State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct and Tier II Operating Permit No. T2-2009.0031

Final

Brigham Young University – Idaho

Rexburg, Idaho

Facility ID No. 065-00011

June 2, 2009

Morrie Lewis

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.

Table of Contents

Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BYU-Idaho	Brigham Young University – Idaho
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
gr/dscf	grains (1 lb = 7,000 grains) per dry standard cubic foot
EPA	U.S. Environmental Protection Agency
HAP	Hazardous Air Pollutants
HP	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
kW	kilowatts
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
MSDS	Material Safety Data Sheets
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
Pb	lead
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SM	synthetic minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per consecutive 12-calendar month period
TAP	Toxic Air Pollutants
target HAP	target hazardous air pollutants as defined in 40 CFR 63.11180
VOC	volatile organic compound
$\mu g/m^3$	micrograms per cubic meter

1. FACILITY INFORMATION

1.1 Facility Description

Brigham Young University-Idaho (BYU-Idaho, formerly Ricks College) is a four-year private university. Emissions units and activities include the central heating plant boilers, the ash handling system, emergency generators, coating operations, laboratories, welding operations, storage tanks, and paved and unpaved roads.

The Central Heating Plant was initially constructed in 1963 and included Boilers No. 1 and 2. Boiler No. 3 was added in 1966, and Boiler No. 4 was added in 1973. Boiler No. 1 was removed in 2001, the same year that Boiler No. 5 was installed. Boilers No. 2, 3, and 4 are coal-fired units, and Boiler No. 5 is a multi-fuel boiler capable of burning distillate fuel oil or gas. The ash handling system is used to transport and remove coal ash generated by the boilers.

Emergency generators located throughout the campus provide electric power when line power is not available. Welding and spray paint coating operations are used for facility maintenance purposes, including the installation, building, and repair of new equipment or structures (e.g., welding for the building and repair of stage sets at the Drama location).

1.2 Permitting Action and Facility Permitting History

This PTC/T2 is for a renewal and modification of PTC/T2 No. P-060500. 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).

September 4, 1990	PTC No. 1000-0011-001, issued September 4, 1990 to Ricks College; permit to construct four coal-fired boilers. (S)
August 12, 1996	T2 No. 065-00011 (9506-078-2); issued August 12, 1996 to Ricks College; initial T2 operating permit. (S)
April 9, 2003	PTC/T2 No. T2-010511, issued April 9, 2003 to BYU-Idaho; T2/PTC renewal and modification to replace Boiler No. 1 with Boiler No. 5, and to incorporate synthetic minor limits. (S)
February 12, 2007	PTC/T2 No. P-060500, issued February 12, 2007 to BYU-Idaho; T2/PTC modification to increase the allowable sulfur content of coal used in Boiler No. 2-4, reduce the allowable sulfur content of No. 2 fuel oil used in Boiler No. 5, replace three emergency generators, and add three emergency generators. (S)

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

This project is an operating permit renewal of PTC/T2 No. P-060500, and a permit to construct modification to:

- Increase Boilers No. 2, 3, and 4 annual coal fuel combustion limit from 8,300 to 9,300 T/yr and coal sulfur content limit from 0.68% to 0.72%;
- Replace Emergency Generator No. 480, located at the Smith Building;
- Add Emergency Generator No. 408, located at the Radio Tower as a regulated emissions source;
- Add the Physical Facilities #1 Spray Booth as a regulated emissions source;
- Add the Physical Facilities #2 Spray Booth as a regulated emissions source;
- Add the Austin Spray Booth as a regulated emissions source;
- Add welding operations as regulated emissions sources.

A facility-wide modeling analysis was conducted as part of this permit renewal, and emissions limits in the permit have been updated to reflect the emissions rates used in the modeling analysis provided in the application to demonstrate compliance with ambient air quality standards (refer to Sections 3.3 and 4.10 for additional information).

2.2 Application Chronology

May 1, 2008	DEQ received a PTC/T2 application (project T2-2008.0068).
June 6 - 20, 2008	DEQ provided an opportunity to request a public comment period on the permit application and proposed permit to construct.
May 30, 2008	DEQ determined that the application was incomplete.
July 15, 2008	DEQ received additional information from the applicant, including a revised emissions inventory and revised modeling analysis.
August 14, 2008	DEQ determined that the application was incomplete.
September 9 - 22, 2008	DEQ received additional information from the applicant, including a revised emissions inventory and federal requirements applicability analysis.
October 9, 2008	DEQ determined that the application was incomplete.
November 3, 2008	DEQ received additional information from the applicant, including a revised modeling protocol.
November 7, 2008	DEQ received a $1,000 PTC application fee.
December 16, 2008	DEQ received additional information from the applicant.
December 30, 2008	DEQ made available the draft permit and statement of basis for peer and Idaho Falls Regional Office review.
January 5, 2009	DEQ made available the draft permit and statement of basis for facility review.

January 15, 2009	DEQ determined that the application was complete.
January 26, 2009	DEQ received a comment from the facility requesting consideration of an increase in coal sulfur content.
February 4, 2009	DEQ received additional information from the applicant, including stack test results for Boiler #5.
March 4, 2009	DEQ received a request to withdraw the application for project T2-2008.0068 to consider a revised application, including a request to increase annual coal usage and sulfur content.
March 10, 2009	DEQ received a PTC/T2 application (project T2-2009.0031).
April 6, 2009	DEQ determined that the application was complete.
May 14, 2009	DEQ made available the draft permit and statement of basis for peer and Idaho Falls Regional Office review.
May 19, 2009	DEQ made available the draft permit and statement of basis for facility review.
June 1, 2009	DEQ received a $10,000 PTC/T2 processing fee.
June 2, 2009	DEQ issued the final permit and statement of basis.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Source Description	Emissions Control(s)
Boiler No.2, Erie City Iron Works Model 16792 H.S.B, stoker coal-fired, 26.7 MM Btu/hr, installed 1963	Multi-clone
Boiler No.3, Union Iron Works Model 234-28, stoker coal-fired, 40 MM Btu/hr, installed 1966	Multi-clone
Boiler No.4, Keeler Watertube MK, stoker coal-fired, 46.7 MM Btu/hr, installed 1973	Multi-clone
Boiler No.5, Indeck/Volcano 02-40-X, gas and No.2 oil-fired (transition fuel), 51.0 MMBtu/hr on gas, 48.25 MMBtu/hr on oil, installed 2001	None
Emergency Generator AOE, Caterpillar Model 4Z03819, diesel-fired, 438 kW, located at Kimball Building, installed before 2004	None
Emergency Generator AIW, Generac 176919019, diesel-fired, 40 kW, located at Radio and Graphic Services Building, installed before 2004	None
Emergency Generator No. 401, Generac SD060 Model 5166180100, diesel-fired, 60 kW, located at Clarke Building, Building No.6, installed before 2004	None
Emergency Generator No. 403, Onan Model DDA-15R/18796D, diesel-fired, 30 kW, located at Snow Performing Arts Center, Building No.12, installed before 2004	None
Emergency Generator No. 404, Onan Model DVA-15R/29163A, diesel-fired, 50 kW, located at Romney Building, Building No.5, installed before 2004	None
Emergency Generator No. 408, diesel-fired, 5 kW, located at Radio Tower, installed before 2004	None
Emergency Generator No. 410, Cummins Model DGBB 5007082, diesel-fired, 25 kW, located at Spori Building, Building No. 1, installed before 2004	None
Emergency Generator No. 411, Cummins Model DGGD 5632344, diesel-fired, 35 kW, located at Campus Substation asset #SUB, installed before 2004	None
Emergency Generator No. 412, Generac Model 3426670200, Type SD080, diesel-fired, 80 kW, located at Ricks Building, Building No. 21, installed before 2004	None
Emergency Generator No.413, Cummins Model DGHE60, diesel-fired, 50 kW, located at Benson Building, Building No.11, installed before 2004	None

Emergency Generator No.423, Olympian Model D30P3, diesel-fired, 30 kW, located at Austin Building, Building No.10, installed before 2004	None
Emergency Generator No.429, Cummins Model NTA 855GS2, diesel-fired, 300 kW, located in Heating Plant, installed before 2004	None
Emergency Generator No.431, Kohler 60ROZJ71, diesel-fired, 80 kW, located at the Library, Building No.4, installed before 2004	None
Emergency Generator No.434, Onan Model 30 DDa, diesel-fired, 30 kW, located in Physical Plant, Building 83, installed before 2004	None
Emergency Generator No.442, Kohler 60ROZ5, diesel-fired, 60 kW, located at Manwaring Center, Building No.7, installed before 2004	None
Emergency Generator 447, Cummins, diesel-fired, 250 kW, portable, installed before 2004	None
Emergency Generator No.473, Kohler Model 20R0P81, diesel-fired, 20 kW, located at Kirkham Building, Building No.3, installed before 2004	None
Emergency Generator No.477, Generac, diesel-fired, 100 kW, located at Hart Building, Building No.9, installed before 2004	None
Emergency Generator No.479, Kohler Model 30R081, diesel-fired, 30 kW, located at Auxiliary Services Building, Building No.90, installed before 2004	None
Emergency Generator No.480, Cummins Model QSX15-G9 Nonroad 2, diesel-fired, 350 kW, located at Smith Building, Building No.8, installed 2008	None
Ash handling system	Baghouse
Physical Facilities #1 Spray Booth, Graco Model 220955 Airless spray gun, 5 gal/hr capacity	Pre-filter and filter system
Physical Facilities #2 Spray Booth, Graco Model 395 Airless spray gun, 5 gal/hr capacity	Pre-filter and filter system
Austin Spray Booth, Campbell Housefield, HVLP spray gun, 1.5 gal/hr capacity	Pre-filter and filter system

3.2 Emissions Inventory

Table 3.2 UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Boilers[a]											
Coal Boiler #2	~23.2	~101.7	21.55	94.39	9.03	39.55	5.13	22.47	0.06	0.26	7.22
Coal Boiler #3	~27.1	~118.7	32.32	141.56	13.55	59.35	7.70	33.73	0.08	0.35	10.82
Coal Boiler #4	~44.5	~194.7	37.71	165.17	15.80	69.20	8.98	39.33	0.09	0.39	12.62
Gas/Oil Boiler #5	0.40	1.76	3.81	16.69	6.43	28.17	3.78	16.25	0.25	1.10	0.10
Emergency Generators[a]											
Heat Plant	0.89	0.223	0.83	0.208	12.48	3.120	2.69	0.673	1.02	0.255	1.2E-03
Kimball Building	1.30	0.325	1.21	0.303	18.21	4.553	3.93	0.983	1.48	0.370	1.7E-03
Hart Building	0.30	0.075	0.28	0.070	4.16	1.040	0.90	0.225	0.34	0.085	3.9E-04
Physical Facilities	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Manwaring Center	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Kirkham Building	0.06	0.015	0.06	0.015	0.84	0.210	0.18	0.045	0.07	0.018	8.8E-05
Auxiliary Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Austin Tech Building	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Snow Performing Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Romney Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.0E-04
Library	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.2E-04
Benson Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.0E-04
Smith Building	0.04	0.010	0.09	0.023	3.36	0.840	0.42	0.105	1.18	0.295	1.4E-03
Clarke Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Radio/Graphic Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035	1.7E-04
Spori Building	0.08	0.020	0.07	0.018	1.04	0.260	0.23	0.058	0.09	0.023	1.0E-04
Ricks Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.2E-04
Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005	2.5E-05
Portable	0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213	9.7E-04
Substation	0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030	1.4E-04
Spray Paint Booths[a]											
Physical Facilities #1 Spray Paint Booth	11.34	49.67							18.30	80.16	
Physical Facilities #2 Spray Paint Booth	3.85	16.84							13.10	57.38	
Austin Spray Booth	0.87	3.82							3.93	17.22	
Boilers Subtotal[b]	**~95.2**	**~416.9**	**95.39**	**417.81**	**44.81**	**196.27**	**25.59**	**111.78**	**0.48**	**2.1**	**30.76**
Generators Subtotal	**5.25**	**1.32**	**4.96**	**1.25**	**75.90**	**18.98**	**16.09**	**4.03**	**7.15**	**1.80**	**0.01**
Spray Paint Booth Subtotal	**16.06**	**70.33**							**35.33**	**154.76**	
Welding	**0.0025**	**0.02**									
Ash Handling System[b]	**~100**	**~438**									
Total, Point Sources	**~216.5**	**~926.6**	**100.35**	**419.06**	**120.71**	**215.25**	**41.68**	**115.81**	**42.96**	**158.66**	**30.77**

[a] Uncontrolled emissions estimates assume 8,760 hours/year of operation for the boilers, ash handling system, and spray paint booths, and up to 500 hours per year of operation for the emergency generators.

[b] Uncontrolled PM_{10} emissions estimates were not provided for the boilers and the ash handling system. For purposes of classification, the estimates shown were calculated assuming 80% and 99% PM_{10} emissions control efficiency for the multiclones and baghouse, respectively.

Table 3.3 CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Boilers[a]											
Coal Boiler #2	4.64	4.95	21.54	22.98	9.03	9.63	5.13	5.47	0.05	0.05	1.44
Coal Boiler #3	5.42	5.78	32.31	34.46	13.54	14.44	7.69	8.21	0.08	0.08	2.16
Coal Boiler #4	8.89	9.48	37.70	40.21	15.80	16.85	8.98	9.57	0.09	0.10	2.52
Gas/Oil Boiler #5	0.40	1.51	3.81	0.89	6.43	20.10	3.78	16.56	0.25	1.09	0.10
Emergency Generators[b]											
Heat Plant	0.89	0.223	0.83	0.208	12.48	3.120	2.69	0.673	1.02	0.255	1.2E-03
Kimball Building	1.30	0.325	1.21	0.303	18.21	4.553	3.93	0.983	1.48	0.370	1.7E-03
Hart Building	0.30	0.075	0.28	0.070	4.16	1.040	0.90	0.225	0.34	0.085	3.9E-04
Physical Facilities	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Manwaring Center	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Kirkham Building	0.06	0.015	0.06	0.015	0.84	0.210	0.18	0.045	0.07	0.018	8.8E-05
Auxiliary Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Austin Tech Building	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Snow Performing Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.3E-04
Romney Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.0E-04
Library	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.2E-04
Benson Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.0E-04
Smith Building	0.04	0.010	0.09	0.023	3.36	0.840	0.42	0.105	1.18	0.295	1.4E-03
Clarke Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.4E-04
Radio/Graphic Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035	1.7E-04
Spori Building	0.08	0.020	0.07	0.018	1.04	0.260	0.23	0.058	0.09	0.023	1.0E-04
Ricks Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.2E-04
Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005	2.5E-05
Portable	0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213	9.7E-04
Substation	0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030	1.4E-04
Spray Paint Booths[c]											
Physical Facilities #1 Spray Paint Booth	0.341	1.50							18.30	80.16	
Physical Facilities #2 Spray Paint Booth	0.116	0.02							13.10	0.66	
Austin Spray Booth	0.026	0.01							3.93	0.27	
Boilers Subtotal	**19.35**	**21.72**	**95.36**	**98.54**	**44.80**	**61.02**	**25.58**	**39.81**	**0.47**	**1.32**	**6.22**
Generators Subtotal	**5.25**	**1.32**	**4.96**	**1.25**	**75.90**	**18.98**	**16.09**	**4.03**	**7.15**	**1.80**	**0.01**
Spray Paint Booth Subtotal	**0.49**	**1.53**							**35.33**	**81.09**	
Welding	**0.0025**	**0.02**									
Ash Handling System[d]	**1.00**	**0.37**									
Total, Point Sources	**26.10**	**24.96**	**100.32**	**99.79**	**120.70**	**80.00**	**41.67**	**43.84**	**42.95**	**84.21**	**6.23**

[a] Controlled emissions estimates assume 9,300 T/yr of facility-wide coal consumption for boilers 2-4; 12 hr/day and 400 hr/yr fuel oil consumption for boiler 5; coal sulfur content of less than 0.72 wt%; SO_2 emissions from coal limited to 97.65 T/yr; and fuel oil sulfur content of less than 0.05 wt%.

