maintenance shop spray booth is not subject to MACT Subpart HHHHHH since none of the coatings used at the booth contain the target HAPs (i.e., chromium, lead, manganese, nickel, and cadmium), coating are generally applied to wood surfaces, and the shop falls under the definition of Facility Maintenance as defined in § 63.11180.

New Permit Condition 9.16 sets coating materials use limit for booth No. 3 for 5.0 gallons/day and 500 gallons per any consecutive 12-month period. These coating materials limits were established because the facility proposed to use 5 gallons/day and 500 gallons per year for the emissions inventory of $PM_{10}/PM_{2.5}$, VOC, and TAPs in Table 4-1 (Paint Booths Emissions Analysis) of the application received by DEQ on 3/1/2013. Compliance with this permit condition is set by the monitoring and recordkeeping requirements in Permit Conditions 9.21, 9.22, and 9.23.

New Permit Condition 9.17, the permittee shall not use Methylene Chloride (MeCl) to remove paint at this facility. This permit condition establishes that the facility will not use MeCl to remove paint at paint booth No. 3. This was done because MeCl was not proposed to be used at this facility by the permittee and the painting booth emissions inventory did not include MeCl in the permittee's PTC application.

New Permit Condition 9.18 prohibits the permittee the use of any of the target HAPs of chromium, lead, manganese, nickel, or cadmium in any coatings material at paint booth No. 3. The permittee has proposed in the PTC application to not use any of the target HAPs in Paint Booth No. 3. Thus, Permit Condition 9.18 is included as a requirement in the PTC.

New Permit Condition 9.19 establishes that the permittee conduct all automotive coating operations in the paint booth or preparation station with the filters in place, exhaust fan(s) operating, and door(s) or curtain(s) closed, that the operation shall use a HVLP spray gun, and that the permittee shall maintain and operate the paint booth and preparation station exhaust filter system in accordance with the manufacturer's specifications. This condition also defines what a booth and preparation station used for applying coating is.

New Permit Condition 9.20 is included in this PTC to require the permittee to install a baghouse to control $PM_{10}/PM_{2.5}$ and PM emissions from the Maintenance Shop's wood working process stack at the facility. This permit condition requires the permittee to develop a baghouse procedures document for the inspection and operation of the baghouse. The document must be a permittee developed document independent of the manufacturer supplied operating manual but may include summaries of procedures included in the manufacturer supplied operating manual. The baghouse is expected to be highly effective in controlling particulates from this process, provided it is operated and maintained according to manufacturer specification and periodically inspected. If any visible emissions were present from the baghouse stack, the permittee must realize that a corrective action must be taken to fix the baghouse and a description of the correction action must be taken. At a minimum the baghouse procedures document must include procedures to determine if bags are ruptured and procedures to determine if bags are not appropriately secured in place. The permittee is required to maintain records of the results of the baghouse inspection in accordance with Monitoring and Recordkeeping requirements in the General Provisions of this permit.

PTC General Provisions:

The most current version of PTC General Provisions is used in this permit, as described below:

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101. This is assured by Permit Condition 10.1.

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211. This is assured by Permit Condition 10.2.

The obligation to comply with general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01. This is assured by Permit Condition 10.3.

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108. This is assured by Permit Condition 10.4.

This permit shall expire if construction has not begun within two years of its issue date, or if construction is suspended for one year. This is addressed in Permit Condition 10.5.

The construction and operation notification provision in Permit Condition 10.6 requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

The performance test report provision requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130. If a reportable excess emission event occurs, send the notifications to the DEQ Pocatello Regional Office as described in the rule.

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

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 or IDAPA 58.01.01.404.01.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 4-1: Paint Booths Emissions Analysis

Technology (2 Booths)
Maint. Shop (1 Booth)

Paint Gun Transfer Efficiency (control for particulates) = 65% (65% typica
Booth Filter Control Efficiency (control for particulates) = 99%

Permit Analysis Total Coating Per Booth		Coating Material	Density	Solids	VOC	acetone 67-64-1	aluminum 7429-90-5	amyl acetate 628-63-7	2-butoxy ethanol 111-76-2	2-butoxy ethyl acetate 112-07-2	butyl acetate 123-86-4	n-butyl alcohol 71-36-3	carbon black 1333-86-4	calcium carbonate
gal/day	gal/yr		lb/gal	Weight Percent										
5	1000	BASF DC5300	8.21	56%	44%	5%					10%			
		BASF DC5600	8.21	56%	44%	20%								
		BASF DP26	11.57	59%	41%	5%					20%		5%	
		PPG DCU2002	7.96	49%	51%									
		PPG DCU2082	7.89	47%	53%	5%								
		PPG DP40LF RTS	11.55	64%	36%				5%				1%	
		PPG DPX171	9.21	42%	58%							20%	1%	
		PPG DPX172	7.00	3%	97%							20%		
		PPG K38	12.46	68%	32%						10%			20%
		PPG K93	12.48	66%	34%						10%			
		R-M BC Base/Color	9.47	47%	82%		10%				50%	5%	3%	
		R-M DE17 Primer	9.36	44%	56%						10%	10%		
		R-M DP20 Prime	12.99	71%	29%						15%			
		R-M EP589 Primer	11.46	61%	39%									
		R-M Activator	7.53	35%	65%									
5	500	Columbia WB Bases	10.43	31%	69%									4%
		Columbia Traffic Paint	13.90	63%	37%									61%
		S.Wlms K#-Thinner	6.67	0%	100%	21%				1%				
		S.Wlms T67F6 Sealer	7.42	15%	85%	50%					7%	1%		
		S.W. T77F56 Lacquer	7.84	25%	75%	7%		5%			31%	4%		

Component Characteristic	If volatile, enter "1" ==>			1	1		1	1	1	1	1		
		lb/gal	Pounds per Hour										
Hourly Spray Calculations (lb/hr based on 24-hr averaging period)	BASF DC5300	8.21	0.96	0.75	0.09	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
	BASF DC5600	8.21	0.96	0.75	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DP26	11.57	1.43	0.96	0.12	0.00	0.00	0.00	0.00	0.48	0.00	0.12	0.00
	PPG DCU2002	7.96	0.81	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	7.89	0.77	0.87	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	11.55	1.54	0.87	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.02	0.00
	PPG DPX171	9.21	0.81	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.02	0.00
	PPG DPX172	7.00	0.04	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00
	PPG K38	12.46	1.77	0.83	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.52
	PPG K93	12.48	1.72	0.88	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00
	R-M BC Base/Color	9.47	0.93	1.62	0.00	0.20	0.00	0.00	0.00	0.99	0.10	0.06	0.00
	R-M DE17 Primer	9.36	0.88	1.09	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
	R-M DP20 Prime	12.99	1.92	0.78	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00
	R-M EP589 Primer	11.46	1.46	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	7.53	0.55	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max		**1.921**	**1.618**	**0.342**	**0.197**	**0.000**	**0.120**	**0.000**	**0.986**	**0.384**	**0.121**	**0.519**
	Columbia WB Bases	10.43	0.67	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	Columbia Traffic Paint	13.90	1.82	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77
	S.Wlms K#-Thinner	6.67	0.00	1.39	0.29	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
	S.Wlms T67F6 Sealer	7.42	0.23	1.31	0.77	0.00	0.00	0.00	0.00	0.11	0.02	0.00	0.00
	S.W. T77F56 Lacquer	7.84	0.41	1.22	0.11	0.00	0.08	0.00	0.00	0.51	0.07	0.00	0.00
	Shop Booth Spray Max		**1.824**	**1.499**	**0.773**	**0.000**	**0.082**	**0.000**	**0.014**	**0.506**	**0.065**	**0.000**	**1.766**

		lb/gal	Tons per Year										
Annual Spray Calculations (tons/yr)	BASF DC5300	8.21	2.30	1.81	0.21	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00
	BASF DC5600	8.21	2.30	1.81	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DP26	11.57	3.42	2.36	0.29	0.00	0.00	0.00	0.00	1.16	0.00	0.29	0.00
	PPG DCU2002	7.96	1.95	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	7.89	1.85	2.09	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	11.55	3.70	2.08	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.06	0.00
	PPG DPX171	9.21	1.93	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.05	0.00
	PPG DPX172	7.00	0.10	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00
	PPG K38	12.46	4.24	1.99	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.00	1.25
	PPG K93	12.48	4.12	2.12	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.00	0.00
	R-M BC Base/Color	9.47	2.24	3.88	0.00	0.47	0.00	0.00	0.00	2.37	0.24	0.14	0.00
	R-M DE17 Primer	9.36	2.06	2.62	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.00	0.00
	R-M DP20 Prime	12.99	4.61	1.88	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00	0.00
	R-M EP589 Primer	11.46	3.50	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	7.53	1.32	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max		**4.611**	**3.883**	**0.821**	**0.474**	**0.000**	**0.289**	**0.000**	**2.363**	**0.921**	**0.289**	**1.248**
	Columbia WB Bases	10.43	0.81	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	Columbia Traffic Paint	13.90	2.19	1.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.12
	S.Wlms K#-Thinner	6.67	0.00	1.67	0.35	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
	S.Wlms T67F6 Sealer	7.42	0.28	1.58	0.93	0.00	0.00	0.00	0.00	0.13	0.02	0.00	0.00
	S.W. T77F56 Lacquer	7.84	0.49	1.47	0.14	0.00	0.10	0.00	0.00	0.61	0.08	0.00	0.00
	Shop Booth Spray Max		**2.19**	**1.80**	**0.93**	**0.00**	**0.10**	**0.00**	**0.02**	**0.61**	**0.08**	**0.00**	**2.12**

	Pollutant		$PM_{2.5}$ PM_{10}	VOC	acetone 67-64-1	aluminum 7429-90-5	amyl acetate 628-63-7	2-butoxy ethanol 111-76-2	2-butoxy ethyl acetate 112-07-2	butyl acetate 123-86-4	n-butyl alcohol 71-36-3	carbon black 1333-86-4	calcium carbonate
Criteria & Toxic Air Pollutant (TAP) Emissions Analysis	TAP Screening Emission Level (lb/hr)		--	--	119	0.667	35.3	8	8.33	47.3	10	0.23	0.667
	Cont. Emissions Rate per Auto Booth (lb/hr)		0.0067	1.62	0.34	0.001	0.000	0.120	0.000	0.986	0.384	0.00042	0.0018
	Cont. Emissions Rate per Shop Booth (lb/hr)		0.0064	1.50	0.77	0.00	0.082	0.000	0.014	0.506	0.065	0.0000	0.0062
	Total Controlled Emissions Rate (lb/hr)		0.020	4.73	1.5	0.001	0.082	0.241	0.014	2.479	0.833	0.00084	0.0098
	% of EL				1.2%	0.2%	0.2%	3.0%	0.2%	5.2%	8.3%	0.4%	1.5%
Criteria & Hazardous Air Pollutant (HAP) Emissions Analysis	Pollutant		$PM_{2.5}$ PM_{10}	VOC									
	Controlled Emissions Rate (tons/yr)		0.040	9.6									

Table 4-1: Paint Booths Emissions Analysis

Technology (2 Booths) I for HVLP)
Maint. Shop (1 Booth)

Permit Analysis Total Coating Per Booth		Coating Material	chromium cmpds 7440-47-3	copper 7440-50-8	ethyl acetate 141-78-6	ethyl alcohol 64-17-5	ethyl benzene 100-41-4	ethylene glycol 107-21-1	fluorides	formaldehyde 50-00-0	glycol ethers 112-34-5	isobutyl alcohol 78-83-1	isopropyl alcohol 67-63-0
gal/day	gal/yr		Weight Percent										
5	1000	BASF DC5300											
		BASF DC5600					5%						
		BASF DP26					5%						
		PPG DCU2002					1%						
		PPG DCU2082											
		PPG DP40LF RTS					1%						
		PPG DPX171			5%	20%							10%
		PPG DPX172			5%	30%							
		PPG K38					5%						
		PPG K93					5%						
		R-M BC Base/Color		10%			10%		5%				10%
		R-M DE17 Primer					5%					10%	
		R-M DP20 Prime					5%						
		R-M EP589 Primer	10%				5%						
		R-M Activator					20%						
5	500	Columbia WB Bases						4%			2%		
		Columbia Traffic Paint											
		S.Wlms K#-Thinner					0.9%						10%
		S.Wlms T67F6 Sealer				4%						1%	4%
		S.W. T77F56 Lacquer				7%				0.1%		8%	4%

Component Characteristic	If volatile, enter "1"				1	1	1	1		1	1	1	1
		Pounds per Hour											
Hourly Spray Calculations (lb/hr based on 24-hr averaging period)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DC5600	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DP26	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2002	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DPX171	0.00	0.00	0.10	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.19
	PPG DPX172	0.00	0.00	0.07	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K38	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K93	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
	R-M BC Base/Color	0.00	0.20	0.00	0.00	0.20	0.00	0.10	0.00	0.00	0.00	0.20
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.20	0.00
	R-M DP20 Prime	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
	R-M EP589 Primer	0.24	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max	**0.239**	**0.197**	**0.098**	**0.437**	**0.314**	**0.000**	**0.099**	**0.000**	**0.000**	**0.195**	**0.197**
	Columbia WB Bases	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.04	0.00	0.00
	Columbia Traffic Paint	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms K#-Thinner	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.14
	S.Wlms T67F6 Sealer	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.02	0.06
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.13	0.07
	Shop Booth Spray Max	**0.000**	**0.000**	**0.000**	**0.114**	**0.013**	**0.087**	**0.000**	**0.002**	**0.043**	**0.131**	**0.139**

			Tons per Year									
Annual Spray Calculations (tons/yr)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DC5600	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00
	BASF DP26	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2002	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DPX171	0.00	0.00	0.23	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.46
	PPG DPX172	0.00	0.00	0.17	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K38	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K93	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
	R-M BC Base/Color	0.00	0.47	0.00	0.00	0.47	0.00	0.24	0.00	0.00	0.00	0.47
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.47	0.00
	R-M DP20 Prime	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00
	R-M EP589 Primer	0.57	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max	**0.573**	**0.474**	**0.230**	**1.050**	**0.753**	**0.000**	**0.237**	**0.00**	**0.0000**	**0.463**	**0.474**
	Columbia WB Bases	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.0000	0.05	0.00	0.00
	Columbia Traffic Paint	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.00	0.00
	S.Wlms K#-Thinner	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.0000	0.00	0.00	0.17
	S.Wlms T67F6 Sealer	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.0000	0.00	0.02	0.07
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.0020	0.00	0.16	0.08
	Shop Booth Spray Max	**0.00**	**0.00**	**0.00**	**0.14**	**0.02**	**0.10**	**0.00**	**0.0020**	**0.05**	**0.16**	**0.17**

	Pollutant	chromium cmpds 7440-47-3	copper 7440-50-8	ethyl acetate 141-78-6	ethyl alcohol 64-17-5	ethyl benzene 100-41-4	ethylene glycol 107-21-1	fluorides	formaldehyde 50-00-0 (annual avg)	glycol ethers 112-34-5	isobutyl alcohol 78-83-1	isopropyl alcohol 67-63-0
Criteria & Toxic Air Pollutant (TAP) Emissions Analysis	TAP Screening Emission Level (lb/hr)	0.033	0.067	93.3	125	29	0.848	0.167	5.1E-04	–	10	65.3
	Cont. Emissions Rate per Auto Booth (lb/hr)	0.00084	0.0007	0.10	0.437	0.314	0.000	0.00035	0.0E+00	0.000	0.20	0.20
	Cont. Emissions Rate per Shop Booth (lb/hr)	0.00000	0.0000	0.000	0.114	0.013	0.087	0.00000	4.5E-04	0.043	0.13	0.14
	Total Controlled Emissions Rate (lb/hr)	0.0017	0.0014	0.19	0.99	0.64	0.087	0.0007	4.5E-04	0.043	0.52	0.53
	% of EL	5.1%	2.1%	0.2%	0.8%	2.2%	10%	0.4%	88%	–	5.2%	0.8%

	Pollutant	chromium cmpds 7440-47-3							formaldehyde 50-00-0	glycol ethers 112-34-5	
Criteria & Hazardous Air Pollutant (HAP) Emissions Analysis	Controlled Emissions Rate (tons/yr)	0.0040							0.0020	0.052	

Table 4-1: Paint Booths Emissions Analysis

Technology (2 Booths)
Maint. Shop (1 Booth)

Permit Analysis Total Coating Per Booth		Coating Material	kaolin 1332-58-7	methanol 67-56-1	1-methoxy 2-propyl acetate 108-65-6	methyl acetate 79-20-9	methyl n-amyl ketone 110-43-0	methyl propyl ketone 107-87-9	MIBK 108-10-1	mica 12002-26-2	naphthalene 91-20-3	phosphoric acid 7664-38-2	propyl alcohol 71-23-8
gal/day	gal/yr		Weight Percent										
5	1000	BASF DC5300									5%		
		BASF DC5600				10%	30%	10%	5%				
		BASF DP26	15%		5%		5%						
		PPG DCU2002					20%						
		PPG DCU2082					20%		20%				
		PPG DP40LF RTS					20%		10%				
		PPG DPX171											
		PPG DPX172							30%			5%	
		PPG K38					5%						
		PPG K93			5%		5%						
		R-M BC Base/Color			3%				50%	10%			
		R-M DE17 Primer											30%
		R-M DP20 Prime	20%		5%								
		R-M EP589 Primer											
		R-M Activator											
5	500	Columbia WB Bases	4%										
		Columbia Traffic Paint		2%									
		S.Wlms K#-Thinner		4%									
		S.Wlms T67F6 Sealer					9%						
		S.W. T77F56 Lacquer											

Component Characteristic	If volatile, enter "1"		1	1	1	1	1	1		1		1
		Pounds per Hour										
Hourly Spray Calculations (lb/hr based on 24-hr averaging period)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
	BASF DC5600	0.00	0.00	0.00	0.17	0.51	0.17	0.09	0.00	0.00	0.00	0.00
	BASF DP26	0.36	0.00	0.12	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2002	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	0.00	0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	0.00	0.00	0.00	0.00	0.48	0.00	0.24	0.00	0.00	0.00	0.00
	PPG DPX171	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DPX172	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.07	0.00
	PPG K38	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K93	0.00	0.00	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
	R-M BC Base/Color	0.00	0.00	0.06	0.00	0.00	0.00	0.99	0.20	0.00	0.00	0.00
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
	R-M DP20 Prime	0.54	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M EP589 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max	**0.541**	**0.000**	**0.135**	**0.171**	**0.513**	**0.171**	**0.986**	**0.197**	**0.086**	**0.073**	**0.585**
	Columbia WB Bases	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Columbia Traffic Paint	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms K#-Thinner	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms T67F6 Sealer	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Shop Booth Spray Max	**0.087**	**0.058**	**0.000**	**0.000**	**0.139**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
		Tons per Year										
Annual Spray Calculations (tons/yr)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00
	BASF DC5600	0.00	0.00	0.00	0.41	1.23	0.41	0.21	0.00	0.00	0.00	0.00
	BASF DP26	0.87	0.00	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2002	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DCU2082	0.00	0.00	0.00	0.00	0.79	0.00	0.79	0.00	0.00	0.00	0.00
	PPG DP40LF RTS	0.00	0.00	0.00	0.00	1.16	0.00	0.58	0.00	0.00	0.00	0.00
	PPG DPX171	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PPG DPX172	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.17	0.00
	PPG K38	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
	PPG K93	0.00	0.00	0.31	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
	R-M BC Base/Color	0.00	0.00	0.14	0.00	0.00	0.00	2.37	0.47	0.00	0.00	0.00
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40
	R-M DP20 Prime	1.30	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M EP589 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R-M Activator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Auto Booth Spray Max	**1.299**	**0.000**	**0.325**	**0.411**	**1.232**	**0.411**	**2.363**	**0.474**	**0.205**	**0.176**	**1.404**
	Columbia WB Bases	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Columbia Traffic Paint	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms K#-Thinner	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms T67F6 Sealer	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Shop Booth Spray Max	**0.10**	**0.07**	**0.00**	**0.00**	**0.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

	Pollutant	kaolin 1332-58-7	methanol 67-56-1	1-methoxy 2-propyl acetate 108-65-6	methyl acetate 79-20-9	methyl n-amyl ketone 110-43-0	methyl propyl ketone 107-87-9	MIBK 108-10-1	mica 12002-26-2	naphthalene 91-20-3	phosphoric acid 7664-38-2	propyl alcohol 71-23-8
Criteria & Toxic Air Pollutant (TAP) Emissions Analysis	TAP Screening Emission Level (lb/hr)	0.133	17.3	24	40.7	15.7	46.7	13.7	0.2	3.33	0.067	33.3
	Cont. Emissions Rate per Auto Booth (lb/hr)	0.0019	0.000	0.135	0.171	0.51	0.171	0.99	0.0007	0.0855	0.00026	0.585
	Cont. Emissions Rate per Shop Booth (lb/hr)	0.0003	0.058	0.000	0.000	0.14	0.000	0.000	0.0000	0.0000	0.0000	0.000
	Total Controlled Emissions Rate (lb/hr)	0.0041	0.058	0.271	0.342	1.2	0.342	2.0	0.0014	0.17	0.0005	1.17
	% of EL	3.1%	0.3%	1.1%	0.8%	7.4%	0.7%	14%	0.7%	5%	0.8%	3.5%

	Pollutant							MIBK 108-10-1		naphthalene 91-20-3	
Criteria & Hazardous Air Pollutant (HAP) Emissions Analysis	Controlled Emissions Rate (tons/yr)							4.74		0.41	

Table 4-1: Paint Booths Emissions Analysis

Technology (2 Booths)
Maint. Shop (1 Booth)

Permit Analysis Total Coating Per Booth		Coating Material	silica - amorphous 61790-53-2 112926-00-8	silica - crystalline 14808-60-7 60676-86-0	stoddard solvent 8052-41-3	styrene 100-42-5	toluene 108-88-3	trimethyl benzene 95-63-6 25551-13-7	VM&P naphtha 8032-32-4 64742-#	xylene 1330-20-7	zinc 7440-66-6	Total HAPS
gal/day	gal/yr		Weight Percent									
5	1000	BASF DC5300						10%	25%			0%
		BASF DC5600			0%				15%	5%		10%
		BASF DP26	5%	5%				5%		10%		10%
		PPG DCU2002				1%				40%		41%
		PPG DCU2082					10%		5%	20%		50%
		PPG DP40LF RTS	5%	1%			5%	5%	5%	5%		20%
		PPG DPX171					20%					20%
		PPG DPX172					30%					60%
		PPG K38		1%			5%	5%	5%	20%		25%
		PPG K93							5%	20%		20%
		R-M BC Base/Color	13%		3%		1%	3%	6%	25%		86%
		R-M DE17 Primer								15%	15%	15%
		R-M DP20 Prime		0.1%						15%	15%	15%
		R-M EP589 Primer	25%	0.1%			1%			20%		31%
		R-M Activator								60%		60%
5	500	Columbia WB Bases										2%
		Columbia Traffic Paint										0%
		S.Wlms K#-Thinner					33%		25%	5%		38%
		S.Wlms T67F6 Sealer	1%									0%
		S.W. T77F56 Lacquer										0%

Component Characteristic	If volatile, enter "1"				1	1	1	1	1	1		
					Pounds per Hour							
Hourly Spray Calculations (lb/hr based on 24-hr averaging period)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.17	0.43	0.00	0.00		
	BASF DC5600	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.09	0.00		
	BASF DP26	0.12	0.12	0.00	0.00	0.00	0.12	0.00	0.24	0.00		
	PPG DCU2002	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.66	0.00		
	PPG DCU2082	0.00	0.00	0.00	0.00	0.16	0.00	0.08	0.33	0.00		
	PPG DP40LF RTS	0.12	0.02	0.00	0.00	0.12	0.12	0.12	0.12	0.00		
	PPG DPX171	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00		
	PPG DPX172	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00		
	PPG K38	0.00	0.03	0.00	0.00	0.13	0.13	0.13	0.52	0.00		
	PPG K93	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.52	0.00		
	R-M BC Base/Color	0.26	0.00	0.06	0.00	0.02	0.06	0.16	0.49	0.00		
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.29		
	R-M DP20 Prime	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.41		
	R-M EP589 Primer	0.60	0.00	0.00	0.00	0.02	0.00	0.00	0.48	0.00		
	R-M Activator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00		
	Auto Booth Spray Max	**0.597**	**0.121**	**0.059**	**0.017**	**0.437**	**0.171**	**0.428**	**0.941**	**0.406**		
	Columbia WB Bases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Columbia Traffic Paint	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	S.Wlms K#-Thinner	0.00	0.00	0.00	0.00	0.46	0.00	0.35	0.07	0.00		
	S.Wlms T67F6 Sealer	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Shop Booth Spray Max	**0.015**	**0.000**	**0.000**	**0.000**	**0.459**	**0.000**	**0.348**	**0.070**	**0.000**		

		Tons per Year									
Annual Spray Calculations (tons/yr)	BASF DC5300	0.00	0.00	0.00	0.00	0.00	0.41	1.03	0.00	0.00	0.00
	BASF DC5600	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.21	0.00	0.41
	BASF DP26	0.29	0.29	0.00	0.00	0.00	0.29	0.00	0.58	0.00	0.58
	PPG DCU2002	0.00	0.00	0.00	0.04	0.00	0.00	0.00	1.59	0.00	1.63
	PPG DCU2082	0.00	0.00	0.00	0.00	0.39	0.00	0.20	0.79	0.00	1.97
	PPG DP40LF RTS	0.29	0.06	0.00	0.00	0.29	0.29	0.29	0.29	0.00	1.16
	PPG DPX171	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.92
	PPG DPX172	0.00	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	2.10
	PPG K38	0.00	0.06	0.00	0.00	0.31	0.31	0.31	1.25	0.00	1.56
	PPG K93	0.00	0.00	0.00	0.00	0.00	0.00	0.31	1.25	0.00	1.25
	R-M BC Base/Color	0.62	0.00	0.14	0.00	0.05	0.14	0.38	1.18	0.00	4.07
	R-M DE17 Primer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.70	0.70
	R-M DP20 Prime	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.97	0.97	0.97
	R-M EP589 Primer	1.43	0.01	0.00	0.00	0.06	0.00	0.00	1.15	0.00	1.76
	R-M Activator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.00	2.26
	Auto Booth Spray Max	**1.433**	**0.269**	**0.142**	**0.040**	**1.050**	**0.411**	**1.026**	**2.259**	**0.974**	**4.072**
	Columbia WB Bases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Columbia Traffic Paint	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.Wlms K#-Thinner	0.00	0.00	0.00	0.00	0.55	0.00	0.42	0.08	0.00	0.83
	S.Wlms T67F6 Sealer	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	S.W. T77F56 Lacquer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Shop Booth Spray Max	**0.02**	**0.00**	**0.00**	**0.00**	**0.55**	**0.00**	**0.42**	**0.08**	**0.00**	**0.83**

	Pollutant	silica - amorphous 61790-53-2 112926-00-8	silica - crystalline 14808-60-7 60676-86-0	stoddard solvent 8052-41-3	styrene 100-42-5	toluene 108-88-3	trimethyl benzene 95-63-6 25551-13-7	VM&P naphtha 8032-32-4 64742-#	xylene 1330-20-7	zinc 7440-66-6
Criteria & Toxic Air Pollutant (TAP) Emissions Analysis	TAP Screening Emission Level (lb/hr)	0.667	0.0067	35	6.67	25	8.2	91.3	29	0.667
	Cont. Emissions Rate per Auto Booth (lb/hr)	0.0021	0.0004	0.059	0.017	0.44	0.171	0.43	0.941	0.0014
	Cont. Emissions Rate per Shop Booth (lb/hr)	0.0001	0.0000	0.000	0.000	0.46	0.000	0.35	0.070	0.0000
	Total Controlled Emissions Rate (lb/hr)	0.0042	0.0008	0.12	0.033	1.3	0.342	1.2	2.0	0.0028
	% of EL	0.6%	13%	0.3%	0.5%	5.3%	4.2%	1.3%	6.7%	0.4%

Criteria & Hazardous Air Pollutant (HAP) Emissions Analysis	Pollutant				styrene 100-42-5	toluene 108-88-3			xylene 1330-20-7		Total HAPs[1]
	Controlled Emissions Rate (tons/yr)				0.060	2.65			4.60		8.8

Note 1: Individual and Total HAPs based on single coating maximum. Therefore, individual HAP maximums (from various coatings) will not add up to Total HAPs.

Table 5-2: Boiler No. 1 (HP1) Modification Emission Analysis

Date: Feb-13

Location: Heat Plant - Building #20 Fuel: Natural Gas Equipment Capacity: 32.05 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly 32.05	Annual 75.4	Hourly 0.00	Annual 0.0	Hourly Basis	Annual Basis	
	EF	calc'd EF[1]	MMBtu/hr	MMscf NG/yr	MMBtu/hr	MMscf NG/yr			
Pollutant	$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr
CO	84	0.082	2.64 E+00	3.17 E+00	0	0	-2.64E+00	-3.17E+00	-7.23E-01
NO_X	100	0.098	3.14 E+00	3.77 E+00	0	0	-3.14E+00	-3.77E+00	-8.61E-01
SO_2	0.60	0.00059	1.89 E-02	2.26 E-02	0	0	-1.89E-02	-2.26E-02	-5.16E-03
PM10	7.60	0.0075	2.39 E-01	2.87 E-01	0	0	-2.39E-01	-2.87E-01	-6.54E-02
PM2.5	7.60	0.0075	2.39 E-01	2.87 E-01	0	0	-2.39E-01	-2.87E-01	-6.54E-02
Pb	0.0005	4.90 E-07	1.57 E-05	1.89 E-05	0	0	-1.57E-05	-1.89E-05	-4.30E-06
VOC	5.50	0.005	1.73 E-01	2.07 E-01	0	0	-1.73E-01	-2.07E-01	-4.73E-02
TOC	11.00	0.011	3.46 E-01	4.15 E-01	0	0	-3.46E-01	-4.15E-01	-9.47E-02
2-Methylnaphthalene	2.4 E-05	2.35 E-08	7.54 E-07	9.05 E-07	0	0	-7.54E-07	-9.05E-07	-2.07E-07
3-Methylchloranthrene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	5.03 E-07	6.03 E-07	0	0	-5.03E-07	-6.03E-07	-1.38E-07
Acenaphthene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Acenaphthylene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Anthracene	2.4 E-06	2.35 E-09	7.54 E-08	9.05 E-08	0	0	-7.54E-08	-9.05E-08	-2.07E-08
Arsenic	2.0 E-04	1.96 E-07	6.28 E-06	7.54 E-06	0	0	-6.28E-06	-7.54E-06	-1.72E-06
Barium	4.4 E-03	4.31 E-06	1.38 E-04	1.66 E-04	0	0	-1.38E-04	-1.66E-04	-3.79E-05
Benzo(a)anthracene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Benzene	2.1 E-03	2.06 E-06	6.60 E-05	7.92 E-05	0	0	-6.60E-05	-7.92E-05	-1.81E-05
Benzo(a)pyrene	1.2 E-06	1.18 E-09	3.77 E-08	4.52 E-08	0	0	-3.77E-08	-4.52E-08	-1.03E-08
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Benzo(g,h,I)perylene	1.2 E-06	1.18 E-09	3.77 E-08	4.52 E-08	0	0	-3.77E-08	-4.52E-08	-1.03E-08
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Beryllium	1.2 E-05	1.18 E-08	3.77 E-07	4.52 E-07	0	0	-3.77E-07	-4.52E-07	-1.03E-07
Butane	2.1 E+00	2.06 E-03	6.60 E-02	7.92 E-02	0	0	-6.60E-02	-7.92E-02	-1.81E-02
Cadmium	1.1 E-03	1.08 E-06	3.46 E-05	4.15 E-05	0	0	-3.46E-05	-4.15E-05	-9.47E-06
Chromium	1.4 E-03	1.37 E-06	4.40 E-05	5.28 E-05	0	0	-4.40E-05	-5.28E-05	-1.21E-05
Chrysene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Cobalt	8.4 E-05	8.24 E-08	2.64 E-06	3.17 E-06	0	0	-2.64E-06	-3.17E-06	-7.23E-07
Copper	8.5 E-04	8.33 E-07	2.67 E-05	3.20 E-05	0	0	-2.67E-05	-3.20E-05	-7.32E-06
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	3.77 E-08	4.52 E-08	0	0	-3.77E-08	-4.52E-08	-1.03E-08
Dichlorobenzene	1.2 E-03	1.18 E-06	3.77 E-05	4.52 E-05	0	0	-3.77E-05	-4.52E-05	-1.03E-05
Ethane	3.1 E+00	3.04 E-03	9.74 E-02	1.17 E-01	0	0	-9.74E-02	-1.17E-01	-2.67E-02
Fluoranthene	3.0 E-06	2.94 E-09	9.43 E-08	1.13 E-07	0	0	-9.43E-08	-1.13E-07	-2.58E-08
Fluorene	2.8 E-06	2.75 E-09	8.80 E-08	1.06 E-07	0	0	-8.80E-08	-1.06E-07	-2.41E-08
Formaldehyde	7.5 E-02	7.35 E-05	2.36 E-03	2.83 E-03	0	0	-2.36E-03	-2.83E-03	-6.46E-04
Hexane	1.8 E+00	1.76 E-03	5.66 E-02	6.79 E-02	0	0	-5.66E-02	-6.79E-02	-1.55E-02
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	5.66 E-08	6.79 E-08	0	0	-5.66E-08	-6.79E-08	-1.55E-08
Manganese	3.8 E-04	3.73 E-07	1.19 E-05	1.43 E-05	0	0	-1.19E-05	-1.43E-05	-3.27E-06
Mercury	2.6 E-04	2.55 E-07	8.17 E-06	9.80 E-06	0	0	-8.17E-06	-9.80E-06	-2.24E-06
Methane	2.30	0.00225	7.23 E-02	8.67 E-02	0	0	-7.23E-02	-8.67E-02	-1.98E-02
Molybdenum	1.1 E-03	1.08 E-06	3.46 E-05	4.15 E-05	0	0	-3.46E-05	-4.15E-05	-9.47E-06
Naphthalene	6.1 E-04	5.98 E-07	1.92 E-05	2.30 E-05	0	0	-1.92E-05	-2.30E-05	-5.25E-06
Nickel	2.1 E-03	2.06 E-06	6.60 E-05	7.92 E-05	0	0	-6.60E-05	-7.92E-05	-1.81E-05
Pentane	2.6 E+00	2.55 E-03	8.17 E-02	9.80 E-02	0	0	-8.17E-02	-9.80E-02	-2.24E-02
Phenanathrene	1.7 E-05	1.67 E-08	5.34 E-07	6.41 E-07	0	0	-5.34E-07	-6.41E-07	-1.46E-07
Propane	1.6 E+00	1.57 E-03	5.03 E-02	6.03 E-02	0	0	-5.03E-02	-6.03E-02	-1.38E-02
Pyrene	5.0 E-06	4.90 E-09	1.57 E-07	1.89 E-07	0	0	-1.57E-07	-1.89E-07	-4.30E-08
Selenium	2.4 E-05	2.35 E-08	7.54 E-07	9.05 E-07	0	0	-7.54E-07	-9.05E-07	-2.07E-07
Toluene	3.4 E-03	3.33 E-06	1.07 E-04	1.28 E-04	0	0	-1.07E-04	-1.28E-04	-2.93E-05
Vanadium	2.3 E-03	2.25 E-06	7.23 E-05	8.67 E-05	0	0	-7.23E-05	-8.67E-05	-1.98E-05
Zinc	2.9 E-02	2.84 E-05	9.11 E-04	1.09 E-03	0	0	-9.11E-04	-1.09E-03	-2.50E-04
Polycyclic Organic Matter (POM)				4.30E-07		0		-4.30E-07	-9.81E-08
		Total HAPs =	0.061	0.073	0	0			

Notes: 1. Natural gas heating value of 1020 Btu/SCF
2. Boiler No.1 shares a stack with Boiler No.2

Table 5-3a: Boiler No. 2 (HP2) Modification Emission Analysis (Coal)							Date:	Feb-13
Location: Heat Plant - Building #20		Fuel:	Coal		Equipment Capacity:	23.0	MMBtu/hr	
EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.1, Tables 1.1-3, 1.1-18, 1.1-19 and prior stack tests		Emission Estimates					
			Pre-Project Basis		Post-Project Basis		Changes in PT	
			Hourly	Annual	Hourly	Annual	Hourly Basis	Annua
			23.0	3,854	0	0		
	EF	calc'd EF	MMBtu/hr	ton_C/yr	MMBtu/hr	ton_C/yr		
Pollutant	lb_E/ton_C	lb_E/ton_C	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr
CO	0.50	0.50	2.94 E-01	9.64 E-01	0	0	-0.29	-0.96
NO_X	---	---	3.26 E+01	5.62 E+01	0	0	-32.60	-56.20
SO_2	---	---	4.77 E+01	9.47 E+01	0	0	-47.70	-94.70
PM10	---	---	1.28 E-02	2.20 E-02	0	0	-1.28E-02	-2.20E-02
PM	---	---	2.53 E-02	4.36 E-02	0	0	-2.53E-02	-4.36E-02
Pb	4.20 E-04	4.20 E-04	2.47 E-04	8.09 E-04	0	0	-2.47E-04	-8.09E-04
CH_4	0.04	0.04	2.35 E-02	7.71 E-02	0	0	-2.35E-02	-7.71E-02
TNMOC	0.06	0.06	3.53 E-02	1.16 E-01	0	0	-3.53E-02	-1.16E-01
N_2O	0.03	0.03	1.76 E-02	5.78 E-02	0	0	-1.76E-02	-5.78E-02
HCl	1.20	1.20	7.06 E-01	2.31 E+00	0	0	-7.06E-01	-2.31E+00
HF	0.15	0.15	8.82 E-02	2.89 E-01	0	0	-8.82E-02	-2.89E-01
Antimony	1.80 E-05	1.80 E-05	1.06 E-05	3.47 E-05	0	0	-1.06E-05	-3.47E-05
Arsenic	4.10 E-04	4.10 E-04	2.41 E-04	7.90 E-04	0	0	-2.41E-04	-7.90E-04
Beryllium	2.10 E-05	2.10 E-05	1.24 E-05	4.05 E-05	0	0	-1.24E-05	-4.05E-05
Cadmium	5.10 E-05	5.10 E-05	3.00 E-05	9.83 E-05	0	0	-3.00E-05	-9.83E-05
Chromium	2.60 E-04	2.60 E-04	1.53 E-04	5.01 E-04	0	0	-1.53E-04	-5.01E-04
Chromium (VI)	7.90 E-05	7.90 E-05	4.65 E-05	1.52 E-04	0	0	-4.65E-05	-1.52E-04
Cobalt	1.00 E-04	1.00 E-04	5.88 E-05	1.93 E-04	0	0	-5.88E-05	-1.93E-04
Magnesium	1.10 E-02	1.10 E-02	6.47 E-03	2.12 E-02	0	0	-6.47E-03	-2.12E-02
Manganese	4.90 E-04	4.90 E-04	2.88 E-04	9.44 E-04	0	0	-2.88E-04	-9.44E-04
Mercury	8.30 E-05	8.30 E-05	4.88 E-05	1.60 E-04	0	0	-4.88E-05	-1.60E-04
Nickel	2.80 E-04	2.80 E-04	1.65 E-04	5.40 E-04	0	0	-1.65E-04	-5.40E-04
Selenium	1.30 E-03	1.30 E-03	7.65 E-04	2.51 E-03	0	0	-7.65E-04	-2.51E-03
			Total HAPs =	2.61	**Total HAPs =**	0		

Table 5-3b: Boiler No. 2 (HP2) Modification Emission Analysis (Natural Gas)