[b] Controlled emissions estimates assume maintenance and testing operation up to 3 hours per day for each generator and assume operation up to 500 hours per year for each of the emergency generators.

[c] Controlled emissions estimates assume 500 gal/yr and 300 gal/yr of coatings applied annually for the Physical Facilities #2 and Austin spray booths, respectively.

[d] Permitted emissions limited to 1 lb/hr and 0.37 T/yr for the ash handling system.

An emissions inventory for BYU-Idaho, including emissions of federally-regulated criteria pollutants and hazardous air pollutants (HAP) and state-regulated toxic air pollutants (TAP) was provided in the PTC/T2 application. The emissions inventory was based on emission factors from various sections in AP-42 (including sections 1.1, 1.3, 1.4, 3.3, and 12.19) for the boilers and the emergency generators,

emissions data provided by the manufacturer of the Smith Building emergency generator, manufacturer's formulation data (MSDS) for the coating materials used in the spray paint booths, the sources and emission controls described in Table 3.1, the emissions limits and operating limits in PTC No. P-060500 (refer to Section 4.10 for additional information), and the proposed coal sulfur, annual combustion limit changes, and the proposed annual coating material usage limits. Summaries of the uncontrolled and controlled emissions of criteria pollutants are shown in Table 3.2 and Table 3.3.

TAP emissions increases which exceed applicable emission screening levels (EL) resulting from the proposed increase in coal combustion and the addition of stationary sources is summarized in Table 3.4. Uncontrolled TAP emissions were below the screening emission level (EL) and demonstrated preconstruction compliance with TAP increments in accordance with IDAPA 58.01.01.210.05 except for those TAP identified in Table 3.4. Compliance with the TAP increments for the TAP listed in Table 3.4 was demonstrated using either the controlled emission increase estimate or the controlled ambient concentration for each applicable TAP; refer to Section 3.3 for additional information.

For the coal-fired boilers, emissions from coal combustion were estimated based on the proposed annual increase of 1,000 T/yr and the proposed annual limit of 9,300 T/yr. For Boiler No. 5, the emissions estimates in Table 3.3 represent the maximum permitted emissions when comparing operation at 8,760 hr/yr using natural gas, with operation at 8,360 hr/yr using natural gas and 400 hr/yr using fuel oil.

Emissions from the emergency generators were based upon a default assumption for estimating potential to emit and controlled emissions of 500 hours of annual operation, assuming that the sole function of emergency generators is to provide back-up power when electric power from the local utility is interrupted. Emissions from the replacement Smith emergency generator were conservatively estimated as an emissions increase, without accounting for offsets or reductions in emissions due to the removal of the existing generator.

Emissions from welding operations were estimated based on double the current actual annual welding rod usage rate. All of the fume emissions were considered 100% particulate matter, and each TAP and HAP emission was calculated based on an average of AP-42 emission factors for shielded metal arc welding electrodes. Welding operations are for facility maintenance purposes, and are not a primary business activity. The welding operations were previously determined to qualify for exemption from permit to construct requirements.

Emissions from lacquer and paint coating materials at the facility were estimated based on information included in the application, including the manufacturer's formulation data (MSDS). A conservative approach was used, in which all of the VOC and HAP within the coating materials were assumed to be 100% emitted. Uncontrolled emissions are based on the maximum capacity of the spray guns at each spray booth (gal/hr) operating at 24 hours/day without particulate filtration, and include a transfer efficiency for particulate emissions. Controlled emissions include the annual usage limits (gal/yr) for Duracat-v vinyl lacquer semi-gloss for the Physical Facilities #2 and Austin spray booths, and include the particulate filtration efficiencies of the pre-filter and filtration systems associated with each spray booth. It should be noted that the spray paint booths were in existence prior to this permitting action, but were not previously included in the permit as regulated sources. Because it was determined that without operating limits on the Physical Facilities #2 and Austin spray booths, emissions could potentially exceed the major source threshold for VOC, and because adequate documentation was not found supporting an exemption determination or indicating the date of installation or modification of these sources, these sources have been treated as new sources for the purposes of demonstrating preconstruction compliance with TAP increments for this permitting action in accordance with IDAPA 58.01.01.210.

The facility-wide controlled emissions estimates provided did not exceed major source thresholds for criteria pollutant emissions or HAP emissions (individual or combined thresholds) for purposes of synthetic minor facility classification. Emissions inventories for this facility are included in Appendix B and Appendix C.

Table 3.4 EMISSIONS ESTIMATES OF TAP EXCEEDING EL – UNCONTROLLED EMISSIONS INCREASE

TAP[a]	Uncontrolled Emissions Increase lb/hr	Controlled Emissions Increase lb/hr[b]	Screening Emissions Levels (EL) lb/hr
Increase in Boiler Nos. 2-4 Coal Combustion (+1,000 T/yr), and Addition of Radio Tower and Smith Generators			
Arsenic	2.4E-04	2.4E-04	1.5E-06
Beryllium & compounds	4.4E-05	4.4E-05	2.8E-05
Cadmium and compounds	1.9E-05	1.9E-05	3.7E-06
Chromium (VI) and compounds	1.8E-06	1.8E-06	5.6E-07
Dioxin and furans	2.1E-10	2.1E-10	1.5E-10
Formaldehyde	4.1E-03	1.1E-04	5.1E-04
Nickel	6.2E-04	6.2E-04	2.7E-05
Physical Facilities #2 Spray Booth			
Formaldehyde	2.2E-01	2.5E-03	5.1E-04
Bis (2-ethylhexyl) phthalate	1.3E+00	1.5E-02	2.8E-02
Austin Spray Booth			
Formaldehyde	6.5E-02	1.5E-03	5.1E-04
Bis (2-ethylhexyl) phthalate	3.9E-01	8.8E-03	2.8E-02

a. TAP listed in Table 3.4 are carcinogenic TAP as provided in IDAPA 58.01.01.586.
b. The controlled emissions increase estimates were calculated based upon an annual average, which assumed 1,000 T/yr increase in coal consumption for Boilers No. 2-4; 500 hr/yr of annual operation of the Radio Tower and Smith emergency generators; and 500 gal/yr and 300 gal/yr of coatings applied annually at the Physical Facilities #2 and Austin spray booths (respectively).

3.3 Ambient Air Quality Impact Analysis

Table 3.5 FULL IMPACT ANALYSIS RESULTS FOR CRITERIA POLLUTANTS AND TAP

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient Concentration ($\mu g/m^3$)	AAC/AACC ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percentage of Limit
PM_{10}	24-hour	63.1	81	144.1		150	96.1%
	Annual	20.5	27	47.5		50	95.0%
NO_2	Annual	44.0	32	76.0		100	76.0%
SO_2	3-hr	1,085.9	42	1127.9		1,300	86.8%
	24-hr	144.6	26	170.6		365	46.8%
	Annual	31.0	8	39.0		80	48.8%
CO	1-hour	3,568.97	10,200	13,768.97		40,000	34.5%
	8-hour	1,544.49	3,400	4,944.49		10,000	49.5%
Pb	Quarterly	NA		NA			NA
Arsenic	Annual	4.55E-05		4.55E-05	2.3E-04		20%
Beryllium	Annual	1.00E-05		1.00E-05	4.2E-03		0.2%
Bis (2-ethylhexyl) phthalate	Annual	NA		NA	4.20E+00		NA
Cadmium	Annual	3.61E-06		3.61E-06	5.6E-04		0.6%
Chromium (VI)	Annual	1.72E-06		1.72E-06	8.3E-05		2%
Dioxin and furans	Annual	3.82E-11		3.82E-11	2.2E-08		0.2%
Formaldehyde	Annual	6.99E-02		6.99E-02	7.7E-02		91%
Nickel	Annual	1.20E-04		1.20E-04	4.2E-03		3%

NA: The controlled emissions rate is below the modeling threshold; modeling is not required in accordance with State of Idaho Air Quality Modeling Guidance DEQ Publication, December 2002, or alternative threshold approved by DEQ Modeling Coordinator.

In accordance with IDAPA 58.01.01.203, compliance with National Ambient Air Quality Standards (NAAQS) and TAP increments were demonstrated in the ambient air quality impact analysis provided, as shown in Table 3.5. Compliance with TAP increments was demonstrated using the controlled ambient concentration in accordance with IDAPA 58.01.01.210.08. The controlled bis (2-ethylhexyl) phthalate emissions rate, which assumed the use of material usage limits, was below the EL and did not require modeling analysis. Modeling conducted in the development of TAP rules indicates that if a controlled emission rate is below the applicable EL, controlled ambient concentrations are expected to be below the relevant AAC or AACC. Refer to Section 4.10 for additional information regarding the material usage limits required for the Physical Facilities #2 and Austin spray booths.

The facility has demonstrated 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 facility has also demonstrated compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed applicable AAC or AACC for TAP.

A summary of the ambient air quality impact analysis is included in Appendix D.

3.4 Origin of Existing Emissions Limits

Permit Condition 3.4

On and after the date on which the initial performance test is completed or required to be completed under 40 CFR 60.8, whichever date comes first, no owner or operator of an affected facility (in this case, Boiler No. 5) that combusts oil and has a heat capacity of 8.7 MW (30 MMBtu/hr) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20% opacity (6-minute average), except for one 6-minute period per hour of not more than 27% opacity. This requirement applies at all times, except during startup, shutdown, or malfunction.

This emissions standard was established in Permit Condition 3.3.2 of PTC No. P-060500 in order to incorporate NSPS Subpart Dc requirements applicable to Boiler No. 5.

Permit Condition 3.6

- *Fuel burned in Boiler No. 5 shall be ASTM Grade No. 1 or No. 2 fuel oil, a mixture of No. 1 and No. 2 fuel oil, or natural gas, exclusively.*
- *For any day when Boilers No. 2, 3, and 4 are operated, Boiler No. 5 operations on fuel oil shall not exceed 12 hours per day.*
- *Boiler No. 5 operations on fuel oil shall not exceed 400 hours in any consecutive 12-month period.*

Fuel type and daily limits were established in Permit Condition 3.5 of PTC No. P-060500 based on the emissions inventory and modeling analysis included in the associated application. The 12-hour per day limit was required to ensure compliance with the NAAQS for SO_2 (24-hr).

The annual fuel limit was established in Permit Condition 3.5 of initial PTC No. P-010511 based on the emissions inventory and modeling analysis included in the associated application, and was used in the updated emissions inventory and modeling analysis included in the current application. This limit is considered a synthetic minor limit used to ensure compliance with the major source threshold of SO_2.

Permit Condition 3.7

The stack height for Boilers No. 2, No. 3, and No. 4 (if being operated) shall be a minimum of 80 feet above grade level.

This requirement was established in Permit Condition 3.6 of initial PTC No. P-010511 based on the modeling analysis included in the associated application, and was used in the updated modeling analysis included in the current application. A minimum stack height was initially required to demonstrate compliance with the short-term NAAQS for SO_2 (3-hr and 24-hr) and PM_{10} (24-hr).

Permit Condition 3.8

The pressure drop across each of the control equipment of Boilers No. 2, No. 3, and No. 4 shall be maintained within manufacturer specifications. Documentation of manufacturer pressure drop specifications shall be kept onsite and shall be made available to DEQ representatives upon request.

The requirement to monitor operation of the multi-clones was established in Permit Condition 2.1.5 of initial PTC No. P-065-00011 issued to Ricks College based on the emissions inventory and modeling analysis included in the associated application, and was used in the updated emissions inventory and modeling analysis (including 24-hr NAAQS for PM_{10}) included in the current application.

Permit Condition 3.10

- *For each shipment of fuel oil received, the permittee shall obtain and maintain at the facility fuel receipts from the fuel supplier, which shall include the name of the supplier and a certification from the fuel oil supplier that the fuel oil—or for fuel oil mixtures, that each component of the fuel oil mixture—complies with ASTM specifications for No. 1 or No. 2 fuel oil, and the fuel sulfur content limit specified in Permit Condition 3.9.*
- *The permittee shall monitor and record the daily (for any day that the boiler is operated), monthly, and annual number of hours that Boiler No. 5 operates on fuel oil. Annual hours shall be determined by summing each monthly total over the previous consecutive 12-month period.*

This requirement was established in Permit Condition 2.13 of initial PTC No. P-010511 to ensure compliance with Permit Conditions 3.6 and 3.9.

Permit Condition 3.15

The permittee shall monitor and record the pressure drop across each of the control equipment of Boilers No. 2, No. 3, and No. 4, once on a weekly basis.

This requirement was established in Permit Condition 3.4 of initial PTC No. P-065-00011 issued to Ricks College to demonstrate compliance with Permit Condition 3.8.

Permit Condition 3.16

The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by 40 CFR 60.7. This notification shall include:

- *The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility,*
- *If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under 40 CFR 60.42c or 43c, and*
- *The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.*

These requirements were established in Permit Condition 3.13 of PTC No. P-060500 in order to incorporate NSPS Subpart Dc requirements applicable to Boiler No. 5.

Permit Condition 3.17

The permittee shall submit an annual-calendar-year report to DEQ no later than 30 days after the end of the calendar year. The report shall include:

- *The calendar dates covered in the reporting period.*
- *Records of fuel supplier certification containing 1) the name of the oil supplier and 2) a statement from the oil supplier that the oil compiles with the specifications under the definition of distillate oil in 40 CFR 60.41c. The report shall include a statement signed by the permittee that the records of fuel supplier certifications submitted represent all the fuel oil combusted during the period.*

- *Each 30-day average sulfur content (weight percent), calculated during the reporting period, ending with the last 30-day period, reasons for any noncompliance with the fuel sulfur standard, and a description of the corrective actions taken.*

These requirements were established in Permit Condition 3.14 of PTC No. P-060500 in order to incorporate NSPS Subpart Dc requirements applicable to Boiler No. 5.

Permit Condition 4.3

The operation of each emergency diesel generator shall not exceed a maximum of 3 hours in any 24-hour period and shall be less than 500 hours in any consecutive 12-calendar month period.

The annual limit was established in Permit Condition 1.1 of initial PTC No. P-065-00011 issued to Ricks College based on the assumption that the sole function of the emergency generator is to provide back-up power when electric power from the local utility is interrupted.