Date: May-13

Location: Heat Plant - Building #20 Fuel: Natural Gas Equipment Capacity: 23.0 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly[2]	Annual [3]	Hourly	Annual	Hourly Basis	Annual Basis	
			23.00	32.5	23.0	32.5			
	EF	calc'd EF[1]	MMBtu/hr	MMscf NG/yr	MMBtu/hr	MMscf NG/yr			
Pollutant	$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr
CO	84	0.082	1.89 E+00	1.37 E+00	1.89 E+00	1.37 E+00	0.0E+00	0.0E+00	0.00E+00
NO_X	100	0.098	2.25 E+00	1.63 E+00	2.25 E+00	1.63 E+00	0.0E+00	0.0E+00	0.00E+00
SO_2	0.60	0.00059	1.35 E-02	9.75 E-03	1.35 E-02	9.75 E-03	0.0E+00	0.0E+00	0.00E+00
PM10[4]	7.60	0.0075	1.71 E-04	1.24 E-01	1.71 E-01	1.24 E-01	1.7E-01	0.0E+00	0.00E+00
PM2.5	7.60	0.0075	1.71 E-04	1.24 E-01	1.71 E-01	1.24 E-01	1.7E-01	0.0E+00	0.00E+00
Pb	0.0005	4.90 E-07	1.13 E-05	8.13 E-06	1.13 E-05	8.13 E-06	0.0E+00	0.0E+00	0.00E+00
VOC	5.50	0.005	1.24 E-01	8.94 E-02	1.24 E-01	8.94 E-02	0.0E+00	0.0E+00	0.00E+00
TOC	11.00	0.011	2.48 E-01	1.79 E-01	2.48 E-01	1.79 E-01	0.0E+00	0.0E+00	0.00E+00
2-Methylnaphthalene	2.4 E-05	2.35 E-08	5.41 E-07	3.90 E-07	5.41 E-07	3.90 E-07	0.0E+00	0.0E+00	0.00E+00
3-Methylchloranthrene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	3.61 E-07	2.60 E-07	3.61 E-07	2.60 E-07	0.0E+00	0.0E+00	0.00E+00
Acenaphthene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Acenaphthylene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Anthracene	2.4 E-06	2.35 E-09	5.41 E-08	3.90 E-08	5.41 E-08	3.90 E-08	0.0E+00	0.0E+00	0.00E+00
Arsenic	2.0 E-04	1.96 E-07	4.51 E-06	3.25 E-06	4.51 E-06	3.25 E-06	0.0E+00	0.0E+00	0.00E+00
Barium	4.4 E-03	4.31 E-06	9.92 E-05	7.15 E-05	9.92 E-05	7.15 E-05	0.0E+00	0.0E+00	0.00E+00
Benzo(a)anthracene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Benzene	2.1 E-03	2.06 E-06	4.74 E-05	3.41 E-05	4.74 E-05	3.41 E-05	0.0E+00	0.0E+00	0.00E+00
Benzo(a)pyrene	1.2 E-06	1.18 E-09	2.71 E-08	1.95 E-08	2.71 E-08	1.95 E-08	0.0E+00	0.0E+00	0.00E+00
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Benzo(g,h,I)perylene	1.2 E-06	1.18 E-09	2.71 E-08	1.95 E-08	2.71 E-08	1.95 E-08	0.0E+00	0.0E+00	0.00E+00
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Beryllium	1.2 E-05	1.18 E-08	2.71 E-07	1.95 E-07	2.71 E-07	1.95 E-07	0.0E+00	0.0E+00	0.00E+00
Butane	2.1 E+00	2.06 E-03	4.74 E-02	3.41 E-02	4.74 E-02	3.41 E-02	0.0E+00	0.0E+00	0.00E+00
Cadmium	1.1 E-03	1.08 E-06	2.48 E-05	1.79 E-05	2.48 E-05	1.79 E-05	0.0E+00	0.0E+00	0.00E+00
Chromium	1.4 E-03	1.37 E-06	3.16 E-05	2.28 E-05	3.16 E-05	2.28 E-05	0.0E+00	0.0E+00	0.00E+00
Chrysene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Cobalt	8.4 E-05	8.24 E-08	1.89 E-06	1.37 E-06	1.89 E-06	1.37 E-06	0.0E+00	0.0E+00	0.00E+00
Copper	8.5 E-04	8.33 E-07	1.92 E-05	1.38 E-05	1.92 E-05	1.38 E-05	0.0E+00	0.0E+00	0.00E+00
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	2.71 E-08	1.95 E-08	2.71 E-08	1.95 E-08	0.0E+00	0.0E+00	0.00E+00
Dichlorobenzene	1.2 E-03	1.18 E-06	2.71 E-05	1.95 E-05	2.71 E-05	1.95 E-05	0.0E+00	0.0E+00	0.00E+00
Ethane	3.1 E+00	3.04 E-03	6.99 E-02	5.04 E-02	6.99 E-02	5.04 E-02	0.0E+00	0.0E+00	0.00E+00
Fluoranthene	3.0 E-06	2.94 E-09	6.76 E-08	4.88 E-08	6.76 E-08	4.88 E-08	0.0E+00	0.0E+00	0.00E+00
Fluorene	2.8 E-06	2.75 E-09	6.31 E-08	4.55 E-08	6.31 E-08	4.55 E-08	0.0E+00	0.0E+00	0.00E+00
Formaldehyde	7.5 E-02	7.35 E-05	1.69 E-03	1.22 E-03	1.69 E-03	1.22 E-03	0.0E+00	0.0E+00	0.00E+00
Hexane	1.8 E+00	1.76 E-03	4.06 E-02	2.93 E-02	4.06 E-02	2.93 E-02	0.0E+00	0.0E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	4.06 E-08	2.93 E-08	4.06 E-08	2.93 E-08	0.0E+00	0.0E+00	0.00E+00
Manganese	3.8 E-04	3.73 E-07	8.57 E-06	6.18 E-06	8.57 E-06	6.18 E-06	0.0E+00	0.0E+00	0.00E+00
Mercury	2.6 E-04	2.55 E-07	5.86 E-06	4.23 E-06	5.86 E-06	4.23 E-06	0.0E+00	0.0E+00	0.00E+00
Methane	2.30	0.00225	5.19 E-02	3.74 E-02	5.19 E-02	3.74 E-02	0.0E+00	0.0E+00	0.00E+00
Molybdenum	1.1 E-03	1.08 E-06	2.48 E-05	1.79 E-05	2.48 E-05	1.79 E-05	0.0E+00	0.0E+00	0.00E+00
Naphthalene	6.1 E-04	5.98 E-07	1.38 E-05	9.91 E-06	1.38 E-05	9.91 E-06	0.0E+00	0.0E+00	0.00E+00
Nickel	2.1 E-03	2.06 E-06	4.74 E-05	3.41 E-05	4.74 E-05	3.41 E-05	0.0E+00	0.0E+00	0.00E+00
Pentane	2.6 E+00	2.55 E-03	5.86 E-02	4.23 E-02	5.86 E-02	4.23 E-02	0.0E+00	0.0E+00	0.00E+00
Phenanathrene	1.7 E-05	1.67 E-08	3.83 E-07	2.76 E-07	3.83 E-07	2.76 E-07	0.0E+00	0.0E+00	0.00E+00
Propane	1.6 E+00	1.57 E-03	3.61 E-02	2.60 E-02	3.61 E-02	2.60 E-02	0.0E+00	0.0E+00	0.00E+00
Pyrene	5.0 E-06	4.90 E-09	1.13 E-07	8.13 E-08	1.13 E-07	8.13 E-08	0.0E+00	0.0E+00	0.00E+00
Selenium	2.4 E-05	2.35 E-08	5.41 E-07	3.90 E-07	5.41 E-07	3.90 E-07	0.0E+00	0.0E+00	0.00E+00
Toluene	3.4 E-03	3.33 E-06	7.67 E-05	5.53 E-05	7.67 E-05	5.53 E-05	0.0E+00	0.0E+00	0.00E+00
Vanadium	2.3 E-03	2.25 E-06	5.19 E-05	3.74 E-05	5.19 E-05	3.74 E-05	0.0E+00	0.0E+00	0.00E+00
Zinc	2.9 E-02	2.84 E-05	6.54 E-04	4.71 E-04	6.54 E-04	4.71 E-04	0.0E+00	0.0E+00	0.00E+00
Polycyclic Organic Matter (POM)				1.85E-07		1.85E-07		0.00E+00	0.00E+00
		Total HAPs =	0.043	0.031	0.043	0.031			

Notes:
1. Natural gas heating value of 1020 Btu/SCF
2. May 2013 - Prior permit basis used 32.05 MMBtu/hr duty for Boiler 2 NG emission calcs. Revised to actual design duty of 23 MMBtu/hr.
3. May 2013 - Prior permit basis used 32.05 MMBtu/hr for 1440 hrs/yr, equivalent to 45.2 MMscf NG/yr. Revised to 32.5 MMscf NG/yr.
4. Particulate matter previously controlled to 99.9% efficiency with baghouse

Table 5-4: Boiler No. 3 (HP3) Modification Emission Analysis

Date: Feb-13

Location: Heat Plant - Building #20 Fuel: Natural Gas Equipment Capacity: 26.92 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly 26.92	Annual 173	Hourly 26.92	Annual 203	Hourly Basis	Annual Basis	
	EF	calc'd EF[1]	MMBtu/hr	MMscf NG/yr	MMBtu/hr	MMscf NG/yr			
Pollutant	**$lb_E/10^6$ scf**	**lb_E/MMBtu**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**
CO	84	0.082	2.22 E+00	7.26 E+00	2.22 E+00	8.53 E+00	0	1.26E+00	2.88E-01
NO_X[2]	50	0.049	1.32 E+00	4.32 E+00	1.32 E+00	5.08 E+00	0	7.52E-01	1.72E-01
SO_2	0.60	0.00059	1.58 E-02	5.19 E-02	1.58 E-02	6.09 E-02	0	9.02E-03	2.06E-03
PM10	7.60	0.0075	2.01 E-01	6.57 E-01	2.01 E-01	7.71 E-01	0	1.14E-01	2.61E-02
PM2.5	7.60	0.0075	2.01 E-01	6.57 E-01	2.01 E-01	7.71 E-01	0	1.14E-01	2.61E-02
Pb	0.0005	4.90 E-07	1.32 E-05	4.32 E-05	1.32 E-05	5.08 E-05	0	7.52E-06	1.72E-06
VOC	5.50	0.005	1.45 E-01	4.76 E-01	1.45 E-01	5.58 E-01	0	8.27E-02	1.89E-02
TOC	11.00	0.011	2.90 E-01	9.51 E-01	2.90 E-01	1.12 E+00	0	1.65E-01	3.77E-02
2-Methylnaphthalene	2.4 E-05	2.35 E-08	6.33 E-07	2.08 E-06	6.33 E-07	2.44 E-06	0	3.61E-07	8.24E-08
3-Methylchloranthrene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	4.22 E-07	1.38 E-06	4.22 E-07	1.62 E-06	0	2.40E-07	5.49E-08
Acenaphthene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Acenaphthylene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Anthracene	2.4 E-06	2.35 E-09	6.33 E-08	2.08 E-07	6.33 E-08	2.44 E-07	0	3.61E-08	8.24E-09
Arsenic	2.0 E-04	1.96 E-07	5.28 E-06	1.73 E-05	5.28 E-06	2.03 E-05	0	3.01E-06	6.86E-07
Barium	4.4 E-03	4.31 E-06	1.16 E-04	3.80 E-04	1.16 E-04	4.47 E-04	0	6.61E-05	1.51E-05
Benzo(a)anthracene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Benzene	2.1 E-03	2.06 E-06	5.54 E-05	1.82 E-04	5.54 E-05	2.13 E-04	0	3.16E-05	7.21E-06
Benzo(a)pyrene	1.2 E-06	1.18 E-09	3.17 E-08	1.04 E-07	3.17 E-08	1.22 E-07	0	1.80E-08	4.12E-09
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Benzo(g,h,I)perylene	1.2 E-06	1.18 E-09	3.17 E-08	1.04 E-07	3.17 E-08	1.22 E-07	0	1.80E-08	4.12E-09
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Beryllium	1.2 E-05	1.18 E-08	3.17 E-07	1.04 E-06	3.17 E-07	1.22 E-06	0	1.80E-07	4.12E-08
Butane	2.1 E+00	2.06 E-03	5.54 E-02	1.82 E-01	5.54 E-02	2.13 E-01	0	3.16E-02	7.21E-03
Cadmium	1.1 E-03	1.08 E-06	2.90 E-05	9.51 E-05	2.90 E-05	1.12 E-04	0	1.65E-05	3.77E-06
Chromium	1.4 E-03	1.37 E-06	3.70 E-05	1.21 E-04	3.70 E-05	1.42 E-04	0	2.10E-05	4.80E-06
Chrysene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Cobalt	8.4 E-05	8.24 E-08	2.22 E-06	7.26 E-06	2.22 E-06	8.53 E-06	0	1.26E-06	2.88E-07
Copper	8.5 E-04	8.33 E-07	2.24 E-05	7.35 E-05	2.24 E-05	8.63 E-05	0	1.28E-05	2.92E-06
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	3.17 E-08	1.04 E-07	3.17 E-08	1.22 E-07	0	1.80E-08	4.12E-09
Dichlorobenzene	1.2 E-03	1.18 E-06	3.17 E-05	1.04 E-04	3.17 E-05	1.22 E-04	0	1.80E-05	4.12E-06
Ethane	3.1 E+00	3.04 E-03	8.18 E-02	2.68 E-01	8.18 E-02	3.15 E-01	0	4.66E-02	1.06E-02
Fluoranthene	3.0 E-06	2.94 E-09	7.92 E-08	2.59 E-07	7.92 E-08	3.05 E-07	0	4.51E-08	1.03E-08
Fluorene	2.8 E-06	2.75 E-09	7.39 E-08	2.42 E-07	7.39 E-08	2.84 E-07	0	4.21E-08	9.61E-09
Formaldehyde	7.5 E-02	7.35 E-05	1.98 E-03	6.49 E-03	1.98 E-03	7.61 E-03	0	1.13E-03	2.57E-04
Hexane	1.8 E+00	1.76 E-03	4.75 E-02	1.56 E-01	4.75 E-02	1.83 E-01	0	2.71E-02	6.18E-03
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	4.75 E-08	1.56 E-07	4.75 E-08	1.83 E-07	0	2.71E-08	6.18E-09
Manganese	3.8 E-04	3.73 E-07	1.00 E-05	3.29 E-05	1.00 E-05	3.86 E-05	0	5.71E-06	1.30E-06
Mercury	2.6 E-04	2.55 E-07	6.86 E-06	2.25 E-05	6.86 E-06	2.64 E-05	0	3.91E-06	8.92E-07
Methane	2.30	0.00225	6.07 E-02	1.99 E-01	6.07 E-02	2.33 E-01	0	3.46E-02	7.89E-03
Molybdenum	1.1 E-03	1.08 E-06	2.90 E-05	9.51 E-05	2.90 E-05	1.12 E-04	0	1.65E-05	3.77E-06
Naphthalene	6.1 E-04	5.98 E-07	1.61 E-05	5.27 E-05	1.61 E-05	6.19 E-05	0	9.17E-06	2.09E-06
Nickel	2.1 E-03	2.06 E-06	5.54 E-05	1.82 E-04	5.54 E-05	2.13 E-04	0	3.16E-05	7.21E-06
Pentane	2.6 E+00	2.55 E-03	6.86 E-02	2.25 E-01	6.86 E-02	2.64 E-01	0	3.91E-02	8.92E-03
Phenanathrene	1.7 E-05	1.67 E-08	4.49 E-07	1.47 E-06	4.49 E-07	1.73 E-06	0	2.56E-07	5.83E-08
Propane	1.6 E+00	1.57 E-03	4.22 E-02	1.38 E-01	4.22 E-02	1.62 E-01	0	2.40E-02	5.49E-03
Pyrene	5.0 E-06	4.90 E-09	1.32 E-07	4.32 E-07	1.32 E-07	5.08 E-07	0	7.52E-08	1.72E-08
Selenium	2.4 E-05	2.35 E-08	6.33 E-07	2.08 E-06	6.33 E-07	2.44 E-06	0	3.61E-07	8.24E-08
Toluene	3.4 E-03	3.33 E-06	8.97 E-05	2.94 E-04	8.97 E-05	3.45 E-04	0	5.11E-05	1.17E-05
Vanadium	2.3 E-03	2.25 E-06	6.07 E-05	1.99 E-04	6.07 E-05	2.33 E-04	0	3.46E-05	7.89E-06
Zinc	2.9 E-02	2.84 E-05	7.65 E-04	2.51 E-03	7.65 E-04	2.94 E-03	0	4.36E-04	9.95E-05
Polycyclic Organic Matter (POM)				9.86E-07		1.16E-06		1.71E-07	3.91E-08
		Total HAPs =	0.051	0.167	0.051	0.195			

Notes: 1. Natural gas heating value of 1020 Btu/SCF

2. Emission factor for "Small Boilers", "Controlled - Low NO_X burners".

Table 5-5a: Boiler No. 4 (HP4) Modification Emission Analysis (Natural Gas)