The daily limit was added in Permit Condition 4.2 of PTC No. P-060500 based on the modeling analysis included in the associated application, and was used in the modeling analysis included in the current application. This was initially required to demonstrate compliance with the short-term NAAQS for SO_2 (3-hr and 24-hr).

Permit Condition 4.4

- *Fuel burned in any emergency generator shall be ASTM Grade No. 1 or No. 2 distillate fuel oil, or a mixture of No. 1 and No. 2 fuel oil, exclusively.*
- *The permittee shall not allow burning waste oil (used oil), gasoline, or refined gasoline in any emergency generator.*

Fuel type limits were established in Permit Condition 4.3 of PTC No. P-060500 based on the emissions inventory and modeling analysis included in the associated application.

Permit Condition 5.3

- *PM_{10} emissions from the ash handling system shall not exceed 1.0 lb/hr and 0.37 T/yr.*

This emissions limit was established in Permit Condition 5.1 of initial PTC No. P-010511 based on the emissions inventory and modeling analysis included in the associated application, and was used in the updated emissions inventory and modeling analysis included in the current application.

Permit Condition 5.4

- *The pressure drop across the ash handling system baghouse equipment shall be maintained within manufacturer specifications. Documentation of the manufacturer pressure drop specifications shall remain onsite and shall be made available to DEQ representatives upon request.*

The requirement to monitor operation of the baghouse was established in Permit Condition 2.1 of initial PTC No. P-065-00011 issued to Ricks College based on the emissions inventory and modeling analysis included in the associated application, and was used in the updated emissions inventory and modeling analysis included in the current application. Proper operation of the baghouse is required to ensure compliance with the NAAQS for PM_{10} (24-hr).

Permit Condition 5.5

- *The permittee shall install, calibrate, maintain, and operate pressure drop monitoring equipment to continuously measure the pressure drop across the ash handling system control equipment to determine compliance with Permit Condition 5.4.*

This requirement was established in Permit Condition 3.1 of initial PTC No. P-065-00011 issued to Ricks College to ensure compliance with Permit Condition 5.4.

Permit Condition 5.6

- *The permittee shall monitor and record the pressure drop across the Ash Handling System baghouse once on a weekly basis.*

This requirement was established in Permit Condition 3.2 of initial PTC No. P-065-00011 issued to Ricks College to ensure compliance with Permit Condition 5.4.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is located in Madison County which is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_X, and Ozone.

4.2 Permit to Construct (IDAPA 58.01.01.201)

The proposed sources and modifications described in Section 2.1 do not meet the permit to construct exemption criteria in IDAPA 58.01.01.220-223. Therefore, a permit to construct is required in accordance with IDAPA 58.01.01.201. The permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228 and IDAPA 58.01.01.400-410.

4.3 Tier II Operating Permit (IDAPA 58.01.01.401)

The permit application was submitted for renewal of PTC/T2 No. P-060500, in accordance with IDAPA 58.01.01.404.04. Therefore, the permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228 and IDAPA 58.01.01.400-410.

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

The facility is classified as a synthetic minor facility for Title V purposes because, without limits on the potential to emit, the PM, PM_{10}, SO_2, NO_X, and CO emissions have the potential to exceed the major source thresholds defined in IDAPA 58.01.01.008.10.

The use of multi-clones on the boilers and the use of a baghouse on the ash handling system are considered synthetic minor limits used to demonstrate compliance with the major source threshold of PM/PM_{10}. The coal fuel sulfur content limit and the annual coal consumption limit for the boilers are considered synthetic minor limits used to demonstrate compliance with the major source threshold of SO_2. The annual coal consumption limit for the boilers is considered a synthetic minor limit used to demonstrate compliance with the major source thresholds of PM_{10}, NO_X, and CO. The annual VOC and coating material usage limits for the Physical Facilities #2 and Austin spray paint booths are considered synthetic minor limits used to demonstrate compliance with the major source threshold of VOC.

4.5 PSD Classification (40 CFR 52.21)

The facility is classified as a synthetic minor facility for PSD purposes because, without limits on the potential to emit, the PM, PM_{10}, and SO_2 emissions have the potential to exceed 250 tons per year.

The facility is not a designated facility as defined in IDAPA 58.01.01.006.30 and is classified as a synthetic minor facility for Title V purposes (refer to Section 4.4 for additional information).

The use of multi-clones on the boilers and the use of a baghouse on the ash handling system are considered synthetic minor limits used to demonstrate compliance with the major source threshold of PM/PM_{10}. The coal fuel sulfur content limit and the annual coal consumption limit for the boilers are considered synthetic minor limits used to demonstrate compliance with the major source threshold of SO_2.

4.6 NSPS Applicability (40 CFR 60)

The facility is subject to the requirements of 40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Subpart Dc

40 CFR 60 Subpart Dc ..... NSPS for Industrial, Commercial, and Institutional Steam Generating Units

40 CFR 60.40c..... Applicability and delegation of authority

Boiler No. 5 is an affected facility in accordance with §60.40c(a) because construction of the boiler commenced after June 9, 1989 (in 2001) and because the maximum design heat input capacity of this boiler is between 10 and 100 MMBtu/hr (45.0 MMBtu/hr). Boilers No. 2, 3, and 4 were constructed prior to June 9, 1989; therefore this subpart does not apply to those units.

A regulatory analysis of Subpart Dc was included in the statement of basis for PTC/T2 Permit No. P-060500. No information has been provided to indicate that any boilers (Boilers No. 2-5) have been modified or reconstructed since the date of installation as listed in Table 1.1 of the permit. The applicability of NSPS subpart Dc has not been revisited at this time.

Subpart IIII

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

40 CFR 60.4200 ..... Am I subject to this subpart?

In accordance with §60.4200(a)(2)(i), the facility is subject to this subpart because the permittee will operate a stationary compression ignition (CI) internal combustion engine (ICE) that will commence construction after July 11, 2005 and was manufactured after April 1, 2006. The replacement Smith Building emergency generator will be installed in 2008 and was manufactured after 2006, and is therefore considered an affected source.

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4201 are not applicable.

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4202 are not applicable.

40 CFR 60.4203 ..... How long must I meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4203 are not applicable.

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

The permittee is not operating a non-emergency stationary CI ICE, so the requirements of §60.4204 are not applicable.

40 CFR 60.4205 ..... What emission standards must I meet for emergency engines if I am an owner operator of a stationary CI internal combustion engine?

Because the emergency generator is model year 2007 or later with a displacement of less than 30 liters per cylinder (14.9 liters/6 cylinders=2.48 liters/cylinder), and is not a fire pump engine, the permittee shall comply with the emission standards for new nonroad CI engines in §60.4202 for all pollutants, in accordance with §60.4205(b).

The emission standards of §89.112 and §89.113 apply to an emergency generator with a maximum engine power between 50 HP and 3,000 HP, and a displacement of less than 10 liters per cylinder, in accordance with §60.4202(a)(2).

The exhaust emission standards in §89.112 for kW>560 (Tier 2) and the Cummins Exhaust Emission Compliance Statement provided in the application for the emergency generator are as follows:

Nonroad engines >750 HP (Tier 2)	NMHC+NO_X (g/HP-hr)	CO (g/HP-hr)	PM (g/HP-hr)
Table 1 of 40 CFR 89.112	4.77	2.61	0.15
Compliance Statement	4.8	2.6	0.15

The smoke emission standards in §89.113 include opacity limits for the emergency generator during acceleration and lugging modes, and the methods of measurement.

The exhaust and smoke emission standards are included in Permit Condition 4.2.

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

In accordance with §60.4206, the permittee shall operate and maintain stationary CI ICE that achieve the emission standards as required in §60.4205 according to the manufacturer's written instructions, over the life of the engine. Permit Condition 4.2 includes the requirements of this section.

40 CFR 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(a), the permittee shall use diesel fuel that meet the requirements of 40 CFR 80.510(a).

In accordance with §60.4207(b), beginning October 1, 2010, the permittee shall use diesel fuel that

meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

The diesel fuel requirements are included in Permit Condition 4.5.

Because the permittee has not proposed to use non-compliant fuel, the facility is not located in Alaska, and has not proposed to operate under a national security exemption, the requirements of §60.4207(c), (d), and (e) are not applicable.

40 CFR 60.4208 ..... What is the deadline for importing or installing stationary CI ICE produced in the previous year?

In accordance with §60.4208 and the dates provided, the permittee shall not install or import an emergency generator that does not meet the applicable emission standards of Subpart IIII. Permit condition 4.8 includes the requirements of this section.

40 CFR 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), the permittee shall install a non-resettable hour meter prior to startup of the engine. Permit Condition 4.8 includes the requirements of this section.

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4210 are not applicable.

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

In accordance with 60.4211(a), the emergency generator shall be operated according to the manufacturer's written instructions. In addition, the permittee shall only change those settings that are permitted by the manufacturer.

In accordance with 60.4211(c), because the emergency generator is model year 2007 or later, and is subject to the emission standards specified in §60.4205(b), the permittee shall comply by purchasing an engine certified to the emission standards in §60.4205(b) and installing and configuring the engine according to the manufacturer's specifications.

In accordance with 60.4211(e), the emergency generator may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Because the emergency generator is meeting the requirements of 40 CFR 60.4205 but not 60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

Permit Condition 4.6 includes the requirements of this section.

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

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section, in accordance with §60.4214.

Permit condition 4.7 includes the requirements of this section.

40 CFR 60.4213 ..... What test methods and other procedures must I use if I am an owner or operator of a stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder?

Because the emergency generator has a displacement of less than 30 liters per cylinder, the requirements of §60.4213 are not applicable.

40 CFR 60.4214 ..... What are my notifications, reporting, and recordkeeping requirements if I am and owner or operator of a stationary CI internal combustion engine?

In accordance with 60.4214(b), because the stationary CI ICE is an emergency stationary ICE, the permittee is not required to submit an initial notification. Because the model year of the emergency generator is before 2011, additional recordkeeping requirements are not applicable.

40 CFR 60.4215 ..... What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

These requirements do not apply to this facility because the facility is not located in the specified locations.

40 CFR 60.4216 ..... What requirements must I meet for engines used in Alaska?

These requirements do not apply to this facility because the facility is not located in the specified location.

40 CFR 60.4217 ..... What requirements must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

These requirements do not apply to this facility because diesel fuel will be used in the emergency generator, and the use of special fuels has not been requested.

40 CFR 60.4218 ..... What part of the general provisions apply to me?

All general provisions apply to this facility except those specified in 40 CFR 60, Subpart IIII.

40 CFR 60.4219 ..... What definitions apply to this subpart?

This section contains the definitions and supporting tables for this subpart.

Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII identifies the requirements of Subpart A which are applicable to this facility.

4.7 NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP.

4.8 MACT Applicability (40 CFR 63)

The facility does not belong to any of the specific source categories regulated by 40 CFR Part 63, and is below the major source thresholds of 10 tons/yr for each HAP and 25 tons/yr for any combination of HAP. However, the facility is subject to Subpart ZZZZ because it is an area source of HAP.

Information was also submitted in the application addressing the applicability of 40 CFR 63, Subpart HHHHHH to spray paint booths at the facility.

Subpart ZZZZ

40 CFR 63, Subpart ZZZZ ..... National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63.6580 ..... What is the purpose of subpart ZZZZ?

In accordance with §63.6580, 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.

40 CFR 63.6585 ..... Am I subject to this subpart?

Because the permittee owns or operates a stationary RICE at an area source of HAP emissions, the permittee is subject to this subpart in accordance with §63.6585.

In accordance with §63.6585(d), if you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart.

40 CFR 63.6590 ..... What parts of my plant does this subpart cover?

In accordance with §63.6590, this subpart applies to each affected source.

In accordance with §63.6590(a), an affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

Because the Kimball Building stationary RICE (emergency generator) is rated above 500 brake horsepower (587.4 HP) and was constructed before December 19, 2002, it is existing in accordance with §63.6590(a)(i).

Because the remainder of the stationary RICE (emergency generators) are located at an area source of HAP emissions and commenced construction before June 12, 2006, they are existing in accordance with §63.6590(a)(1)(iii).

Because the emergency generators are existing compression ignition (CI) stationary RICE or are existing emergency stationary RICE, they do not have to meet the requirements of this subpart and of subpart A of this part in accordance with §63.6590(b)(3). No initial notification is necessary.

It should be noted that a portable engine that does not remain at a location for more than 12 consecutive months or for two consecutive annual operating periods in the case of seasonal sources may become subject to nonroad engine requirements in accordance with 40 CFR 1027-1074 (Subchapter U), including 40 CFR 89, 94, and/or 1068.

Subpart HHHHHH

40 CFR 63, Subpart HHHHHH..... National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

40 CFR 63.11170 ..... Am I subject to this subpart?

In accordance with §63.11170(a), the facility is subject to this subpart if it operates an area source of

HAP as defined in paragraph (b) of this section, and performs one or more of the activities in paragraphs (a)(1) through (3) of this section.

In accordance with §63.11170(a)(1), this subpart applies to paint stripping using 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 §63.11170(a)(2) and (a)(3), this subpart applies to spray application of coatings to motor vehicles and mobile equipment, and to spray application of coatings that contain the target HAP to a plastic and/or metal substrate on a part or product, except spray coating applications that meet the definition of facility maintenance in §63.11180.

Because the facility has not proposed the use of MeCl in any paint stripping operations and because the spray coating operations conducted by the facility meet the definition of facility maintenance in accordance with §63.11180, this subpart does not apply.

40 CFR 63.11180 ..... What definitions do I need to know?

Facility maintenance means, for the purposes of this subpart, surface coating performed as part of the routine repair or renovation of the tools, equipment, machinery, and structures that comprise the infrastructure of the affected facility and that are necessary for the facility to function in its intended capacity. *Facility maintenance* also includes surface coating associated with the installation of new equipment or structures, and the application of any surface coating as part of janitorial activities. *Facility maintenance* includes the application of coatings to stationary structures or their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs. *Facility maintenance* also includes the refinishing of mobile equipment in the field or at the site where they are used in service and at which they are intended to remain indefinitely after refinishing. Such mobile equipment includes, but is not limited to, farm equipment and mining equipment for which it is not practical or feasible to move to a dedicated mobile equipment refinishing facility. Such mobile equipment also includes items, such as fork trucks, that are used in a manufacturing facility and which are refinished in that same facility. *Facility maintenance* does not include surface coating of motor vehicles, mobile equipment, or items that routinely leave and return to the facility, such as delivery trucks, rental equipment, or containers used to transport, deliver, distribute, or dispense commercial products to customers, such as compressed gas canisters.

4.9 CAM Applicability (40 CFR 64)

The facility is classified as a synthetic minor facility, and is therefore not subject to CAM requirements. Refer to Section 4.4 for additional information regarding the synthetic minor classification.

4.10 Permit Conditions Review

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

Existing Permit Condition 2.11

The permittee shall sell, distribute, use, or make available for use any 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.
- ASTM Grade 4, 5, and 6 fuel oil – 1.75% by weight.

Modified Permit Condition 2.11

The permittee shall not sell, distribute, use, or make available for use any 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.
- ASTM Grade 4, 5, and 6 fuel oils – 1.75% by weight.

The permittee shall comply with the requirements of Permit Conditions 3.9 and 4.5 to ensure compliance with this requirement.

Discussion

This requirement was corrected to reflect the language of IDAPA 58.01.01.725.02 and .03, and clarifying language added that compliance is ensured by complying with Permit Conditions 3.9 and 4.5.

Added Permit Condition 2.12

The permittee shall not sell, distribute, use, or make available for use, any coal containing greater than 1.0% sulfur by weight. The permittee shall comply with the requirements of Permit Condition 3.9 to ensure compliance with this requirement.

Discussion

Coal sulfur content is regulated by IDAPA 58.01.01.725.04. Clarifying language was also added that compliance is ensured by complying with Permit Condition 3.9.

Added Permit Condition 2.13

The permittee shall maintain documentation of supplier verification of fuel oil sulfur content and coal sulfur content as required by Permit Conditions 3.10, 3.11, and 4.10 to ensure compliance with Permit Conditions 2.11 and 2.12.

Discussion

Monitoring and recordkeeping of fuel sulfur content is required to ensure compliance with Permit Conditions 2.11 and 2.12.

Added Permit Condition 2.15

The permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A – General Provisions in accordance with 40 CFR 60.1 and 40 CFR 60.4218. A summary of requirements for affected facilities is provided in Table 2.1.

Table 2.1 NSPS 40 CFR 60, Subpart A – Summary of General Provisions for Owners and Operators of Affected Facilities

Section	Subject	Summary of Section Requirements
60.4	Address	• All requests, reports, applications, submittals, and other communications associated with 40 CFR 60, Subpart I shall be submitted to: Boise Regional Office Department of Environmental Quality 1445 N. Orchard St. Boise, ID 83706 • All requests, reports, applications, submittals, and other communications associated with 40 CFR 60, Subpart A and Subpart IIII shall be submitted to: Director Air and Waste EPA Region X 1200 Sixth Avenue OAQ-107 Seattle, WA 98101 and Boise Regional Office Department of Environmental Quality 1445 N. Orchard St. Boise, ID 83706
60.7(a),(b), and (f)	Notification and Recordkeeping	• Notification shall be furnished of commencement of construction postmarked no later than 30 days of such date. • Notification shall be furnished of initial startup postmarked within 15 days of such date. • Notification shall be furnished of any physical or operational change that may increase emissions postmarked 60 days before the change is made. • Records shall be maintained of the occurrence and duration of any startup, shutdown or malfunction; any malfunction of the air pollution control equipment; or any periods during which a CMS or monitoring device is inoperative. • Records shall be maintained, in a permanent form suitable for inspection, of all measurements, performance testing measurements, calibration checks, adjustments and maintenance performed, and other required information. Records shall be maintained for a period of two years following the date of such measurements, maintenance, reports, and records.
60.8	Performance Tests	• At least 30 days prior notice of any performance test shall be provided to afford the opportunity to have an observer to be present. • Within 60 days of achieving the maximum production rate, but not later 180 days after initial startup, performance test(s) shall be conducted and a written report of the results of such test(s) furnished. • Performance testing facilities shall be provided as follows: Sampling ports adequate for test methods applicable to such facility. Safe sampling platform(s). Safe access to sampling platform(s). Utilities for sampling and testing equipment. • Performance tests shall be conducted and data reduced in accordance with 40 CFR 60.8(b), (c), and (f).
60.11(a), (d), (f), and (g)	Compliance with Standards and Maintenance Requirements	• When performance tests are required, compliance with standards is determined by methods and procedures established by 40 CFR 60.8. • At all times, including periods of startup, shutdown, and malfunction, the owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. • For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

Section	Subject	Summary of Section Requirements
60.11(b), (c), and (e)	Compliance with Standards and Maintenance Requirements (Opacity)	• Compliance with opacity standards shall be determined by Method 9 in Appendix A of 40 CFR 60. The permittee may elect to use COM measurements in lieu of Method 9, provided notification is made at least 30 days before the performance test. • The opacity standards shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided. • Opacity observations shall be conducted concurrently with the initial performance test required in 40 CFR 60.8 in accordance with the requirements and exceptions in 40 CFR 60.11(e).
60.12	Circumvention	• No permittee shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard.
60.14	Modification	• A physical or operational change which results in an increase in the emission rate to the atmosphere or any pollutant to which a standard applies shall be considered a modification, and upon modification an existing facility shall become an affected facility in accordance with the requirements and exemptions in 40 CFR 60.14. • Within 180 days of the completion of any physical or operational change, compliance with all applicable standards must be achieved.
60.15	Reconstruction	• An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate in accordance with the requirements of 40 CFR 60.15.

Discussion

General provisions are required by NSPS Subparts A, Dc, and IIII. Refer to Section 4.6 for additional information.

Added Permit Condition 2.16

Unless expressly provided otherwise, any reference in this permit to any document identified in IDAPA 58.01.01.107.03 shall constitute the full incorporation into this permit of that document for the purposes of the reference, including any notes and appendices therein. Documents include, but are not limited to:

- Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

For permit conditions referencing or cited in accordance with any document incorporated by reference (including permit conditions identified as NSPS or NESHAP), should there be any conflict between the requirements of the permit condition and the requirements of the document, the requirements of the document shall govern, including any amendments to that regulation.

Discussion

This permit condition clarifies that federal requirements are incorporated into the Rules in accordance with IDAPA 58.01.01.107. This permit condition also clarifies that with regard to permit conditions referenced in accordance with these federal requirements or the incorporation of these requirements by reference, should there be a conflict between the language of the permit condition and the language of the federal requirement, the language of the federal requirement shall govern.

Existing Permit Condition 3.3

Emissions of PM_{10}, NO_x, CO, and SO_2 from the boilers shall not exceed any corresponding emissions rate limits listed in the following table:

Table 3.1 BOILERS No.2 - No. 5 EMISSIONS LIMITS

Source Description	PM_{10}		SO_2		NO_x		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Total Boilers	22.6	30.6	143	99.3	49.9	57.5	22.7	38.7

Modified Permit Condition 3.3

Emissions of PM_{10} and SO_2 from the boilers shall not exceed any corresponding emissions rate limits listed in Table 3.1.

Table 3.1 BOILERS EMISSIONS LIMITS[a]

Source Description	PM_{10}[b]		SO_2	
	lb/hr[c]	T/yr[d]	lb/hr[c]	T/yr[d]
Boiler No. 2	4.64	4.95	33.60	97.65[e]
Boiler No. 3	5.50	5.78	50.40	
Boiler No. 4	8.91	9.48	58.80	
Boiler No. 5	0.40	1.51	6.67	0.90

[a] In the absence of any other credible evidence, compliance is assured by complying with the operating, monitoring, and recordkeeping requirements of this permit.
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.80.
[c] Pounds per hour as determined by a test method prescribed by IDAPA 58.01.01.157 or DEQ approved alternative.
[d] Tons per consecutive 12-calendar month period.
[e] The SO_2 emissions from Boilers No. 2, No. 3, and No. 4 combined shall not exceed 97.65 tons per any consecutive 12-calendar month period.

Discussion

A facility-wide modeling analysis was conducted as part of this permit renewal, and the emissions limits in this permit condition have been updated to reflect the emissions rates which were used in the modeling analysis to demonstrate compliance with the NAAQS for PM_{10} and to demonstrate compliance with the major source threshold for SO_2 (refer to Sections 3.2, 3.3, and 4.4 for additional information). Because the NO_X and CO emissions from the boilers are limited based on coal fuel combustion limits (Permit Condition 3.5) and the fuel oil operating hour restriction (Permit Condition 3.6), and because emissions are estimated to be less than 80% of major source thresholds, these limits were removed from the permit.

Short-term limits (lb/hr) for PM_{10} are in higher in some cases than what was presented in the emissions inventory estimates (Table 3.3 of Section 3.2). The short-term limits are based on the values utilized in the modeling analysis used to demonstrate compliance with the short-term NAAQS for PM_{10} (24-hr) and SO_2 (3-hr and 24-hr). Annual limits are based on the values presented in the emissions inventory. Refer to Section 3.2 and Appendix C for additional information.

Existing Permit Condition 3.4

Total consumption of coal in Boilers No. 2, 3, and 4, combined, shall not exceed 8,300 T/yr in any consecutive 12-month period.

Modified Permit Condition 3.5

Total annual tons of coal combusted in Boilers No. 2, 3, and 4, combined, shall not exceed 9,300 T/yr in any consecutive 12-calendar month period, on a dry weight basis.

Discussion

The permittee has proposed an increase in annual coal combustion for Boilers No. 2-4. This limit was revised based upon this request and the emissions inventory and modeling analysis provided. This limit is considered a synthetic minor limit used to demonstrate compliance with the major source thresholds of PM_{10}, NO_X, and CO (refer to Section 4.4 for additional information). Compliance with this limit is

also required to ensure compliance with the short-term and annual PM_{10} emissions limits for Boilers No. 2-4 in Permit Condition 3.3.

Existing Permit Condition 3.8

- The sulfur content of coal combusted shall not exceed 0.68% by weight on an as-received basis.
- The sulfur content of distillate fuel oil combusted in Boiler No. 5 shall not exceed 0.05% by weight on an as-received basis.

Modified Permit Condition 3.9

- The sulfur content of coal combusted shall not exceed 0.72% by weight on a dry weight basis.
- The sulfur content of distillate fuel oil combusted in Boiler No. 5 shall not exceed 0.05% by weight on an as-received basis.

Discussion

The permittee has proposed an increase in maximum sulfur content for coal fuel. This limit was revised based upon this request and the emissions inventory and modeling analysis provided. To maintain synthetic minor classification for SO_2 emissions, tracking of annual SO_2 emissions is now required (Permit Condition 3.12).

Existing Permit Condition 3.10

- For each shipment of coal received, the permittee shall either obtain samples and a laboratory analysis, or obtain and maintain at the facility fuel receipts from the fuel supplier, which demonstrate that any coal received complies with the fuel sulfur content limit specified in Permit Condition 3.8.
- The permittee shall monitor and record the daily, monthly, and annual consumption of coal burned in Boilers No. 2, 3, and 4, combined. Annual coal usage shall be determined by summing each monthly total over the previous consecutive 12-month period.

Modified Permit Condition 3.11

- For each shipment of coal received, the permittee shall either obtain samples and a laboratory analysis, or obtain and maintain at the facility fuel receipts from the fuel supplier, which demonstrate that each shipment of coal received complies with the fuel sulfur content limit specified in Permit Condition 3.9.
- The permittee shall monitor and record the annual tons of coal combusted in Boiler Nos. 2, 3, and 4, combined on a monthly basis to demonstrate compliance with Permit Condition 3.5. Annual tons of coal combusted shall be determined by summing each monthly total on a dry weight basis over the previous consecutive 12-calendar month period, using the following equation:

$$T_{total} = \sum_{i=1}^{n} T_i$$

where:

T_{total} = annual tons of coal combusted in Boilers No. 2, 3, and 4; in tons per consecutive 12-calendar month period; on a dry weight basis (T/yr).

n = total number of coal shipments combusted over the consecutive 12-calendar month period.

T_i = tons of each coal shipment i combusted over the previous consecutive 12-calendar month period, on a dry weight basis (T/yr).

Discussion

The permittee has proposed to monitor and record annual SO_2 emissions in order to maintain synthetic minor classification for SO_2 emissions. Permit Condition 3.9 was revised and Permit Condition 3.10 was added based upon this request and the emissions inventory and modeling analysis provided (refer to Section 4.4 for additional information). Monitoring and recordkeeping of annual fuel combustion is required to ensure compliance with Permit Condition 3.10.

Added Permit Condition 3.12

The permittee shall monitor and record the combined annual SO_2 emissions from Boilers No. 2, 3, and 4 on a monthly basis to demonstrate compliance with the combined annual SO_2 emissions limit for Boilers No. 2, No. 3, and No. 4 in Permit Condition 3.3. Annual SO_2 emissions shall be determined by summing each monthly total over the previous consecutive 12-calendar month period, using the following equation:

$$SO_2 = \sum_{i=1}^{n} \frac{35 * S_i * T_i}{2000}$$

where:

SO_2 = annual emissions of SO_2 from Boilers No. 2, 3, and 4; in tons per consecutive 12-calendar month period (T/yr).

n = total number of coal shipments combusted over the previous consecutive 12-calendar month period.

S_i = sulfur content in weight percent of each coal shipment i, on a dry weight basis, as required by Permit Condition 3.11.

T_i = tons of each coal shipment i combusted over the previous consecutive 12-calendar month period, on a dry weight basis (T/yr).

Discussion

The permittee has proposed to monitor and record annual SO_2 emissions in order to maintain synthetic minor classification for SO_2. Permit Condition 3.9 was revised and Permit Condition 3.10 was added based upon this request and the emissions inventory and modeling analysis provided (refer to Section 4.4 for additional information). Without direct monitoring and recordkeeping of SO_2 emissions for the boilers, operation using coal with a sulfur content of 0.72% and a combustion rate of 9,300 T/yr could potentially exceed the major source threshold for SO_2 on a facility-wide basis.

Existing Permit Condition 3.11

Within 24 months of the issuance date of this permit, the permittee shall conduct a performance test to measure PM emissions from Boilers No. 2, No. 3, and No. 4. This performance test and all subsequent performance tests required by this permit shall be conducted in accordance with General

Provision No. 6. Boilers shall be operated at or above 80% of maximum capacity during the source test period.

During each performance test, the permittee shall monitor and record the following process information:

- The ash content and sulfur content of the coal on an as-received and dry basis,
- The steaming rate of the boiler in pounds per hour,
- The amount of coal consumed in each boiler during the test,
- The pressure drop across the multiclone, and
- The opacity at the boiler stack. Opacity shall be determined using a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625.

The frequency of subsequent PM performance testing shall be conducted as follows:

- If the PM grain loading measured in the previous performance test is less than or equal to 75% of the grain-loading emission standard listed in Permit Condition 2.11, a subsequent performance test is required to be conducted within the next five years.
- If the PM grain loading measured during the previous performance test is greater than 75%, but less than or equal to 90% of the emission standard, a subsequent performance test is required to be conducted within three years.
- If the PM grain loading measured during the previous performance test is greater than 90% of the emission standard, a subsequent performance test is required to be conducted within the next 12 months.

Modified Permit Condition 3.14

The permittee shall conduct performance tests on Boilers No. 2, No. 3, and No. 4 to measure the PM emission rates in grains per dry standard cubic feet and the PM_{10} emission rates in pounds per hour to demonstrate compliance with the PM and PM_{10} emission limits in Permit Conditions 2.10 and 3.3. PM and PM_{10} performance testing shall be performed concurrently. The permittee is encouraged to submit a source testing protocol for approval 30 days prior to conducting the performance tests.

The permittee shall test in accordance with IDAPA 58.01.01.157 and the conditions of this permit, including Permit Condition 3.15 and General Provision 6. Boilers shall be operated at or above 80% of maximum capacity during the source test period.