Date: Feb-13

Location: Heat Plant - Building #20 Fuel: Natural Gas Equipment Capacity: 72.84 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly 72.84	Annual 468	Hourly 72.84	Annual 498	Hourly Basis	Annual Basis	
	EF	calc'd EF[1]	MMBtu/hr	MMscf NG/yr	MMBtu/hr	MMscf NG/yr			
Pollutant	$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr
CO	84	0.082	6.00 E+00	1.97 E+01	6.00 E+00	2.09 E+01	0	1.26E+00	2.89E-01
NO_X[2]	50	0.049	3.57 E+00	1.17 E+01	3.57 E+00	1.25 E+01	0	7.53E-01	1.72E-01
SO_2	0.60	0.00059	4.28 E-02	1.40 E-01	4.28 E-02	1.49 E-01	0	9.03E-03	2.06E-03
PM10	7.60	0.0075	5.43 E-01	1.78 E+00	5.43 E-01	1.89 E+00	0	1.14E-01	2.61E-02
PM2.5	7.60	0.0075	5.43 E-01	1.78 E+00	5.43 E-01	1.89 E+00	0	1.14E-01	2.61E-02
Pb	0.0005	4.90 E-07	3.57 E-05	1.17 E-04	3.57 E-05	1.25 E-04	0	7.53E-06	1.72E-06
VOC	5.50	0.005	3.93 E-01	1.29 E+00	3.93 E-01	1.37 E+00	0	8.28E-02	1.89E-02
TOC	11.00	0.011	7.86 E-01	2.57 E+00	7.86 E-01	2.74 E+00	0	1.66E-01	3.78E-02
2-Methylnaphthalene	2.4 E-05	2.35 E-08	1.71 E-06	5.61 E-06	1.71 E-06	5.98 E-06	0	3.61E-07	8.25E-08
3-Methylchloranthrene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	1.14 E-06	3.74 E-06	1.14 E-06	3.98 E-06	0	2.41E-07	5.50E-08
Acenaphthene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Acenaphthylene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Anthracene	2.4 E-06	2.35 E-09	1.71 E-07	5.61 E-07	1.71 E-07	5.98 E-07	0	3.61E-08	8.25E-09
Arsenic	2.0 E-04	1.96 E-07	1.43 E-05	4.68 E-05	1.43 E-05	4.98 E-05	0	3.01E-06	6.87E-07
Barium	4.4 E-03	4.31 E-06	3.14 E-04	1.03 E-03	3.14 E-04	1.10 E-03	0	6.62E-05	1.51E-05
Benzo(a)anthracene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Benzene	2.1 E-03	2.06 E-06	1.50 E-04	4.91 E-04	1.50 E-04	5.23 E-04	0	3.16E-05	7.22E-06
Benzo(a)pyrene	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07	8.57 E-08	2.99 E-07	0	1.81E-08	4.12E-09
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Benzo(g,h,i)perylene	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07	8.57 E-08	2.99 E-07	0	1.81E-08	4.12E-09
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Beryllium	1.2 E-05	1.18 E-08	8.57 E-07	2.81 E-06	8.57 E-07	2.99 E-06	0	1.81E-07	4.12E-08
Butane	2.1 E+00	2.06 E-03	1.50 E-01	4.91 E-01	1.50 E-01	5.23 E-01	0	3.16E-02	7.22E-03
Cadmium	1.1 E-03	1.08 E-06	7.86 E-05	2.57 E-04	7.86 E-05	2.74 E-04	0	1.66E-05	3.78E-06
Chromium	1.4 E-03	1.37 E-06	1.00 E-04	3.28 E-04	1.00 E-04	3.49 E-04	0	2.11E-05	4.81E-06
Chrysene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Cobalt	8.4 E-05	8.24 E-08	6.00 E-06	1.97 E-05	6.00 E-06	2.09 E-05	0	1.26E-06	2.89E-07
Copper	8.5 E-04	8.33 E-07	6.07 E-05	1.99 E-04	6.07 E-05	2.12 E-04	0	1.28E-05	2.92E-06
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07	8.57 E-08	2.99 E-07	0	1.81E-08	4.12E-09
Dichlorobenzene	1.2 E-03	1.18 E-06	8.57 E-05	2.81 E-04	8.57 E-05	2.99 E-04	0	1.81E-05	4.12E-06
Ethane	3.1 E+00	3.04 E-03	2.21 E-01	7.25 E-01	2.21 E-01	7.72 E-01	0	4.67E-02	1.07E-02
Fluoranthene	3.0 E-06	2.94 E-09	2.14 E-07	7.02 E-07	2.14 E-07	7.47 E-07	0	4.52E-08	1.03E-08
Fluorene	2.8 E-06	2.75 E-09	2.00 E-07	6.55 E-07	2.00 E-07	6.97 E-07	0	4.22E-08	9.62E-09
Formaldehyde	7.5 E-02	7.35 E-05	5.36 E-03	1.75 E-02	5.36 E-03	1.87 E-02	0	1.13E-03	2.58E-04
Hexane	1.8 E+00	1.76 E-03	1.29 E-01	4.21 E-01	1.29 E-01	4.48 E-01	0	2.71E-02	6.19E-03
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07	1.29 E-07	4.48 E-07	0	2.71E-08	6.19E-09
Manganese	3.8 E-04	3.73 E-07	2.71 E-05	8.89 E-05	2.71 E-05	9.46 E-05	0	5.72E-06	1.31E-06
Mercury	2.6 E-04	2.55 E-07	1.86 E-05	6.08 E-05	1.86 E-05	6.47 E-05	0	3.91E-06	8.94E-07
Methane	2.30	0.00225	1.64 E-01	5.38 E-01	1.64 E-01	5.73 E-01	0	3.46E-02	7.91E-03
Molybdenum	1.1 E-03	1.08 E-06	7.86 E-05	2.57 E-04	7.86 E-05	2.74 E-04	0	1.66E-05	3.78E-06
Naphthalene	6.1 E-04	5.98 E-07	4.36 E-05	1.43 E-04	4.36 E-05	1.52 E-04	0	9.18E-06	2.10E-06
Nickel	2.1 E-03	2.06 E-06	1.50 E-04	4.91 E-04	1.50 E-04	5.23 E-04	0	3.16E-05	7.22E-06
Pentane	2.6 E+00	2.55 E-03	1.86 E-01	6.08 E-01	1.86 E-01	6.47 E-01	0	3.91E-02	8.94E-03
Phenanathrene	1.7 E-05	1.67 E-08	1.21 E-06	3.98 E-06	1.21 E-06	4.23 E-06	0	2.56E-07	5.84E-08
Propane	1.6 E+00	1.57 E-03	1.14 E-01	3.74 E-01	1.14 E-01	3.98 E-01	0	2.41E-02	5.50E-03
Pyrene	5.0 E-06	4.90 E-09	3.57 E-07	1.17 E-06	3.57 E-07	1.25 E-06	0	7.53E-08	1.72E-08
Selenium	2.4 E-05	2.35 E-08	1.71 E-06	5.61 E-06	1.71 E-06	5.98 E-06	0	3.61E-07	8.25E-08
Toluene	3.4 E-03	3.33 E-06	2.43 E-04	7.95 E-04	2.43 E-04	8.47 E-04	0	5.12E-05	1.17E-05
Vanadium	2.3 E-03	2.25 E-06	1.64 E-04	5.38 E-04	1.64 E-04	5.73 E-04	0	3.46E-05	7.91E-06
Zinc	2.9 E-02	2.84 E-05	2.07 E-03	6.78 E-03	2.07 E-03	7.22 E-03	0	4.37E-04	9.97E-05
Polycyclic Organic Matter (POM)				2.67E-06		2.84E-06		1.72E-07	3.92E-08
		Total HAPs =	0.138	0.450	0.138	0.479			

Notes: 1. Natural gas heating value of 1020 Btu/SCF

2. Emission factor for "Small Boilers", "Controlled - Low NO_X burners".

Table 5-5b: Boiler No. 4 (HP4) Modification Emission Analysis (Diesel)

Date: Feb-13

Location: Heat Plant - Building #20 Fuel: Diesel Equipment Capacity: 400 gal/hr

EQUIPMENT EMISSIONS	Diesel Emission Factors from EPA AP-42, Section 1.3, Tables 1.3-1 to 3, 1.3-6, 1.3-9 to 10		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
	EF	calc'd EF[1]	Hourly 72.84 MMBtu/hr	Annual	Hourly[2] 56.0 MMBtu/hr	Annual[3] 75,000 gallon/yr	Hourly Basis	Annual Basis	
Pollutant	$lb_E/10^3$ gal	lb_E/MMBtu	Nat. Gas lbE/hr	tonE/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr
CO	5	3.57E-02	6.00 E+00		2.00 E+00	1.88 E-01	-4.00E+00	1.88E-01	4.28E-02
NO_X[4]	9	6.43E-02	3.57 E+00		3.60 E+00	3.38 E-01	2.94E-02	3.38E-01	7.71E-02
SO_2	0.0022	1.54E-05	4.28 E-02		8.64 E-04	8.10 E-05	-4.20E-02	8.10E-05	1.85E-05
PM10	1.00	7.14E-03	5.43 E-01		4.00 E-01	3.75 E-02	-1.43E-01	3.75E-02	8.56E-03
PM2.5	0.25	1.79E-03	5.43 E-01		1.00 E-01	9.38 E-03	-4.43E-01	9.38E-03	2.14E-03
Pb	0.00	9.00E-06	3.57 E-05		5.04 E-04	4.73 E-05	4.68E-04	4.73E-05	1.08E-05
VOC	0.34	2.43E-03	3.93 E-01		1.36 E-01	1.28 E-02	-2.57E-01	1.28E-02	2.91E-03
TOC	0.56	3.97E-03	7.86 E-01		2.22 E-01	2.09 E-02	-5.63E-01	2.09E-02	4.76E-03
2-Methylnaphthalene			1.71 E-06		0	0	-1.71E-06	0.00E+00	0.00E+00
3-Methylchloranthrene			1.29 E-07		0	0	-1.29E-07	0.00E+00	0.00E+00
7,12-Dimethylbenz(a)anthracite			1.14 E-06		0	0	-1.14E-06	0.00E+00	0.00E+00
Acenaphthene	2.11E-05	1.51E-07	1.29 E-07		8.44 E-06	7.91 E-07	8.31E-06	7.91E-07	1.81E-07
Acenaphthylene	2.53E-07	1.81E-09	1.29 E-07		1.01 E-07	9.49 E-09	-2.73E-08	9.49E-09	2.17E-09
Anthracene	1.22E-06	8.71E-09	1.71 E-07		4.88 E-07	4.58 E-08	3.17E-07	4.58E-08	1.04E-08
Arsenic	5.60E-04	4.00E-06	1.43 E-05		2.24 E-04	2.10 E-05	2.10E-04	2.10E-05	4.79E-06
Barium			3.14 E-04		0.00 E+00	0.00 E+00	-3.14E-04	0.00E+00	0.00E+00
Benzo(a)anthracene	4.01E-06	2.86E-08	1.29 E-07		1.60 E-06	1.50 E-07	1.48E-06	1.50E-07	3.43E-08
Benzene	2.14E-04	1.53E-06	1.50 E-04		8.56 E-05	8.03 E-06	-6.44E-05	8.03E-06	1.83E-06
Benzo(a)pyrene			8.57 E-08		0	0	-8.57E-08	0.00E+00	0.00E+00
Benzo(b)fluoranthene	1.48E-06	1.06E-08	1.29 E-07		5.92 E-07	5.55 E-08	4.63E-07	5.55E-08	1.27E-08
Benzo(g,h,I)perylene	2.66E-06	1.90E-08	8.57 E-08		1.06 E-06	9.98 E-08	9.78E-07	9.98E-08	2.28E-08
Benzo(k)fluoranthene	1.48E-06	1.06E-08	1.29 E-07		5.92 E-07	5.55 E-08	4.63E-07	5.55E-08	1.27E-08
Beryllium	0.00	3.00E-06	8.57 E-07		1.68 E-04	1.58 E-05	1.67E-04	1.58E-05	3.60E-06
Butane			1.50 E-01		0	0	-1.50E-01	0.00E+00	0.00E+00
Cadmium	0.00	3.00E-06	7.86 E-05		1.68 E-04	1.58 E-05	8.94E-05	1.58E-05	3.60E-06
Chromium	0.00	3.00E-06	1.00 E-04		1.68 E-04	1.58 E-05	6.80E-05	1.58E-05	3.60E-06
Chrysene	2.38E-06	1.70E-08	1.29 E-07		9.52 E-07	8.93 E-08	8.23E-07	8.93E-08	2.04E-08
Cobalt			6.00 E-06		0	0	-6.00E-06	0.00E+00	0.00E+00
Copper	0.00	6.00E-06	6.07 E-05		3.36 E-04	3.15 E-05	0.00	3.15E-05	7.19E-06
Dibenzo(a,h)anthracene	1.67E-06	1.19E-08	8.57 E-08		6.68 E-07	6.26 E-08	5.82E-07	6.26E-08	1.43E-08
Dichlorobenzene			8.57 E-05		0	0	-8.57E-05	0.00E+00	0.00E+00
Ethane			2.21 E-01		0	0	-2.21E-01	0.00E+00	0.00E+00
Fluoranthene	4.84E-06	3.46E-08	2.14 E-07		1.94 E-06	1.82 E-07	1.72E-06	1.82E-07	4.14E-08
Fluorene	4.47E-06	3.19E-08	2.00 E-07		1.79 E-06	1.68 E-07	1.59E-06	1.68E-07	3.83E-08
Formaldehyde	0.061	4.36E-04	5.36 E-03		2.44 E-02	2.29 E-03	1.90E-02	2.29E-03	5.22E-04
Hexane			1.29 E-01		0	0	-1.29E-01	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	2.14E-06	1.53E-08	1.29 E-07		8.56 E-07	8.03 E-08	7.27E-07	8.03E-08	1.83E-08
Manganese	0.00	6.00E-06	2.71 E-05		3.36 E-04	3.15 E-05	3.09E-04	3.15E-05	7.19E-06
Mercury	0.00	3.00E-06	1.86 E-05		1.68 E-04	1.58 E-05	1.49E-04	1.58E-05	3.60E-06
Methane			1.64 E-01		0	0	-1.64E-01	0.00E+00	0.00E+00
Molybdenum			7.86 E-05		0	0	-7.86E-05	0.00E+00	0.00E+00
Naphthalene	1.13E-03	8.07E-06	4.36 E-05		4.52 E-04	4.24 E-05	4.08E-04	4.24E-05	9.67E-06
Nickel	0.00	3.00E-06	1.50 E-04		1.68 E-04	1.58 E-05	1.80E-05	1.58E-05	3.60E-06
Pentane			1.86 E-01		0	0	-1.86E-01	0.00E+00	0.00E+00
Phenanathrene	1.05E-05	7.50E-08	1.21 E-06		4.20 E-06	3.94 E-07	2.99E-06	3.94E-07	8.99E-08
Propane			1.14 E-01		0	0	-1.14E-01	0.00E+00	0.00E+00
Pyrene	4.25E-06	3.04E-08	3.57 E-07		1.70 E-06	1.59 E-07	1.34E-06	1.59E-07	3.64E-08
Selenium	0.00	1.50E-05	1.71 E-06		8.40 E-04	7.88 E-05	8.38E-04	7.88E-05	1.80E-05
Toluene	6.20E-03	4.43E-05	2.43 E-04		2.48 E-03	2.33 E-04	2.24E-03	2.33E-04	5.31E-05
Vanadium			1.64 E-04		0	0	-1.64E-04	0.00E+00	0.00E+00
Zinc	0.00	4.00E-06	2.07 E-03		2.24 E-04	2.10 E-05	-1.85E-03	2.10E-05	4.79E-06
Polycyclic Organic Matter (POM)						4.94E-07		4.94E-07	1.13E-07
		Total HAPs =	0.1375	0.0000	0.0302	0.0028			

Notes:
1. Diesel heating value of 140 MBtu/gal
2. Diesel delivery pump maximum capacity is 400 gallon/hr. 400 gal/hr * 0.14 MMBtu/gal = 56 MMBtu/hr
3. 75,000 gallons allows ISU to operate with emergency diesel fuel for one week at 400 gal/hr fuel rate.
4. Emission factor for "Boiler < 100 Million Btu/hr", 45% reduction in NOx because of low-NOx burner (pg 1.3-6).

Table 5-6: Boiler No. 36 (B36) Modification Emission Analysis

Date: Feb-13

Location: Gale Life Science Building #65 Fuel: Natural Gas Equipment Capacity: 1.60 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly 0.00	Annual 0	Hourly 1.60	Annual 8760	Hourly Basis	Annual Basis	
	EF	calc'd EF[1]	MMBtu/hr	hr/yr	MMBtu/hr	hr/yr			
Pollutant	$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr	ton_E/yr	lb_E/hr
CO	84	0.082	0	0	1.32 E-01	5.77 E-01	1.32E-01	5.77E-01	1.32E-01
NO_x	100	0.098	0	0	1.57 E-01	6.87 E-01	1.57E-01	6.87E-01	1.57E-01
SO_2	0.60	0.00059	0	0	9.41 E-04	4.12 E-03	9.41E-04	4.12E-03	9.41E-04
PM10	7.60	0.0075	0	0	1.19 E-02	5.22 E-02	1.19E-02	5.22E-02	1.19E-02
PM2.5	7.60	0.0075	0	0	1.19 E-02	5.22 E-02	1.19E-02	5.22E-02	1.19E-02
Pb	0.0005	4.90 E-07	0	0	7.84 E-07	3.44 E-06	7.84E-07	3.44E-06	7.84E-07
VOC	5.50	0.005	0	0	8.63 E-03	3.78 E-02	8.63E-03	3.78E-02	8.63E-03
TOC	11.00	0.011	0	0	1.73 E-02	7.56 E-02	1.73E-02	7.56E-02	1.73E-02
2-Methylnaphthalene	2.4 E-05	2.35 E-08	0	0	3.76 E-08	1.65 E-07	3.76E-08	1.65E-07	3.76E-08
3-Methylchloranthrene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	0	0	2.51 E-08	1.10 E-07	2.51E-08	1.10E-07	2.51E-08
Acenaphthene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Acenaphthylene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Anthracene	2.4 E-06	2.35 E-09	0	0	3.76 E-09	1.65 E-08	3.76E-09	1.65E-08	3.76E-09
Arsenic	2.0 E-04	1.96 E-07	0	0	3.14 E-07	1.37 E-06	3.14E-07	1.37E-06	3.14E-07
Barium	4.4 E-03	4.31 E-06	0	0	6.90 E-06	3.02 E-05	6.90E-06	3.02E-05	6.90E-06
Benzo(a)anthracene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Benzene	2.1 E-03	2.06 E-06	0	0	3.29 E-06	1.44 E-05	3.29E-06	1.44E-05	3.29E-06
Benzo(a)pyrene	1.2 E-06	1.18 E-09	0	0	1.88 E-09	8.24 E-09	1.88E-09	8.24E-09	1.88E-09
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Benzo(g,h,I)perylene	1.2 E-06	1.18 E-09	0	0	1.88 E-09	8.24 E-09	1.88E-09	8.24E-09	1.88E-09
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Beryllium	1.2 E-05	1.18 E-08	0	0	1.88 E-08	8.24 E-08	1.88E-08	8.24E-08	1.88E-08
Butane	2.1 E+00	2.06 E-03	0	0	3.29 E-03	1.44 E-02	3.29E-03	1.44E-02	3.29E-03
Cadmium	1.1 E-03	1.08 E-06	0	0	1.73 E-06	7.56 E-06	1.73E-06	7.56E-06	1.73E-06
Chromium	1.4 E-03	1.37 E-06	0	0	2.20 E-06	9.62 E-06	2.20E-06	9.62E-06	2.20E-06
Chrysene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Cobalt	8.4 E-05	8.24 E-08	0	0	1.32 E-07	5.77 E-07	1.32E-07	5.77E-07	1.32E-07
Copper	8.5 E-04	8.33 E-07	0	0	1.33 E-06	5.84 E-06	1.33E-06	5.84E-06	1.33E-06
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	0	0	1.88 E-09	8.24 E-09	1.88E-09	8.24E-09	1.88E-09
Dichlorobenzene	1.2 E-03	1.18 E-06	0	0	1.88 E-06	8.24 E-06	1.88E-06	8.24E-06	1.88E-06
Ethane	3.1 E+00	3.04 E-03	0	0	4.86 E-03	2.13 E-02	4.86E-03	2.13E-02	4.86E-03
Fluoranthene	3.0 E-06	2.94 E-09	0	0	4.71 E-09	2.06 E-08	4.71E-09	2.06E-08	4.71E-09
Fluorene	2.8 E-06	2.75 E-09	0	0	4.39 E-09	1.92 E-08	4.39E-09	1.92E-08	4.39E-09
Formaldehyde	7.5 E-02	7.35 E-05	0	0	1.18 E-04	5.15 E-04	1.18E-04	5.15E-04	1.18E-04
Hexane	1.8 E+00	1.76 E-03	0	0	2.82 E-03	1.24 E-02	2.82E-03	1.24E-02	2.82E-03
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	0	0	2.82 E-09	1.24 E-08	2.82E-09	1.24E-08	2.82E-09
Manganese	3.8 E-04	3.73 E-07	0	0	5.96 E-07	2.61 E-06	5.96E-07	2.61E-06	5.96E-07
Mercury	2.6 E-04	2.55 E-07	0	0	4.08 E-07	1.79 E-06	4.08E-07	1.79E-06	4.08E-07
Methane	2.30	0.00225	0	0	3.61 E-03	1.58 E-02	3.61E-03	1.58E-02	3.61E-03
Molybdenum	1.1 E-03	1.08 E-06	0	0	1.73 E-06	7.56 E-06	1.73E-06	7.56E-06	1.73E-06
Naphthalene	6.1 E-04	5.98 E-07	0	0	9.57 E-07	4.19 E-06	9.57E-07	4.19E-06	9.57E-07
Nickel	2.1 E-03	2.06 E-06	0	0	3.29 E-06	1.44 E-05	3.29E-06	1.44E-05	3.29E-06
Pentane	2.6 E+00	2.55 E-03	0	0	4.08 E-03	1.79 E-02	4.08E-03	1.79E-02	4.08E-03
Phenanathrene	1.7 E-05	1.67 E-08	0	0	2.67 E-08	1.17 E-07	2.67E-08	1.17E-07	2.67E-08
Propane	1.6 E+00	1.57 E-03	0	0	2.51 E-03	1.10 E-02	2.51E-03	1.10E-02	2.51E-03
Pyrene	5.0 E-06	4.90 E-09	0	0	7.84 E-09	3.44 E-08	7.84E-09	3.44E-08	7.84E-09
Selenium	2.4 E-05	2.35 E-08	0	0	3.76 E-08	1.65 E-07	3.76E-08	1.65E-07	3.76E-08
Toluene	3.4 E-03	3.33 E-06	0	0	5.33 E-06	2.34 E-05	5.33E-06	2.34E-05	5.33E-06
Vanadium	2.3 E-03	2.25 E-06	0	0	3.61 E-06	1.58 E-05	3.61E-06	1.58E-05	3.61E-06
Zinc	2.9 E-02	2.84 E-05	0	0	4.55 E-05	1.99 E-04	4.55E-05	1.99E-04	4.55E-05
Polycyclic Organic Matter (POM)				0.00E+00		7.83E-08		7.83E-08	1.79E-08
		Total HAPs =	0	0	0.003	0.013			

Notes: 1. Natural gas heating value of 1020 Btu/SCF
2. Boiler 36 is configured to work only with Emergency Generator # 8.