Performance testing on each of the coal boilers shall be performed according to the following schedule:

- If the PM_{10} emission rate measured during the previous performance test is less than or equal to 75% of the PM_{10} emission rate listed in Permit Condition 3.3, and the PM grain loading measured during the previous performance test is less than or equal to 75% of the PM grain loading emission standard listed in Permit Condition 2.10, subsequent performance testing is required to be conducted within the next five years.
- If the PM_{10} emission rate measured during the previous performance test is greater than 75% but less than or equal to 90% of the PM_{10} emission rate listed in Permit Condition 3.3, or the PM grain loading measured during the previous performance test is greater than 75% but less than or equal to

90% of the PM grain loading emission standard listed in Permit Condition 2.10, subsequent performance testing is required to be conducted within three years.

- If the PM_{10} emission rate measured during the previous performance test is greater than 90% of the PM_{10} emission rate listed in Permit Condition 3.3, or the PM grain loading measured during the previous performance test is greater than 90% of the PM grain loading emission standard listed in Permit Condition 2.10, subsequent performance testing is required to be conducted within the next 12 months.

Discussion

Because the results of the ambient air quality impact analysis indicate that the PM_{10} impacts may exceed 80% of the 24-hour NAAQS for PM_{10}, performance testing for PM_{10} has been added to the existing grain loading testing requirement. Because grain loading performance also has the potential to exceed the applicable standard based on recent performance testing results, the grain loading testing requirement has been retained to demonstrate compliance with Permit Condition 2.10.

DEQ records indicate that the initial performance tests have been performed as required within 24 months of the issuance of PTC/T2 No. P-060500; for clarification purposes this language has been removed.

The requirement to monitor process information has been relocated to Permit Condition 3.14 for clarification purposes.

Added Permit Condition 3.15

During each performance test, the permittee shall monitor and record the following process information:

- The ash content and sulfur content of the coal on a dry weight basis,
- The steaming rate of the boiler in pounds per hour,
- The amount of coal consumed in each boiler during the test,
- The pressure drop across the multiclone, and
- The opacity at the boiler stack. Opacity shall be determined using a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625.

Discussion

The requirement to monitor process information has been relocated from Existing Permit Condition 3.11 to Permit Condition 3.14 for clarification purposes. Due to the addition of SO_2 emissions monitoring and recordkeeping and for consistency in monitoring and recordkeeping requirements related to coal fuel, the requirement for tracking ash and sulfur content has been modified to a dry weight basis.

Added Permit Condition 4.2

- The permittee shall operate and maintain the emergency generator according to the manufacturer's written instructions or procedures that are approved by the engine manufacturer, over the entire life of the engine, in accordance with 40 CFR 60.4206.
- The permittee shall comply with the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants, in accordance with 40 CFR 60.4205(b) and 40 CFR 60.4202(a)(2).

- Exhaust emissions from the emergency generator shall not exceed the applicable exhaust emission standards contained in Table 4.1, in accordance with 40 CFR 89.112.

Table 4.1 NSPS EMERGENCY GENERATOR EXHAUST EMISSIONS LIMITS[1]

NMHC+NO_X (g/HP-hr)	CO (g/HP-hr)	PM (g/HP-hr)
4.77	2.61	0.15

1) Table 1 of 40 CFR 89.112, Tier 2 engines greater than 560 kW.

- Exhaust opacity from the emergency generator shall not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either the acceleration or lugging modes, in accordance with 40 CFR 89.113. Opacity levels are to be measured and calculated as set forth in 40 CFR part 86, subpart I.

Discussion

Emissions standards are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

Added Permit Condition 4.5

- The permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(a), with a maximum sulfur content of 500 ppm, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent, in accordance with 40 CFR 60.4207(a).
- Beginning October 1, 2010, the permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(b), with a maximum sulfur content of 15 ppm, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent, in accordance with 40 CFR 60.4207(b).

Discussion

Fuel requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

Added Permit Condition 4.6

- Maintenance checks and readiness testing of the emergency generator is limited to 100 hours per year, in accordance with 40 CFR 60.4211(e). There is no time limit on the use of the emergency generator in emergency situations. The emergency generator may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine.
- Any operation other than emergency operation, maintenance, and testing is prohibited in accordance with 40 CFR 60.4211(e). Anyone may petition EPA for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year.
- The permittee shall operate and maintain the emergency generator according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine manufacturer, in accordance with 60.4211(a). In addition, the permittee shall only change those settings that are permitted by the manufacturer. The owner or operator must also meet the requirements of 40 CFR 89, 94, and/or 1068, as they apply.

- The emergency generator purchased by the permittee shall be certified to the applicable emission standard in 40 CFR 60.4205(b) for the same model year and maximum engine power, and shall be installed and configured according to the manufacturer's specifications, in accordance with 40 CFR 60.4211(c).

Discussion

Compliance requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

Added Permit Condition 4.7

Owners and operators who conduct performance tests must do so according to the paragraphs of 40 CFR 60.4212 (a) through (d), in accordance with 40 CFR 60.4212.

Discussion

Test method procedures are specified in NSPS Subpart IIII. Refer to Section 4.6 for additional information.

Added Permit Condition 4.8

- The permittee shall comply with the deadlines for importing and installing an emergency generator produced in a previous model year, in accordance with 40 CFR60.4208 (a) through (g).
- The permittee shall install a non-resettable hour meter prior to startup of the emergency generator, in accordance with 40 CFR 60.4209(a).

Discussion

Other requirements are specified in NSPS Subpart IIII. Refer to Section 4.6 for additional information.

Existing Permit Condition 4.4

The permittee shall monitor and record the date, number of hours of operation, and reason for the operation of each emergency generating set.

Modified Permit Condition 4.9

The permittee shall monitor and record the following information on a monthly basis to demonstrate compliance with Permit Conditions 4.3 and 4.6. Records of this information shall be maintained in accordance with General Provision 7.

- For each day that an emergency generator is operated, the date and the number of hours of operation for each emergency generator.
- For each day that an emergency generator is operated, the reason for the operation of each emergency generator.
- For each month that an emergency generator is operated, the consecutive 12-calendar month number of hours of operation for each emergency generator, calculated as a rolling 12-calendar month average.

Discussion

The daily limit was added in Permit Condition 4.2 of PTC No. P-060500 based on the modeling analysis

included in the associated application, and was used in the modeling analysis included in the current application. This was initially required to demonstrate compliance with the short-term NAAQS for SO_2 (3-hr and 24-hr).

Discussion

This permit condition has been updated to include a recordkeeping interval and to reference the associated requirements. Monitoring and recordkeeping of emergency generator operating hours is required to ensure compliance with Permit Conditions 4.3 and 4.6. The recordkeeping interval and the daily limit in Permit Condition 4.3 are based on the modeling analysis provided, which assumed up to 3 hours of operation for maintenance and testing in any 24-hour period.

Added Permit Condition 4.10

The permittee shall maintain documentation of supplier verification of the fuel oil sulfur content on an as-received basis for every shipment, to demonstrate compliance with Permit Conditions 2.11 and 4.5.

Discussion

This permit condition has been added to ensure compliance with Permit Conditions 2.11 and 4.5.

Added Permit Condition 4.11

The permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A – General Provisions in accordance with 40 CFR 60.1 and 40 CFR 60.4218. A summary of requirements for affected facilities is provided in Table 2.1 in Permit Condition 2.15.

Discussion

General provisions are required by NSPS Subparts A and IIII. The referenced summary table for this permit condition is provided in Permit Condition 2.15. Refer to Section 4.6 for additional information.

Added Permit Condition 6.2

Emissions of VOC from the coating operations shall not exceed any corresponding emissions rate limits listed in Table 6.1.

Table 6.1 COATING OPERATIONS EMISSIONS LIMITS[1]

Source Description	VOC T/yr[2]
Physical Facilities #2 Spray Booth	0.66
Austin Spray Booth	0.27

[1] In the absence of any other credible evidence, compliance is assured by complying with the operating, monitoring, and recordkeeping requirements of this permit.
[2] Tons per consecutive 12-calendar month period.

Discussion

This permit condition limits annual VOC emissions (T/yr) of two of the three spray paint booths (Physical Facilities #2 and Austin). These limits are considered synthetic minor limits used to demonstrate compliance with the major source threshold of VOC (refer to Section 4.4 for additional information). Compliance with this limit is also required to demonstrate preconstruction compliance with applicable TAP EL and AACC on a facility-wide basis in accordance with IDAPA 58.01.01.210.08.c.

TAP emissions from the spray paint booths are limited based on the annual VOC and coating material usage limits, the maximum capacity of the spray guns, and the coating material formulations provided in the application. As a result, VOC limits (Table 6.1) and material coating limits (Table 6.2) were used in lieu of operational or TAP-specific limits as required by IDAPA 58.01.01.210.08.c. An annual limit was not required for the third spray paint booth (Physical Facilities #2) to demonstrate compliance with the major source threshold for VOC or applicable TAP EL and AACC. Refer to Sections 3.2, 3.3, and 4.4 for additional information.

Added Permit Condition 6.3

Coating material usage rates at the facility shall not exceed the usage rates listed in Table 6.2, to demonstrate compliance with Permit Condition 6.2 and in accordance with IDAPA 58.01.01.210.08.c.

Table 6.2 COATING MATERIAL USAGE LIMITS[1]

Location	Coating Materials	Material Usage Rate gal/yr[2]
Physical Facilities #2 Spray Booth	Duracat-v vinyl lacquer semi-gloss	500
Austin Spray Booth	Duracat-v vinyl lacquer semi-gloss	300

[1] Any changes in coating materials or coating material formulations at the facility may require a permit to construct in accordance with IDAPA 58.01.01.201 unless the source is exempted in accordance with the procedures of IDAPA 58.01.01.220-223.
[2] Gallons per consecutive 12-calendar month period.

Discussion

This permit condition limits annual coating material usages (gal/yr) of two of the three spray paint booths (Physical Facilities #2 and Austin). These limits are considered synthetic minor limits used to demonstrate compliance with Permit Condition 6.2 and the major source threshold of VOC (refer to Section 4.4 for additional information). Compliance with this limit is also required to demonstrate preconstruction compliance with applicable TAP EL and AACC on a facility-wide basis in accordance with IDAPA 58.01.01.210.08.c.

TAP emissions from the spray paint booths are limited based on the annual VOC and coating material usage limits, the maximum capacity of the spray guns, and the coating material formulations provided in the application. As a result, VOC limits (Table 6.1) and material coating limits (Table 6.2) were used in lieu of operational or TAP-specific limits as required by IDAPA 58.01.01.210.08.c. An annual limit was not required for the third spray paint booth (Physical Facilities #2) to demonstrate compliance with the major source threshold for VOC or applicable TAP EL and AACC. Refer to Sections 3.2, 3.3, and 4.4 for additional information.

Added Permit Condition 6.4

The permittee shall collect and maintain records of the following information to demonstrate compliance with Permit Condition 6.3. The permittee shall perform the required calculations on a monthly basis, using data from the previous 12 consecutive months of operation.

- The name and volume of each coating material used, in gallons per month.
- The total of all coating materials used, in gallons per consecutive 12 calendar month period. The total shall be calculated as a rolling 12 calendar month usage rate, and determined on a monthly basis.

- For each product used in a coating material, the permittee shall collect and maintain a current copy of the information provided by materials suppliers or manufacturers, such as manufacturer's formulation data or MSDS. This shall include, but not be limited to:
  - The manufacturer name and product number.
  - The mass fraction of each toxic air pollutant (TAP), in percent by weight.
  - The mass fraction of each hazardous air pollutant (HAP), in percent by weight.
  - The mass fraction of volatile organic compounds (VOC), in percent by weight.
  - The density, in pounds per gallon.
  - The mass fraction of solids, in percent by weight.

Discussion

This permit condition has been added to ensure compliance with Permit Condition 6.3.

Existing Permit Condition 6

The following table provides a summary of all emission rate limits required by this permit.

Table 6.1 SUMMARY OF ALL EMISSION RATE LIMITS

Source Description	PM_{10}[c]		NO_x		CO		SO_2	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boilers	22.6	30.6	49.9	57.5	22.7	38.7	143	99.3
Ash Handling System	1.0	0.37						

[a] As determined by a pollutant-specific U.S. EPA reference method, a DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

[b] As determined by multiplying the actual or allowable (if actual is not available) pound per hour emission rate by the allowable hours per year that the process(es) may operate(s), or by actual annual production rates.

[c] Includes condensibles.

Modified Permit Condition 7

The following tables provide a summary of all emission rate limits required by this permit.

Table 7.1 SUMMARY OF ALL EMISSION RATE LIMITS (EXCEPT NSPS EMERGENCY GENERATOR)[1]

Source Description	PM_{10}[2]		SO_2		VOC
	lb/hr[3]	T/yr[4]	lb/hr[3]	T/yr[4]	T/yr[4]
Boiler No. 2	4.64	4.95	33.60	97.65	
Boiler No. 3	5.50	5.78	50.40		
Boiler No. 4	8.91	9.48	58.80		
Boiler No. 5	0.40	1.51	6.67	0.90	
Ash Handling System	1.00	0.37			
Physical Facilities #2 Spray Booth					0.66
Austin Spray Booth					0.27

[1] In the absence of any other credible evidence, compliance is assured by complying with the operating, monitoring, and recordkeeping requirements of this permit.
[2] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.80.
[3] Pounds per hour as determined by a test method prescribed by IDAPA 58.01.01.157 or DEQ approved alternative.
[4] Tons per consecutive 12-calendar month period.

Table 7.2 SUMMARY OF NSPS EMERGENCY GENERATOR EMISSION RATE LIMITS[1]

$NMHC+NO_X$ (g/HP-hr)	CO (g/HP-hr)	PM (g/HP-hr)
4.77	2.61	0.15

Discussion

This permit condition summarizes the emission rate limits required by this permit. Those limits which have been added, revised, modified or deleted as a result of this permitting action are explained in the relevant permit condition.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $10,000 in accordance with IDAPA 58.01.01.407.01 because the facility is classified as a synthetic minor facility with permitted emissions below major source threshold levels; refer to Section 4.4 for information regarding the facility classification. Refer to the chronology in Section 2.2 for fee receipt dates.

Table 5.1 PROCESSING FEE TABLE

Pollutant	Permitted Emissions (T/yr)
NO_X	80.00
SO_2	99.79
CO	43.42
PM_{10}	24.96
VOC	84.20
HAP[1,2]	0.0
Total[1,2]:	**332.37**
Fee Due	**$10,000.00**

[1] For the purposes of fee calculation, HAP emissions from PM_{10} are included in the PM_{10} emissions total, and are therefore not included in the HAP emissions total.
[2] For the purposes of fee calculation, HAP emissions from VOC are included in the VOC emissions total, and are therefore not included in the HAP emissions total.

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC/T2 application was provided from in accordance with IDAPA 58.01.01.404.01.c. During this time, there was no comment on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology in Section 2.2 for public comment opportunity dates.