Table 5-7: Boiler No. 37 (B37) Modification Emission Analysis

Date: Feb-13

Location: Rendezvous Bldg #38 | Fuel: Natural Gas | Equipment Capacity: 2.50 MMBtu/hr

EQUIPMENT EMISSIONS	Emission Factors from EPA AP-42, Section 1.4, Tables 1.4-1 to 1.4-4		Emission Estimates						
			Pre-Project Basis		Post-Project Basis		Changes in PTE		
			Hourly	Annual	Hourly	Annual	Hourly Basis	Annual Basis	
			0.00	0	2.50	8,760			
	EF	calc'd EF[1]	MMBtu/hr	hr/yr	MMBtu/hr	hr/yr			
Pollutant	**$lb_E/10^6$ scf**	**lb_E/MMBtu**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**	**ton_E/yr**	**lb_E/hr**
CO	84	0.082	0	0	2.06 E-01	9.02 E-01	2.06E-01	9.02E-01	2.06E-01
NO_X[2]	80.6	0.079	0	0	1.98 E-01	8.65 E-01	1.98E-01	8.65E-01	1.98E-01
SO_2	0.60	0.00059	0	0	1.47 E-03	6.44 E-03	1.47E-03	6.44E-03	1.47E-03
PM10	7.6	0.0075	0	0	1.86 E-02	8.16 E-02	1.86E-02	8.16E-02	1.86E-02
PM2.5	7.6	0.0075	0	0	1.86 E-02	8.16 E-02	1.86E-02	8.16E-02	1.86E-02
Pb	0.0005	4.90 E-07	0	0	1.23 E-06	5.37 E-06	1.23E-06	5.37E-06	1.23E-06
VOC	5.50	0.005	0	0	1.35 E-02	5.90 E-02	1.35E-02	5.90E-02	1.35E-02
TOC	11.00	0.011	0	0	2.70 E-02	1.18 E-01	2.70E-02	1.18E-01	2.70E-02
2-Methylnaphthalene	2.4 E-05	2.35 E-08	0	0	5.88 E-08	2.58 E-07	5.88E-08	2.58E-07	5.88E-08
3-Methylchloranthrene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
7,12-Dimethylbenz(a)anthracite	1.6 E-05	1.57 E-08	0	0	3.92 E-08	1.72 E-07	3.92E-08	1.72E-07	3.92E-08
Acenaphthene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Acenaphthylene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Anthracene	2.4 E-06	2.35 E-09	0	0	5.88 E-09	2.58 E-08	5.88E-09	2.58E-08	5.88E-09
Arsenic	2.0 E-04	1.96 E-07	0	0	4.90 E-07	2.15 E-06	4.90E-07	2.15E-06	4.90E-07
Barium	4.4 E-03	4.31 E-06	0	0	1.08 E-05	4.72 E-05	1.08E-05	4.72E-05	1.08E-05
Benzo(a)anthracene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Benzene	2.1 E-03	2.06 E-06	0	0	5.15 E-06	2.25 E-05	5.15E-06	2.25E-05	5.15E-06
Benzo(a)pyrene	1.2 E-06	1.18 E-09	0	0	2.94 E-09	1.29 E-08	2.94E-09	1.29E-08	2.94E-09
Benzo(b)fluoranthene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Benzo(g,h,I)perylene	1.2 E-06	1.18 E-09	0	0	2.94 E-09	1.29 E-08	2.94E-09	1.29E-08	2.94E-09
Benzo(k)fluoranthene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Beryllium	1.2 E-05	1.18 E-08	0	0	2.94 E-08	1.29 E-07	2.94E-08	1.29E-07	2.94E-08
Butane	2.1 E+00	2.06 E-03	0	0	5.15 E-03	2.25 E-02	5.15E-03	2.25E-02	5.15E-03
Cadmium	1.1 E-03	1.08 E-06	0	0	2.70 E-06	1.18 E-05	2.70E-06	1.18E-05	2.70E-06
Chromium	1.4 E-03	1.37 E-06	0	0	3.43 E-06	1.50 E-05	3.43E-06	1.50E-05	3.43E-06
Chrysene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Cobalt	8.4 E-05	8.24 E-08	0	0	2.06 E-07	9.02 E-07	2.06E-07	9.02E-07	2.06E-07
Copper	8.5 E-04	8.33 E-07	0	0	2.08 E-06	9.13 E-06	2.08E-06	9.13E-06	2.08E-06
Dibenzo(a,h)anthracene	1.2 E-06	1.18 E-09	0	0	2.94 E-09	1.29 E-08	2.94E-09	1.29E-08	2.94E-09
Dichlorobenzene	1.2 E-03	1.18 E-06	0	0	2.94 E-06	1.29 E-05	2.94E-06	1.29E-05	2.94E-06
Ethane	3.1 E+00	3.04 E-03	0	0	7.60 E-03	3.33 E-02	7.60E-03	3.33E-02	7.60E-03
Fluoranthene	3.0 E-06	2.94 E-09	0	0	7.35 E-09	3.22 E-08	7.35E-09	3.22E-08	7.35E-09
Fluorene	2.8 E-06	2.75 E-09	0	0	6.86 E-09	3.01 E-08	6.86E-09	3.01E-08	6.86E-09
Formaldehyde	7.5 E-02	7.35 E-05	0	0	1.84 E-04	8.05 E-04	1.84E-04	8.05E-04	1.84E-04
Hexane	1.8 E+00	1.76 E-03	0	0	4.41 E-03	1.93 E-02	4.41E-03	1.93E-02	4.41E-03
Indeno(1,2,3-cd)pyrene	1.8 E-06	1.76 E-09	0	0	4.41 E-09	1.93 E-08	4.41E-09	1.93E-08	4.41E-09
Manganese	3.8 E-04	3.73 E-07	0	0	9.31 E-07	4.08 E-06	9.31E-07	4.08E-06	9.31E-07
Mercury	2.6 E-04	2.55 E-07	0	0	6.37 E-07	2.79 E-06	6.37E-07	2.79E-06	6.37E-07
Methane	2.30	0.00225	0	0	5.64 E-03	2.47 E-02	5.64E-03	2.47E-02	5.64E-03
Molybdenum	1.1 E-03	1.08 E-06	0	0	2.70 E-06	1.18 E-05	2.70E-06	1.18E-05	2.70E-06
Naphthalene	6.1 E-04	5.98 E-07	0	0	1.50 E-06	6.55 E-06	1.50E-06	6.55E-06	1.50E-06
Nickel	2.1 E-03	2.06 E-06	0	0	5.15 E-06	2.25 E-05	5.15E-06	2.25E-05	5.15E-06
Pentane	2.6 E+00	2.55 E-03	0	0	6.37 E-03	2.79 E-02	6.37E-03	2.79E-02	6.37E-03
Phenanathrene	1.7 E-05	1.67 E-08	0	0	4.17 E-08	1.83 E-07	4.17E-08	1.83E-07	4.17E-08
Propane	1.6 E+00	1.57 E-03	0	0	3.92 E-03	1.72 E-02	3.92E-03	1.72E-02	3.92E-03
Pyrene	5.0 E-06	4.90 E-09	0	0	1.23 E-08	5.37 E-08	1.23E-08	5.37E-08	1.23E-08
Selenium	2.4 E-05	2.35 E-08	0	0	5.88 E-08	2.58 E-07	5.88E-08	2.58E-07	5.88E-08
Toluene	3.4 E-03	3.33 E-06	0	0	8.33 E-06	3.65 E-05	8.33E-06	3.65E-05	8.33E-06
Vanadium	2.3 E-03	2.25 E-06	0	0	5.64 E-06	2.47 E-05	5.64E-06	2.47E-05	5.64E-06
Zinc	2.9 E-02	2.84 E-05	0	0	7.11 E-05	3.11 E-04	7.11E-05	3.11E-04	7.11E-05
Polycyclic Organic Matter (POM)				0E+00		1.22E-07		1.22E-07	2.79E-08
		Total HAPs =	0	0	0.005	0.021			

Notes: 1. Natural gas heating value of 1020 Btu/SCF
2. Powerflame low-Nox burner emission factor provided by manufacturer

Table EI1.1: Pre-Project Potential to Emit for NSR Regulated Pollutants (Annual)

Emissions Unit	tons/year									
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	THAPs	Lead	$CO2_e$	GHG
Boiler No. 1: 75.4 MMscf/yr	0.29	0.29	0.023	3.77	3.17	0.21	0.07	1.9E-05		
Boiler No. 2: Coal or NG[1]	0.022	0.022	94.9	56.2	1.37	0.09	2.61	8.1E-04		
Boiler No. 3: 173 MMscf/yr	0.657	0.657	0.052	4.32	7.26	0.476	0.17	4.3E-05		
Boiler No. 4: 468 MMscf/yr	1.78	1.78	0.14	11.70	19.7	1.29	0.45	1.2E-04		
Boiler No. 36 (Bldg 65)	0	0	0	0	0	0	0	0		
Boiler No. 37 (Bldg 38)	0	0	0	0	0	0	0	0		
Fuel Tank No. 1- Diesel	0	0	0	0	0	0	0	0		
Fuel Tank No. 2- Gasoline	0	0	0	0	0	0	0	0		
Paint Booth No. 1 (Bldg 48)	0	0	0	0	0	0	0	0		
Paint Booth No. 2 (Bldg 48)	0	0	0	0	0	0	0	0		
Paint Booth No. 3 (Bldg 22)	0	0	0	0	0	0	0	0		
Shop Baghouse No. 1 (Bldg 22)	0	0	0	0	0	0	0	0		
Totals	**2.74**	**2.74**	**95.11**	**75.99**	**31.50**	**2.06**	**3.30**	**9.9E-04**	**Not calculated**	

Table EI1.2: Post-Project Potential to Emit for NSR Regulated Pollutants (Annual)

Emissions Unit	tons/year									
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	THAPs	Lead	$CO2_e$	GHG
Boiler No. 1: Decommissioned	0	0	0	0	0	0	0	0	0	0
Boiler No. 2: NG only	0.124	0.124	0.0098	1.63	1.37	0.09	0.03	8.1E-06	1950	1949
Boiler No. 3: 203 MMscf/yr	0.771	0.771	0.061	5.08	8.53	0.558	0.20	5.1E-05	12183	12171
Boiler No. 4: 498 MMscf/yr + Diesel Ops	1.90	1.93	0.15	12.79	21.1	1.38	0.48	1.7E-04	30732	30700
Boiler No. 36 (Bldg 65)	0.052	0.052	0.0041	0.69	0.58	0.038	0.013	3.4E-06	818	817
Boiler No. 37 (Bldg 38)	0.082	0.082	0.0064	0.87	0.90	0.059	0.021	5.4E-06	1279	1277
Fuel Tank No. 1- Diesel	0	0	0	0	0	0.0012	0.001	0	0	0
Fuel Tank No. 2- Gasoline	0	0	0	0	0	0.583	0.010	0	0	0
Paint Booth No. 1 (Bldg 48)	0.016	0.016	0	0	0	3.88	4.07	0	0	0
Paint Booth No. 2 (Bldg 48)	0.016	0.016	0	0	0	3.88	4.07	0	0	0
Paint Booth No. 3 (Bldg 22)	0.008	0.008	0	0	0	1.80	0.63	0	0	0
Shop Baghouse No. 1 (Bldg 22)	0.021	0.021	0	0	0	0.00	0	0	0	0
Totals	**2.99**	**3.02**	**0.23**	**21.04**	**32.47**	**12.27**	**9.5**	**2.4E-04**	**46962**	**46915**

Table EI1.3: Changes in Potential to Emit for NSR Regulated Pollutants (Annual)

Emissions Unit	tons/year									
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	THAPs	Lead	$CO2_e$	GHG
Boiler No. 1- shared stack w/ No.2 Boiler No. 2- shared stack w/ No.1	-0.19	-0.19	-94.91	-58.35	-3.17	-0.21	-2.65	-8.20E-04	1950	1949
Boiler No. 3	0.11	0.11	0.0090	0.75	1.27	0.08	0.03	7.52E-06	12183	12171
Boiler No. 4	0.12	0.15	0.0091	1.09	1.40	0.10	0.03	0.00	30732	30700
Boiler No. 36 (Bldg 65)	0.052	0.052	0.0041	0.69	0.58	0.038	0.013	3.44E-06	818	817
Boiler No. 37 (Bldg 38)	0.082	0.082	0.0064	0.87	0.90	0.059	0.021	5.37E-06	1279	1277
Fuel Tank No. 1- Diesel	0	0	0	0	0	0.0012	0.001	0	0	0
Fuel Tank No. 2- Gasoline	0	0	0	0	0	0.58	0.010	0	0	0
Paint Booth No. 1 (Bldg 48)	0.016	0.016	0	0	0	3.88	4.07	0	0	0
Paint Booth No. 2 (Bldg 48)	0.016	0.016	0	0	0	3.88	4.07	0	0	0
Paint Booth No. 3 (Bldg 22)	0.008	0.008	0	0	0	1.80	0.63	0	0	0
Shop Baghouse No. 1 (Bldg 22)	0.021	0.021	0	0	0	0	0	0	0	0
Increase in Emissions	**0.43**	**0.46**	**0.03**	**3.4**	**4.1**	**N/A**	**N/A**	**7.1E-05**	**N/A**	**N/A**
Facility Change in Emissions	**0.25**	**0.27**	**-94.9**	**-55.0**	**0.98**	**10.2**	**6.2**	**-7.5E-04**	**46962**	**46915**

Note 1: May 2013 Revision- Boiler No. 2 Pre-Project Duty revised from 45.2 to 32.5 MMscf/yr natural gas to reflect actual duty rather than 2006 basis

Table EI2.1: Pre-Project Potential to Emit for NSR Regulated Pollutants (Hourly)

Emissions Unit	lbs/hr					
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC
Boiler No. 1: 32.05 MMBtu/hr	0.239	0.239	0.019	3.14	2.64	0.17
Boiler No. 2: Coal or NG	0.0128	0.0128	47.7	32.6	1.89	0.12
Boiler No. 3: 26.92 MMBtu/hr	0.201	0.201	0.016	1.32	2.22	0.145
Boiler No. 4: 72.84 MMBtu/hr NG	0.54	0.54	0.043	3.57	6.0	0.39
Boiler No. 36 (Bldg 65)	0	0	0	0	0	0
Boiler No. 37 (Bldg 38)	0	0	0	0	0	0
Fuel Tank No. 1- Diesel	0	0	0	0	0	0
Fuel Tank No. 2- Gasoline	0	0	0	0	0	0
Paint Booth No. 1 (Bldg 48)	0	0	0	0	0	0
Paint Booth No. 2 (Bldg 48)	0	0	0	0	0	0
Paint Booth No. 3 (Bldg 22)	0	0	0	0	0	0
Shop Baghouse No. 1 (Bldg 22)	0	0	0	0	0	0
Totals	**0.99**	**0.99**	**47.78**	**40.63**	**12.75**	**0.83**

Table EI2.2: Post-Project Potential to Emit for NSR Regulated Pollutants (Hourly)

Emissions Unit	lbs/hr					
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC
Boiler No. 1: 32.05 MMBtu/hr	0.000	0.000	0.000	0.00	0.00	0.00
Boiler No. 2: NG only, no baghouse	0.171	0.171	0.014	2.25	1.89	0.12
Boiler No. 3: 26.92 MMBtu/hr	0.201	0.201	0.016	1.32	2.22	0.15
Boiler No. 4: Diesel or NG	0.54	0.54	0.043	3.60	6.0	0.39
Boiler No. 36 (Bldg 65)	0.012	0.012	9.4E-04	0.16	0.13	0.0086
Boiler No. 37 (Bldg 38)	0.019	0.019	0.0015	0.20	0.21	0.013
Fuel Tank No. 1- Diesel	0	0	0	0	0	0.002
Fuel Tank No. 2- Gasoline	0	0	0	0	0	1.14
Paint Booth No. 1 (Bldg 48)	0.0067	0.0067	0	0	0	1.62
Paint Booth No. 2 (Bldg 48)	0.0067	0.0067	0	0	0	1.62
Paint Booth No. 3 (Bldg 22)	0.0064	0.0064	0	0	0	1.50
Shop Baghouse No. 1 (Bldg 22)	0.0047	0.0047	0	0	0	0.00
Totals	**0.97**	**0.97**	**0.07**	**7.53**	**10.45**	**6.56**

Table EI2.3: Changes in Potential to Emit for NSR Regulated Pollutants (Hourly)

Emissions Unit	lbs/hr					
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC
Boiler No. 1	-0.24	-0.24	-0.02	-3.14	-2.64	-0.17
Boiler No. 2	0.16	0.16	-47.69	-30.35	0	0
Boiler No. 3	0	0	0	0	0	0
Boiler No. 4	0	0	0	0.03	0	0
Boiler No. 36 (Bldg 65)	0.012	0.012	0.0009	0.157	0.13	0.009
Boiler No. 37 (Bldg 38)	0.019	0.019	0.0015	0.198	0.21	0.013
Fuel Tank No. 1- Diesel	0	0	0	0	0	0.002
Fuel Tank No. 2- Gasoline	0	0	0	0	0	1.14
Paint Booth No. 1 (Bldg 48)	0.0067	0.0067	0	0	0	1.62
Paint Booth No. 2 (Bldg 48)	0.0067	0.0067	0	0	0	1.62
Paint Booth No. 3 (Bldg 22)	0.0064	0.0064	0	0	0	1.50
Shop Baghouse No. 1 (Bldg 22)	0.0047	0.0047	0	0	0	0
Increase in Emissions	**0.06**	**0.06**	**0.00**	**0.38**	**0.33**	**NA**
Facility Change in Emissions	**-0.02**	**-0.02**	**-47.7**	**-33.1**	**-2.30**	**5.73**

ISU, Pocatello, Idaho Figure 6-1: Maintenance Shop Baghouse Emissions Analysis

Maintenance Shop (Building 22) Baghouse	Air Flow	Emission Factor[1]	PM Emission Rate	
	cfm	grains/scf	lb/hr	ton/yr
Murphy Rodgers MRA-19-420H	5500	0.0001	0.00471	0.0206

1. From Idaho DEQ Emission Factor Guide for Wood Industry, Attachment B, Sanderdust Cyclone Exhaust with Baghouse, 1/8/97.