Appendix A – AIRS Information

AIRS/AFS Facility-wide Classification Form

Facility Name: Brigham Young University - Idaho

Facility Location: Rexburg, Idaho

Facility ID: 065-00011 **Date:** 06-01-09

Project/Permit No.: T2-2009.0031 **Completed By:** Morrie Lewis

☐ Check if there are no changes to the facilitywide classification resulting from this action. (compare to form with last permit)

☒ Yes, this facility is an SM80 source.

Identify the facility's area classification as A (attainment), N (nonattainment), or U (unclassified) for the following pollutants:

	SO2	PM10	VOC
Area Classification:	U	U	U

DO NOT LEAVE ANY BLANK

Check one of the following:

☒ **SIP** [0] - Yes, this facility is subject to SIP requirements. (do not use if facility is Title V)

OR

☐ **Title V** [V] - Yes, this facility is subject to Title V requirements. (If yes, do not also use SIP listed above.)

For SIP or TV, identify the classification (A, SM, B, C, or ND) for the pollutants listed below. Leave box blank if pollutant is not applicable to facility.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	**SM**	**SM**	**SM**	**SM**	**SM**	**SM**	**B**

☐ **PSD** [6] - Yes, this facility has a PSD permit.

If yes, identify the pollutant(s) listed below that apply to PSD. Leave box blank if pollutant does not apply to PSD.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☐ **NSR - NAA** [7] - Yes, this facility is subject to NSR nonattainment area (IDAPA 58.01.01.204) requirements.

Note: As of 9/12/08, Idaho has no facility in this category.

If yes, identify the pollutant(s) listed below that apply to NSR-NAA. Leave box blank if pollutant does not apply to NSR - NAA.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☒ **NESHAP** [8] - Yes, this facility is subject to NESHAP (Part 61) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

☒ **NSPS** [9] - Yes, this facility is subject to NSPS (Part 60) requirements.

If yes, what CFR Subpart(s) is applicable? A, Dc, IIII

If yes, identify the pollutant(s) regulated by the subpart(s) listed above. Leave box blank if pollutant does not apply to the NSPS.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☒	☒	☒	☐	☒	☐	☐

☒ **MACT** [M] - Yes, this facility is subject to MACT (Part 63) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable? ZZZZ

Appendix B – Emissions Inventory

Table 3.2 UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit		PM10		SO2		NOx		CO		VOC		LEAD
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Boilers[a]												
Coal	Boiler #2	23.20	101.616	21.55	94.39	9.03	39.55	5.13	22.47	0.06	0.26	7.22
Coal	Boiler #3	27.10	118.70	32.32	141.56	13.55	59.35	7.70	33.73	0.08	0.35	10.82
Coal	Boiler #4	44.45	194.691	37.71	165.17	15.80	69.20	8.98	39.33	0.09	0.39	12.62
Gas/Oil	Boiler #5	0.40	1.752	3.81	16.69	6.43	28.17	3.78	16.25	0.25	1.10	0.10
Emergency	**Generators**[a]											
Heat	Plant	0.89	0.223	0.83	0.208	12.48	3.120	2.69	0.673	1.02	0.255	1.20E-03
Kimball	Building	1.30	0.325	1.21	0.303	18.21	4.553	3.93	0.983	1.48	0.370	1.70E-03
Hart	Building	0.30	0.075	0.28	0.070	4.16	1.040	0.90	0.225	0.34	0.085	3.90E-04
Physical	Facilities	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Manwaring	Center	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Kirkham	Building	0.06	0.015	0.06	0.015	0.84	0.210	0.18	0.045	0.07	0.018	8.80E-05
Auxiliary	Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Austin	Tech Building	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Snow Performing	Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Romney	Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.00E-04
Library		0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.20E-04
Benson	Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.00E-04
Smith	Building	0.04	0.010	0.09	0.023	3.36	0.840	0.42	0.105	1.18	0.295	1.40E-03
Clarke	Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Radio/Graphic	Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035	1.70E-04
Spori	Building	0.08	0.020	0.07	0.018	1.04	0.260	0.23	0.058	0.09	0.023	1.00E-04
Ricks	Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.20E-04
Radio	Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005	2.50E-05
Portable		0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213	9.70E-04
Substation		0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030	1.40E-04
Spray	**Paint Booths**[a]											
Physical Facilities	#1 Spray Paint Booth	11.34	49.67							18.3	80.16	
Physical Facilities	#2 Spray Paint Booth	3.85	16.87							13.1	57.38	
Austin	Spray Booth	0.87	3.82							3.93	17.22	
Boilers	**Subtotal**[b]	**95.15**	**416.757**	**95.39**	**417.81**	**44.81**	**196.274**	**25.59**	**111.778**	**0.48**	**2.11**	**30.76**
Generators	**Subtotal**	**5.25**	**1.32**	**4.96**	**1.25**	**75.90**	**18.98**	**16.09**	**4.03**	**7.15**	**1.79**	**0.01**
Spray	**Paint Booth Subtotal**	**16.06**	**70.36**							**35.33**	**154.76**	
Welding		**0.0025**	**0.02**									
Ash	**Handling System**[b]	**100**	**438**									
Total,	**Point Sources**	**216.4625**	**926.453**	**100.35**	**419.054**	**120.71**	**215.253**	**41.68**	**115.805**	**42.96**	**158.661**	**30.77**

Table 3.3 CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit		PM10		SO2		NOx		CO		VOC		LEAD
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Boilers[a]												
Coal	Boiler #2	4.64	4.95	21.54	22.98	9.03	9.63	5.13	5.47	0.05	0.05	1.44
Coal	Boiler #3	5.42	5.78	32.31	34.46	13.54	14.44	7.69	8.21	0.08	0.08	2.16
Coal	Boiler #4	8.89	9.48	37.70	40.21	15.80	16.85	8.98	9.57	0.09	0.10	2.52
Gas/Oil	Boiler #5	0.40	1.51	3.81	0.89	6.43	20.10	3.78	16.14	0.25	1.08	0.10
Emergency	**Generators**											
Heat	Plant	0.89	0.223	0.83	0.208	12.48	3.120	2.69	0.673	1.02	0.255	1.20E-03
Kimball	Building	1.30	0.325	1.21	0.303	18.21	4.553	3.93	0.983	1.48	0.370	1.70E-03
Hart	Building	0.30	0.075	0.28	0.070	4.16	1.040	0.90	0.225	0.34	0.085	3.90E-04
Physical	Facilities	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Manwaring	Center	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Kirkham	Building	0.06	0.015	0.06	0.015	0.84	0.210	0.18	0.045	0.07	0.018	8.80E-05
Auxiliary	Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Austin	Tech Building	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Snow Performing	Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028	1.30E-04
Romney	Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.00E-04
Library		0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.20E-04
Benson	Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043	2.00E-04
Smith	Building	0.04	0.010	0.09	0.023	3.36	0.840	0.42	0.105	1.18	0.295	1.40E-03
Clarke	Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053	2.40E-04
Radio/Graphic	Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035	1.70E-04
Spori	Building	0.08	0.020	0.07	0.018	1.04	0.260	0.23	0.058	0.09	0.023	1.00E-04
Ricks	Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068	3.20E-04
Radio	Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005	2.50E-05
Portable		0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213	9.70E-04
Substation		0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030	1.40E-04
Spray	**Paint Booths**											
Physical Facilities	#1 Spray Paint Booth	0.341	1.50							18.3	80.16	
Physical Facilities	#2 Spray Paint Booth	0.116	0.02							13.1	0.66	
Austin	Spray Booth	0.026	0.01							3.93	0.27	
Boilers	**Subtotal**	**19.35**	**21.72**	**95.37**	**98.54**	**44.80**	**61.02**	**25.58**	**39.39**	**0.4655**	**1.31**	**6.23**
Generators	**Subtotal**	**5.25**	**1.32**	**4.96**	**1.25**	**75.90**	**18.98**	**16.09**	**4.03**	**7.15**	**1.79**	**0.01**
Spray	**Paint Booth Subtotal**	**0.48**	**1.53**							**35.33**	**81.09**	
Welding		**0.0025**	**0.02**									
Ash	**Handling System**	**1.00**	**0.37**									
Total,	**Point Sources**	**26.09**	**24.96**	**100.33**	**99.79**	**120.70**	**80.00**	**41.67**	**43.42**	**42.95**	**84.20**	**6.23**

a. PM10 lb/hr emission rates for all boilers are based on stack tests performed in 2002. Coal boilers T/yr emission rates are based on 9300 T/yr coal usage and 2133 hr/yr total for all 3 coal boilers. Boiler 5 T/yr are calculated using AP-42 emission rates for 400 hr/yr fuel oil and 8360 hr/yr natural gas. Boiler 5 SO2 lb/hr calculated based on stack tests performed in 2002.

Total Facility TAPs Potential To Emit (9300 TPY Coal @ 0.6% S)

TAP	Coal Boilers (lb/yr)	Boiler 5 (NG/Oil) (lb/yr)	Generators (lb/yr)	Paint Booths (lb/yr)	Total (TPY)
Arsenic	19.489	0.147			9.82E-03
Barium[2]		1.655			8.28E-04
Beryllium	3.530	0.059			1.79E-03
Cadmium	1.548	0.468			1.01E-03
Chromium VI	0.147	0.581			3.64E-04
Cobalt		0.032			1.58E-05
Copper[2]		0.428			2.14E-04
Manganese		0.251			1.25E-04
Mercury		0.152			7.59E-05
Molybdenum[2]		0.414			2.07E-04
Nickel	49.932	0.844			2.54E-02
Selenium		0.279			1.40E-04
Vanadium[2]		0.865			4.33E-04
Zinc[2]		10.982			5.49E-03
1,3-Butadiene			0.140		6.99E-05
2-Methylnaphthalene		0.009			4.51E-06
3-Methylchloranthrene		0.001			3.39E-07
7,12-Dimethylbenz(a)anthracene		0.006			3.01E-06
Acenaphthene	0.005	0.003	0.005		6.60E-06
Acenaphthylene	0.002	0.001	0.018		1.06E-05
Acetaldehyde	5.301		2.741		4.02E-03
Acetone				2324.400	1.16E+00
Acrolein			0.331		1.65E-04
Anthracene	0.002	0.001	0.007		4.85E-06
Benz(a)anthracene		0.001			5.96E-07
Benzene	12.090	0.818	3.335		8.12E-03
Benzo(a)anthracene,			0.006		3.00E-06
Benzo(a)pyrene		0.0005	0.001		5.62E-07
Benzo(b)fluoranthene[1]		0.0009			4.34E-07
Benzo(g,h,i)perylene	2.51E-04	0.0007	0.002		1.37E-06
Benzo(k)fluoranthene[1]		0.001			4.34E-07
Bis(2-ethylhexyl)phthalate	0.679			203.832	1.02E-01
Chloroform	0.549				2.74E-04
Chrysene		0.001			4.92E-07
Dibenzo(a,h)anthracene		0.001	0.002		1.37E-06
Dichlorobenzene		0.451			2.26E-04
Dioxins/Furans	1.64E-05	3.99E-07			8.38E-09
Ethylbenzene[2]		0.008		416.402	2.08E-01
Ethylene dibromide	0.011				5.58E-06
Fluoranthene	6.60E-03	0.002	0.027		1.78E-05
Fluorene	8.46E-03	0.002	0.104		5.72E-05
Formaldehyde	2.232	32.458	4.217	34.568	3.67E-02
Hexane		677.160			3.39E-01
Indeno(1,2,3-cd)pyrene		0.001	0.001		1.15E-06
Isobutyl alcohol				119.200	5.96E-02
Isopropyl alcohol				178.800	8.94E-02
Manganese				7.728	3.86E-03
Methyl alcohol				476.800	2.38E-01
Methyl amyl ketone				238.400	1.19E-01
Methyl chloride	4.929				2.46E-03
Methyl hydrazine	1.581				7.91E-04
Methylene chloride	2.697				1.35E-03
Naphtha, alkanes, and naphthenes				178.800	8.94E-02
Naphthalene	1.21E-01	0.375	0.303		3.99E-04
n-butyl acetate				655.600	3.28E-01
Pentane[2]		978.120			4.89E-01
Phenanathrene		0.008			3.87E-06
Phenanthrene	2.51E-02		0.105		6.51E-05
Pyrene	3.07E-03	0.002	0.017		1.13E-05
Tetachloroethylene	0.400				2.00E-04
Toluene		2.076	1.462	119.200	6.14E-02
Xylenes		0.014	1.019		5.16E-04
Sum (lb/yr)	105.29	1708.68	13.84	4953.73	3.39
Sum (TPY)	0.053	0.854	0.007	2.477	3.39

Total Facility HAP Controlled Emissions

TAP	Coal Boilers (T/yr)	Boiler 5 (NG/Oil) (T/yr)	Generators (T/yr)	Paint Booths (T/yr)	Total (T/yr)
Arsenic	9.74E-03	7.36E-05			9.82E-03
Beryllium	1.77E-03	2.93E-05			1.79E-03
Cadmium	7.74E-04	2.34E-04			1.01E-03
Chromium VI	7.35E-05	2.90E-04			3.64E-04
Cobalt		1.58E-05			1.58E-05
Manganese		1.25E-04			1.25E-04
Mercury		7.59E-05			7.59E-05
Nickel	2.50E-02	4.22E-04			2.54E-02
Selenium		1.40E-04			1.40E-04
1,3-Butadiene			6.99E-05		6.99E-05
Acenaphthene	2.37E-06	1.70E-06	2.54E-06		6.60E-06
Acenaphthylene	1.16E-06	3.55E-07	9.04E-06		1.06E-05
Acetaldehyde	2.65E-03		1.37E-03		4.02E-03
Acrolein			1.65E-04		1.65E-04
Anthracene	9.77E-07	5.30E-07	3.34E-06		4.85E-06
Benz(a)anthracene		5.96E-07	3.00E-06		3.60E-06
Benzene	6.05E-03	4.09E-04	1.67E-03		8.12E-03
Benzo(a)anthracene,			3.00E-06		3.00E-06
Benzo(a)pyrene		2.26E-07	3.36E-07		5.62E-07
Benzo(b)fluoranthene[1]		4.34E-07	1.77E-07		6.11E-07
Benzo(g,h,i)perylene	1.26E-07	3.71E-07	1.04E-06		1.54E-06
Benzo(k)fluoranthene[1]		4.34E-07	2.77E-07		7.11E-07
Bis(2-ethylhexyl)phthalate (DEHP)	3.39E-04			0.102	1.02E-01
Chloroform	2.74E-04				2.74E-04
Chrysene		4.92E-07	6.31E-07		1.12E-06
Dibenzo(a,h)anthracene		3.33E-07	1.04E-06		1.37E-06
Dichlorobenzene		2.26E-04			2.26E-04
Dioxins/Furans	8.18E-09	1.99E-10			8.38E-09
Ethylbenzene		4.09E-06		0.208	2.08E-01
Ethylene dibromide	5.58E-06				5.58E-06
Formaldehyde	1.12E-03	1.62E-02	2.11E-03	0.017	3.67E-02
Hexane		3.39E-01			3.39E-01
Manganese - from welding				0.004	3.86E-03
Methyl alcohol				0.238	2.38E-01
Methyl chloride	2.46E-03				2.46E-03
Methyl hydrazine	7.91E-04				7.91E-04
Naphthalene	6.05E-05	1.87E-04	1.52E-04		3.99E-04
Phenanathrene		3.87E-06			3.87E-06
Phenanthrene	1.26E-05		5.25E-05		6.51E-05
Pyrene	1.53E-06	1.21E-06	8.54E-06		1.13E-05
Tetrachloroethylene	2.00E-04				2.00E-04
Toluene		1.04E-03	7.31E-04	0.060	6.14E-02
Xylenes		7.01E-06	5.09E-04		5.16E-04
Sum (T/yr)	0.05	3.58E-01	6.86E-03	0.63	1.05

Power Generation

EPA Tier 2 Exhaust Emission Compliance Statement 350DFEG

60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with U.S. EPA and California emission regulations under the provisions of 40 CFR 89, Nonroad (Mobile Off Highway) Tier 2 emissions limits when tested per ISO 8178 D2.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	CEX - NRCI - 07 -02
Effective Date:	09/15/2006
Date Issued:	09/18/2006
EPA Nonroad Diesel Engine Family:	7CEXL015.AAB
CARB Executive Order:	U-R-002-0364

Engine Information:

Model:	Cummins Inc. QSX15-G9 Nonroad 2	Bore:	5.39 in. (137 mm)
Engine Nameplate HP:	755		
Type:	4 Cycle, In-Line, 6 Cylinder Diesel	Stroke:	6.65 in. (169 mm)
Aspiration:	Turbo-charged with air-to-air charge air cooling	Displacement:	912 cu. in. (14.9 liters)
Compression Ratio:	17:1		
Emission Control Device:	Turbocharged with Charge Air Cooled		

U.S. Environmental Protection Agency Nonroad Tier 2 Limits

COMPONENT	(All values are Grams per HP-Hour)
NOx + HC (Oxides of Nitrogen as NO2 + Total Unburned Hydrocarbons)	4.8
CO (Carbon Monoxide)	2.6
PM (Particulate Matter)	0.15

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Appendix C – Ambient Air Quality Impact Analysis

MEMORANDUM

DATE: May 13, 2009

TO: Morrie Lewis, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: T2-2009.0031

SUBJECT: Modeling Review for Brigham Young University-Idaho, Tier II Permit Renewal and Permit to Construct for Installation of a Replacement Generator and Radio Tower Emergency Generator and the Modification of Coal Throughput Limitations for their facility in Rexburg, Idaho.

1.0 Summary

Brigham Young University-Idaho (BYU-Idaho) submitted a Permit to Construct (PTC)/Tier II Operating Permit (Tier II OP) application for the renewal of the facility-wide Tier II OP. The facility-wide permit accounts for three existing previously unpermitted paint spray booths. This project also consists of PTC actions to increase the annual coal combustion allowed in the permit, permits the installation of two emergency backup generators. This permit application's modeling demonstration was based on the following submittals:

- March 11, 2008 Modeling Protocol
- May 1, 2008 Permit to Construct (PTC)/Tier II OP application and modeling demonstration
- July 15, 2008 submittal for the response to DEQ incompleteness letter
- November 3, 2008 submittal primarily focused on permitting and modeling of 3 existing spray paint booths
- January 26, 2009 submittal requesting a permitted increase in annual coal consumption to 9,300 tons per year
- March 9, 2009 Tier II/PTC application incorporating previous modeling submittals for the paint spray booths, 2 emergency backup generators, ash handling baghouse, an increase in coal sulfur content to 0.72 percent by weight, and an annual coal throughput increase of 1,000 tons per year for the 3 coal-fired boilers.

This list is not a complete list of the documentation submitted to support this permitting action. Please review the permit project's Statement of Basis to see the complete listing of the history of this project.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was 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, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor 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**
Boilers 2, 3, and 4	
Coal sulfur content was limited to 0.72 percent by weight (wt %) in the modeling analysis.	The modeling analysis demonstrated SO2 NAAQS compliance at 0.72 wt % for the 3-hour, the 24-hour, and the annual averaging periods. The modeling analysis did not reflect any daily hours of operation limitations, operating capacity reductions by scaling emission rates, seasonal operation factors, or any other limitation. These emission units demonstrated compliance using the worst-case assumptions for 8,760 hours per year. Any limitation on coal sulfur content below 0.72 wt % is not required to assure NAAQS compliance.
An annual coal throughput limitation of 9,300 tons per year (T/yr) was used in the TAPs analysis. An increase of 1000 T/yr was used as the increase in throughput from the existing permit enforceable limitation of 8,300 T/yr.	The submitted TAPs compliance demonstration for Boilers 2, 3, and 4 used a controlled emission rate and controlled ambient concentration scenario under Section 210 of the Air Rules to demonstrate compliance with the applicable carcinogenic TAPs increments.
Boiler No. 5	
Distillate fuel oil sulfur content was limited to 0.05 wt % in Boiler No. 5. Boiler No. 5 can combust either distillate fuel oil or natural gas.	The modeled SO_2 emission rate for boiler No. 5 was 6.67 lb/hr pounds per hour (lb/hr) for 3-hr, 24-hr, and annual averaging periods.
Emergency Backup Generators (All)	
All emergency electrical generators were assumed to operate for 3 hours per day and 500 hours per year to establish compliance with NAAQS. For pollutants with a 3-hour or a 24-hour averaging period (SO_2 and PM_{10}) generators were assumed to operate 3 hours per averaging period. For pollutants with an annual averaging period (SO_2, PM_{10}, and NO_2) generators were assumed to operate 500 hours per year.	Operating limitations of 3 hours per 24-hour period and 500 hours per year were applied to each emergency electrical generator.
Radio Tower, Smith, and Auxiliary Services Generators	
This project includes the replacement of two existing generators and the installation of a new generator. These changes were appropriately accounted for in the NAAQS and TAPs analyses.	One new 5 kW generator will be located at the Radio Tower Building. The existing Smith Building Generator (60 kW) will be moved to the Auxiliary Services building. A new 350 kW generator will be installed at the Smith Building.
Ash Handling Baghouse	
The modeling demonstration used an emission rate of 1.0 lb/hr of PM_{10} for 24 hours per day and 8,760 hours per year.	Ash handling emissions of PM_{10} were controlled by a baghouse and reflected unrestricted hours of operation.

Table 1 (CONTINUED). KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Paint Spray Booths **PM_{10}:** Daily PM_{10} emissions from all three paint spray booths are limited by the control efficiencies of the filter systems at the capacities of the spray equipment and the amount of overspray used in the emission calculations and the physical properties (solids contents) of the materials used in the paint booths. The application states that the worst-case PM_{10} emission rate was modeled for 24 hours per day. Physical Facilities Paint Booth Number 1 (PFPB1) is equipped with an exhaust stack that originally was horizontal, but will be modified to an unobstructed vertical orientation. PFPB1 The Physical Facilities Paint Spray Booth #1 was not modeled for formaldehyde emissions. Formaldehyde is not anticipated to be emitted from this source.	**PM_{10}:** PM_{10} ambient impacts for a horizontal or blocked flow condition from point source PFPB1 could be considerably higher due to building downwash and ambient air being immediately exterior to any BYU-Idaho building and at certain building windows and HVAC air intakes. The requirement to alter this stack's orientation and exhaust may be considered by the permit engineer as a possible permit condition. The permit engineer may consider the assumptions used in the PM_{10} emission estimates for all three paint spray booths for use as permit conditions. These sources were modeled with the following PM_{10} emission rates: • PFPB1: 0.34 lb/hr, 8.16 lb/day, and 2,978.4 lb/yr (or 1.49 T/yr) • PFPB2: 0.12 lb/hr, 2.76 lb/day, and 11.83 lb/yr (or 0.006 T/yr) • AUST_PB: 0.026 lb/hr, 0.624 lb/day, and 4.91 lb/yr (0.0025 T/yr)
Paint Spray Booths **Formaldehyde:** PFPB2 500 gallons per year (gal/yr) of duracat-v vinyl lacquer semi-gloss, or paint material of equivalent formaldehyde content. This equates to operation of 100 hours per year (hr/yr) at a 5 gallon per hour (gal/hr) spray rate. ABPB (Austin Building Paint Booth) 300 gal/yr of duracat-v vinyl lacquer semi-gloss, or paint material of equivalent formaldehyde content. This equates to operation of 200 hr/yr at a 1.5 gal/hr spray rate. The resulting predicted ambient impact for formaldehyde emissions subject to the TAPs rules was 0.071 $\mu g/m^3$, annual average, or 92% of the TAPs increment. This impact is a controlled design concentration using either a gallon per year limitation or an hours per year at maximum spray gun capacity limitation.	**Formaldehyde:** The permit engineer may consider formaldehyde content and material usage limitations for limiting the annual emissions of formaldehyde from these sources. Formaldehyde emissions are not controlled by the air pollution control equipment in place on the paint booths. Formaldehyde emissions were represented in the modeling as being emitted by PFPB2 and ABPB. Source PFPB1 was not evaluated for impacts for formaldehyde. The stack orientation for PFPB1 is not an issue for formaldehyde increment compliance.

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 BYU-Idaho Rexburg facility is located in Madison County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.102, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Emissions of lead and carbon monoxide (CO) were not modeled by BYU-Idaho for this project. Ambient impacts of CO were predicted to be well below the NAAQS in a past modeling demonstration. Emissions of lead were predicted to be below the modeling thresholds listed in the *State of Idaho Modeling Guideline*.

Table 2. CRITERIA AIR POLLUTANTS APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.102
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year
[g] Concentration at any modeled receptor
[h] Never expected to be exceeded more than once in any calendar year
[i] Concentration at any modeled receptor when using five years of meteorological data
[j] Not to be exceeded more than once per year

2.1.3 TAPs Analyses

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

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

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

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

Per Section 210 of the Idaho Air Rules, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of the Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated. If DEQ determines T-RACT is used to control emissions of carcinogenic TAPs, then modeled concentrations of 10 times the AACC are considered acceptable, as per Idaho Air Rules Section 210.12.

2.2 Background Concentrations

Ambient background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations used in these analyses are listed in Table 3. Background concentrations for NO_2, SO_2, and PM_{10} were based on small town/suburban default values.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	81
	Annual	27
NO_2[c]	Annual	32
SO_2[d]	3-hour	42
	24-hour	26
	Annual	8

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Nitrogen dioxide
[d] Sulfur dioxide

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

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used in the DEQ verification analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/ Values	Documentation/Additional Description
Model	AERMOD	AERMOD, Version 07026
Meteorological data	5 years of local airport surface data and Boise upper air data for the same period	BYU-Idaho used surface met data for the Madison County Airport, located in Rexburg, for 5 consecutive years from 2003 to 2007. Boise airport upper air data was used for the same 2003 through 2007 period. The met data was processed using a very well detailed AERSURFACE evaluation of the area surrounding Rexburg's airport where the met data collected. The AERSURFACE program calculated the surface characteristic coefficients of albedo, surface roughness length, and Bowen ratio. Average moisture conditions were used in selecting coefficients.
Land Use (urban or rural)	Rural	Urban area surface heating was not used in this analysis based on the land use at the site.
Terrain	Considered	Receptor 3-dimensional coordinates were utilized. Each receptor was assigned an elevation. DEQ did not re-import the DEM files.
Building downwash	Downwash algorithm	Building dimensions obtained from modeling files submitted, and BPIP-PRIME was used to evaluate downwash effects.
Receptor grid	Grid 1	25-meter spacing exterior to all buildings covering 1,075 meters (X direction) and 1,375 meters (Y direction) centered on the campus.
	Grid 2	50-meter spacing in a 2,100 meters (X) by 2,300 meters (Y) grid centered on Grid 1
	Grid 3	100 meter spacing in a 4,200 meters (X) by 4,400 meters (Y) grid centered on Grid 2
	Additional Elevated Receptors	BYU-Idaho placed flagpole (or elevated) receptors along the exterior of buildings where windows may be opened or on buildings where fresh air intakes for HVAC equipment were located.

3.1.1 Modeling protocol

Stanley Consultants, Inc., on behalf of BYU-Idaho, submitted a modeling protocol to DEQ on March 11, 2008. DEQ approved the modeling protocol, with comments, by email attachment, on March 20, 2008.

On September 12, 2008, DEQ received an email updating the March 11, 2008 modeling protocol to address permit application incompleteness issues for 3 paint spray booths at the BYU-Idaho facility. The approach outlined by Stanley Consultants in the email was approved by DEQ via email on September 17, 2008.

Modeling was conducted using methods listed in the modeling protocol and required by the *State of Idaho Air Quality Modeling Guideline*.

3.1.2 Model Selection

AERMOD was used by BYU-Idaho to conduct the final ambient air impact analyses for this project. DEQ verified that AERMOD, Version 07026, which is the current version of this regulatory guideline model, is the appropriate model for this project.

3.1.3 Meteorological Data

Rexburg airport surface data and Boise upper air meteorological data were used for the modeling

demonstration for the BYU-Idaho project. Except for on-site surface data, this data set is the most representative met data set available for this facility. A continuous 5-year data set spanning 2003 through 2007 was used.

To process the met data in AERMET, BYU-Idaho used the AERSURFACE tool and the National Land Cover Data from 1992 to estimate the surface coefficients that are used by AERMET to calculate met parameters that characterize the planetary boundary layer in the atmosphere. The use of AERSURFACE is considered appropriate and follows EPA guidance on establishing the surface parameter coefficient values for the Bowen ratio, albedo, and most importantly, the surface roughness height. The values for these variables can be reviewed by opening the electronic file in the met data titled "STAGE3.RPT" in the modeling demonstration files.

3.1.4 Terrain Effects

The modeling analyses conducted by BYU-Idaho considered elevated terrain. The permittee's submittal used AERMAP to determine the actual elevation of each receptor and the controlling hill height elevation from United Geological Survey (USGS) digital elevation map (DEM) files for the area surrounding the facility. The domain for the project accounted for terrain that exceeded a 10% slope at all receptors. Elevations of emission sources, buildings, and receptors were developed based on surrounding terrain elevations as extracted from the DEM files. The AERMAP report files were checked and no errors were noted in the permittee's AERMAP run. DEQ did not re-import DEM files and did not re-run AERMAP for this project.

3.1.5 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the modeling input to satellite images of the site obtained from the Google Earth internet site to confirm the facility layout.

3.1.6 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. The Building Profile Input Program-PRIME (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 for AERMOD. AERMOD identified the effects of structure-induced downwash on predicted ambient impacts.

3.1.7 Ambient Air Boundary

Ambient air was determined to exist for all areas immediately exterior to all buildings. Public access is allowed onto the facility, and BYU-Idaho's modeling demonstration properly accounted for this situation. DEQ approved of this ambient air boundary determination.

3.1.8 Receptor Network

The receptor grids used by BYU-Idaho met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. In addition to placement of discrete receptors immediately outside of all of the campus buildings, BYU-Idaho also included a number of flagpole receptors to evaluate ambient impacts of pollutants at locations where a member of the public could be exposed at open windows or by entrainment of pollutants in HVAC fresh air intakes, at DEQ's request.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used by BYU-Idaho for the modeling demonstration:

- All modeled criteria air pollutant emissions rates were equal to or greater than the facility's emissions calculated in the PTC application or requested permit allowable emission rates.

Tables 5 and 6 list the criteria air pollutant emissions rates for sources included in the dispersion modeling analyses for short term and annual averaging periods, respectively. Hourly emissions representing daily emissions were modeled by BYU-Idaho for 24 hours. Hourly emissions representing annual emissions were modeled over 8,760 hours per year.

BYU-Idaho modeled CO emissions in the initial submittal received on May 1, 2008. The highest 2nd high impacts predicted to occur were 3,569 $\mu g/m^3$, 1-hour average and 1,544 $\mu g/m^3$, 8-hour average (see Appendix E—Predicted Concentrations—of the May 1, 2008 permit application. Due to the low predicted ambient impacts for CO, DEQ did not require BYU-Idaho to submit CO modeling for subsequent modeling demonstrations.

Facility-wide controlled lead emissions were estimated to be 6.23 lb/quarter (approximately 25 lb/month). Uncontrolled lead emissions were estimated to be 31.7 lb/month. This level of emissions is below the modeling thresholds of 1200 lb/yr or 100 lb/month. Lead and CO emissions are not included in Table 5 or Table 6.

Table 5. MODELED CRITERIA SHORT-TERM EMISSIONS RATES				
Source ID	**Description**	**Emission Rates (lb/hr[a])**		
		PM_{10}[b], 24-hr avg	**SO_2[c], 3-hr avg**	**SO_2, 24-hr avg**
BOILER2	Boiler #2-coal-fired	4.64	33.60	33.60
BOILER3	Boiler #3-coal-fired	5.50	50.40	50.40
BOILER4	Boiler #4-coal-fired	8.91	58.80	58.80
BOILER5	Boiler #5-natural gas or distillate fuel oil-fired	0.40	6.67	6.67
HEAT_GEN	Boiler house emergency electrical generator	0.11	0.82	0.10
KIMB_GEN	Kimball building emergency electrical generator	0.16	1.20	0.15
HART_GEN	Hart building emergency electrical generator	0.037	0.27	0.034
PHYP_GEN	Physical plant building emergency electrical generator	0.011	0.082	0.010
MAN_GEN	Manwaring Center emergency electrical generator	0.022	0.17	0.021
KIRK_GEN	Kirkham building emergency electrical generator	0.0071	0.055	0.0069
ASER_GEN	Auxiliary Services building emergency electrical generator	0.022	0.17	0.021
AUST_GEN	Austin Tech building emergency electrical generator	0.011	0.082	0.010
SNOW_GEN	Snow Performing Art Center emergency electrical generator	0.011	0.082	0.010
ROMN_GEN	Romney building emergency electrical generator	0.018	0.14	0.017
LIBR_GEN	Library building emergency electrical generator	0.030	1.75	0.22
BENS_GEN	Bensen building emergency electrical generator	0.018	0.14	0.017
SMTH_GEN	Smith building emergency electrical generator	0.010	0.17	0.021
CLRK_GEN	Clarke building emergency electrical generator	0.022	0.17	0.021
R_GR_GEN	Radio/Graphics building emergency electrical generator	0.015	0.11	0.014
SPRI_GEN	Spori building emergency electrical generator	0.0093	0.069	0.0087
RIKS_GEN	Ricks building emergency electrical generator	0.030	0.22	0.027
EG408	Radio Tower emergency electrical generator.	0.0019	0.014	0.0017
ASH	Ash Handling System baghouse vent	1.00	0	0
PFPB1	Phys. Fac. Paint Spray Booth #1	0.34	0	0
PFPB2	Phys. Fac. Paint Spray Booth #2	0.115	0	0
AUST_PB	Austin Paint Spray Booth	0.026	0	0

[a] Pounds per hour

[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

[c] Sulfur dioxide

Table 6. MODELED CRITERIA ANNUAL EMISSIONS RATES				
Source ID	Description	Emission Rates (lb/hr[a])		
		PM_{10}[b]	SO_2[c]	NO_2[b]
BOILER2	Boiler #2-coal-fired	4.64	33.60	9.03
BOILER3	Boiler #3-coal-fired	5.50	50.40	13.54
BOILER4	Boiler #4-coal-fired	8.91	58.80	15.80
BOILER5	Boiler #5-natural gas or distillate fuel oil-fired	0.40	6.67	6.43
HEAT_GEN	Boiler house emergency electrical generator	0.050	0.047	0.71
KIMB_GEN	Kimball building emergency electrical generator	0.074	0.069	1.04
HART_GEN	Hart building emergency electrical generator	0.017	0.016	0.24
PHYP_GEN	Physical plant building emergency electrical generator	0.0051	0.0047	0.071
MAN_GEN	Manwaring Center emergency electrical generator	0.010	0.0094	0.14
KIRK_GEN	Kirkham building emergency electrical generator	0.0033	0.0032	0.047
ASER_GEN	Auxiliary Services building emergency electrical generator	0.010	0.0094	0.14
AUST_GEN	Austin Tech building emergency electrical generator	0.0051	0.0047	0.071
SNOW_GEN	Snow Performing Art Center emergency electrical generator	0.0051	0.0047	0.071
ROMN_GEN	Romney building emergency electrical generator	0.0084	0.0079	0.12
LIBR_GEN	Library building emergency electrical generator	0.013	0.10	0.19
BENS_GEN	Bensen building emergency electrical generator	0.0084	0.0079	0.12
SMTH_GEN	Smith building emergency electrical generator	0.0048	0.0097	0.41
CLRK_GEN	Clarke building emergency electrical generator	0.010	0.0094	0.14
R_GR_GEN	Radio/Graphics building emergency electrical generator	0.0067	0.0063	0.095
SPRI_GEN	Spori building emergency electrical generator	0.0042	0.0040	0.059
RIKS_GEN	Ricks building emergency electrical generator	0.013	0.013	0.19
EG408	Radio Tower emergency electrical generator.	8.7E-04	7.9E-04	0.012
ASH	Ash Handling System baghouse vent	1.00	0	0
PFPB1	Phys. Fac. Paint Spray Booth #1	0.34[e]	0	0
PFPB2	Phys. Fac. Paint Spray Booth #2	1.35E-03	0	0
AUST_PB	Austin Paint Spray Booth	5.56E-04	0	0

[a] Pounds per hour
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Sulfur dioxide
[d] Nitrogen dioxide
[e] This is the emission rate included in the November 3, 2008 modeling demonstration files for the annual ambient standards.

The requested increase in the annual coal combustion limitation will create an increase in TAPs emissions. Two of the existing paint spray booths emit a TAP above the screening emission rate limit, and the proposed new and replacement emergency backup generator engines also emit TAPs. The requested emissions levels are listed below in Table 7 and were modeled for 8,760 hours per year. Only TAPs with an annual averaging period (carcinogenic TAPs) were affected, and are listed in Table 7.

Table 7. MODELED TOXIC AIR POLLUTANTS EMISSIONS RATES								
Source ID	Description	Carcinogenic Toxic Air Pollutants						
		Arsenic (lb/hr[a])	Cadmium (lb/hr)	Chromium (lb/hr)	Dioxins/ Furans (lb/hr)	Formaldehyde (lb/hr)	Beryllium (lb/hr)	Nickel (lb/hr)
BOILER2	Coal Boiler #2	5.63E-05[b]	4.467E-06[b]	2.12E-06[b]	4.73E-11[b]	6.45E-06	1.02E-05	1.44E-04
BOILER3	Coal Boiler #3	8.44E-05[b]	6.70E-06[b]	3.18E-06[b]	7.09E-11[b]	9.67E-06	1.53E-05	2.16E-04
BOILER4	Coal Boiler #4	9.85E-05[b]	7.82E-06[b]	3.71E-06[b]	8.27E-11[b]	1.13E-05	1.78E-05	2.52E-04
SMTH_GEN	Smith Building Emergency Generator (2008)	0	0	0	0	8.05E-05	0	0
R_GR_GEN	Radio/Graphics Building Emergency Generator	0	0	0	0	1.15E-06	0	0
PFPB2	Physical Facilities Paint Spray Booth #2	0	0	0	0	2.47E-03	0	0
AUST_PB	Austin Paint Spray Booth	0	0	0	0	1.48E-03	0	0

[a] Pounds per hour

[b] The emission rates entered into the model were multiplied by a factor of 10^{10} to generate ambient impacts with enough significant figures in the AERMOD output files to capture the spatial variation of the impact predications. The ambient impacts were then divided by the same factor of 10^{10} to create the ambient design concentration for the compliance demonstration. These values are the actual estimated emission rates.

3. 3 Emission Release Parameters

Table 8 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity used in the modeling demonstration for point sources.

Exhaust parameter information was reviewed by the facility for this permit application. Values used in the analyses appeared reasonable and within expected ranges. Additional documentation for the verification of these parameters was not required.

The Kimball Generator (KIMB_GEN) was modeled using the following exhaust parameters:

- Exhaust velocity of 57.6 meters per second,
- Actual stack diameter of 0.2 meters,
- Exhaust temperature of 812 Kelvin, and,
- Modeled as an unobstructed vertical release.

BYU-Idaho examined whether the buoyancy flux (determined by the exhaust temperature) or the momentum flux was the dominant dispersion mechanism. The September 25, 2006 analyses indicate that the buoyancy flux is the dominant plume dispersion mechanism. No other emergency electrical generators were analyzed for similar treatment in the modeling demonstration.

Table 8. POINT SOURCE STACK PARAMETERS						
Release Point	Release Point Description	Source Type	Stack Height (m)[a]	Modeled Stack Diameter (m)	Stack Gas Temp (K)[c]	Stack Gas Flow Velocity (m/sec)[d]
BOILER2	Boiler #2-coal-fired	Point	24.38	0.762	480.6	19.69
BOILER3	Boiler #3-coal-fired	Point	24.38	0.965	445.6	23.09
BOILER4	Boiler #4-coal-fired	Point	24.38	0.965	530.6	23.1
BOILER5	Boiler #5-natural gas or distillate fuel oil-fired	Point	17.98	1.067	455.2	16.01
HEAT_GEN	Boiler house emergency electrical generator	Point	12.8	0.152	588.6	53.69
KIMB_GEN	Kimball building emergency electrical generator	Point	3.81	0.203	588.6	29.11[f]
HART_GEN	Hart building emergency electrical generator	Point	2.13	0.051	588.6	41.95
PHYP_GEN	Physical plant building emergency electrical generator	Point	1.83	0.076	588.6	0.001
MAN_GEN	Manwaring Center emergency electrical generator	Point	6.1	0.076	588.6	0.001
KIRK_GEN	Kirkham building emergency electrical generator	Point	6.1	0.076	588.6	0.001
ASER_GEN	Auxiliary Services building emergency electrical generator	Point	2.44	0.203	588.6	0.001
AUST_GEN	Austin Tech building emergency electrical generator	Point	1.83	0.076	588.6	0.001
SNOW_GEN	Snow Performing Art Center emergency electrical generator	Point	2.13	0.344	588.6	0.001
ROMN_GEN	Romney building emergency electrical generator	Point	2.74	0.344	588.6	0.001
LIBR_GEN	Library building emergency electrical generator	Point	2.44	0.076	588.6	0.001
BENS_GEN	Bensen building emergency electrical generator	Point	2.13	0.076	588.6	0.001
SMTH_GEN	Smith building emergency electrical generator	Point	2.54	0.152	588.6	0.001
CLRK_GEN	Clarke building emergency electrical generator	Point	2.44	0.076	588.6	41.09
R_GR_GEN	Radio/Graphics building emergency electrical generator	Point	2.44	0.343	588.6	0.001
SPRI_GEN	Spori building emergency electrical generator	Point	2.44	0.076	588.6	0.001
RIKS_GEN	Ricks building emergency electrical generator	Point	1.83	0.076	588.6	0.001
EG408	Radio Tower emergency electrical generator.	Point	3.35	0.044	588.6	0.001
ASH	Ash Handling System baghouse vent	Point	17.78	0.305	346.9	5.52
PFPB1	Phys. Fac. Paint Spray Booth #1	Point	10.46	0.61	294.1	16.17
PFPB2	Phys. Fac. Paint Spray Booth #2	Point	10.46	0.61	294.1	16.17
AUST_PB	Austin Paint Spray Booth	Point	7.21	1.517	294.1	0.001

[a] Meters
[c] Kelvin
[d] Meters per second
[e] Stack exhausts horizontally or flow is obstructed
[f] Stack exhausts horizontally but the thermal buoyancy flux was determined by the applicant to be the dominant form of plume rise.

3.4 Results for Modeling Analyses

3.4.1 Full Impact Analyses

A significant contribution analysis was not submitted for this application. This project is a Tier II renewal with new source review components, therefore full impact analyses is necessary to demonstrate compliance with NAAQS, which were submitted by BYU-Idaho. The results of the full impact analyses are listed in Table 9.

Table 9. RESULTS OF FULL IMPACT ANALYSES						
Pollutant	**Averaging Period**	**Modeled Design Concentration[a] ($\mu g/m^3$)[a]**	**Background Concentration ($\mu g/m^3$)**	**Total Ambient Impact ($\mu g/m^3$)**	**NAAQS[b] ($\mu g/m^3$)**	**Percent of NAAQS**
PM_{10}[c]	24-hour	63.1[f]	81	144.1	150	96%
	Annual	20.5	27	47.5	50	95%
SO_2[d]	3-hour	1085.9	42	1127.9	1,300	87%
	24-hour	144.6	26	170.6	365	47%
	Annual	31.0	8	39.0	80	49%
NO_2[e]	Annual	44.0	32	76.0	100	76%

[a] Micrograms per cubic meter
[b] National ambient air quality standards
[c] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[d] Sulfur dioxide
[e] Nitrogen dioxide
[f] BYU-Idaho elected to use the highest second high value of the 5 years of modeling runs instead of the highest 6th highest value from a modeling run using a 5-year concatenated met file.

3.4.2 Toxic Air Pollutant Impact Analyses

Modeling for TAPs was required to demonstrate compliance with the TAP increments specified by IDAPA 58.01.01.585 and 586. The results of the TAPs analyses are listed in Table 10.

Table 10. RESULTS OF TAP ANALYSES				
TAP	**Averaging Period**	**Maximum Modeled Concentration (ug/m^3)[a]**	**AACC[b] (ug/m^3)**	**Percent of AACC**
Carcinogenic				
Arsenic	Annual	4.55E-05	2.3E-04	20%
Beryllium	Annual	1.00E-05	4.2E-03	0.2%
Cadmium	Annual	3.61E-06	5.6E-04	0.6%
Chromium (+6)	Annual	1.72E-06	8.3E-05	2%
Dioxins and Furans	Annual	3.82E-11	2.2E-08	0.2%
Formaldehyde	Annual	6.99E-02	7.7E-02	91%
Nickel	Annual	1.20E-04	4.2E-03	3%

[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 verification analyses, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.