Table 7-1: Post-Project Change in HAP/TAP Emissions

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)	Boiler #1	Boiler #2	Boiler #3	Boiler #4 - Natural Gas Hourly	Boiler #4 - Diesel Hourly	Boiler #4 - NG + Diesel Annual	Boiler #36	Boiler #37	Gasoline Tank	Diesel Tank	Automotive Technology Paint Booths	Maintenance Shop Paint Booth	Post-Project Overall Change in Emissions	Screening Emission Level	Any Source Exceeds EL/ Modeling Required?
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	
Organic HAPs/TAPs															
Acenaphthene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**1.9E-07**	**2.8E-09**	**4.4E-09**					**1.8E-07**	9.1E-05	No
Acenaphthylene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**8.4E-09**	**2.8E-09**	**4.4E-09**					**6.3E-09**	9.1E-05	No
Anthracene	**-2.1E-08**	**0.0E+00**	**8.2E-09**			**1.9E-08**	**3.8E-09**	**5.9E-09**					**1.6E-08**	9.1E-05	No
Benzene	**-1.8E-05**	**0.0E+00**	**7.2E-06**			**9.1E-06**	**3.3E-06**	**5.1E-06**	**1.3E-03**				**1.3E-03**	8.0E-04	Yes
Benzo(a)anthracene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**4.1E-08**	**2.8E-09**	**4.4E-09**					**3.8E-08**		See POM
Benzo(a)pyrene	**-1.0E-08**	**0.0E+00**	**4.1E-09**			**4.1E-09**	**1.9E-09**	**2.9E-09**					**2.7E-09**	2.0E-06	See POM
Benzo(b)fluoranthene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**1.9E-08**	**2.8E-09**	**4.4E-09**					**1.7E-08**		See POM
Benzo(g,h,i)perylene	**-1.0E-08**	**0.0E+00**	**4.1E-09**			**2.7E-08**	**1.9E-09**	**2.9E-09**					**2.6E-08**	9.1E-05	No
Benzo(k)fluoranthene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**1.9E-08**	**2.8E-09**	**4.4E-09**					**1.7E-08**		See POM
Chrysene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**2.7E-08**	**2.8E-09**	**4.4E-09**					**2.4E-08**		See POM
Dibenzo(a,h)anthracene	**-1.0E-08**	**0.0E+00**	**4.1E-09**			**1.8E-08**	**1.9E-09**	**2.9E-09**					**1.7E-08**		See POM
Dichlorobenzene	-1.0E-05	0.0E+00	4.1E-06	0.0E+00	-8.6E-05		1.9E-06	2.9E-06					-1.4E-06	20	No
Ethyl Benzene											**0.6275**	**0.013**	**6.4E-01**	29	No
Fluoranthene	**-2.6E-08**	**0.0E+00**	**1.0E-08**			**5.2E-08**	**4.7E-09**	**7.4E-09**					**4.8E-08**	9.1E-05	No
Fluorene	**-2.4E-08**	**0.0E+00**	**9.6E-09**			**4.8E-08**	**4.4E-09**	**6.9E-09**					**4.5E-08**	9.1E-05	No
Formaldehyde	**-6.5E-04**	**0.0E+00**	**2.6E-04**			**7.8E-04**	**1.2E-04**	**1.8E-04**				**4.47E-04**	**1.1E-03**	5.1E-04	Yes
Hexane	-5.7E-02	0.0E+00	0.0E+00	0.0E+00	-1.3E-01		2.8E-03	4.4E-03					-0.049	12	No
Indeno(1,2,3-cd)pyrene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**2.5E-08**	**2.8E-09**	**4.4E-09**					**2.2E-08**		See POM
Methyl isobutyl ketone											1.97		1.97	47	No
2-Methylnaphthalene	**-2.1E-07**	**0.0E+00**	**8.2E-08**			**8.2E-08**	**3.8E-08**	**5.9E-08**					**5.5E-08**	9.1E-05	No
3-Methylchloranthrene	**-1.5E-08**	**0.0E+00**	**6.2E-09**			**6.2E-09**	**2.8E-09**	**4.4E-09**					**4.1E-09**	2.5E-06	No
Naphthalene	-1.9E-05	0.0E+00	0.0E+00	0.0E+00	4.1E-04		9.6E-07	1.5E-06		2.4E-03			**2.8E-03**	3.33	No
Phenanathrene	**-1.5E-07**	**0.0E+00**	**5.8E-08**			**1.5E-07**	**2.7E-08**	**4.2E-08**					**1.3E-07**	9.1E-05	No
Polycyclic Organic Matter (POM)	**-9.8E-08**	**0.0E+00**	**3.9E-08**			**1.5E-07**	**1.8E-08**	**2.8E-08**					**1.4E-07**	2.0E-06	No
Pyrene	**-4.3E-08**	**0.0E+00**	**1.7E-08**				**7.8E-09**	**1.2E-08**					**-5.8E-09**	9.1E-05	No
Styrene											0.033		0.03	6.67	No
Toluene	-1.1E-04	0.0E+00	0.0E+00	0.0E+00	2.2E-03		5.3E-06	8.3E-06	8.7E-03	2.4E-03	8.7E-01	4.6E-01	1.35	25	No
Xylene											1.88	0.070	1.95	29	No
Organic TAPs (non-HAP)															
Pentane	-8.2E-02	0.0E+00	0.0E+00	0.0E+00	-1.9E-01		4.1E-03	6.4E-03					-0.071	118	No
Metals HAPs/TAPs															
Arsenic	**-1.7E-06**	**-1.80E-04**	**6.9E-07**			**5.5E-06**	**3.1E-07**	**4.9E-07**					**-1.8E-04**	1.5E-06	Yes
Barium	-1.4E-04	0.0E+00	0.0E+00	0.0E+00	-3.1E-04		6.9E-06	1.1E-05					**-4.3E-04**	0.033	No
Beryllium	**-1.0E-07**	**-9.24E-06**	**4.1E-08**			**3.6E-06**	**1.9E-08**	**2.9E-08**					**-5.6E-06**	2.8E-05	No
Cadmium	**-9.5E-06**	**-2.24E-05**	**3.8E-06**			**7.4E-06**	**1.7E-06**	**2.7E-06**					**-1.6E-05**	3.7E-06	Yes
Chromium	-4.4E-05	-1.2E-04	0.0E+00	0.0E+00	6.8E-05		2.2E-06	3.4E-06			1.7E-03	0.0E+00	0.002	0.033	No
Cobalt	-2.6E-06	-5.7E-05	0.0E+00	0.0E+00	-6.0E-06		1.3E-07	2.1E-07					-5.9E-05	0.0033	No
Copper	-2.7E-05	0.0E+00	0.0E+00	0.0E+00	2.8E-04		1.3E-06	2.1E-06			1.4E-03	0.0E+00	0.0016	0.013	No
Manganese	-1.2E-05	-2.8E-04	0.0E+00	0.0E+00	3.1E-04		6.0E-07	9.3E-07					1.9E-05	0.067	No
Mercury	-8.2E-06	-4.3E-05	0.0E+00	0.0E+00	1.5E-04		4.1E-07	6.4E-07					0.0001	0.003	No
Molybdenum	-3.5E-05	0.0E+00	0.0E+00	0.0E+00	-7.9E-05		1.7E-06	2.7E-06					-3.0E-05	0.333	No
Nickel	**-1.8E-05**	**-1.2E-04**	**7.2E-06**			**1.1E-05**	**3.3E-06**	**5.1E-06**					**-1.1E-04**	2.7E-05	No
Selenium	-7.5E-07	-7.6E-04	0.0E+00	0.0E+00	8.4E-04		3.8E-08	5.9E-08					0.00007	0.013	No
Vanadium	-7.2E-05	0.0E+00	0.0E+00	0.0E+00	-1.6E-04		3.6E-06	5.6E-06					-0.00006	0.003	No
Zinc	-9.1E-04	0.0E+00	0.0E+00	0.0E+00	-1.8E-03		4.5E-05	7.1E-05					-0.00079	0.667	No

Note: Bold values represent annually-averaged carcinogenic TAPs .

Table 7-2: Greenhouse Gas Estimated Emissions

Emission Factors (40 CFR 98 Tables C-1,C-2)		CO_2	CH_4	N_2O
Diesel/Gasoline	kg/mmBtu	74.0	3.0E-03	6.0E-04
Natural Gas	kg/mmBtu	53.0	1.0E-03	1.0E-04
Global Warming Potential (Table A-1)		1	21	310

Heating Values (Tables C-1, C-2)	
Diesel	0.138 mmBtu/gal
Gasoline	0.125 mmBtu/gal
N. Gas	1028 mmBtu/mmscf

PTE EGen Annual Hours 500 (includes possible emer. ops)
Permitted EGen Annual Hours 100 (NESHAP limit for EGen 6-9)

Unit	Fuel Type	Design Duty	PTE Emissions						Permitted Emissions					
			Fuel Input	CO_2	CH_4	N_2O	GHG_{mass}	$CO2_e$	Fuel Input	CO_2	CH_4	N_2O	GHG_{mass}	$CO2_e$
		mmBtu/hr	mmBtu/yr	metric tons/yr					mmBtu/yr	metric tons/yr				
Boiler No. 1	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Boiler No. 2	NG	23.0	201,480	10,682	0.201	0.0201	10,683	10,693	33,410	1,771	0.03	0.003	1,771	1,773
Boiler No. 3	NG	26.9	235,846	12,505	0.236	0.0236	12,505	12,517	208,684	11,064	0.21	0.021	11,065	11,075
Boiler No. 4	NG	72.8	638,078	33,831	0.638	0.0638	33,832	33,864	511,944	27,143	0.51	0.051	27,144	27,170
Boiler No. 4	Diesel	-	-	-	-	-	-	-	10,350	765	0.03	0.006	766	768
Boiler No. 8	NG	1.67	14,664	777	0.015	0.0015	778	778	14,664	777	0.01	0.001	778	778
Boiler No. 9	NG	2.68	23,459	1,244	0.023	0.0023	1,244	1,245	23,459	1,244	0.02	0.002	1,244	1,245
Boiler No. 10	NG	2.51	21,996	1,166	0.022	0.0022	1,166	1,167	21,996	1,166	0.02	0.002	1,166	1,167
Boiler No. 11	NG	2.68	23,451	1,243	0.023	0.0023	1,243	1,245	23,451	1,243	0.02	0.002	1,243	1,245
Boiler No. 12	NG	3.35	29,328	1,555	0.029	0.0029	1,555	1,557	29,328	1,555	0.03	0.003	1,555	1,557
Boiler No. 13	NG	8.40	73,584	3,901	0.074	0.0074	3,902	3,905	73,584	3,901	0.07	0.007	3,902	3,905
Boiler No. 14	NG	5.74	50,282	2,666	0.050	0.0050	2,666	2,669	50,282	2,666	0.05	0.005	2,666	2,669
Boiler No. 15	NG	2.25	19,710	1,045	0.020	0.0020	1,045	1,046	19,710	1,045	0.02	0.002	1,045	1,046
Boiler No. 16	NG	3.84	33,673	1,785	0.034	0.0034	1,785	1,787	33,673	1,785	0.03	0.003	1,785	1,787
Boiler No. 17	NG	1.30	11,388	604	0.011	0.0011	604	604	11,388	604	0.01	0.001	604	604
Boiler No. 18	NG	1.20	10,512	557	0.011	0.0011	557	558	10,512	557	0.01	0.001	557	558
Boiler No. 19	NG	0.30	2,619	139	0.003	0.0003	139	139	2,619	139	0.00	0.000	139	139
Boiler No. 20	NG	3.00	26,280	1,393	0.026	0.0026	1,393	1,395	26,280	1,393	0.03	0.003	1,393	1,395
Boiler No. 21	NG	0.30	2,619	139	0.003	0.0003	139	139	2,619	139	0.00	0.000	139	139
Boiler No. 22	NG	0.73	6,360	337	0.006	0.0006	337	338	6,360	337	0.01	0.001	337	338
Kiln No. 23	NG	0.026	225	12	0.000	0.0000	12	12	225	12	0.00	0.000	12	12
Kiln No. 24	NG	0.10	876	46	0.001	0.0001	46	46	876	46	0.00	0.000	46	46
Burnoff Furnace No. 25	NG	0.20	1,752	93	0.002	0.0002	93	93	1,752	93	0.00	0.000	93	93
Melting Furnace No. 26	NG	0.10	876	46	0.001	0.0001	46	46	876	46	0.00	0.000	46	46
Boiler No. 27	NG	1.75	15,330	813	0.015	0.0015	813	814	15,330	813	0.02	0.002	813	814
Boiler No. 28	NG	0.53	4,599	244	0.005	0.0005	244	244	4,599	244	0.00	0.000	244	244
Boiler No. 29	NG	0.50	4,380	232	0.004	0.0004	232	232	4,380	232	0.00	0.000	232	232
Boiler No. 30	NG	0.50	4,380	232	0.004	0.0004	232	232	4,380	232	0.00	0.000	232	232
Boiler No. 31	NG	0.23	1,971	105	0.002	0.0002	105	105	1,971	105	0.00	0.000	105	105
Boiler No. 32	NG	0.72	6,307	334	0.006	0.0006	334	335	6,307	334	0.01	0.001	334	335
Boiler No. 33	NG	8.28	72,533	3,846	0.073	0.0073	3,846	3,849	72,533	3,846	0.07	0.007	3,846	3,849
Boiler No. 34	NG	0.99	8,672	460	0.009	0.0009	460	460	8,672	460	0.01	0.001	460	460
Boiler No. 35	NG	0.47	4,135	219	0.004	0.0004	219	219	4,135	219	0.00	0.000	219	219
Boiler No. 36 (Emer. Ops)	NG	1.60	14,016	743	0.014	0.0014	743	744	14,016	743	0.01	0.001	743	744
Boiler No. 37	NG	2.50	21,900	1,161	0.022	0.0022	1,161	1,162	21,900	1,161	0.02	0.002	1,161	1,162
Emer. Generator 1	NG	0.54	270	14	0.000	0.0000	14	14	270	14	0.00	0.000	14	14
Emer. Generator 2	Diesel	1.38	690	51	0.002	0.0004	51	51	690	51	0.00	0.000	51	51
Emer. Generator 3	NG	0.88	442	23	0.000	0.0000	23	23	442	23	0.00	0.000	23	23
Emer. Generator 4	Diesel	4.13	2,063	153	0.006	0.0012	153	153	2,063	153	0.01	0.001	153	153
Emer. Generator 5	Diesel	4.08	2,042	151	0.006	0.0012	151	152	2,042	151	0.01	0.001	151	152
Emer. Generator 6	Diesel	1.36	682	50	0.002	0.0004	50	51	136	10	0.00	0.000	10	10
Emer. Generator 7	Diesel	1.36	682	50	0.002	0.0004	50	51	136	10	0.00	0.000	10	10
Emer. Generator 8	Diesel	1.36	682	50	0.002	0.0004	50	51	136	10	0.00	0.000	10	10
Emer. Generator 9	Diesel	6.38	3,188	236	0.010	0.0019	236	237	638	47	0.00	0.000	47	47
Totals		180.8	1,598,026					85,022 metric tons **93,525 short tons**						67,967 metric tons **74,764 short tons**

Table 7-3: Post-Project Uncontrolled Potential to Emit

Emissions Unit (Note 1)	tons/year							
	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	THAPs	
Boiler No. 1	0	0	0	0	0	0	0	
Boiler No. 2	0.75	0.75	0.06	9.88	8.30	0.54	0.19	
Boiler No. 3	0.88	0.88	0.069	5.78	9.71	0.64	0.22	
Boiler No. 4	2.38	2.38	0.19	15.6	26.3	1.72	0.60	
Boiler No. 36 (Bldg 65)	0.052	0.052	0.004	0.69	0.58	0.038	0.013	
Boiler No. 37 (Bldg 38)	0.082	0.082	0.006	0.87	0.90	0.059	0.021	
Fuel Tank No. 1- Diesel	0.000	0.000	0	0	0	0.001	0.001	
Fuel Tank No. 2- Gasoline	0.000	0.000	0	0	0	0.58	0.583	
Paint Booth No. 1 (Bldg 48)	2.95	2.95	0	0	0	7.09	7.4	
Paint Booth No. 2 (Bldg 48)	2.95	2.95	0	0	0	7.09	7.4	
Paint Booth No. 3 (Bldg 22)	1.40	1.40	0	0	0	3.28	1.2	
Shop Baghouse No. 1 (Bldg 22)	2.06	2.06	0	0	0	0	0	
Emergency Generators Nos. 1-4[2]	0.43	0.43	0.40	6.89	2.64	0.37	0.018	
Emergency Generators Nos. 5-9[3]	0.18	0.18	0.007	5.68	1.03	0.25	0.25	
Incinerator[2]	0.30	0.30	0.320	1.17	0.090	0.040	1.3	
Boilers (Items 8-22, 27-34, and 35) Kilns & Furnaces (Items 23-26)[2]	0.98	0.98	0.080	12.89	10.83	0.710	0.5	**Total ton/yr**
Post-Project Totals	**15.4**	**15.4**	**1.1**	**59.5**	**60.4**	**22.4**	**19.7**	**159**
Pre-Project Totals[2]	NA	66.8	144.4	211.2	61.9	4.4	NA	489

Note 1: Boiler emissions shown at full-time, design duty; emergency generators at 500 hours per year; paint booths operating 365 days per year without filters; no baghouse filter

Note 2: Values from Statement of Basis, Tier II Operating Permit and PTC No. T2-030317, July 28, 2006. Boilers, Kilns & Furnaces THAPs conservatively (over) estimated at 0.5 ton/yr

Note 3: Emission estimates from individual unit PTC exemption documentation (see Appendix B).

Table 9-2: Emission Source Pollutant Rates (modified 4/29)

Emissions units - *modification change*	Stack ID	Change in Annual Emissions, lbs/hr			
		Arsenic	Benzene	Cadmium	Formaldehyde
Boiler No. 1- *eliminated*	HP1	-1.7E-06	-1.8E-05	-9.5E-06	-6.5E-04
Boiler No. 2 - ~~*no coal*~~	HP2	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Boiler No. 3	HP3	6.9E-07	7.2E-06	3.8E-06	2.6E-04
Boiler No. 4	HP4	5.5E-06	9.1E-06	7.4E-06	7.8E-04
Boiler No. 36	B36	3.1E-07	3.3E-06	1.7E-06	1.2E-04
Boiler No. 37	B37	4.9E-07	5.1E-06	2.7E-06	1.8E-04
Gasoline Tank No.1	GT1	0.0E+00	1.3E-03	0.0E+00	0.0E+00
Paint Booth No. 3	PB3	0.0E+00	0.0E+00	0.0E+00	4.5E-04

May 2013 Boiler No. 2 Revision:

No change in emissions from natural gas operations.

The decrease in arsenic emissions from the elimination of coal is -1.8E-04 lbs/hr. However, the original TAP modeling basis is not known so such a comparitively large credit was not taken.

The decrease in cadmium emissions from the elimination of coal is -2.2E-05 lbs/hr. However, the original TAP modeling basis is not known so such a comparitively large credit was not taken.

Table 10-1: Emergency Generators Equipment List

Emergency Generator		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
Location		Bldg. 60	Bldg. 3	Bldg. 27	Bldg. 88	Bldg. 38	Bldg. 50	Bldg. 8	Bldg. 65	Bldg. 5
Manufacturer		Generac	Spectrum	Generac	Kohler	Generac	Generac	Generac	Generac	Generac
Model		2000	400DS60	6.8GN	60REOZJB	SC400	SD135	SD135	SD135	SD600
Manufactured Date		N/A	N/A	N/A	N/A	3/24/2005	6/3/2008	5/26/2008	6/3/2008	10/22/2008
Construction Date[1]		Before 6/12/2006				5/30/2007	7/14/2008	8/12/2008	8/13/2008	11/25/2008
Order Date						5/30/2007	7/14/2008	8/12/2008	8/13/2008	11/25/2008
RICE Subpart		ZZZZ	ZZZZ	ZZZZ	ZZZZ	not covered	IIII	IIII	IIII	IIII
Startup Date						October-07	July-09			
Rated Generator Power (kWe)						400	135	135	135	600
Rated Engine Power	MMBtu/hr	0.539	1.38	0.884	4.154					
	bhp					600	197	197	197	954
Fuel		natural gas	diesel	natural gas	diesel	diesel	diesel	diesel	diesel	diesel
Cylinder Displacement (L/cylinder)						2.17	1.13	1.13	1.13	1.83
Max Annual Operation (hr/yr)		500	500	500	500	500	100	100	100	100
EPA Certification		None	None	None	None	None	Tier 3	Tier 3	Tier 3	Tier 2

Note 1: Consistent with Subpart IIII, the date of construction for Generators Nos. 5-9 is the date the new engine was ordered from the manufacturer.

Capacity	Annual Thruput	Overall Emission Rate[1]		Component	Liquid[2]	Vapor[1]	Emissions		Screening EL
gal	gal/yr	lb/hr	ton/yr	Component	wt%	wt%	lbs/hr	tons/yr	lbs/hr
5000	80000	0.002	0.0012	Naphthalene	0.5%	100%	0.0024	0.0012	3.33
				Toluene	0.5%	100%	0.0024	0.0012	25
				VOC	100%	100%	0.0024	0.0012	29

Notes: 1. Conservatively assume to be 100%
2. Concentrations from Sinclair Diesel MSDS

Aboveground Storage Tank Emissions Using the AP-42 Method

Tank capacity = 5000 gal = 668.4 ft^3
Fuel RVP (avg) = <1 psi

L_T = Standing Losses + Working Losses = $L_S + L_W$

$L_S = nV_VW_VK_EK_S$

n = days in the year = 365
V_V = vapor space volume of the ullage
W_V = vapor density
K_E = vapor space expansion factor
K_S = vented vapor saturation factor

V_V

V_V = 1/2 tank capacity = 334.2 ft^3

W_V

$W_V = M_VP_{VA} / RT_{LA}$

M_V = molecular weight of vapor (see Table 3.2 for fuel type) = 130 lb/lb-mol

P_{VA} = total vapor pressure of liquid mixture (see Table 3-2) = 0.0045 psia

R = ideal gas constant = 10.731 psia-ft^3/lb mole-R

T_{LA} = daily average surface temperature = $(T_{LN} + T_{LX})/2$

T_{LN} = daily minimum liquid surface temperture, R = $[T_{amb.avg} + 460] - [(1 - \text{Attenuation factor}) * (T_{amb.range}/2)]$

T_{LX} = daily maximum liquid surface temperature, R = $[T_{amb.avg} + 460] + [(1 - \text{Attenuation factor}) * (T_{amb.range}/2)]$

$T_{amb.avg}$ = daily ambient average temperature (F): from TANKS 4.0 for location

$T_{amb.range}$ = daily ambient temperature range (F); from TANKS 4.0 for location

Location = Pocatello $T_{amb.avg}$ = 50 F $T_{amb.range}$ = 20 F

Attentuation Factor = adjustment to gasoline surface temperature dependent on tank type
AF for single-walled (non-insulated) ASTs = 0.17
AF for protected (insulated) ASTs = 0.8
AF for project = 0.8 Tank description: Double-walled tank; concrete outer

T_{LN} = 508 R
T_{LX} = 512 R
T_{LA} = 510 R
W_V = 0.00011 lb/ft^3

K_E

$K_E = [(\Delta T_V/T_{LA})] + [(\Delta P_V - \Delta P_B) /(14.7 - P_{VA})]$

ΔT_V = daily vapor temperature range = $T_{LX} - T_{LN}$ = 4 R

ΔP_V = daily vapor pressure range = $P_{VX} - P_{VN}$

From Figure : A = 13 (based on RVP)
From Figure : B = 7500 (based on RVP)

P_{VX} = vapor pressure P_{VA} at daily maximum liquid surface temperature = exp[A - (B/T_{LX})] = 0.19 psi
P_{VN} = vapor pressure P_{VA} at daily minimum liquid surface temperature = exp[A - (B/T_{LN})] 0.17 psi

ΔP_V = 0.021 psi

ΔP_B = breather vent range = $P_{BP} - P_{BN}$
P_{BP} = breather vent pressure setting (psi) = 14.7 psi (not installed at ISU)
P_{BV} = breather vent vacuum setting (psi) = 14.7 psi

ΔP_B = 0.00 psi
K_E = 0.0020

K_S

$K_S = 1 / [1 + (0.053 * P_{VA} * H_{VO})]$

H_{VO} = vapor space outage = 0.5 * Height of tank

Height of tank = **8.82** ft

H_{VO} = 4.4116 ft

K_S = 0.999

L_S

L_S = 0.026 lb/year

L_S = 2.9E-06 lb/hour (average)

L_W

L_W = working loss due to deliveries into AST + working loss due to dispenses from AST = $L_{W\ (Deliveries)} + L_{W\ (Dispenses)}$

$L_{W\ (Delivered)} = L_{W\ (Dispensed)} = (V_{(Delivered)} * W_V)$

V (Delivered) = volume of fuel delivered to AST = 70% of volu 534.8 ft^3

$L_{W\ (Delivered)}$ = 0.06 lb/delivery = $L_{W\ (Dispensed)}$

Number of Deliveries per year = **20**

L_W = 2.3 lb/year

L_T

L_T = **2.3** **lb/yr VOCs**

L_T = 0.00026 $lb/hr_{Average}$

L_T = 0.0024 $lb/hr_{Maximum}$ (delivery days)

Emissions of individual HAPs and TAPs will not be significant- not calculated.

Capacity	Annual Thruput	Overall Emission Rate[1]		Component Composition	Liquid[2] wt%	Vapor[1] wt%	Emissions		Screening EL
gal	gal/yr	lb/hr$_{MAX}$	ton/yr				lbs/hr[3]	tons/yr	lbs/hr
5000	80000	1.14	0.58	Benzene	3.0%	0.9%	1.25E-03	0.0055	8.0E-04
				Ethyl alcohol	10%	1.5%	0.017	0.0085	125
				Toluene	10%	0.8%	0.009	0.0045	25
				VOC	100%	100%	1.138	0.583	--

Notes: 1. Calculated below.
2. Concentrations from Sinclair Gasoline MSDS
3. Benzene hourly emissions are on an annual basis. All other hourly emissions are on a 24-hr basis.

Aboveground Storage Tank Emissions Using the AP-42 Method

Tank capacity = 5000 gal = 668.4 ft^3
Fuel RVP (avg) = 10 psi (from MSDS)

L_T = Standing Losses + Working Losses = $L_S + L_W$

$L_S = nV_VW_VK_EK_S$

n = days in the year = 365
V_V = vapor space volume of the ullage
W_V = vapor density
K_E = vapor space expansion factor
K_S = vented vapor saturation factor

V_V

V_V = 1/2 tank capacity = 334.2 ft^3

W_V

$W_V = M_VP_{VA} / RT_{LA}$

M_V = molecular weight of vapor (see Table 3.2 for fuel RVP) = 66 lb/lb-mol
P_{VA} = total vapor pressure of liquid mixture (see Table 3-2) = 4.2 psia
R = ideal gas constant = 10.731 psia-ft^3/lb mole-R

T_{LA} = daily average surface temperature = $(T_{LN} + T_{LX})/2$

T_{LN} = daily minimum liquid surface temperture, R = $[T_{amb.avg} + 460] - [(1 - \text{Attenuation factor}) * (T_{amb.range}/2)]$

T_{LX} = daily maximum liquid surface temperature, R = $[T_{amb.avg} + 460] + [(1 - \text{Attenuation factor}) * (T_{amb.range}/2)]$

$T_{amb.avg}$ = daily ambient average temperature (F): from TANKS 4.0 for location
$T_{amb.range}$ = daily ambient temperature range (F); from TANKS 4.0 for location

Location = Pocatello $T_{amb.avg}$ = 50 F $T_{amb.range}$ = 20 F

Attentuation Factor = adjustment to gasoline surface temperature dependent on tank type
AF for single-walled (non-insulated) ASTs = 0.17
AF for protected (insulated) ASTs = 0.8
AF for project = 0.8 Tank description: Double-walled tank; concrete outer

T_{LN} = 508 R
T_{LX} = 512 R
T_{LA} = 510 R
W_V = 0.0507 lb/ft^3

K_E

$K_E = [(\Delta T_V/T_{LA})] + [(\Delta P_V - \Delta P_B) /(14.7 - P_{VA})]$

ΔT_V = daily vapor temperature range = $T_{LX} - T_{LN}$ = 4 R
ΔP_V = daily vapor pressure range = $P_{VX} - P_{VN}$

From Figure 3-3: A = 11.6 (based on RVP)
From Figure 3-4: B = 5300 (based on RVP)

P_{VX} = vapor pressure P_{VA} at daily maximum liquid surface temperature = $\exp[A - (B/T_{LX})]$ = 3.48 psi
P_{VN} = vapor pressure P_{VA} at daily minimum liquid surface temperature = $\exp[A - (B/T_{LN})]$ = 3.21 psi
ΔP_V = 0.27 psi

ΔP_B = breather vent range = $P_{BP} - P_{BN}$
P_{BP} = breather vent pressure setting (psi) = 14.7 psi (not installed at ISU)
P_{BV} = breather vent vacuum setting (psi) = 14.7 psi
ΔP_B = 0.00 psi
K_E = 0.0267

K_S

$K_S = 1 / [1 + (0.053 * P_{VA} * H_{VO})]$

H_{VO} = vapor space outage = 0.5 * Height of tank

Height of tank = **8.82** ft

H_{VO} = 4.4116 ft

K_S = 0.505

L_S

L_S = 83.3 lb/year

L_S = 0.0095 lb/hour (average)

L_W

L_W = working loss due to deliveries into AST + working loss due to dispenses from AST = $L_{W\ (Deliveries)} + L_{W\ (Dispenses)}$

$L_{W\ (Delivered)} = L_{W\ (Dispensed)} = (V_{(Delivered)} * W_V)$

$V_{(Delivered)}$ = volume of fuel delivered to AST = 80% of volume = 534.8 ft^3

$L_{W\ (Delivered)}$ = 27.1 lb/delivery = $L_{W\ (Dispensed)}$

Number of Deliveries per year = **20**

L_W = 1083.4 lb/year

L_T

L_T = **1166.7** **lb/yr VOCs**

L_T = 0.133 lb/hr $_{Average}$

L_T = 1.14 lb/hr $_{Maximum}$ (delivery days)

In order to calculate individual pollutant emissions, the vapor weight fraction must be determined

L_{Ti} = emission rate of component I, lb/yr = $(Z_{Vi})(L_T)$

Z_{Vi} = weight fraction of component I in the vapor, lb/lb = $(y_i)(M_i) / (M_V)$

y_i = vapor mole fraction of component i

M_i = molecular weight of component i

M_V = molecular weight of vapor stock = 66 (determined above)

$y_i = (P_{Vi})(x_i) / (P_{VA})$

P_{Vi} = vapor pressure of pure I at the daily average liquid suface temperature, psia (Table 3-3 and Perry's Table 3-8))

x_i = liquid mole fraction of component i

P_{VA} = total vapor pressure of liquid mixture, psia = 4.20 (determined above)

$x_i = (Z_{Li})(M_L) / (M_i)$

Z_{Li} = weight fraction of component I in the liquid, lb/lb

M_L = molecular weight of gasoline = 100 (typical gasoline MW)

M_i = molecular weight of component i

L_{Ti}

Component i	Z_{Li} lb/lb^2	M_i lb/lb mol	x_i mol/mol	P_{Vi} psia @50F	y_i mol/mol	Z_{Vi} lb/lb	L_{Ti} lb/yr	
Benzene	0.030	78	0.038	0.870	0.008	0.009	10.99	
Ethyl alcohol	0.100	46	0.217	0.406	0.021	0.015	17.09	
Naphthalene	0.002	128	0.002	0.002	7.4E-07	1.4E-06	0.002	Not significant
Trimethylbenzene	0.070	120	0.058	0.002	2.8E-05	5.1E-05	0.06	Not significant
Toluene	0.100	92	0.109	0.213	0.006	0.008	8.97	
Xylene	0.065	106.00	0.061	0.004	5.8E-05	9.4E-05	0.11	Not significant

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: August 19, 2013

TO: Harbi Elshafei, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT: P-2013.0015 PROJ 61162 – Application to Replace the Facility-wide Tier II Operating Permit with a PTC-Modeling Reflects Installation of 2 Small Boilers, 1 Existing Paint Spray Booth, and Alterations to All Four of the Heat Plant Boilers

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.202.01(a), 203.02 (NAAQS) and 203.03 (TAPs)

1.0 Summary

Idaho State University (ISU) submitted a Permit to Construct (PTC) application for the proposed changes to the facility on March 1, 2013. ISU is an existing facility located in Pocatello, Idaho. This project will replace the facility's Tier II Operating Permit T2-030317, issued August 2, 2006, which expired on August 2, 2011, with a facility-wide PTC. Several changes to the facility are proposed and these changes are reflected in the PTC application and modeling demonstration. The equipment and operational changes that are reflected in this permitting action that are reflected in the modeling demonstration include:

- Heat plant boilers (increased annual allowable usage for natural gas for existing Boilers 3 and 4 and elimination of coal combustion capability for Boiler 2;
- Boiler 1 has been decommissioned and is being eliminated from the facilitys' permit;
- Existing gasoline and diesel storage tanks;
- 2 Small natural gas-fired boilers (not located at the Heat Plant) and
- 1 Paint spray booth (existing)

The proposed project is subject to review under Idaho Air Rules Section 200 Idaho Air Rules Section 203.02 requires the facility to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). Idaho Air Rules Section 210 requires the facility to demonstrate compliance with the toxic air pollutants (TAPs) increments, which are listed in Idaho Air Rules Section 585 and 586.

TORF Environmental Consultants (TORF), on behalf of Idaho State University (ISU) performed the ambient air dispersion modeling analyses for this project to demonstrate compliance with TAPs. This project was determined by the Department to be below the Level I or Level II modeling applicability thresholds and no SIL or NAAQS modeling demonstrations were required. The modeling analyses: 1) utilized appropriate methods and models; 2) were conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility were below TAPs increments at all ambient air locations.

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

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Boiler 1 Boiler 1 was modeled using negative TAP emission rates to reflect the elimination of this emission unit as a permitted source. Boiler 1 was permitted as a backup boiler and was permitted to combust up to 75.4 million standard cubic feet per year (MMscf/yr) of natural gas with a rated heat input capacity of 32.05 MMBtu/hr under Tier II OP # T2-030317, issued 8/2/06 and expired 8/2/11.	Boiler 1 has been decommissioned and will be removed from the facility's permit. Boiler 1 and Boiler 2 vented to a common stack.
Boiler 2 Boiler 2 is rated at 23 MMBtu/hr as listed in Tier 2 Operating Permit #T2-030317 and was permitted to fire coal exclusively. Although not included in Tier 2 OP #T2-030317, Boiler 2 is described as having an existing natural gas burner with a capacity of 23.0 MMBtu/hr[a] with an annual fuel consumption limit of 32.5 MMscf/yr of natural gas.[a] [a] May 2013 incompleteness response emission calculation spreadsheet.	This modification project regarded Boiler 2 natural gas combustion capability as 23 MMBtu/hr heat input capacity and 32.5 MMscf/year of allowable natural gas combustion for both pre-project and post-project potential to emit for regulated air pollutants and operating limitation considerations. Coal combustion capability has been eliminated, with allowable potential emissions and operating limitations altered accordingly. Particulate matter emission control for coal combustion consisted of a baghouse. This baghouse has been decommissioned. Boiler 2 will be the only emission unit exhausting to the primary stack at the University's Heat Plant following issuance of this PTC action.
Boilers 3 and 4 Boiler 3's annual allowable natural gas throughput limitation was increased by 30 MMscf/y to 203 MMscf/yr. Boiler 4's annual allowable natural gas throughput limitation was increased by 30 MMscf/yr. There were no changes to short-term combustion capacity.	Carcinogenic TAPs emissions and modeling reflected a 30 MMscf/yr increase in natural gas combustion for each of these boilers.

1.1 Summary of Events

January 6, 2012:	DEQ, ISU, and TORF held a pre-application meeting.
January 6, 2012:	DEQ emailed TORF and ISU a copy of theISU facility's 2005/2006 Tier II permit project model setup compressed with 7 ZIP.
February 17, 2013:	DEQ received an initial discussion project inventory spreadsheet to review for a modeling applicability determination.
February 27, 2013:	DEQ uploaded the ISU facility's2005/2006 modeling setup onto TORF's FTP site.
April 6-9, 2013:	DEQ and TORF exchanged emails concerning the regulatory requirements for the project.

August 28, 2012:	DEQ received a modeling protocol from TORF, on behalf of ISU.
October 16, 2012:	DEQ issued a conditional modeling protocolapproval letter to TORF, on behalf of ISU.
March 1, 2013:	DEQ received a permit application with a modeling demonstration from ISU.
April 1, 2013:	DEQ declared the application incomplete.
April 24, 2013:	DEQ sent TORF several Google earth images to support the request for revision of structure dimensions in the model input.
May 3, 2013:	TORF submitted a response to the incompleteness determination on May 3, 2013.
June 4, 2013:	DEQ issued a second incompleteness letter.
June 11-25, 2013:	DEQ and TORF worked through several modeling input issues.
July 2, 2013:	DEQ received an incompleteness determination response with revised modeling files.
August 1, 2013:	DEQ declared the application complete.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The ISU facility is located in Bannock County, designated as "better than national standards"area for sulfur dioxide (SO_2); unclassifiable/attainment for carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), 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 operates under a SIP maintenance plan for the PM_{10}, 24-hour average standard.

There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

Criteria air pollutant modeling was not required for this project. DEQ's October 16, 2013 conditional modeling protocol approval letter applied Level I and Level II modeling thresholds to the applicability determination.

2.1.3 TAPs Analyses

The increase in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact dispersion analysis required for any TAP having a requested potential emission rate that exceeds the screening emission rate limit (EL) specified by Idaho Air Rules Section 585 or 586.

This project is for an existing facility. All TAPs emission increases for emissions units subject to PTC modification requirementsassociated with this project are subject to the requirements of the TAPs regulations. A decrease in TAPs emissions for Boiler 1 was reflected in this analysis to reflect the shutdown and decommissioning of the emissions unit.The analyses submitted in this application included a TAPs compliance demonstration per the requirements of Idaho Air Rules Section 210.

2.2 Background Concentrations

Background concentrationswere not required for this project. This project was exempted from criteria air pollutant dispersion modeling analyses per DEQ's October 16, 2013 conditional modeling protocol approval letter.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 2 provides a summary of the modeling parameters used in the submitted modeling analyses.

Table 2. MODELING PARAMETERS

Parameter	Description/ Values	Documentation/Additional Description
Model	AERMOD	AERMOD, Version 12345
Meteorological data		A five-year dataset for JR Simplot's Don Siding plant for 1997-2001 was provided to TORF by DEQ. A second single year dataset based on 2001 Inkom data was also requested to be used for the analysis, and was provided for TORF.
Land Use (urban or rural)	Rural	Urban heat rise coefficients were not used. DEQ agrees with TORF that a rural designation is appropriate for this site.
Terrain	Considered	Receptor ground elevations and hill height scales were calculated in the modeling demonstration using USGS NED file data and AERMAP 11103.
Building downwash	Downwash algorithm	Buildings, tank structures, and the cooling tower were included in the model setup. BPIP-PRIME and AERMOD—which contains the PRIME algorithm—were used to evaluate downwash effects.
Receptor Grid	Grid 1	10-meter spacing within 200 meter (X) by 150 meter (Y) rectangular grid centered on Building 20 (Heat Plant). Receptors located within buildings were not deleted.
	Grid 2	10-meter spacing within 150 meter (X) by 160 meter (Y) rectangular grid centered on Building 38 and Boiler 37. Receptors located within buildings were not deleted.
	Grid 3	10-meter spacing within 160 meter (X) by 160 meter (Y) rectangular grid centered on Building 65 and Boiler 36. Receptors located within buildings were not deleted.
	Grid 4	Polar Grid of 36 receptors radially-spaced at 5-meter intervals from the emission source location out to 10 meters. Thereafter, 36 receptors are radially spaced 10 meters apart for an additional 40 meters. These receptors are all centered on the Gasoline Fuel Loading Area Vent.
	Grid 5	100-meter spacing in a 1,900 meter (X) by 1,700 meter (Y) grid centered on the center of the ISU campus.

3.1.1 Modeling protocol

A modeling protocol was submitted to DEQ by TORF Environmental Management (TORF), on behalf of ISU, on August 28, 2012. DEQ issued a conditional modeling protocol approval letter on October 16, 2012. Modeling was conducted using methods documented in the modeling protocol and the *State of Idaho Air Quality Modeling Guideline*.

3.1.2 Model Selection

AERMOD Version 12345 was used by ISU to conduct the ambient air analyses. DEQ determined AERMOD is the most appropriate model for this project, considering regional meteorology, terrain and the configuration of the proposed facility.

3.1.3 Meteorological Data

DEQ's modeling protocol approval recommended the use of two met datasets for this project. A 5 year met dataset based on surface data collected at the JR Simplot Don Siding facility near Pocatello for the years 1997 through 2001, and a single-year met dataset for 2001 with on-site surface data collected at Inkom.

3.1.4 Terrain Effects

The modeling analyses conducted by ISU considered elevated terrain. AERMAP Version 11103 was used in ISU's modeling demonstration to determine the actual elevation of each receptor and the controlling hill height elevation from United Geological Survey (USGS) National Elevation Database (NED) files for the area surrounding the facility. The NED file was not included in the application materials and DEQ did not verify whether the NED .tiff file had 1 degree arc second or 1/3 arc second resolution. A 1/3 arc second resolution is preferred. Elevations of emission sources and receptors were developed based on surrounding terrain elevations as extracted from the NED files based on review of the BEE-Line BEEST Graphical User Interface (GUI) model files. AERMAP was run using the NAD27 datum. The facility is located in zone 12 of the Universe Transverse Mercator (UTM) coordinate system.

3.1.5 Facility Layout

On January 6, 2012, via email, DEQ provided TORF with a modeling demonstration input file that had been submitted by ISU for issuance of their 2006 Tier II operating permit renewal project. This file was used as a base input for this project's modeling demonstration. The 2006 model setup used the NAD27 datum and this project also used the NAD27 datum.

The ISU campus is an existing facility with a large number of structures at the site. DEQ verified that the final modeling demonstration appropriately represented the structures of concern for modeling of the emission points associated with this project. Locations and dimensions of buildings that were not affected by the TAPs modeling were not checked.

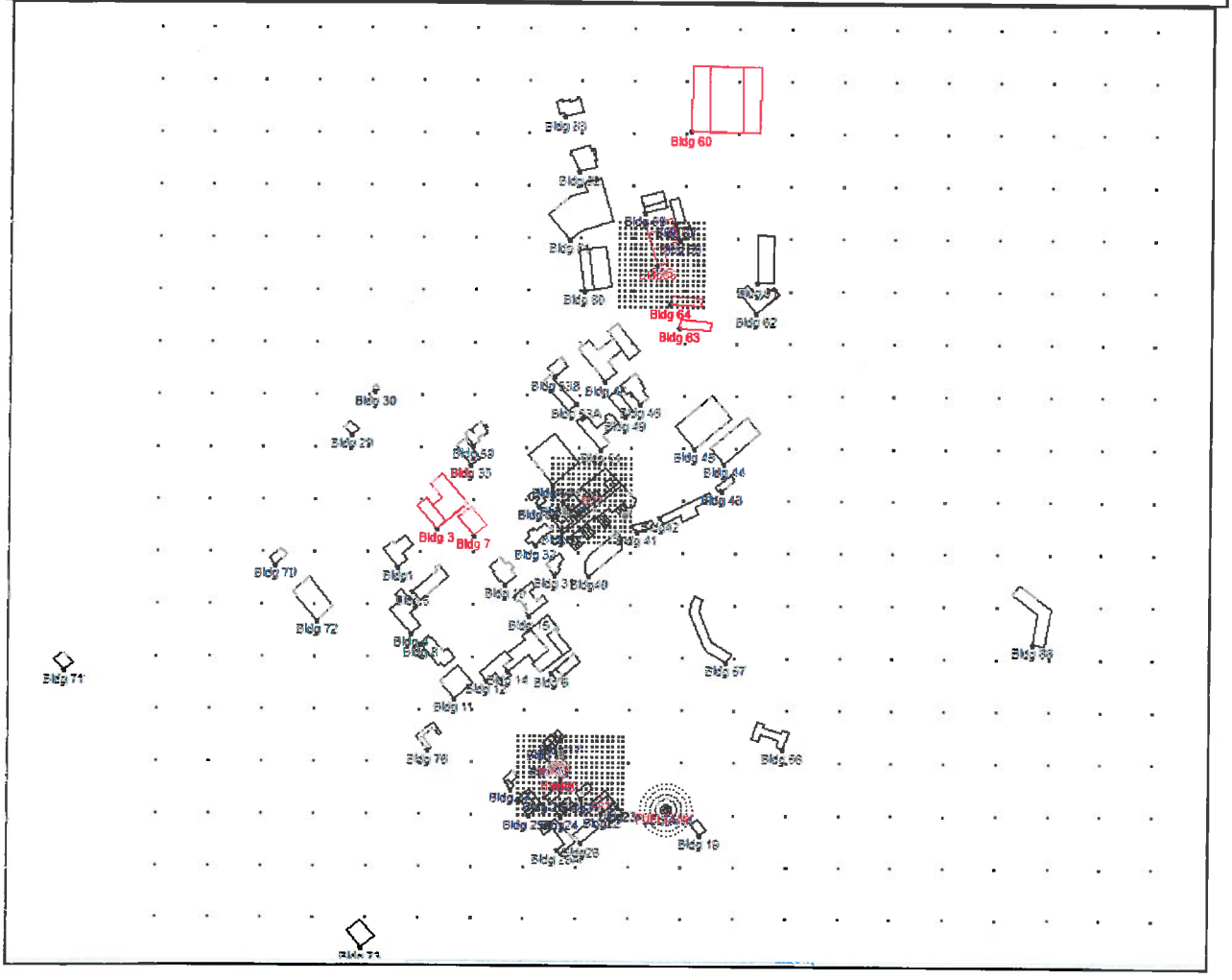
Emission source base elevations were calculated by TORF/ISU using the AERMAP 11103 and National Elevation Dataset (NED) file. This may have caused discrepancies between the emission point source stack base elevation and building elevation. The AERMAP setup option to calculate building and tank elevations were not selected in the file reviewed by DEQ. This project's building base elevations matched the base elevations used in the 2006 model setup for structures present in both the 2006 and the 2012/2013 projects.

Building 38 was constructed subsequent tocreation of ISU's 2006 modeling demonstration.TORF modified the Building 38 and Heat Plant Building 20 dimensions per DEQ's request. Building 38 is a complex structure with numerous tiers and wings. TORF's final submittal included architectural building design plans with dimensions noted that accurately depict the structure's dimensions and these dimensions were represented in the BPIP setup.Base elevations for Building 38 and the Fuel Tank structure were determined by TORF.

A scaled plot plan of the entire facility was not provided with the permit application. A 2011 campus layout map was included in the modeling protocol and the permit application. Google earth imagery was used to spot check locations andidentify structure layout concerns.

As shown in Figure 1, areas with a high receptor density (3 rectangular grids and one polar grid) cover the areas where this project's emission sources are located.

Figure 1. ISU Building and Receptor Grids Layout



3.1.6 Building Downwash

Plume downwash effects caused by structures at the facility were accounted for in the modeling analyses. The Building Profile Input Program for the Plume Rise Model Enhancements algorithm (BPIP-PRIME) was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters. The output from BPIP-PRIME was used as input to AERMOD to account for building-induced downwash effects. Structure dimensions, and the structure's location in relation to emission sources and the ambient air boundary are important factors in evaluating the effects of building-induced downwash on exhaust plumes.

ISU's final modeling demonstration included refined dimensions for several buildings and assignment of point source emission stack base elevations set equal to building base elevations, as requested by DEQ. Building downwash effects were appropriately considered in ISU's modeling demonstration.

3.1.7 Ambient Air Boundary

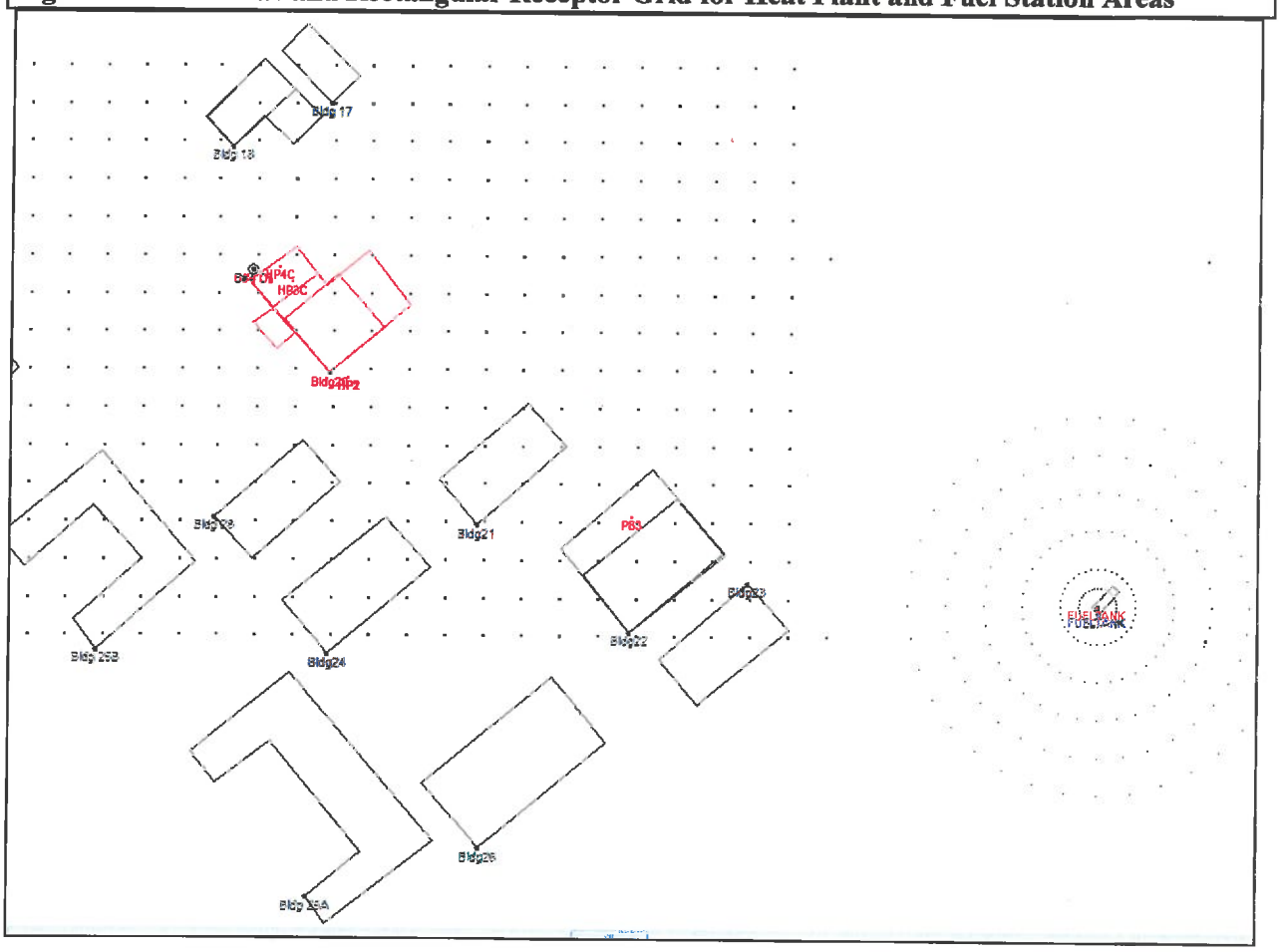
Ambient air was determined to exist for all areas immediately exterior to any structures. The facility is a public institution of higher learning and no special consideration for any areas with restricted access to the general public was presented in the permit application or modeling protocol. ISU's modeling demonstration treated areas within structures as ambient air where discrete receptors were placed within fine resolution receptor grids. This is considered a conservative approach. DEQ concurs that the ambient air was appropriately treated for this project, according to the methods specified in the *State of Idaho Air Quality Modeling Guideline*.

3.1.8 Receptor Network

The receptor grids used by ISU met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined the receptor grids were adequate to reasonably resolve the maximum modeled ambient impacts for the sources included in this modeling demonstration.

TORF used densely-spaced receptors in the areas immediately surrounding the modeled sources. All maximum design impacts were located within the dense grids used in the analyses and where the maximum impact occurred near the edge of a dense receptor grid, the impact was lower at the more distant adjacent receptor, so the maximum impact is believed to have been captured. Figure 2 shows an example of the dense receptor grids. The dots represent ground level receptor locations.

Figure 2. Dense Polar and Rectangular Receptor Grid for Heat Plant and Fuel Station Areas



3.2 *Emission Rates*

Emissions rates used in the dispersion modeling analyses submitted by the applicant werprovided into the permit writer who reviewed the emission rates against those in the permit application. The following approach was used for ISU's modeling:

- All modeled TAP emissions rates were equal to or greater than the facility's emissions calculated in the PTC application or requested permit allowable emissin rates. Negative emission rateswere modeled for the elimination of Boiler1.

The annualized hourly emission rates (maximum annual rates divided by 8,760 hours per year) listed in Table 3 were modeled to evaluate compliance with annual carcinogenic TAP standards. Emissions of all other TAPs were estimated to be below emissions screening levels (ELs) listed in Idaho Air Rules Section 585 and 586, and air impact analyses were not required.

Table 3. MODELED CARCINOGENIC TOXIC AIR POLLTANT EMISSIONS RATES					
Source ID	Description	Arsenic (lb/hr[a])	Benzene (lb/hr)	Cadmium (lb/hr)	Formaldehyde (lb/hr)
HP1	Boiler #1	-1.70E-06	-1.80E-05	-9.47E-06	-6.46E-04
HP3C	Boiler #3 (Change)	6.90E-07	7.20E-06	3.77E-06	2.57E-04
HP4C	Boiler #4 (Change)	5.50E-06	9.10E-06	7.40E-06	7.80E-04
B36	Boiler #36	3.10E-07	3.30E-06	1.73E-06	1.18E-04
B37	Boiler #37	4.90E-07	5.10E-06	2.70E-06	1.84E-04
P83	Paint Booth #3	0	0	0	4.50E-04
FUELTANK	Gasoline fueling station	0	1.30E-03	0	0

[a] Pounds per hour

3. 3 Emission Release Parameters

Table 4 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources.The permit application contained specification sheets and provided detailed calculations on exhaust velocities.

Exit velocities for Boilers 1 and 2, which share a common stack, were calculated using wet-basis EPA F-Factors for natural gas combustion. The volumetric flow rates were corrected to a 355 degrees Fahrenheit exit temperature and an atmospheric pressure at the ISU site. Boiler 2's exit velocity was scaled based on the Boiler 1 exit velocity.

Boiler 36, Paint Booth #3, and the fuel tank vent were described as being equipped with a rain cap. ISU modeled these sources as a vertical release with an exit velocity of 0.001 meters per second.

Boiler 37 is equipped with an exhaust vent that has four "open vent" triangular areas situated at the corners of a square arrangement as shown below in Figure3, taken from Appendix A-Exhaust Velocity Calcs This arrangement differs from the typical single vent with a circular, rectangular, or square shape. The modeled exhaust parameter used a 0.357 meter (14 inch) equivalent diameter stack with a 3.66 m/s (12.0 ft/sec) exit velocity, which should be adequate to model this emission unit with conservative parameters.

Figure 3. Top View of Boiler 37 Exhaust Vent Design

The FUELTANK was modeled as a vertical rain-capped point source with an exit velocity of 0.001 m/s with an elevated release height. A value of 283 Kelvin (49.7 degrees Fahrenheit) was used for the exit temperature.

Values used in the analyses appeared reasonable and within expected ranges fothe assumptions used in the submitted analyses.

Table 4. POINT SOURCE STACK PARAMETERS					
Release Point	Description	Stack Height (m)[a]	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]	Modeled Stack Diameter (m)
HP1	Boiler #1	30.5	452.6	2.74	1.68
HP3C	Boiler #3 (Change)	11.9	505.4	2.90	0.091
HP4C	Boiler #4 (Change)	11.9	434.8	5.43	1.52
B36	Boiler #36	4.9	422.0	0.001[d]	0.20
B37	Boiler #37	19.2	433.0	3.66	0.36
P83	Paint Booth #3	7.6	343.0	0.001[d]	0.82
FUELTANK	Gasoline fueling station	6.6	283.0	0.001[d]	0.052

[a] Meters
[b] Kelvin
[c] Meters per second
[d] Stack is equipped with a rain cap and exit velocity was set to 0.001 m/s to account for loss of exhaust plume momentum flux

3.4 Results for Ambient Impact Analyses

3.4.1 Toxic Air Pollutant Impact Analyses

Dispersion modeling for TAPs was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 586. The results of the TAPs analyses are listed in Table5. The predicted maximum ambient impacts were below any TAPs increments.

ISU modeled the TAPs emissions using two separate data sets—a Simplot Don Siding dataset based on on-site monitoring at the JR Simplot facility located west of Pocatello, and a one-year Inkom dataset based on a single year of on-site data collected at the Ash Grove Cement facility in Inkom. The higher maximum impact from the two datasets was used as the design concentration.

Table 5. RESULTS OF TAPs ANALYSES					
Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	AACC[b] ($\mu g/m^3$)	Percent of AACC	Met Data Set and Year of Design Impact
Arsenic	Annual	4E-05	2.3E-04	17%	Don Siding 2000 and 2001 and Inkom 2005
Benzene	Annual	6.5E-02	1.2E-01	54%	Don Siding 2001
Cadmium	Annual	2.5E-04	5.6E-04	45%	Don Siding 2001 and Inkom 2005
Formaldehyde	Annual	4.9E-02	4.9E-02	64%	Don Siding 2001

[a] Micrograms per cubic meter
[b] Acceptable ambient concentration for carcinogens

4.0 Conclusions

The ambient air impact analysis submitted, in combination with DEQ's review, demonstrated to DEQ's satisfaction that emissions from the facility, as represented in the permit application, will not cause or significantly contribute to a violation of an air quality standard.

Modeling Protocol Approval Letter from DEQ for the Idaho State University Permit to Construct for Proposed Modifications to Various Sources

October 16, 2012

Sarah Stine
TORF Environmental Management
Boise, ID

RE: Modeling Protocol for the Idaho State University Permit to Construct for proposed Modifications to various sources

Sarah:

DEQ received your dispersion modeling protocol submitted to me via email on August 28, 2012. The modeling protocol was submitted on behalf of Idaho State University (ISU). The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct application for proposed modifications of various sources at ISU.

The modeling protocol has been reviewed and DEQ has the following comments:

- Comment 1: The submitted application must provide thorough and complete justification and documentation of release parameters of all sources included in the modeling analyses. As results approach applicable standards, DEQ will demand a greater degree of stack parameter justification.

- Comment 2: The proposed receptor grid appears reasonable. However, it is the applicant's responsibility to use a sufficiently tight receptor network such that the maximum modeled concentration is reasonably resolved. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.

- Comment 3: The emissions calculations in the protocol were not reviewed by DEQ so approval of this protocol does not constitute approval of emissions calculation methods.

- Comment 4: The protocol proposed usingmeteorological data collected from the Pocatello airport. DEQ has studied the meteorology of the valley and the site location, and has concluded that Pocatello airport data do not reasonably represent the site. DEQ will require use of two data sets in the air impact analyses: meteorological data from the Simplot site in Pocatello; meteorological data collected in Inkom. To adequately demonstrate compliance, modeling results from both data sets must show compliance with standards. These data are processed and ready for input to the AERMOD model.

- Comment 5: DEQ reviewed the emissions units involved in the proposed modification. Considering the distances between emissions units showing emissions increases, and considering the nature of the emissions release, DEQ has determined that site specific modeling analyses will not be required for criteria pollutants.

  DEQ has developed modeling thresholds (presented in DEQ's Air Modeling Guideline) and a description on how such thresholds are to be applied. Only emissions increases are considered. Emissions decreases at a specific source are not included in the evaluation because of potential differences in dispersion characteristics between sources showing and increase and those showing

a decrease. Since the proposed project involves numerous sources that are separated by a large distance at ISU, DEQ grouped sources that were sufficiently close and applied the modeling thresholds to each group. The following were the source groups: Bldg22 Group- paint booth No. 3, shop baghouse No. 1, Boilers No. 1-4; Bldg48 Group - paint booth No. 1, paint booth No. 2; Bldg38 Group - boiler No. 37; Bldg65 Group– Boiler No. 36; Bldg71 Group– Boiler No. 18.

Total emissions increases of each group were below the unconditional Level 1 modeling thresholds except for Bldg22 Group. Bldg22 Group had emissions over Level 1 thresholds for annual NOx, 24-hour PM2.5, and annual PM2.5. However, the emissions were below the case-by-case Level 2 thresholds. To evaluate whether modeling would be needed for these sources, DEQ considered: 1) the magnitude of the emissions increase (well below Level 2 thresholds); 2) any proposed emissions decreases (large decrease at Boiler No. 1); 3) dispersion characteristics of the sources (hot stack releases with a relatively high stack); 4) distance to potentially exposed public (immediately next to the source at groundlevel); 5) existing air quality in the area and the presence of other pollution sources (few or no other emissions sources in the immediate area). DEQ then concluded that the use of Level 2 thresholds are appropriate for the sources involved and modeling of criteria pollutants will not be required for the project.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf for further guidance.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP and AERMAP input and output files) are submitted with an analysis report. If DEQ provided model-ready meteorological data files, then these do not need to be resubmitted to DEQ with the application. If you have any further questions or comments, please contact me at (208) 373-0112.

Sincerely,

Kevin Schilling

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

APPENDIX C – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**IdahoState University**
Address:	**Facilties Services, 749 E. Humboit**
City:	**Pocatello**
State:	**Idaho**
Zip Code:	**83209-8137**
Facility Contact:	**Robert Colling**
Title:	**Environmental & Safety Manager**
AIRS No.:	**005-00029**

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	21.0	75.99	-55.0
SO_2	0.2	95.11	-94.9
CO	32.5	32.03	0.4
PM10	3.0	2.74	0.3
VOC	12.3	2.09	10.2
TAPS/HAPS	9.5	3.3	6.2
Total:		211.26	**-132.7**
Fee Due	**$ 1,000.00**		

Comments: