

Statement of Basis

**Permit to Construct No. P-2012.0057
Project ID 61991**

**St. Luke's Meridian Medical Center
Meridian, Idaho**

Facility ID 001-00182

Final



**May 24, 2018
Rakaël Pope
Permit Writer**

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE.....	3
FACILITY INFORMATION.....	4
Description.....	4
Permitting History.....	4
Application Scope.....	4
Application Chronology.....	4
TECHNICAL ANALYSIS.....	5
Emissions Units and Control Equipment.....	5
Emissions Inventories.....	8
Ambient Air Quality Impact Analyses.....	12
REGULATORY ANALYSIS.....	12
Attainment Designation (40 CFR 81.313).....	12
Facility Classification.....	12
Permit to Construct (IDAPA 58.01.01.201).....	13
Tier II Operating Permit (IDAPA 58.01.01.401).....	13
Visible Emissions (IDAPA 58.01.01.625).....	13
Fuel-Burning Equipment (IDAPA 58.01.01.676 and 677).....	13
Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70).....	14
PSD Classification (40 CFR 52.21).....	14
NSPS Applicability (40 CFR 60).....	14
NESHAP Applicability (40 CFR 61).....	15
MACT/GACT Applicability (40 CFR 63).....	15
Permit Conditions Review.....	17
PUBLIC REVIEW.....	18
Public Comment Opportunity.....	18
Public Comment Period.....	18
APPENDIX A – EMISSIONS INVENTORIES.....	19
APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES.....	20
APPENDIX C – FACILITY DRAFT COMMENTS.....	21
APPENDIX D – PROCESSING FEE.....	23

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAS No.	Chemical Abstracts Service registry number
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
HAP	hazardous air pollutants
HHV	higher heating value
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PAH	polyaromatic hydrocarbons
PC	permit condition
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
RICE	reciprocating internal combustion engines
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Saint Luke's Meridian Medical Center (SLMMC) is a general medical and surgical hospital located at 520 S. Eagle Rd. in Meridian, Idaho. The facility is an existing hospital has been previously permitted with eleven boilers and two diesel generators. The two largest boilers are NG (natural gas) and ULSD (ultra-low sulfur diesel) fueled. The remaining boilers are NG fueled. The two generators are ULSD fueled. The facility also has self-exempted five NG boilers, three NG water heaters, and one NG generators that are all considered for modeling air quality data, but are not included in this PTC.

Permitting History

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

August 25, 2017	P-2012.0057, Project No. 61888, PTC modification. Permit status (A), but will become (S) upon issuance of this permit.
May 19, 2015	P-2012.0057, Project No. 61323, PTC modification. Permit status (S).
April 12, 2013	PTC No. P-2012.0057 Project No. 61106, PTC modification. Permit status (S).
February 13, 2006	P-050041, revision, Permit status (S).
November 21, 2001	001-00182, Permit status (S).
September 24, 2001	001-00182, Permit status (S).

Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Update maintenance and testing procedures to include:
 1. Remove flowmeter and maximum fuel flow rate requirement for GEN01 and GEN02.
 2. Increase the limit on maintenance and testing to five hours each month per generator for GEN01 and GEN02.

Application Chronology

January 16, 2018	DEQ received an application and an application fee.
January 22– February 6, 2018	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
February 16, 2018	DEQ determined that the application was complete.
March 26, 2018	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 3, 2018	DEQ made available the draft permit and statement of basis for applicant review.
April 19 – May 21, 2018	DEQ provided a public comment period on the proposed action.
May 15, 2018	DEQ received the permit processing fee.
May 24, 2018	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
1	<p><u>Boiler No. 1:</u> Location: Central Plant Manufacturer: Hurst Rated steam rate (lb/hr): 12,075 Manufacturer's Serial No.: S1750-150-15 Model No S4-GA2-350-150 Burner Type: Industrial Combustion Burner No.: AM-913-165 Fuel flow gas (maximum MMBtu/hr): 15 ULSD fuel oil flow (gallons per hour): 105 Manufacture Date: 2000 Heat input rating: 15 MMBtu/hr Fuel: Natural gas and ULSD</p>		Height (ft): 25 (7.6m) Diameter (ft): 1.7 (0.52m) Flow rate (acfm): 5,085 Exit temperature (°F): 450 Orientation of release: Raincap
2	<p><u>Boiler No. 2:</u> Location: Central Plant Manufacturer: Hurst Rated steam rate (lb/hr): 12,075 Manufacturer's Serial No.: S1750-150-16 Model No.: S4-GA2-350-150 Burner Type: Industrial Combustion Burner No.: AM-913-166 Fuel flow gas (maximum MMBtu/hr): 15 ULSD fuel oil flow (gallons per hour): 105 Manufacture Date: 2000 Heat input rating: 15 MMBtu/hr Fuel: Natural gas and ULSD</p>		Height (ft): 25 (7.6m) Diameter (ft): 1.7 (0.52m) Flow rate (acfm): 5,085 Exit temperature (°F): 450 Orientation of release: Raincap
3	<p><u>Boiler No. 3:</u> Location: Main Hospital basement Manufacturer: Kewanee Model: M-505-KG Installation Date: 1996 Rating: 150 HP Heat input rating: 6.3 MMBtu/hr Fuel: Natural gas</p>		Boilers nos. 3-6 exhaust to a common stack with the following stack parameters: Height (ft): 69.5 (21.2m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 6450 Exit temperature (°F): 200 Orientation of release: Raincap
4	<p><u>Boiler No. 4:</u> Location: Main Hospital basement Manufacturer: Kewanee Model: M-505-KG Installation Date: 1996 Rating: 150 HP Heat input rating: 6.3 MMBtu/hr Fuel: Natural gas</p>		
5	<p><u>Boiler No. 5:</u> Location: Main Hospital basement Manufacturer: Kewanee Model: M-505-KG Installation Date: 1998 Rating: 150 HP Heat input rating: 6.3 MMBtu/hr Fuel: Natural gas</p>		

Source ID No.	Sources	Control Equipment	Emission Point ID No.
6	<u>Boiler No. 6:</u> Location: Main Hospital basement Manufacturer: Kewanee Model: M-505-KG Installation Date: 1998 Rating: 150 HP Heat input rating: 6.3 MMBtu/hr Fuel: Natural gas	None	Boilers nos. 3-6 exhaust to a common stack with the following stack parameters: Height (ft): 69.5 (21.2m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 6450 Exit temperature (°F): 200 Orientation of release: Raincap
7	<u>Boiler No. 7:</u> Location: Surgery Center roof Manufacturer: Hurst Model: VIX-G-100-150 Serial No.: VIX217-150-32 Installation Date: 2013 Heat input rating: 4.2 MMBtu/hr Fuel: Natural gas		Height (ft): 54 (16.5m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 1,073 Exit temperature (°F): 200 Orientation of release: Raincap
8	<u>Boiler No. 8:</u> Location: Surgery Center roof Manufacturer: Hurst Model: VIX-G-100-150 Serial No.: VIX217-150-33 Installation Date: 2013 Heat input rating: 4.2 MMBtu/hr Fuel: Natural gas		Height (ft): 54 (16.5m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 1,073 Exit temperature (°F): 200 Orientation of release: Raincap
9	<u>Boiler No. 9:</u> Location: Surgery Center roof Manufacturer: Lochinvar Model: FBN2500 Installation Date: 2013 Heat input rating: 2.5 MMBtu/hr Fuel: Natural gas		Height (ft): 54 (16.5m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 639 Exit temperature (°F): 200 Orientation of release: Raincap
10	<u>Boiler No. 10:</u> Location: Surgery Center roof Manufacturer: Lochinvar Model: FBN2500 Installation Date: 2013 Heat input rating: 2.5 MMBtu/hr Fuel: Natural gas		Height (ft): 54 (16.5m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 639 Exit temperature (°F): 200 Orientation of release: Raincap
11	<u>Boiler No.11:</u> Location: Surgery Center roof Manufacturer: Lochinvar Model: FBN2500 Installation Date: 2013 Heat input rating: 2.5 MMBtu/hr Fuel: Natural gas		Height (ft): 54 (16.5m) Diameter (ft): 2.0 (0.61m) Flow rate (acfm): 639 Exit temperature (°F): 200 Orientation of release: Raincap
12	<u>Office Generator IC Engine, GEN01:</u> Location: Main Hospital basement Manufacturer: Detroit Diesel Rated power: 1,231 hp Model No.: R163-7K08 Fuel: ULSD		Height (ft): 68.9 (21m) Diameter (ft): 1 (0.3m) Flow rate (acfm): 5350 Exit temperature (°F): 955 Orientation of release: Vertical w/flap

Source ID No.	Sources	Control Equipment	Emission Point ID No.
13	<u>Plant Generator IC Engine, GEN02:</u> Location: Central Plant Manufacturer: Caterpillar Rated power: 2,520 hp Model No.: 3516 Serial No.: 7GM00824 Fuel: ULSD	None	Height (ft): 25 (7.62m) Diameter (ft): 1 (0.3m) Flow rate (acfm): 12,706 Exit temperature (°F): 912 Orientation of release: Vertical w/flap
14	<u>Hot Water Boiler #1 (Self-Exempted):</u> Location: Portico Building Manufacturer: Laars Installation Date: Unknown Heat input rating: 1.999 MMBtu/hr Fuel: Natural gas		Height (ft): 66.6 (20.3m) Diameter (ft): 0.6 (0.18m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Horizontal
15	<u>Hot Water Boiler #2 (Self-Exempted):</u> Location: Portico Building Manufacturer: Laars Installation Date: Unknown Heat input rating: 1.999 MMBtu/hr Fuel: Natural gas		Height (ft): 66.6 (20.3m) Diameter (ft): 0.6 (0.18m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Horizontal
16	<u>Hot Water Boiler #3 (Self-Exempted):</u> Location: Portico Building Manufacturer: Laars Installation Date: Unknown Heat input rating: 1.999 MMBtu/hr Fuel: Natural gas		Height (ft): 66.6 (20.3m) Diameter (ft): 0.6 (0.18m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Horizontal
17	<u>Hot Water Boiler #4 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Laars Installation Date: Unknown Heat input rating: 0.9996 MMBtu/hr Fuel: Natural gas		Meadow Lake Building Boilers nos. 4,5 exhaust to a common stack with the following stack parameters: Height (ft): 91.5 (27.9m) Diameter (ft): 0.6 (0.18m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Raincap
18	<u>Hot Water Boiler #5 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Laars Installation Date: Unknown Heat input rating: 0.9996 MMBtu/hr Fuel: Natural gas		Height (ft): 91.5 (27.9m) Diameter (ft): 0.33 (0.1m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Raincap
19	<u>Hot Water Heater #1 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Rheem Installation Date: Unknown Heat input rating: 0.07 MMBtu/hr Fuel: Natural gas		Height (ft): 91.5 (27.9m) Diameter (ft): 0.33 (0.1m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Raincap
20	<u>Hot Water Heater #2 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Rheem Installation Date: Unknown Heat input rating: 0.07 MMBtu/hr Fuel: Natural gas		Height (ft): 91.5 (27.9m) Diameter (ft): 0.33 (0.1m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Raincap

Source ID No.	Sources	Control Equipment	Emission Point ID No.
21	<u>Hot Water Heater #3 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Rheem Installation Date: Unknown Heat input rating: 0.07 MMBtu/hr Fuel: Natural gas	None	Height (ft): 77.4 (23.6m) Diameter (ft): 0.5 (0.15m) Flow rate (acfm): 397 Exit temperature (°F): 53 Orientation of release: Raincap
22	<u>Natural Gas Generator, GEN03 (Self-Exempted):</u> Location: Meadow Lake Building Manufacturer: Cummins Model No.: GGHF Power Rating.: 70KW/94HP Heat input rating: 0.916 MMBtu/hr Fuel: Natural gas		Height (ft): 91.5 (27.9m) Diameter (ft): 0.33 (0.1m) Flow rate (acfm): 539 Exit temperature (°F): 53==1233 Orientation of release: Vertical w/flap

Emissions Inventories

Potential to Emit

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

Using this definition of Potential to Emit an emission inventory was developed for the changes to testing for two IC engine operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, HAP PTE were based on emission factors from AP-42, operation of 100 hours per year, and process information specific to the facility for this proposed project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. The table contains the pre-project potential to emit taken from the Statement of Basis of P-2012.0057 Project 61888, issued August 25, 2017 for all criteria pollutants from emissions units at the facility. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Plant Generator #2 IC Engine (diesel fuel) ^a	0.81	0.040	0.02	0.001	26.75	1.34	11.97	0.60	1.27	0.06
Office Generator #1 IC Engine (diesel fuel) ^b	0.10	0.005	0.008	0.0004	11.32	0.57	0.88	0.04	0.23	0.01
Boiler #1 (Hurst)(NG fuel) ^{c,d}	0.11	0.49	0.01	0.04	1.47	6.44	1.24	5.41	0.08	0.35
Boiler #1 (Hurst)(diesel fuel) ^{c,d}	0.25	0.01	0.02	0.00	2.14	0.05	0	0	0	0
Boiler #2 (Hurst)(NG fuel) ^{c,d}	0.11	0.49	0.01	0.04	1.47	6.44	1.24	5.41	0.08	0.35
Boiler #2 (Hurst)(diesel fuel) ^{c,d}	0.25	0.01	0.02	0.00	2.14	0.05	0	0	0	0
Boiler #3 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #4 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #5 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #6 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #7 (Hurst)(NG fuel)	0.0202	0.088	0.01	0.029	0.37	1.619	0.16	0.68	0.11	0.46
Boiler #8 (Hurst)(NG fuel)	0.0202	0.088	0.01	0.029	0.37	1.619	0.16	0.68	0.11	0.46
Boiler #9 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Boiler #10 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Boiler #11 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Pre-Project Totals	1.44	1.78	0.09	0.19	43.67	23.45	16.58	16.86	1.97	2.12

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
- b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
- c) This table includes a worst case of 8,760 hr/yr NG fuel for CO, NO_x, VOC, and CO₂e for BOI01 & 02. A worst case of 8,760 hr/yr ULSD fuel for each boiler was used for PM.
- d) Data reflects corrected output capacity plate value.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Plant Generator #2 IC Engine (diesel fuel) ^a	0.99	0.05	0.03	0.001	32.68	1.63	14.62	0.73	1.55	0.08
Office Generator #1 IC Engine (diesel fuel) ^b	0.09	0.004	0.01	0.001	11.82	0.59	1.80	0.09	0.18	0.009
Boiler #1 (Hurst)(NG fuel)	0.11	0.49	0.01	0.04	1.47	6.44	1.24	5.41	0.08	0.35
Boiler #1 (Hurst)(diesel fuel)	0.25	0.01	0.02	0.00	2.14	0.05	0	0	0	0
Boiler #2 (Hurst)(NG fuel) ^d	0.11	0.49	0.01	0.04	1.47	6.44	1.24	5.41	0.08	0.35
Boiler #2 (Hurst)(diesel fuel) ^d	0.25	0.01	0.02	0.00	2.14	0.05	0	0	0	0
Boiler #3 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #4 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #5 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #6 (Kewanee)(NG fuel)	0.047	0.206	0.0037	0.016	0.62	2.711	0.52	2.28	0.034	0.15
Boiler #7 (Hurst)(NG fuel)	0.0202	0.088	0.01	0.029	0.37	1.619	0.16	0.68	0.11	0.46
Boiler #8 (Hurst)(NG fuel)	0.0202	0.088	0.01	0.029	0.37	1.619	0.16	0.68	0.11	0.46

Boiler #9 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Boiler #10 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Boiler #11 (Lochinvar)(NG fuel)	0.0186	0.082	0.002	0.0077	0.08	0.3395	0.03	0.11	0.01	0.06
Post Project Totals	1.61	1.79	0.10	0.19	50.10	23.76	20.15	17.04	2.20	2.14

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
- b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
- c) This table includes a worst case of 8,760 hr/yr NG fuel for CO, NOx, VOC, and CO₂e for BOI01 & 02. A worst case of 8,760 hr/yr ULSD fuel for each boiler was used for PM.
- d) Data reflects corrected output capacity plate value.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	1.44	1.78	0.09	0.19	43.67	23.45	16.58	16.86	1.97	2.12
Post Project Potential to Emit	1.61	1.79	0.10	0.19	50.10	23.76	20.15	17.04	2.20	2.14
Changes in Potential to Emit	0.17	0.01	0.01	0.00	6.43	0.31	3.57	0.18	0.23	0.02

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table. Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 5 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	1.72E-06	2.16E-06	0.0000	0.017	No
Dichlorobenzene	8.37E-05	6.61E-05	0.0000	30	No
Ethylbenzene	7.47E-08	3.73E-08	0.0000	29	No
Fluorene	1.52E-07	1.10E-07	0.0000	0.133	No
Hexane	1.26E-01	9.91E-02	-0.0269	12	No
Naphthalene	6.20E-05	6.92E-05	0.0000	9.10E-05	No
Toluene	2.46E-04	2.64E-04	0.0000	25	No
o-Xylene	4.22E-05	5.30E-06	0.0000	29	No
Barium	3.07E-04	2.42E-04	-0.0001	3.30E-02	No
Chromium	9.77E-05	7.71E-05	0.0000	3.30E-02	No
Cobalt	5.86E-06	4.62E-06	0.0000	3.30E-03	No
Copper	5.93E-05	4.68E-05	0.0000	6.70E-02	No
Manganese	2.65E-05	2.09E-05	0.0000	6.70E-02	No
Molybdenum	7.67E-05	6.06E-05	0.0000	0.333	No
Selenium	1.67E-06	1.32E-06	0.0000	1.30E-02	No
Vanadium	2.30E-04	1.82E-04	0.0000	3.00E-03	No
Zinc	2.02E-03	1.60E-03	-0.0004	6.67E-01	No

None of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 6 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
3-Methylchloranthrene	1.26E-07	9.91E-08	0.0000	2.50E-06	No
Acetaldehyde	5.51E-06	6.91E-06	0.0000	3.00E-03	No
Benzene	3.16E-04	3.29E-04	0.0000	8.00E-04	No
Benzo(a)pyrene	1.40E-07	1.37E-07	0.0000	2.00E-06	No
Formaldehyde	5.23E-03	4.13E-03	-0.0011	5.10E-04	No
7-PAH	9.10E-05	1.86E-06	-0.0001	2.00E-06	No
Arsenic	2.73E-02	2.73E-02	0.0000	1.50E-06	No
Beryllium	8.37E-07	6.61E-07	0.0000	2.80E-05	No
Cadmium	7.67E-05	6.06E-05	0.0000	3.70E-06	No
Nickel	1.46E-04	1.16E-04	0.0000	2.70E-05	No

None of the PTEs for carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any carcinogenic TAP because none of the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from for the IC engine test procedures being modified as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (lb/hr)	PTE (T/yr)
Acrolein	2.16E-06	0.00
Benzene	3.29E-04	0.00
Dichlorobenze	6.61E-05	0.00
Ethylbenzene	3.73E-08	0.00
Formaldehyde	4.13E-03	0.02
Hexane	9.91E-02	0.43
Napthalene	3.57E-05	0.00
Toluene	2.64E-04	0.00
o-Xylene	5.30E-05	0.00
Arsenic	2.73E-02	0.00
Beryllium	6.61E-07	0.00
Cadmium	6.06E-05	0.00
Chromium	7.71E-05	0.00
Cobalt	4.62E-06	0.00
Manganese	2.09E-05	0.00
Mercury	1.43E-05	0.00
Nickel	1.16E-04	0.00
Selenium	1.32E-06	0.00
Totals	0.13	0.45

Ambient Air Quality Impact Analyses

The estimated emission rates of from this project were below applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline¹. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP).

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application for the August 25, 2017 permit, P-2012.0057. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Ada County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has actual or potential emissions ≥ 10 T/yr or if the aggregate of all HAPS (Total HAPs) has actual or potential emissions ≥ 25 T/yr.
- SM80 = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits ≥ 8 T/yr of a single HAP or ≥ 20 T/yr of THAP.
- SM = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to < 8 T/yr of a single HAP and/or < 20 T/yr of THAP.
- B = Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold
- UNK = Class is unknown

For All Other Pollutants:

- A = Actual or potential emissions of a pollutant are ≥ 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.

¹ Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

- B = Actual and potential emissions are < 100 T/yr without permit restrictions.
- UNK = Class is unknown.

Table 8 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	2.28	1.79	100	B
PM ₁₀	2.28	1.79	100	B
PM _{2.5}	2.28	1.79	100	B
SO ₂	0.23	0.19	100	B
NO _x	30.21	23.77	100	B
CO	22.44	17.03	100	B
VOC	2.49	2.13	100	B
HAP (single)	0.43	0.43	10	B
HAP (total)	0.45	0.45	25	B
Pb	0.0002	0.0001	100	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the increased load for IC engine emissions sources, GEN01 and GEN02. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

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

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.3 and 3.3.

Fuel-Burning Equipment (IDAPA 58.01.01.676 and 677)

IDAPA 58.01.01.676 Standards for New Sources, and

IDAPA 58.01.01.677 Standards for Minor and Existing Sources

The permittee shall not discharge to the atmosphere from any fuel-burning equipment particulate matter in excess of 0.015 grains per dry standard cubic foot (gr/dscf) of effluent gas corrected to 3% oxygen by volume for gas or 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid fuel.

These rules apply to the Boilers Nos. 1-11 existing at the facility.

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

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM₁₀, SO₂, NO_x, CO, and VOC or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

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

NSPS Applicability (40 CFR 60)

40 CFR 60, Subpart Dc..... Standards of Performance for Small Industrial–Commercial–Institutional Steam Generating Units

The existing two Hurst dual-fired boilers nos. 1 and 2 are subject to 40 CFR Part 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, as each boiler is rated at heat input capacity of 15 MMBtu/hr and each was constructed after June 9, 1989. The requirements of the NSPS Subpart Dc were addressed in the PTC No. P-2012.0057 Project 61106, issued on April 12, 2013, and these requirements are carried over to this permit. The other boilers (nos. 3 to 11) are not subject to the NSPS requirements of 40 CFR Part 60 because each boiler is rated at heat input capacity of less than 10 MMBtu/hr.

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

§ 60.4200 Am I subject to this part?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines;

(ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005.

§ 60.4219 What definitions apply to this subpart?

Fire pump engine means an emergency stationary internal combustion engine certified to NFPA requirements that is used to provide power to pump water for fire suppression or protection.

Both IC engines at this facility were installed after July 11, 2005 and are not fire pump engines. Therefore, Subpart IIII does apply to the two IC engines at this facility.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT/GACT Applicability (40 CFR 63)

40 CFR 63 Subpart ZZZZ..... National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The facility maintains and operates two emergency internal combustion engines. Generator engine No. 1, a Detroit Diesel (Model R163-7KO6) with an engine power rating of 1,231 bhp, installed prior to June 12, 2006. Generator engine No. 2, a Caterpillar (Model: 3516 DITA) with an engine power rating of 2,346 bhp, installed prior to June 12, 2006. This facility is classified as an area source of HAP emissions defined as PTE 10 tons per year T/yr or less for any single HAP or PTE less than 25 T/yr for total HAPs.

§ 63.6580..... What is the purpose of subpart ZZZZ?

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

§ 63.6585..... Am I subject to this subpart?

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

In accordance with 40 CFR 63.6590(a)(1)(iii), the stationary RICE located at area sources constructed before 6/12/2006 are considered existing RICE. At SLMMC, this includes emergency generator engines Nos. 1 and 2.

In addition, pursuant to 40 CFR 63.6585(f) The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in §63.6675, which includes operating according to the provisions specified in §63.6640(f).

(1) Existing residential emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

(2) Existing commercial emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

(3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

The §63.6640(f)(2)(ii) and (iii); and §63.6640(f)(4)(ii) of Subpart ZZZZ don't apply to SLMMC.

In accordance with 40 CFR 63.6675 (What definitions apply to this Subpart?), the existing institutional emergency RICE means the following: "an emergency stationary RICE used in institutional establishments such

as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police stations, and fire stations.”

The two generator engines are existing institutional emergency stationary RICE located at an area source of HAP emissions. Therefore, Subpart ZZZZ does not apply to these IC engines based on the definition.

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

§ 63.11193 Am I subject to this subpart?

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

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

§ 63.11195 Are any boilers not subject to this subpart?

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

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

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

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

§ 63.11237 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in § 63.2 (General Provisions), and in this section as follows:

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

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

According to the PTC application that DEQ received from the facility on 1/30/14 and PTC addendum received on 7/15/14, all of the boilers at the facility are included in the definitions above. All boilers at the facility are fired with natural gas fuel. Boilers Nos. 1 and 2 (Hurst), however, have the ability to fire diesel fuel, but this option will only be used in an emergency situation if the natural gas supply to the hospital is disrupted. Any operational testing the facility does with Boiler Nos. 1 and 2 operating with diesel fuel will be limited to less than 48 hours during any calendar year. Pursuant to 40 CFR 63.11237, bullet No. 2 in Permit Condition 2.5 limits the facility for the hours of operations during testing the boilers on diesel fuel oil. Permit Condition 2.11 is to monitor and record the hours of operations of the boilers during operational testing on diesel fuel.

Permit Conditions Review

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

Existing Permit Condition 2.9, second bullet

Stack height of Boilers 1 and Boiler 2 shall be 25 feet (7.62 meters). The permittee shall notify DEQ within 60 days of issuance of this permit that modification of Boiler 1 and Boiler 2 stacks to this height is complete.

The second bullet of this permit condition has been deleted because construction is complete.

Existing Permit Condition 3.5

Fuel Use Limit During Testing and Maintenance and Diesel Fuel Meter

The IC engines shall not exceed the following amounts of ULSD during testing and maintenance:

- *Plant generator No. 2 IC engine: 100.6 gallons per hour.*
- *Office generator No. 1 IC engine: 36.3 gallons per hour.*

This permit condition has been deleted because the applicant demonstrated compliance with air quality regulations for engines tested at 100% load. The remaining permit conditions were renumbered, accordingly.

Existing Permit Condition 3.6 (now 3.5)

Stack Height and Testing Requirements

- *Stack height of GEN02 shall be 25 feet (7.62 meters) to accommodate emergency generator testing. The permittee shall notify DEQ within 60 days of issuance of this permit that modification of the GEN02 stack to this height is complete.*
- *The emergency generator engines shall be tested once each month for up to a combined total time of 4 hours per generator.*
- *The emergency generator engines may operate concurrently during maintenance or testing.*

Revised Permit Condition 3.6 (now 3.5)

Testing Requirements

- *The emergency generator engines may be tested each month for a combined total time of up to 5 hours for each generator engine.*
- *The emergency generator engines may operate concurrently during maintenance or testing.*

The first bullet of this permit condition has been deleted because this construction is complete. The second bullet was modified to increase testing to 5 hours because the applicant demonstrated compliance with air quality regulations with this change.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.01.c. During this time, comments were not submitted in response to DEQ's proposed action. Refer to the chronology for public comment period dates.

APPENDIX A – EMISSIONS INVENTORIES

**St Lukes Meridian Medical Center
New Criteria Pollutant Summary**

Criteria Pollutants Emissions Unit Name	PM10		PM2.5		CO		NOx		SOx		Lead		VOC	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Plant Generator - 2346 HP	0.99	0.05	0.95	0.05	14.62	0.73	32.68	1.63	0.03	0.001			1.55	0.08
Office Generator - 1231 HP	0.09	0.004	0.09	0.004	1.80	0.09	11.82	0.59	0.010	0.0005			0.18	0.01
Boiler #1 Hurst (NG)		0.49		0.49	1.24	5.41		6.44		0.04	7.35E-06	3.22E-05	0.08	0.35
Boiler #1 Hurst (ULSD)	0.25		0.17				2.14		0.02					
Boiler #2 Hurst (NG)		0.49		0.49	1.24	5.41		6.44		0.04	7.35E-06	3.22E-05	0.08	0.35
Boiler #2 Hurst (ULSD)	0.25		0.17				2.14		0.02					
Boiler #3 Kewanee (NG)	0.05	0.21	0.05	0.21	0.52	2.28	0.62	2.71	0.00	0.02	3.09E-06	1.36E-05	0.03	0.15
Boiler #4 Kewanee (NG)	0.05	0.21	0.05	0.21	0.52	2.28	0.62	2.71	0.00	0.02	3.09E-06	1.36E-05	0.03	0.15
Boiler #5 Kewanee (NG)	0.05	0.21	0.05	0.21	0.52	2.28	0.62	2.71	0.00	0.02	3.09E-06	1.36E-05	0.03	0.15
Boiler #6 Kewanee (NG)	0.05	0.21	0.05	0.21	0.52	2.28	0.62	2.71	0.00	0.02	3.09E-06	1.36E-05	0.03	0.15
Boiler #7 Hurst (NG)	0.02	0.09	0.02	0.09	0.16	0.68	0.37	1.62	0.01	0.03	2.06E-06	9.02E-06	0.11	0.46
Boiler #8 Hurst (NG)	0.02	0.09	0.02	0.09	0.16	0.68	0.37	1.62	0.01	0.03	2.06E-06	9.02E-06	0.11	0.46
Boiler #9 Lochinvar (NG)	0.02	0.08	0.02	0.08	0.03	0.11	0.08	0.34	0.00	0.01	1.23E-06	5.37E-06	0.01	0.06
Boiler #10 Lochinvar (NG)	0.02	0.08	0.02	0.08	0.03	0.11	0.08	0.34	0.00	0.01	1.23E-06	5.37E-06	0.01	0.06
Boiler #11 Lochinvar (NG)	0.02	0.08	0.02	0.08	0.03	0.11	0.08	0.34	0.00	0.01	1.23E-06	5.37E-06	0.01	0.06
Totals	1.85	2.28	1.66	2.28	21.36	22.44	52.23	30.21	0.12	0.23	0.000035	0.000153	2.28	2.49

Note:

**For Boilers #1 and #2, only one can operate at any given time. Therefore, for total emissions, only one of the boilers (Boiler #1 or Boiler #2) emission will be added. Since the two boilers are identical, either of the boilers emissions will be used.

St Lukes Meridian Medical Center
Hazardous Air Pollutants Summary

TAPs/HAPs	CAS	Plant Generator (Gen 2)		Office Generator (Gen 1)		Facility Wide Total		EL (lb/hr)	Exceeds EL	AAC (mg/m3)	AACC (ug/m3)	
		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)					
2-Methylnaphthalene	91-57-6					1.32E-06	0.00					
3-Methylchloranthrene	56-49-5					9.91E-08	0.00	2.50E-06	Below			
7,12-Dimethylbenz(a)anthracene	57-97-6					8.81E-07	0.00					
Acenaphthene	83-32-9					9.91E-08	0.00					
Acenaphthylene	208-96-8					9.91E-08	0.00					
Acetaldehyde	75-07-0	4.95E-06	2.17E-05	1.97E-06	8.61E-06	6.91E-06	0.00	3.00E-03	Below		4.50E-01	
Acrolein	107-02-8	1.55E-06	6.78E-06	6.15E-07	2.69E-06	2.16E-06	0.00	0.017	Below	0.0125		
Anthracene	120-12-7					1.30E-07	0.00					
Benzene	71-43-2	1.52E-04	6.67E-04	6.05E-05	2.65E-04	3.29E-04	0.00	8.00E-04	Below		1.20E-01	
Benzo(a)pyrene	50-32-8	5.05E-08	2.21E-07	2.00E-08	8.78E-08	1.37E-07	0.00	2.00E-06	Below			
Dichlorobenzene	106-46-7					6.61E-05	0.00	30	Below	22.5		
Ethylbenzene	100-41-4					3.73E-08	0.00	29	Below	21.75		
Fluoranthene	206-44-0					1.18E-07	0.00					
Fluorene	86-73-7					1.10E-07	0.00					
Formaldehyde	50-00-0	1.55E-05	6.79E-05	6.15E-06	2.70E-05	4.13E-03	0.02	5.10E-04	Exceeds		7.70E-02	
Hexane	110-54-3					9.91E-02	0.43	12	Below	9		
Naphthalene	91-20-3	2.55E-05	1.12E-04	1.01E-05	4.44E-05	6.92E-05	0.00	9.10E-05	Below	2.5		
Phenanthrene	85-01-8					6.71E-07	0.00					
Pyrene	129-00-0					1.97E-07	0.00					
Toluene	108-88-3	5.52E-05	2.42E-04	2.19E-05	9.60E-05	2.64E-04	0.00	25	Below	18.75		
o-Xylene	1330-20-7	3.79E-05	1.66E-04	1.51E-05	6.59E-05	5.30E-05	0.00	29	Below	21.75		
PAH	NA	8.83E-07	3.87E-06	3.51E-07	1.54E-06	1.86E-06	0.00	9.10E-05	Below		1.40E-02	
HAPS Metals												
Arsenic	7440-38-2					2.73E-02	0.00	1.50E-06	Exceeds		2.30E-04	
Barium	7440-39-3					2.42E-04	0.00	3.30E-02	Below	0.025		
Beryllium	7440-41-7					6.61E-07	0.00	2.80E-05	Below		4.20E-03	
Cadmium	7440-43-9					6.06E-05	0.00	3.70E-06	Exceeds		5.60E-04	
Chromium	7440-47-3					7.71E-05	0.00	3.30E-02	Below	0.025		
Cobalt	7440-48-4					4.62E-06	0.00	3.30E-03	Below	0.0025		
Copper	7440-50-8					4.68E-05	0.00	6.70E-02	Below	0.05		
Manganese	7439-96-5					2.09E-05	0.00	6.70E-02	Below	0.05		
Mercury	7439-97-6					1.43E-05	0.00	0.001	Below			
Molybdenum	7439-98-7					6.06E-05	0.00	0.333	Below	0.25		
Nickel	7440-02-0					1.16E-04	0.00	2.70E-05	Exceeds		4.20E-03	
Selenium	7782-49-2					1.32E-06	0.00	1.30E-02	Below	0.01		
Vanadium	1314-62-1					1.82E-04	0.00	3.00E-03	Below	0.0025		
Zinc	7440-66-6					1.60E-03	0.01	6.67E-01	Below	0.5		
							0.47					

Note:

For Boilers #1 and #2, only one can operate at any given time. Therefore, for total emissions, only one of the boilers (Boiler #1 or Boiler #2) emission will be added. Since the two boilers are identical, either of the boilers emissions will be used.

St. Lukes Regional Medical Center - Meridian (Generator #2)

Generator Name	1879 Kw
Manufacturer	Cat
Engine Power Rating (kW)	1,879
Engine Power Rating (hp)	2,520
Fuel Type	Distillate #2
- maximum sulfur content (%)	0.0015
Maximum Firing Rate (gals/hr)*	122.87
(MMBtu/hr)	17.20
Maximum Hours of Operation	100
Annual Operation Limit (hrs/yr)	100
Annual Firing Rate (gals/yr)	12,287
Heat Value of Fuel (Btu/gal)	140,000

1879 kW boiler name plate rating (DEQ Inspected - January 5, 2017)

Assume: 1 hp = 7000 Btu/hr
Source: AP-42, Section 3.3, Footnote a to table 3.3-1

Increase from 80% load (100 57gph) to 100% load (122.87gph) (See CAT data sheet)

Assume: Uncontrolled PTE is equal to Controlled PTE

Pollutant	CAS No.	Uncontrolled Potential to Emit			Controlled Potential to Emit			
		Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Total Particulate Matter (PM) ¹		0.1	1.72	172	0.086	1.72	172	0.09
PM ₁₀ ²		0.0573	0.99	99	0.049	0.99	99	0.05
PM _{2.5} ²		0.0555	0.95	95	0.048	0.95	95	0.05
Nitrogen Oxides (NOx) ^{1,3}		1.9	32.68	3,268	1.63	32.68	3,268	1.63
NO ₂ (80% of NOx)			26.15	2,615	1.31	26.15	2,615	1.31
Sulfur Oxides ^{1,4}		0.0015	0.026	2.6	0.001	0.03	2.6	0.001
Carbon Monoxide (CO) ¹		0.85	14.62	1,462	0.73	14.62	1,462	0.73
TOC ^{1,5}		0.09	1.55	155	0.077	1.55	155	0.08

Toxics ⁶	CAS Number	Uncontrolled Potential to Emit			Controlled Potential to Emit			IDAPA /586 - EL	PTE Emission Rate vs. EL	
		Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)			Emission Rate (ton/yr)
Benzene	71-43-2	7.76E-04	1.52E-04	1.33E+00	6.67E-04	1.52E-04	1.33E+00	6.67E-04	8.00E-04	Below
Formaldehyde	50-00-0	7.89E-05	1.55E-05	1.36E-01	6.79E-05	1.55E-05	1.36E-01	6.79E-05	5.10E-04	Below
Naphthalene	91-20-3	1.30E-04	2.55E-05	2.24E-01	1.12E-04	2.55E-05	2.24E-01	1.12E-04	9.10E-05	Below
Toluene	108-88-3	2.81E-04	5.52E-05	4.83E-01	2.42E-04	5.52E-05	4.83E-01	2.42E-04	2.50E+01	Below
o-Xylenes	1330-20-7	1.93E-04	3.79E-05	3.32E-01	1.66E-04	3.79E-05	3.32E-01	1.66E-04	2.90E+01	Below
Acetaldehyde	75-07-0	2.52E-05	4.95E-06	4.33E-02	2.17E-05	4.95E-06	4.33E-02	2.17E-05	3.00E-03	Below
Acrolein	107-02-8	7.88E-06	1.55E-06	1.36E-02	6.78E-06	1.55E-06	1.36E-02	6.78E-06	1.70E-02	Below
Benz(a)anthracene	56-55-3	6.22E-07	1.22E-07	1.07E-03	5.35E-07	1.22E-07	1.07E-03	5.35E-07		
Benzo(b)fluoranthene	205-99-2	1.11E-06	2.18E-07	1.91E-03	9.55E-07	2.18E-07	1.91E-03	9.55E-07		
Benzo(k)fluoranthene	205-82-3	2.18E-07	4.28E-08	3.75E-04	1.87E-07	4.28E-08	3.75E-04	1.87E-07		
Chrysene	218-01-9	1.53E-06	3.00E-07	2.63E-03	1.32E-06	3.00E-07	2.63E-03	1.32E-06		
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	6.79E-08	5.95E-04	2.98E-07	6.79E-08	5.95E-04	2.98E-07		
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	8.13E-08	7.12E-04	3.56E-07	8.13E-08	7.12E-04	3.56E-07		
Benzo(a)pyrene	50-32-8	2.57E-07	5.05E-08	4.42E-04	2.21E-07	5.05E-08	4.42E-04	2.21E-07		
Total PAH ⁷			8.83E-07	7.74E-03	3.87E-06	8.83E-07	7.74E-03	3.87E-06	9.10E-05	Below

¹ PM, NOx, CO, SOx, and TOC emission factors are derived from EPA AP-42, Table 3.4-1

² PM₁₀ and PM_{2.5} emission factors are derived from EPA AP-42, Table 3.4-2

³ Plant generator is documented in the August 17, 2001 Technical Memorandum prepared by IDEQ as using a controlled NOx emission rate due to a 4-degree engine retard

⁴ SO₂ emission factor multiplied by percent sulfur content of fuel (EPA AP-42 Table 3.4-1) EF = 8.09E-03 x 0.0015 = 1.21E-05

⁵ TOC emission factor is used to estimate VOCs

⁶ Toxic emission factors are derived from EPA AP-41, Table 3.4-3 and Table 3.4-4

⁷ Polynuclear aromatic hydrocarbons is the sum of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene

Note: Toxic emission factors derived from EPA AP-42 Tables 3.4-3 and 3.4-4

GHG Emissions			
Pollutant ⁸	Emissions (metric tons)	GWP	CO2e
CO ₂	125.41	1	125.407
CH ₄	0.0051	25	0.127
N ₂ O	0.00102	298	0.303
Total	125.41		125.84

For CO₂, Use Equation C-1 from 40 CFR 98 Subpart C

CO₂ = 1x10⁻³ x Fuel x HHV x EF

CO₂ = Annual CO₂ mass emissions in Metric Tons = 125.41

Fuel = Volume of fuel used (gallons) = 12,287

HHV = High Heat Value from Table C-1 (mmBTU/short ton) = 0.138

EF_{CO2} = Emission factor (kg/mmBTU) = 73.98

For CH₄ and N₂O, Use Equation C-8 from 40 CFR 98 Subpart C

CH₄, N₂O = 1x10⁻³ x Fuel x HHV x EF

CH₄ = Annual CH₄ mass emissions in Metric Tons = 0.0051

N₂O = Annual N₂O mass emissions in Metric Tons = 0.00102

Fuel = Volume of fuel used (gallons) = 12,287

HHV = High Heat Value from Table C-1 (mmBTU/short ton) = 0.138

EF_{CH4} = Emission factor (kg/mmBTU) = 3.00E-03

EF_{N2O} = Emission factor (kg/mmBTU) = 8.00E-04

Notes

⁸ 40 CFR 98.32 - For stationary fuel combustion sources only, report CO₂, CH₄, and N₂O

GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1

St. Lukes Regional Medical Center - Meridian (Generator #1)

Generator Name	918 kW
Manufacturer	Detroit Diesel
Engine Power Rating (kW)	918
Engine Power Rating (hp)	1,231
Fuel Type	Distillate #2
Maximum sulfur content	0.0015
Maximum Firing Rate (gals/hr)	48.8
Maximum Heat Input Rating (MMBtu/hr)	6.83
Maximum Hours of Operation	100
Annual Operation Limit (hrs/yr)	100
Annual Firing Rate (gals/yr)	4,880
Heat Value of Fuel (Btu/gal)	140,000

Assume: 1 hp = 7000 Btu/hr
Source: AP-42, Section 3.3, Footnote a to table 3.3-1

increase from 75% load (36.3 gph) to 100% load (48.8 gph)

Assume: Uncontrolled PTE is equal to Controlled PTE

Pollutant	CAS No.	Manufacturer Emission Rate at 75% load ¹ (g/hr)	Emission Factor ² (lb/MMBtu)	Uncontrolled Potential to Emit			Controlled Potential to Emit		
				Emission Rate ³ (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Total Particulate Matter (PM) ⁴		40.60	0.1	0.09	9	0.004	0.09	9	0.004
PM ₁₀ ⁴		40.60	0.0573	0.09	9	0.004	0.09	9	0.004
PM _{2.5} ⁴		40.60	0.0555	0.09	9	0.004	0.09	9	0.004
Nitrogen Oxides (NOx)		5360	3.2	11.82	1182	0.59	11.82	1,182	0.59
NO ₂ (80% of NOx)				9.45	945	0.47	9.45	945	0.47
Sulfur Oxides		1575.00	0.0015	0.0104	1.04	0.00052	0.010	1	0.001
Carbon Monoxide (CO)		816	0.85	1.80	180	0.09	1.80	180	0.09
TOC ⁵		82.0	0.09	0.18	18	0.009	0.18	18	0.009

Toxics ⁶	CAS Number	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Uncontrolled Potential to Emit			Controlled Potential to Emit			IDAPA 58.01.01.68 5/586 - EL (lb/hr)	PTE Emission Rate vs. EL
				Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)			
Benzene	71-43-2	7.76E-04	6.05E-05	5.30E-01	2.65E-04	6.05E-05	5.30E-01	2.65E-04	8.00E-04	Below	
Formaldehyde	50-00-0	7.89E-05	6.15E-06	5.39E-02	2.70E-05	6.15E-06	5.39E-02	2.70E-05	5.10E-04	Below	
Naphthalene	91-20-3	1.30E-04	1.01E-05	8.86E-02	4.44E-05	1.01E-05	8.86E-02	4.44E-05	9.10E-05	Below	
Toluene	108-88-3	2.81E-04	2.19E-05	1.92E-01	9.60E-05	2.19E-05	1.92E-01	9.60E-05	2.50E+01	Below	
p-Xylenes	1330-20-7	1.93E-04	1.51E-05	1.32E-01	6.59E-05	1.51E-05	1.32E-01	6.59E-05	2.90E+01	Below	
Acetaldehyde	75-07-0	2.52E-05	1.97E-06	1.72E-02	8.61E-06	1.97E-06	1.72E-02	8.61E-06	3.00E-03	Below	
Acrolein	107-02-8	7.88E-06	6.15E-07	5.38E-03	2.69E-06	6.15E-07	5.38E-03	2.69E-06	1.70E-02	Below	
Benz(a)anthracene	56-55-3	6.22E-07	4.85E-08	4.25E-04	2.12E-07	4.85E-08	4.25E-04	2.12E-07			
Benzo(b)fluoranthene	205-99-2	1.11E-06	8.66E-08	7.58E-04	3.79E-07	8.66E-08	7.58E-04	3.79E-07			
Benzo(k)fluoranthene	205-82-3	2.18E-07	1.70E-08	1.49E-04	7.45E-08	1.70E-08	1.49E-04	7.45E-08			
Chrysene	218-01-9	1.53E-06	1.19E-07	1.05E-03	5.23E-07	1.19E-07	1.05E-03	5.23E-07			
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	2.70E-08	2.36E-04	1.18E-07	2.70E-08	2.36E-04	1.18E-07			
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	3.23E-08	2.83E-04	1.41E-07	3.23E-08	2.83E-04	1.41E-07			
Benzo(a)pyrene	50-32-8	2.57E-07	2.00E-08	1.76E-04	8.78E-08	2.00E-08	1.76E-04	8.78E-08			
Total PAH ⁷			3.51E-07	3.07E-03	1.54E-06	3.51E-07	3.07E-03	1.54E-06	9.10E-05	Below	

¹ Criteria pollutant emission factors are from manufacturer at 75% load (see manufacturer data sheet)
² Criteria pollutant emission factors are derived from EPA AP-42, Table 3.4-1 and Table 3.4-2
³ Used manufacturer emission rate at 75% load to calculate emissions for all criteria pollutants except sulfur oxides
⁴ Assumed PM₁₀ and PM_{2.5} emission rate equal PM emission rate at 75% load
⁵ Assumed hydro carbon (HC) emission rate in manufacturer data sheet at 75% load equals VOC emission rate
⁶ Toxic emission factors are derived from EPA AP-41, Table 3.4-3 and Table 3.4-4.
⁷ Polynuclear aromatic hydrocarbons is the sum of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene

Note: Toxic emission factors derived from EPA AP-42 Tables 3.4-3 and 3.4-4.

GHG Emissions			
Compound ⁷	Emissions (metric tons)	GWP	CO ₂ e
CO ₂	49.81	1	49.808
CH ₄	0.0020	25	0.051
N ₂ O	0.00040	298	0.120
Total	49.81		49.98

For CO₂, Use Equation C-1 from 40 CFR 98 Subpart C:
CO₂ = 1x10⁻³ x Fuel x HHV x EF
CO₂ = Annual CO₂ mass emissions in Metric Tons = 49.81
Fuel = Volume of fuel used (gallons) = 4,880
HHV = High Heat Value from Table C-1 (mmBTU/short ton) = 0.138
EF_{CO2} = Emission factor (kg/mmBTU) = 73.96

For CH₄ and N₂O, Use Equation C-8 from 40 CFR 98 Subpart C:
CH₄, N₂O = 1x10⁻³ x Fuel x HHV x EF
CH₄ = Annual CH₄ mass emissions in Metric Tons = 0.0020
N₂O = Annual N₂O mass emissions in Metric Tons = 0.00040
Fuel = Volume of fuel used (gallons) = 4,880
HHV = High Heat Value from Table C-1 (mmBTU/short ton) = 0.138
EF_{CH4} = Emission factor (kg/mmBTU) = 3.00E-03
EF_{N2O} = Emission factor (kg/mmBTU) = 6.00E-04

Notes
⁷ 40 CFR 98.32 - For stationary fuel combustion sources only, report CO₂, CH₄, and N₂O
GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM DRAFT

DATE: April 2, 2018

TO: Rakael Pope, Permit Writer, Air Program

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

PROJECT: P-2012.0057 PROJ 61991, Modification of an existing Permit to Construct for St. Luke's Meridian Medical Center, located in Meridian, Idaho

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

St. Luke's Health Services (SLHS) was issued a modification to their Permit to Construct (PTC), P-2012.0057 PROJ 61888, in 2017 to address changes in operating requirements of emergency generator engines and corrections to boiler capacities. Their permit application was supported by facility-wide air impact analyses, performed by their consultant, CH2M Hill, Inc (CH2M). Attachment A of this Memorandum.

The emergency generator engine operations (for non-emergency operation) were constrained by the existing permit to 4 hour/day and 100 hour/year. The Office Generator (GEN01) is also limited to operations at 75 percent load (36.3 gallon/hour fuel use) during testing and the Plant Generator (GEN02) was limited to 80 percent load (100.6 gallon/hour fuel use). The 24-hour air impact analysis for PM₁₀ and PM_{2.5} conservatively assumed that each engine was tested each day of the year. This approach is very conservative given the probabilistic nature of those standards. Design value 24-hour PM_{2.5} impacts were modeled at 34.7 µg/m³ (99 percent of the 35 µg/m³ standard), with a 5.72 µg/m³ source impact and a 34.7 µg/m³ background. The annual PM_{2.5} impact assessment was not as conservative as the 24-hour assessment. Emissions were based on an allowable operational rate of 100 hour/year, and emissions were modeled by evenly distributing emissions over 8,760 hour/year.

SLHS now requests that the generator engines be allowed to operate up to 5 hour/day when tested and be allowed to operate at 100 percent load. This change is only important for PM₁₀ and PM_{2.5} impact analyses. Short-term CO emissions are affected, but maximum modeled design value impacts, when combined with background, are less than 30 percent of the NAAQS. The magnitude of proposed changes in allowable operational rates and hours are not enough to potentially cause a NAAQS violation. Short-term NO_x emissions from the testing of emergency engines are affected by the change, but 1-hour NO_x emissions from emergency generators can be excluded from air impact analyses as per DEQ policy. Although annual NO_x emissions will be affected by the increase in allowable load, the magnitude of the increase cannot cause a violation of the NAAQS since the previous analysis resulted a design value annual NO₂ impact of 51 percent of the NAAQS.

DEQ's initial estimate was that the existing PM₁₀ and PM_{2.5} analyses are still likely to overestimate impacts, even with increased allowable hours of testing at increased load. DEQ performed a sensitivity analysis to better evaluate NAAQS compliance certainty for the facility with the requested changes in engine testing operations.

DEQ used modeling analyses from the most recent SLHS permitting action as a base for evaluating impacts with the proposed changes. The following describes DEQ's approach:

1. DEQ used scenario 2 of the submitted analyses. This scenario assumes that the Hurst Dual Fuel Boiler 2 (BOI02) is the main boiler in operation, and the Hurst Dual Fuel Boiler 1 (BOI01) is the backup boiler and the boiler that is periodically tested for using diesel fuel. The alternate scenario assumes Boiler 1 is the main boiler in operation and Boiler 2 is the backup. Since the two boiler stacks are located side-by-side, there is very little difference between the two scenarios.
2. DEQ adjusted the base elevation of the Central Plant, Generator 2, and both Hurst Dual Fuel Boilers. Base elevations of the building and sources housed in that building were 808.92 meters while nearby receptors had a base elevation 812.7 meters. DEQ changed the base elevations of the building and sources to 812.7 meters to account for what appeared as a potential error in elevation evaluation.
3. Hourly emissions from GEN01 and GEN02 were adjusted to reflect 100 percent load. This was done by multiplying the hourly emissions rate by a ratio of operational loads (100/75 for GEN01 and 100/80 for GEN02). The resulting hourly PM_{2.5} emissions are 0.138 lb/hour for GEN01 and 0.977 lb/hour for GEN02.
4. GEN01 and GEN02 emissions were modeled by using an external emissions file with 5 hours of emissions randomly assigned to a day each month. Since SLHS indicated that night-time testing was preferred, emissions were assigned to hours ending 24 through hour ending 4.
5. The model option MAXDCONT was used to evaluate the contribution of emissions from engine testing on design value impacts and subsequent descending concentration ranks.
6. DEQ used meteorological data collected from Boise Airport for 2012 through 2016. The data were processed using the U* adjustment to more accurately simulate low winds. The previous analyses used data for 2011 through 2015, also with the U* adjustment.

Model results showed a 24-hour PM_{2.5} design value (highest 8th high modeled value) of 5.11 µg/m³, which is less than the design value associated with the impact analyses of the previous analysis. The contribution of engine testing emissions to this value was only 0.036 µg/m³. For all design values above 2 µg/m³ (at surrounding receptors), the impacts of engine testing were all below 1.4 µg/m³. Of all facility-wide 24-hour PM_{2.5} impacts above 3.0 µg/m³, the maximum contribution from engines was less than 0.8 µg/m³.

The contribution of engines to elevated 24-hour averaged ambient concentrations is likely even less than that shown by using a 24-hour PM_{2.5} background value of 29 µg/m³, which is the regulatory design value of the 3-year average of the upper 98th percentile of 24-hour averaged concentrations (equal to the 8th highest value for 365 day/year). Background values typically drop off sharply with decreasing rank from the 98th percentile design value. Since engines are only tested on a schedule of one day per month, it is highly unlikely that wind directions and poor dispersion conditions that result in higher modeled impacts from engine testing would coincide with periods of high background concentrations.

Annual allowable hours of operation are not changing from the 100 hours listed in the previous permit application. Emissions will only increase because of the increased allowable load rate. The previous annual PM_{2.5} analysis indicated a maximum annual impact of 1.44 µg/m³. If facility-wide impacts increase proportionately to the increased load used for engine testing, then facility-wide impacts would increase to 1.92 µg/m³. When combined with the 10 µg/m³ background value, the total ambient concentration is 11.9 µg/m³ (compared to the 12 µg/m³ NAAQS). This approach is conservative because the engines are only a fraction of the PM_{2.5} emissions from the SLHS facility.

In summary, increasing hours of engine testing from 4 hours on 1 day each month to 5 hours on 1 day each month, and increasing engine load during tests up to 100 percent, will not measurably affect the conclusion of the air impact analyses used for modified PTC, P-2012.0057 Project 61888, issued on August 25th, 2017. DEQ contends that the conservative analyses performed in support of the issued permit modification, in combination with sensitivity analyses recently conducted by DEQ, satisfactorily demonstrates that modified operations will not cause or significantly contribute to a violation of NAAQS. This conclusion is based on the following:

1. The previous analysis accounted for emissions from the testing of engines in a very conservative manner. The model assumed emissions would occur every day for 4 hours, and those emissions were evenly distributed over 24 hours. Although smearing 4 hours of emissions over a 24-hour period is not conservative, assuming emissions occur every day rather than 1 day each month will tend to greatly overestimate impacts for probabilistic standards.
2. A more refined analysis, using the proposed changes in engine testing operations, resulted in projected impacts that are less than those estimated from the more-conservative analysis used for the previous permitting project.

Based on this assessment, no additional air impact analyses are needed to support the proposed changes in engine testing.

Attachment A

Modeling Review Memorandum for Previous Permitting Project

P-2012.0057 PROJ 61888

MEMORANDUM

DATE: August 1, 2017
TO: Rakael Pope, Permit Writer, Air Program
FROM: Darrin Mehr, Analyst, Air Program
PROJECT: P-2012.0057 PROJ 61888 – Permit to Construct (PTC) Application for St. Luke’s Meridian Medical Center (SLMMC) for Changes to Emergency Generator Engine Operating Requirements and Boiler Capacity Corrections, in Meridian, Idaho
SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

Contents

Acronyms, Units, and Chemical Nomenclature..... 3

1.0 Summary..... 5

 1.1 General Project Summary 5

 1.2 Summary of Submittals and Actions 7

2.0 Background Information 7

 2.1 Permit Requirements for Permits to Construct 7

 2.2 Project Location and Area Classification 8

 2.3 Modeling Applicability for Criteria Air Exemption 8

 2.3.1 Below Regulatory Concern and DEQ Modeling Guideline Level I and II Thresholds 8

 2.3.2 Ozone Modeling Applicability..... 9

 2.3.3 Secondary Particulate Formation Modeling Applicability 10

 2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses..... 10

 2.5 Toxic Air Pollutant Analyses 11

3.0 Analytical Methods and Data..... 12

 3.1 Modeling Methodology..... 12

 3.1.1 Overview of Analyses..... 12

 3.1.2 Modeling Protocol 13

 3.1.3 Model Selection 13

3.2 Background Concentrations.....	14
3.3 Meteorological Data	16
3.4 Terrain Effects on Modeled Impacts.....	17
3.5 Building Downwash Effects on Modeled Impacts	17
3.6 Facility Layout	18
3.7 Ambient Air Boundary	19
3.8 Receptor Network.....	19
3.9 Emission Rates	20
3.9.1 Criteria Pollutant Emission Rates	21
3.9.2 Toxic Air Pollutant Emission Rates	22
3.10 Emission Release Parameters	23
4.0 Results for Air Impact Analyses	26
4.1 Results for Significant Impact Analyses.....	26
4.2 Results for Cumulative Impact Analyses	27
4.3 Results for Toxic Air Pollutant Impact Analyses	28
5.0 Conclusions	28
References	29

Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a Non-Carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
ACFM	Actual cubic feet per minute
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
ARM	Ambient Ratio Method
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
Btu/hr	British Thermal Units per hour
CFR	Code of Federal Regulations
CH2M	CH2M (St. Luke's permitting and modeling consultant)
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
fps	Feet per second
GEP	Good Engineering Practice
hr	Hours
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
m	Meters
m/s	Meters per second
MMBtu	Million British Thermal Units
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NO	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
NEI	National Emissions Inventory
NWS	National Weather Service
O ₃	Ozone
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	Parts Per Billion
PRIME	Plume Rise Model Enhancement
PTC	Permit to Construct
PTE	Potential to Emit
SIL	Significant Impact Level
SLHS	St. Luke's Health Services
SLMMC	St. Luke's Meridian Medical Center

SO ₂	Sulfur Dioxide
TAP	Toxic Air Pollutant
tons/year	Ton(s) per year
T/yr	Tons per year
ULSD	Ultra Low Sulfur Diesel
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VCU	Vapor Control Unit
VOCs	Volatile Organic Compounds
°F	Degrees Fahrenheit
µg/m ³	Micrograms per cubic meter of air

1.0 Summary

1.1 General Project Summary

On May 11, 2017, St. Luke's Health Services (SLHS) submitted an application for Permit to Construct (PTC) modification to incorporate changes to the permitted heat input capacity of two existing boilers and requirements for testing and maintenance operations of emergency generator engines at the St. Luke's Meridian Medical Center (SLMMC) facility located at the corner of East St. Luke's Road and South Eagle Road in Meridian, Idaho.

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). CH2M, SLSH's permitting and modeling consultant, submitted analyses and applicable information and data to enable DEQ to evaluate potential impacts to ambient air.

CH2M performed project-specific air quality impact analyses to demonstrate compliance with air quality standards for the proposed project. The project consisted of a PTC modification for the following:

- Central Plant Hurst Boiler 1 and Hurst Boiler 2 have increased heat input capacity reflecting 15 MMBtu/hr heat input while fired primarily on natural gas and on distillate fuel oil #2 for backup fuel. The stack release heights for each of these boilers will be increased from the existing 20 feet to 25 feet above grade.
- Emergency electrical generator engine #1 (main building) and emergency electrical generator engine #2 (central plant building) operating requirements created to comply with the 1-hour NO₂ NAAQS will be removed from the PTC to reflect DEQ's current policy⁵ on 1-hour NO₂ NAAQS modeling for emergency electrical engines.
- Two medical office buildings were purchased by SLHS since the issuance of PTC P-2012.0057 Project 61323, on May 19, 2015. The Portico East Building and the Meadow Lake Building (also referred to as the "Touchmark" Building in some documentation).

CH2M performed project-specific air quality impact analyses to demonstrate compliance for facility-wide allowable emissions with air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the pollutant dispersion modeling analyses used to demonstrate that the estimated emissions associated with operation of the facility as modified will not cause or significantly contribute to a violation of the applicable air quality standards. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. This modeling review also did not evaluate the accuracy of emissions estimates. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the DEQ Statement of Basis.

The submitted air quality impact analyses: 1) utilized appropriate methods and models according to established DEQ/EPA rules, policies, guidance, and procedures; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the facility as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from applicable emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air

locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project do not result in increased emissions and modeling was not required to demonstrate compliance with any TAPs increments. Table 1 presents key assumptions and results to be considered in the development of the permit.

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
<p>Hurst Boilers 1 and 2 Heat Input Each of these boilers was evaluated using a heat input capacity of 15 MMBtu/hr heat input for both natural gas and ultra-low sulfur diesel (ULSD) distillate fuel oil.</p>	<p>These heat input ratings represent each emissions unit's verified manufacturer heat input capacity in place of the 11.7 MMBtu/hr used in previous modeling demonstrations.</p>
<p>Hurst Boiler 1 and Boiler 2 Operations</p> <ul style="list-style-type: none"> • Boiler 1 and Boiler 2 were modeled at rated capacity on ultra-low sulfur diesel ULSD for 4 consecutive hours every other month between the hours of 7 am and 6 pm. This represented 24 hours of operation during the year. During other times the boilers will operate exclusively on natural gas. • Boilers 1 and 2 may not operate concurrently when combusting fuel oil, except where one boiler is operating on natural gas and the other boiler is being operated on ULSD fuel oil for testing purposes. 	<p>Assumptions used in the modeling demonstration that limit operations of emissions units are critical to assure compliance with the 1-hour NO₂ and 24-hour PM_{2.5} NAAQS.</p> <p>Night-time operations, when plume dispersion characteristics are typically much worse than daytime conditions, were not applied to periods of distillate fuel oil combustion in Boilers 1 and 2. NAAQS compliance is not assured if night-time operations are not prohibited.</p>
<p>Hurst Boilers 1 and 2 Stack Release Heights An increased stack height was needed to enable compliance with the 1-hour NO₂ NAAQS.</p> <p>The submitted application proposed increasing Boiler 1 and 2 stack release heights from 20 feet to 25 feet above grade.</p>	<p>Compliance with NAAQS was demonstrated using stack release heights of 25 feet above grade. NAAQS compliance is not demonstrated for a shorter stack height.</p>
<p>Emergency Generator Engine Operating Hours and Constraints (GEN01, GEN02, and GEN03) GEN01 and GEN02: each engine may operate up to 4 hours per day and 100 hours per year.</p> <p>GEN03: this engine may operate up to 24 hours per day and 100 hours per year at full load capacity. Concurrent operation of the emergency generator engines for testing and maintenance was supported by the submitted impact analyses.</p>	<p>The analyses reflected a daily limit of any combination of up to four hours in total during each day for GEN01 and GEN02, while GEN03 was modeled continuously for 24 hours per day so no daily restrictions apply, and all three may operate concurrently at any hour of the day and may operate on any day of the year.</p> <p>Annual operations for all three emergency generator sets were limited to 100 hours per year.</p>
<p>Emergency Generator Engine 2 (GEN02) Exclusion Zone A temporary "exclusion zone" to establish an area where public access is precluded during operation of the Central Plant GEN02 is not needed.</p>	<p>A permit condition requiring establishment of a temporary exclusion zone during GEN02 testing and maintenance operation may be removed from the existing permit. This requirement was established due to the ambient impact contribution of GEN02 to the facility-wide 1-hour NO₂ NAAQS. Emergency generators are now excluded from the 1-hour NO₂ ambient air impact analyses during these operations.</p>
<p>East Portico and Meadow Lake Medical Office Building Emissions Units Two of three natural gas-fired boilers at the East Portico building were modeled as continuously operating (BOI12, BOI13, or BOI14).</p> <p>The Meadow Lake (or Touchmark) Building has two natural gas-fired boiler (BOI15 and BOI16), three natural gas-fired hot water heaters (HWH01, HWH02, HWH03), and one natural gas-fired emergency electrical generator engine (GEN03).</p>	<p>These emissions units have been added to the SLMMC facility as potential emissions sources and were evaluated for compliance with the applicable ambient air quality standards.</p>
<p>Non-operational Units at the Meadow Lake Building (also referred to as the Touchmark Building)</p>	<p>These emissions units are listed in Appendix A of the permit application, but were not reflected in the ambient impact</p>

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES

Three small natural gas-fired emissions units are no longer operational per CH2M (July 13, 2015, email R. McCormick CH2M to R. Pope, DEQ): <ul style="list-style-type: none">• One 0.85 MMBtu/hr Venmar rooftop heater• Two 0.2 MMBtu/hr AO Smith rooftop heaters	analyses. Units were assumed to be appropriately left out of the analyses as currently inoperable and are assumed to be inoperable in the future with zero potential emissions.
--	---

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department, using DEQ/EPA established guidance, policies, and procedures, that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

1.2 Summary of Submittals and Actions

- February 2, 2017: Representatives for SLHS, CH2M, and DEQ participated in a project pre-application meeting.
- March 1, 2017: CH2M submitted a modeling protocol to DEQ, on behalf of SLHS, via email.
- March 27, 2017: DEQ issued a modeling protocol approval letter with comments.
- April 5, 2017: CH2M requested DEQ approval to use the ADJ_U* option using the corrected and current version of AERMET—Version 162116r—to process the project’s met dataset. CH2M processed the project’s 2011-2015 meteorological dataset rather than utilize a DEQ-developed dataset.
- April 21, 2017: CH2M submitted a clarification request to verify that DEQ agreed the revised external emission rate files for NO_x and PM_{2.5} emissions were appropriately set up.
- April 25, 2017: DEQ emailed CH2M that the external NO_x and PM_{2.5} emission rate files appeared correct and ready for use in the project’s modeling demonstration.
- May 11, 2017: DEQ received the application for the PTC modification.
- June 7, 2017: DEQ declared the application complete.

2.0 Background Information

2.1 Permit Requirements for Permits to Construct

PTCs are issued to authorize the construction of a new source or modification of an existing source or permit. Idaho Air Rules Section 203.02 requires that emissions from the new source or modification not cause or significantly contribute to a violation of an air quality standard, and Idaho Air Rules Section 203.03 requires that emissions from a new source or modification comply with applicable toxic air pollutant (TAP) increments of Idaho Air Rules Sections 585 and 586.

2.2 Project Location and Area Classification

The facility is located in Meridian, Idaho, in Ada County. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers (PM_{2.5}). The area is not classified as non-attainment for any criteria pollutants, but the area operates under a maintenance plan for CO and PM₁₀.

2.3 Modeling Applicability for Criteria Pollutants

2.3.1 Below Regulatory Concern and DEQ Modeling Guideline Level I and II Thresholds

Idaho Air Rules Section 203.02 state that a PTC cannot be issued unless the application demonstrates to the satisfaction of DEQ that the new source or modification will not cause or significantly contribute to a NAAQS violation. Atmospheric dispersion modeling is used to evaluate the potential impact of a proposed project to ambient air and demonstrate NAAQS compliance. However, if the emissions associated with a project are very small, project-specific modeling analyses may not be necessary.

If project-wide potential to emit (PTE) values for criteria pollutants would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more criteria pollutants exceeding the BRC threshold of 10% of emissions defined by Idaho Air Rules as significant, then an air impact analysis may not be required for those pollutants. DEQ's regulatory interpretation policy¹ of exemption provisions of Idaho Air Rules Section 221 is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant." The interpretation policy also states that the exemption criteria of uncontrolled PTE not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. This permitting project cannot qualify for a BRC exemption from Idaho Air Rules Section 203.02 because there are existing permit conditions that require changes; however, because facility-wide emissions of some criteria pollutants are below BRC levels, a NAAQS compliance demonstration is not required for those pollutants.

Site-specific air impact analyses may not be required for a project, even when the project cannot use the BRC exemption from the NAAQS demonstration requirements. If the emissions increases associated with a project are below modeling applicability thresholds established in the *Idaho Air Modeling Guideline* ("State of Idaho Guideline for Performing Air Quality Impact Analyses²," available at <http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf>), then a project-specific analysis is not required. Modeling applicability emissions thresholds were developed by DEQ based on modeling of a hypothetical source and were designed to reasonably ensure that impacts are below the applicable SIL. DEQ has established two threshold levels: Level 1 thresholds are unconditional thresholds, requiring no DEQ approval for use; Level 2 thresholds are conditional upon DEQ approval, which depends on evaluation of the project and the site, including emissions quantities, stack parameters, number of sources emissions are distributed amongst, distance between the sources and the ambient air boundary, and the presence of sensitive receptors near the ambient air boundary.

As shown below in Table 2, facility-wide emissions of PM₁₀, PM_{2.5}, NO_x, and CO exceeded the BRC thresholds, and a NAAQS compliance demonstration was required for these pollutants. NAAQS compliance demonstrations were not required for SO₂, lead, and ozone emissions.

Criteria Pollutant	Below Regulatory Concern Level (ton/year)	Applicable Facility-Wide Potential Emissions (ton/year)	NAAQS Compliance Exempted per BRC Policy?
PM ₁₀ ^a	1.5	2.55	No
PM _{2.5} ^b	1.0	2.54	No
Carbon Monoxide (CO)	10.0	25.35	No
Sulfur Dioxide (SO ₂)	4.0	0.25	Yes
Nitrogen Oxides (NO _x)	4.0	33.60	No
Lead (Pb)	0.06	1.71E-04	Yes
Ozone as VOC or NO _x	4.0	2.7 T/yr of VOCs	Yes

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

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

2.3.2 Ozone Modeling Applicability

Ozone (O₃) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O₃ is formed in the atmosphere through reactions of VOCs, NO_x, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O₃ impacts resulting from VOC and NO_x emissions from an industrial facility. O₃ concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O₃ has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

... footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."

Allowable emissions estimates of VOCs at 2.7 tons/year and NO_x at 33.6 tons/year are well below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O₃ impact analysis.

2.3.3 Secondary Particulate Formation Modeling Applicability

The impact from secondary particulate formation resulting from emissions of NO_x, SO₂, and/or VOCs was assumed by DEQ to be negligible on the basis of the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM₁₀ and PM_{2.5} impacts would be anticipated.

2.4 Significant and Cumulative NAAQS Impact Analyses

If maximum modeled pollutant impacts to ambient air from emissions sources associated with a new facility or the emissions increase associated with a modification exceed the SILs of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis may also be required for permit revisions driven by compliance/enforcement actions, any correction of emissions limits or other operational parameters that may affect pollutant impacts to ambient air, or other cases where DEQ believes NAAQS may be threatened by the emissions associated with the facility or proposed project.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts, according to established DEQ/EPA guidance, policies, and procedures, from applicable facility-wide emissions and emissions from any nearby co-contributing sources. A DEQ-approved background concentration value is then added to the modeled result that is appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 3. Table 3 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis.

If the cumulative NAAQS impact analysis shows a violation of the standard, the permit cannot be issued if the proposed project or facility has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. The facility or project does not have a significant contribution to a violation if impacts are below the SIL at all specific receptors showing violations during the time periods when modeled violations occurred.

Compliance with Idaho Air Rules Section 203.02 is demonstrated if: a) specific applicable criteria pollutant emissions increases are at a level defined as Below Regulatory Concern (BRC), using the criteria established by DEQ regulatory interpretation¹; or b) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling applicable emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

Table 3. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Impact Levels ^a ($\mu\text{g}/\text{m}^3$) ^b	Regulatory Limit ^c ($\mu\text{g}/\text{m}^3$)	Modeled Design Value Used ^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.3	12 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest ⁿ
	8-hour	500	10,000 ^m	Maximum 2 nd highest ⁿ
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ^o (7.8 $\mu\text{g}/\text{m}^3$)	75 ppb ^p (196 $\mu\text{g}/\text{m}^3$)	Mean of maximum 4 th highest ^q
	3-hour	25	1,300 ^m	Maximum 2 nd highest ⁿ
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb (7.5 $\mu\text{g}/\text{m}^3$)	100 ppb ^s (188 $\mu\text{g}/\text{m}^3$)	Mean of maximum 8 th highest ^t
	Annual	1.0	100 ^r	Maximum 1 st highest ⁿ
Lead (Pb)	3-month ^u	NA	0.15 ^r	Maximum 1 st highest ⁿ
	Quarterly	NA	1.5 ^r	Maximum 1 st highest ⁿ
Ozone (O ₃)	8-hour	40 TPY VOC ^v	70 ppb ^w	Not typically modeled

- ^a Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- ^b Micrograms per cubic meter.
- ^c Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- ^d The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- ^e Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- ^f Not to be exceeded more than once per year on average over 3 years.
- ^g Concentration at any modeled receptor when using five years of meteorological data.
- ^h Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- ⁱ 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
- ^j 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
- ^k 3-year mean of annual concentration.
- ^l 5-year mean of annual averages at the modeled receptor.
- ^m Not to be exceeded more than once per year.
- ⁿ Concentration at any modeled receptor.
- ^o Interim SIL established by EPA policy memorandum.
- ^p 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
- ^q 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
- ^r Not to be exceeded in any calendar year.
- ^s 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
- ^t 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
- ^u 3-month rolling average.
- ^v An annual emissions rate of 40 ton/year of VOCs is considered significant for O₃.
- ^w Annual 4th highest daily maximum 8-hour concentration averaged over three years.

2.5 Toxic Air Pollutant Analyses

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

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

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

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

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

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion. TAPs modeling was not triggered for this project.

3.0 Analytical Methods and Data

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant's consultant, CH2M, to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

CH2M performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the facility, using established DEQ policies, guidance, and procedures. Results of the submitted analyses, in combination with DEQ's analyses, demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 4 provides a brief description of parameters used in the modeling analyses.

3.1.2 Modeling Protocol

A modeling protocol was submitted to DEQ on March 1, 2017. On March 27, 2017, DEQ issued a conditional modeling protocol approval letter to SLHS and CH2M. On April 21, 2017, CH2M requested that DEQ confirm that CH2M's external emission rate input file setup was correct. DEQ confirmed the setup was correct via email on April 25, 2017. Project-specific modeling was conducted using data and methods described in the modeling protocol and the *Idaho Air Modeling Guideline*².

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Meridian, Idaho	The area is an attainment or unclassified area for all criteria pollutants. Northern Ada County operates under limited PM ₁₀ and CO maintenance plans.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 16216r.
Meteorological Data	Boise	2011-2015—See Section 3.3 of this memorandum. Surface data from the Boise airport and upper air data from Boise, Idaho. Meteorological data were processed using the U* adjustment to more accurately simulate low winds.
Terrain	Considered	Receptor, building, and emissions source stack base elevations were determined using USGS 1 arc second National Elevation Dataset (NED) files based on the NAD83 datum. The facility is located within Zone 11.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility and numerous nearby structures.
Receptor Grid	Criteria Air Pollutants and Toxic Air Pollutants	
	Grid 1	10-meter spacing along the perimeter walls of the facility's buildings and outward in a 580-meter (x) by 510-meter (y) rectangular grid roughly centered on the facility's buildings.
	Grid 2	100-meter spacing in a 2,400-meter (x) by 2,300-meter (y) rectangular grid centered on Grid 1.
	Grid 3	500-meter spacing in a 10,500-meter (x) by 10,500-meter (y) rectangular grid centered on Grid 2.

3.1.3 Model Selection

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

CH2M used AERMOD version 16216r to evaluate pollutant impacts to ambient air from the facility, which is the current version of AERMOD.

NO₂ 1-hour impacts can be assessed using a tiered approach to account for NO/NO₂/O₃ chemistry. Tier 1 assumes full conversion of NO to NO₂. Tier 2 Ambient Ratio Method (ARM) assumes a 0.80 default ambient ratio of NO₂/NO_x. Tier 2 ARM2³ was recently developed and replaces the previous ARM. Recent EPA guidance⁴ on compliance methods for NO₂ states the following for ARM2:

“This method is based on an evaluation of the ratios of NO₂/NO_x from the EPA’s Air Quality System (AQS) record of ambient air quality data. The ARM2 development report (API, 2013) specifies that ARM2 was developed by binning all the AQS data into bins of 10 ppb increments for NO_x values less than 200 ppb and into bins of 20 ppb for NO_x in the range of 200-600 ppb. From each bin, the 98th percentile NO₂/NO_x ratio was determined and finally, a sixth-order polynomial regression was generated based on the 98th percentile ratios from each bin to obtain the ARM2 equation, which is used to compute a NO₂/NO_x ratio based on the total NO_x levels.”

Tier 3 methods account for more refined assessment of the NO to NO₂ conversion, using a supplemental modeling program with AERMOD to better account for NO/NO₂/O₃ atmospheric chemistry. Either the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) can be specified within the AERMOD input file for the Tier 3 approach. EPA guidance (Memorandum: from Tyler Fox,

Leader, Air Quality Modeling Group, C439-01, Office of Air Quality Planning and Standards, USEPA; to Regional Air Division Directors. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard*. March 01, 2011) has not indicated a preference for one option over the other (PVMRM vs OLM) for particular applications.

The Tier 2 ARM2 and Tier 3 PVMRM and OLM methods are now regulatory options following the publication of final changes to EPA's Guideline on Air Quality Models on January 17, 2017. CH2M used the Tier 2 ARM2 method with regulatory default minimum and maximum ARM values of 0.5 and 0.9, respectively.

The Beta algorithms for treatment of point sources with horizontal release orientation or equipped with a rain cap that impedes the vertical momentum of exhaust plumes were adopted as guideline techniques with the revisions to Appendix W (Guideline on Air Quality Models). The Appendix W final rule was signed by the Administrator on December 2016, and published in the January 17, 2017 in the Federal Register, with a delayed final effective date of May 22, 2017. This method eliminated momentum induced plume rise while still accounting for thermal buoyancy induced plume rise. CH2M applied the algorithms for capped stacks to several of the modeled stacks.

3.2 Background Concentrations

A background concentration tool was used to establish ambient background concentrations for this project. A beta version of the background concentration tool was developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) and provided through Washington State University (located at <http://lar.wsu.edu/nw-AIRQUEST/lookup.html>). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. The background concentration is added to the design value for each pollutant and averaging period. Tables 5 and 6 list the background concentrations approved by DEQ in the March 27, 2017 conditional modeling protocol approval letter.

Pollutant	Averaging Period	Background Concentration (µg/m³)^{a, b}
PM ₁₀ ^f	24-hour	88 ^c
PM _{2.5} ^g	24-hour	29
	Annual	10
Ozone ^d	Annualized value	66 ppb ^e
NO ₂ ^h	1-hour	86 (46 ppb)
	Annual	18.2 (9.7 ppb)
CO ⁱ	1-hour	2,383 (2,082 ppb)
	8-hour	1,407 (1,229 ppb)

a. Micrograms per cubic meter, except where noted otherwise.

b. Northwest AirQuest ambient background lookup tool, March 20, 2017 access date. See <http://lar.wsu.edu/nw-airquest/lookup.html>, except where noted otherwise.

c. Without extreme values.

d. Ozone for use in 1-hour nitrogen dioxide modeling using Tier 3 Ozone Limiting Method or Tier 3 Plume Volume Molar Ratio Method.

e. Parts per billion by volume.

f. Particulate matter with an aerodynamic diameter of 10 microns.

g. Particulate matter with an aerodynamic diameter of 2.5 microns.

h. Nitrogen dioxide.

i. Carbon monoxide.

CH2M used an alternative 1-hour NO₂ dataset developed by CH2M and approved by DEQ that was based on Meridian, Idaho, near-road monitoring data. This dataset has been approved for other permitting projects requiring 1-hour NO₂ NAAQS compliance demonstrations. The advantage of using this dataset over the single background value obtained from the NW AIRQUEST tool is that multiple values can be used to address seasonal and diurnal variations in background NO₂ concentrations. The DEQ monitor site and the SLMMC facility are separated by 1.5 miles, which indicates the data are highly representative for the SLMMC site.

The seasons are assigned the following months:

Winter: December, January, and February
 Spring: March, April, and May
 Summer: June, July, and August
 Fall: September, October, and November.

The final dataset of background concentrations used in the 1-hour NO₂ analysis for this project is listed in Table 6.

Hour of Day	1-hour NO ₂ , units of ppb ^b			
	Winter	Spring	Summer	Autumn
1 (12 am to 1 am)	30.6	26.3	23.7	24.3
2	28.6	21.8	18.5	21.6
3	26.7	20.6	17.5	21.0
4	25.8	23.9	21.3	22.3
5	26.9	26.2	24.2	22.1
6	28.2	27.2	27.3	25.3
7	29.1	31.8	30.0	28.4
8	29.8	32.4	26.0	30.3
9	31.1	27.1	23.7	26.5
10	26.9	22.2	20.0	24.3
11	25.9	18.5	19.7	21.5
12	24.6	16.6	15.5	17.9
13	20.0	15.7	14.3	17.1
14	18.0	16.6	13.6	16.3
15	20.9	15.7	16.0	18.0
16	22.5	15.7	16.6	21.0
17	23.7	17.1	17.7	23.3
18	28.0	18.4	17.4	28.6
19	32.6	24.3	20.6	34.6
20	35.1	32.5	30.9	41.4
21	34.4	40.1	41.4	39.6
22	33.7	39.2	40.0	34.6
23	32.4	35.3	35.7	31.5
24	32.0	31.5	31.1	26.5

^a Nitrogen dioxide.

^b Parts per billion.

3.3 Meteorological Data

DEQ provided CH2M with an AERMOD-ready meteorological dataset for use in the modeling analyses. The dataset was generated from monitored data collected from 2011-2015 at the Boise airport (FAA airport code KBOI) for surface and Automated Surface Observing System (ASOS) data and upper air data from the National Weather Service (NWS) Station site (site ID 726810-24131). Surface characteristics

were determined by DEQ staff using AERSURFACE version 13016. DEQ modeling staff evaluated annual moisture conditions for the AERSURFACE runs based on thirty years of Boise airport precipitation data. Conditions were determined to be “wet” for 2014 only. 2011-2013 and 2015 were determined to be “average” years for precipitation. Continuous snow cover at the Boise airport site was determined to not have existed during any period from 2011-2015. AERMINUTE version 15271 was used to process ASOS wind data for use in AERMET. AERMET Version 15181 was used to process surface and upper air data and to generate a model-ready meteorological data input file. DEQ determined these data were representative for the Meridian site and approved use of this dataset for the project.

Subsequent to the initial modeling protocol and DEQ approval, CH2M notified DEQ that they intended to reprocess the meteorological dataset using the “ADJ_U*” option with AERMET, while still using the other parameters of DEQ-processed dataset. The ADJ_U* option adjusts the surface friction velocity (u^*) to address AERMOD’s tendency to over predict from some sources under stable, low wind speed conditions. The method was approved as a regulatory guideline method in EPA’s final rulemaking for alterations to the 40 CFR 51, Appendix W-Guideline on Air Quality Models, published in the Federal Register on January 17, 2017. The submitted analyses were performed using the ADJ_U* option.

3.4 Terrain Effects

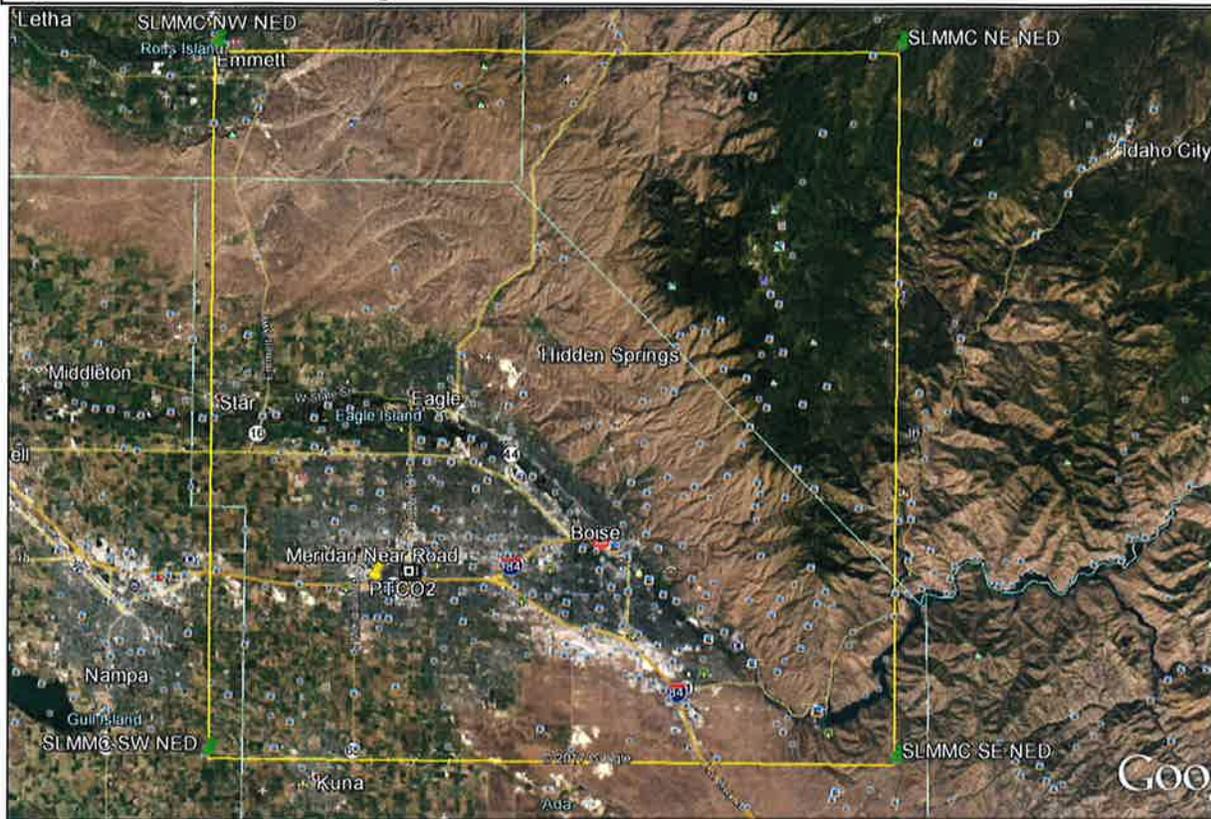
CH2M used a National Elevation Dataset (NED) file in “tif” format in the NAD83 datum, to calculate elevations of receptors. A 1 arc second file provided 30-meter resolution of elevation data. The terrain preprocessor AERMAP version 11103 was used to extract the elevations from the NED file and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain. Figure 1 shows the extent of the NED file coverage.

3.5 Building Downwash Effects on Modeled Impacts

Potential downwash effects on the emissions plume were accounted for in the model by using building dimensions and locations as described by CH2M. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and release parameters for input to AERMOD. Modeled structure base elevations and stack base elevations matched, thereby assuring that downwash is appropriately handled in the model. Base elevations of stacks were not determined using AERMAP. Building height values were described as being established by CH2M using Google earth Pro®.

DEQ noted that the Central Plant building (model identification CENTPLAN), Hurst Boilers 1 and 2 (BOI01, BOI02), and Central Plant Generator (GEN02) were modeled with an identical base elevation of 808.92 meters. The discrete receptors surrounding the Central Plant building were obtained from USGS terrain data using AERMAP Version 11103 and were greater than 812.6 meters in elevation. It was noted that the AERMAP output file listed the CENTPLAN base elevation as 812.69 meters, for a difference of approximately 12 feet compared to the modeled elevation. The relationship between stack release height above the structure roofline is preserved because stack base elevations are identical to the CENTPLAN building elevation. The modeled approach should provide conservative ambient impacts from the emissions units located in the CENTPLAN building and so it was not regarded as a deficiency. DEQ concluded that the building downwash was appropriately evaluated.

Figure 1. Terrain File Coverage



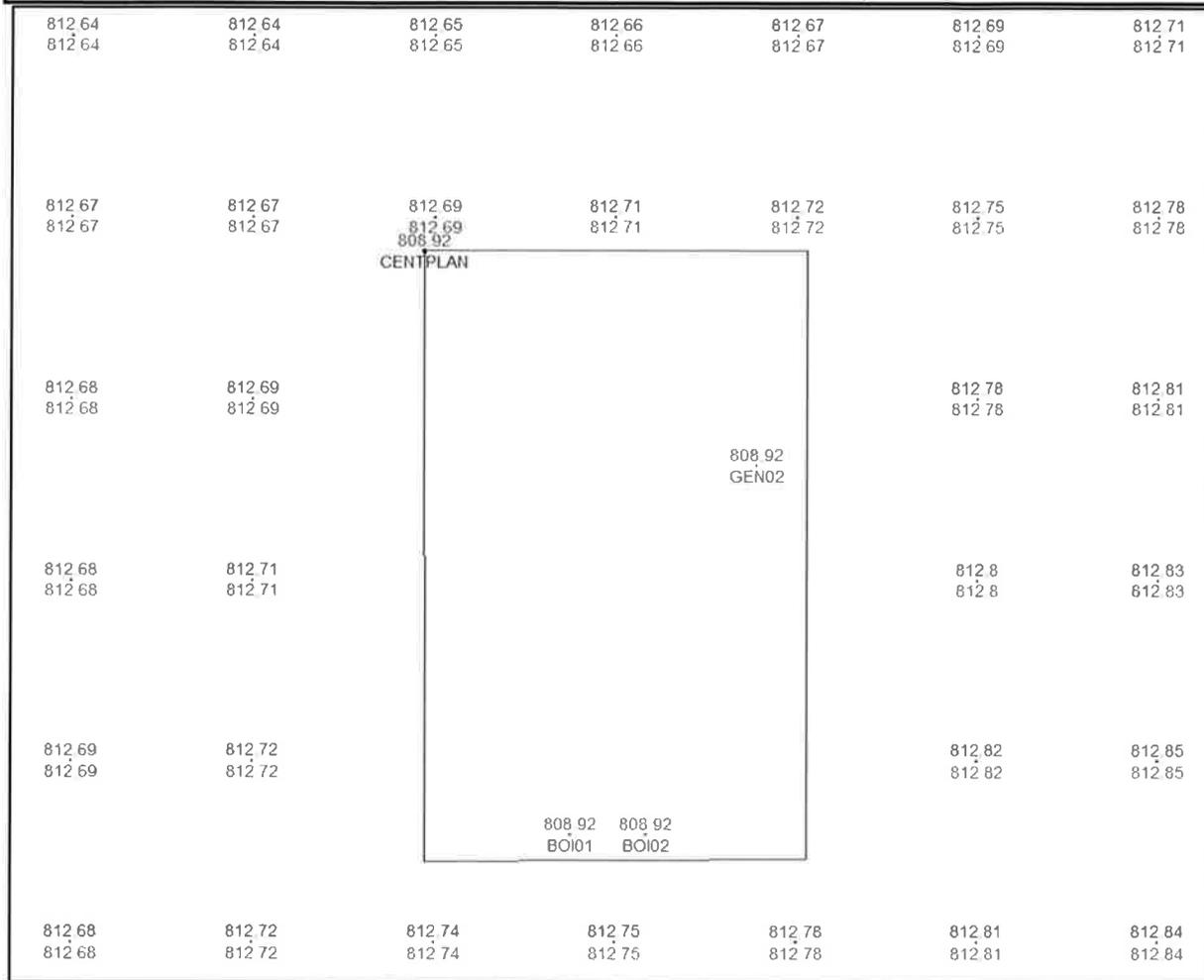
3.6 Facility Layout

Figure 2 of the submitted SLMMC project modeling report depicted the facility layout. DEQ exported the model setup to Google earth® and confirmed that the model setup of the facility's emission sources and structures were appropriately located in the modeling analyses. The recently-acquired East Portico and Meadow Lake buildings were also included, as were nearby buildings which were included to evaluate downwash effects on emission point exhaust plumes for sources within the East Portico and Meadow Lake buildings.

3.7 Ambient Air Boundary

The ambient air boundary used for this project was established immediately exterior to all buildings on the SLMMC campus, including the East Portico and Meadow Creek Medical Office Buildings. Figure 3 below shows that discrete receptors were placed along the perimeter of the structure and in a grid exterior to the buildings. DEQ review concluded that the ambient air boundary employed in the final air impact analyses precluded public access based on the methods described in the modeling report according to the criteria described in DEQ's *Modeling Guideline*². CH2M appropriately addressed air pollutant impacts to areas considered to be ambient air.

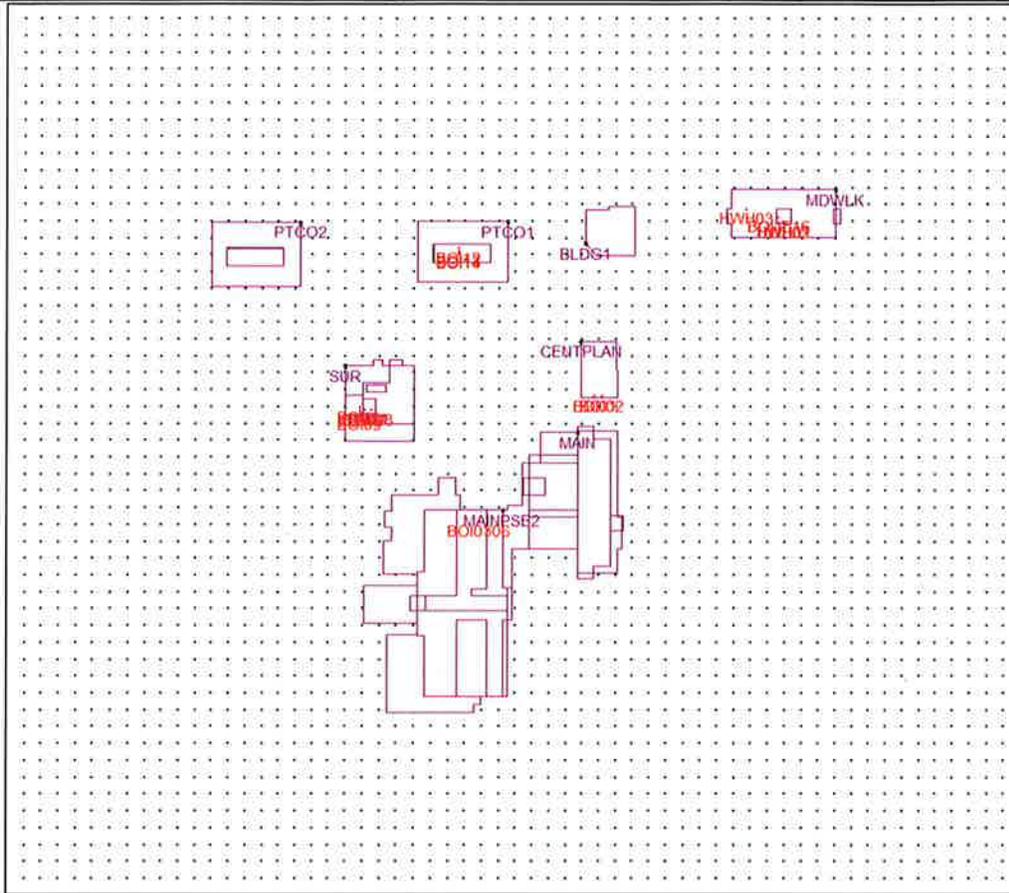
Figure 2. Base Elevations Central Plant Building Sources and Nearby Receptors



3.8 Receptor Network

Table 4 describes the receptor network used in the submitted modeling analyses. The receptor grids used in the model provided good resolution of the maximum design concentrations for the project and provided extensive coverage. The full receptor grid was used for NAAQS and TAPs ambient air impact analyses. DEQ determined that the receptor network was effective in reasonably assuring compliance with applicable air quality standards at all ambient air locations. The refined grid is shown in Figure 3. The complete extent of the receptor grid is depicted below in Figure 4.

Figure 3. Fine Resolution Receptor Grid With 10-meter Spacing

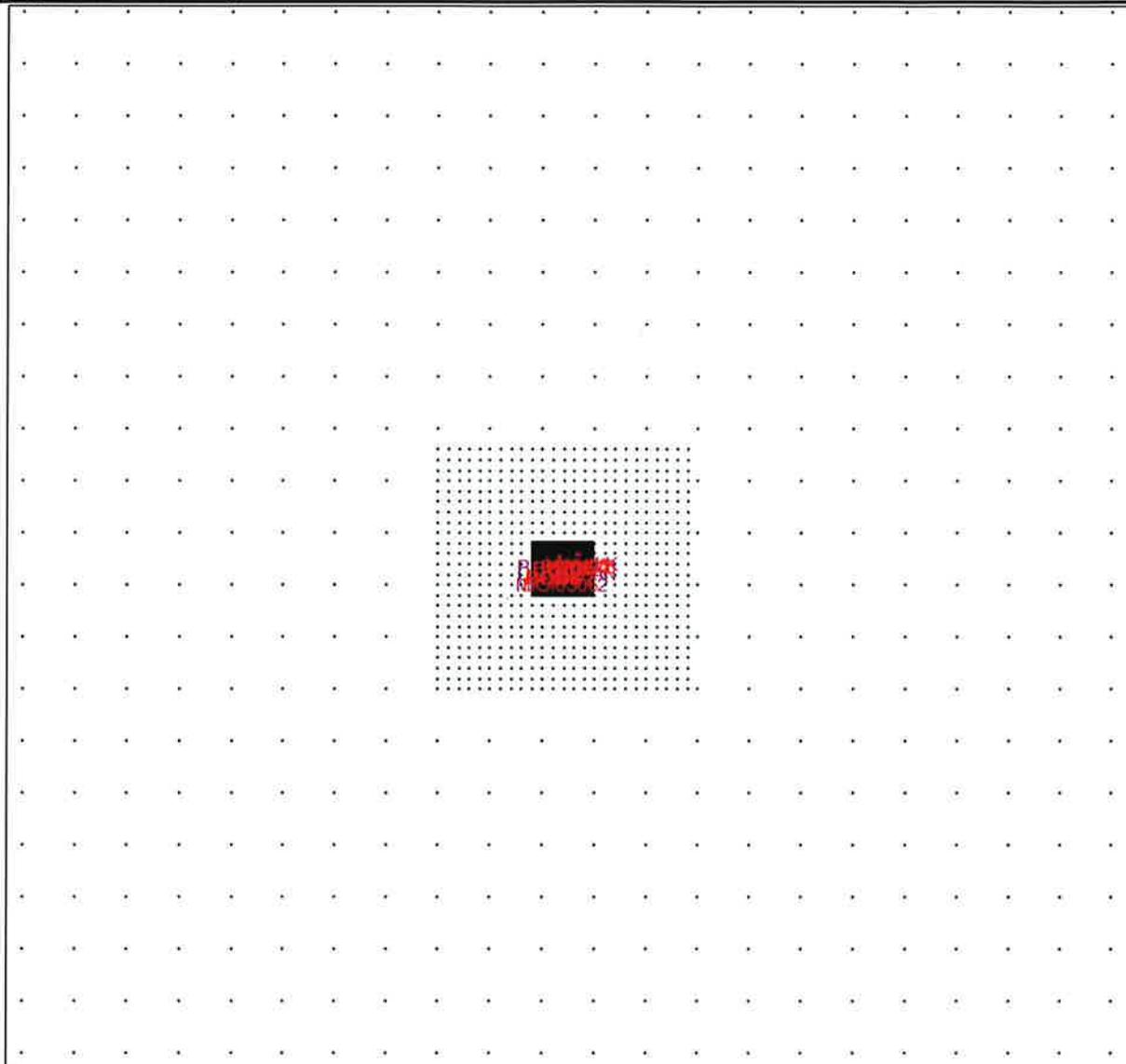


3.9 Emission Rates

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

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

Figure 4. Full Receptor Grid



3.9.1 Criteria Pollutant Emissions Rates for Significant Impact Level and Cumulative Analyses

Significant impact level (SIL) analyses were submitted as part of the NAAQS compliance demonstration. SIL and cumulative impact analyses emission rates were identical. Cumulative NAAQS analyses were conducted for PM₁₀, PM_{2.5}, CO, and NO_x emissions to demonstrate compliance with short-term and annual average NAAQS.

External emissions rate files affecting only Central Plant Hurst Boilers 1 and 2 (BOI01 and BOI02) were generated by CH2M and used for the 24-hour PM_{2.5} and 1-hour NO₂ NAAQS compliance demonstrations. Each boiler operating as the primary boiler required a separate modeling scenario. The external emission rate files accounted for several special operating conditions for these dual fuel boilers:

- Only one of these two boilers is operational at any time for normal operations and combusts natural gas during these times. Both boilers are periodically tested on the ultra-low sulfur diesel (ULSD) backup fuel.

- The primary boiler operates for 8,736 hours per year on natural gas and for 24 hours per year operates on diesel for four consecutive hours in six separate testing and maintenance operation events per year.
- The standby boiler was modeled with diesel emissions for four consecutive hours within the period of 7 am until 6 pm of the day in six separate testing and maintenance operation events per year. Emissions were zeroed for all other hours.

Table 7 lists criteria pollutant continuous (24 hours per day) emissions rates used to evaluate NAAQS compliance for standards with averaging periods of 24 hours or less, except where noted. Table 8 lists criteria pollutant continuous (8,760 hours/year) emissions rates used to evaluate NAAQS compliance for standards with an annual averaging period. These modeled rates must be equal or greater than permit allowable facility-wide emissions for the listed averaging period.

Emissions Point	Description	PM₁₀^a (lb/hr)^e	PM_{2.5} (lb/hr)	NO_x (lb/hr)	CO (lb/hr)
BOI01	Hurst Dual Fuel Boiler 1-Central Plant	0.25	0.11 (natural gas) ^b 0.17 (distillate) ^b	0.19 (natural gas) ^b 0.27 (distillate) ^b	1.24
BOI02	Hurst Dual Fuel Boiler 2-Central Plant	0.25	0.11 (natural gas) ^b 0.17 (distillate) ^b	0.19 (natural gas) ^b 0.27 (distillate) ^b	1.24
BOI0306	Boilers 3, 4, 5, and 6 (common stack - Main Building)	0.19	0.19	2.48	2.08
BOI07	Boiler 7 - Surgery Center - Hurst	0.020	0.020	0.37	0.16
BOI08	Boiler 8 - Surgery Center - Hurst	0.020	0.020	0.37	0.16
BOI09	Boiler 9 - Surgery Center - Lochinvar	0.019	0.019	0.078	0.025
BOI10	Boiler 10 - Surgery Center - Lochinvar	0.019	0.019	0.078	0.025
BOI11	Boiler 11 - Surgery Center - Lochinvar	0.019	0.019	0.078	0.025
GEN01	Diesel-fired Emergency generator 1 - Main building	0.017	0.017	0.0 ^h	0.88
GEN02	Diesel-fired Emergency generator 2 - Central Plant	0.13	0.13	0.0 ^h	11.97
BOI12	Boiler 12 - East Portico Bldg - Laars	0.015 ^f	0.015	0.20	0.16 ^f
BOI13	Boiler 13 - East Portico Bldg - Laars	0.015 ^f	0.015	0.20	0.16 ^f
BOI14	Boiler 14 - East Portico Bldg - Laars	0.015 ^f	0.015	0.20	0.16 ^f
BOI1516	Meadow Lake Bldg Boilers 4 and 5 - common stack	0.015	0.015	0.20	0.16
HWH01	Hot water heater 1 - Meadow Lake Bldg	5.22E-04	5.22E-04	0.0069	0.0058
HWH02	Hot water heater 2 - Meadow Lake Bldg	5.22E-04	5.22E-04	0.0069	0.0058
HWH03	Hot water heater 3 - Meadow Lake Bldg	0.0012	0.0012	0.016	0.013
GEN03	Emergency generator 3 - natural gas fired -- Meadow Lake Building	7.06E-05	7.06E-05	0.0 ^h	2.01

^a Particulate matter with a mean aerodynamic diameter of 10 microns or less.

^b Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.

^c Nitrogen oxides.

^d Carbon monoxide.

^e Pounds per hour.

^f Two out of the three boilers (BOI12, BOI13, and BOI14) operate at any time. The third boiler is idled as backup.

^g Either Boiler 1 or Boiler 2 is operating as the primary boiler on natural gas and the other of the two is idle. Both Boilers 1 and 2 were modeled as periodically operating on distillate fuel oil, which is the backup fuel, for testing and maintenance purposes, for six individual periods of 4 consecutive hours per day, once every other month of the year.

^h Emergency generator engine testing and maintenance operation emissions are exempt from modeling requirements per DEQ policy.

Emissions Point	Description	PM_{2.5}^a (lb/hr)^b	NO_x^c (lb/hr)
BOI01	Hurst Dual Fuel Boiler 1-Central Plant	0.11 ^d	1.47 ^d
BOI02	Hurst Dual Fuel Boiler 2-Central Plant	0.11 ^d	1.47 ^d
BOI0306	Boilers 3, 4, 5, and 6 (common stack - Main Building)	0.19	2.48
BOI07	Boiler 7 - Surgery Center - Hurst	0.020	0.37
BOI08	Boiler 8 - Surgery Center - Hurst	0.020	0.37
BOI09	Boiler 9 - Surgery Center - Lochinvar	0.019	0.077
BOI10	Boiler 10 - Surgery Center - Lochinvar	0.019	0.077
BOI11	Boiler 11 - Surgery Center - Lochinvar	0.019	0.077
BOI12	Boiler 12 - East Portico Bldg - Laars	0.015	0.20
BOI13	Boiler 13 - East Portico Bldg - Laars	0.015	0.20
BOI14	Boiler 14 - East Portico Bldg - Laars	0.015	0.20
BOI1516	Meadow Lake Bldg boilers 4 and 5 - common stack	0.015	0.20
HWH01	Hot water heater 1 - Meadow Lake Bldg	5.22E-04	0.0069
HWH02	Hot water heater 2 - Meadow Lake Bldg	5.22E-04	0.0069
HWH03	Hot water heater 3 - Meadow Lake Bldg	0.0012	0.016
GEN01	Diesel-fired Emergency generator 1 - Main building	0.0012	0.13
GEN02	Diesel-fired Emergency generator 2 - Central Plant	0.0089	0.31
GEN03	Emergency generator 3 - natural gas fired - Meadow Lake Building	8.06E-07	0.026

^{a.} Particulate matter with a mean aerodynamic diameter of 2.5 or less.

^{b.} Pounds per hour.

^{c.} Nitrogen oxides.

^{d.} Either Boiler 1 or Boiler 2 is operating as the primary boiler on natural gas and the other of the two is idle. Both Boilers 1 and 2 were modeled as periodically operating on distillate fuel oil, which is the backup fuel, for testing and maintenance purposes, for six individual periods of 4 consecutive hours per day, once every other month of the year.

3.9.2 Toxic Air Pollutant Emissions

The increase in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact analyses required for any TAP having a requested potential emission rate that exceeds the screening emissions level (EL) specified by Idaho Air Rules Section 585 or 586. Review of the TAPs emissions inventory, and authority to request alterations to the inventory, is the responsibility of the permit writer/project manager.

This project modeled four TAPs with emission rates that exceeded the carcinogenic screening emission rate limits (ELs) specified in Section 586 of the Idaho *Air Rules*.

The hourly TAPs emission rates listed in Table 9 were modeled for 8,760 hours per year.

Emissions Point	Description	Pollutant			
		Arsenic (lb/hr)^a	Cadmium (lb/hr)	Formaldehyde (lb/hr)	Nickel (lb/hr)
BOI01	Hurst Dual Fuel Boiler 1-Central Plant	0.0029	0.0162	0.0011	0.0308
BOI02	Hurst Dual Fuel Boiler 2-Central Plant	0.0029	0.0162	0.0011	0.0308
BOI0306	Boilers 3, 4, 5, and 6 (common stack - Main Building)	0.0050	0.0272	0.0019	0.0521
BOI07	Boiler 7 - Surgery Center - Hurst	8.24E-04	0.0045	3.08E-04	0.0087
BOI08	Boiler 8 - Surgery Center - Hurst	8.24E-04	0.0045	3.08E-04	0.0087
BOI09	Boiler 9 - Surgery Center - Lochinvar	4.91E-04 ^b	0.0027 ^b	1.84E-04 ^b	0.0051 ^b
BOI10	Boiler 10 - Surgery Center - Lochinvar	4.91E-04 ^b	0.0027 ^b	1.84E-04 ^b	0.0051 ^b
BOI11	Boiler 11 - Surgery Center - Lochinvar	4.91E-04 ^b	0.0027 ^b	1.84E-04 ^b	0.0051 ^b

^{a.} Pounds per hour.

^{b.} Two boilers out of the three Lochinvar Surgery Center building boilers (BOI09, BOI10, and BOI11) are operational at any time. The third boiler is idle.

3.10 Emission Release Parameters

Table 10 lists emissions release parameters for modeled sources for the SLMMC facility.

DEQ's permitting policies and guidance require that each permit application have stand-alone documentation to support the appropriateness of release parameters used in the air impact analyses. The SLMMC modeling report submitted to DEQ provided justification and documentation of assumptions and data supporting key release parameters used to model these point sources.

A key part of the release parameter documentation and justification included two tables presented in Attachment C to the application's modeling report—titled "Field-Measured Stack Parameters." In the first table, SLHS staff conducted measurements of the operating stack temperature, date and time of the temperature measurement, and an identification of the typical operating load condition. In the second table, the emission units' stack height, stack diameter, and type of release were identified (rain-capped, horizontal release, vertical with a flap). The date these values were measured was also recorded.

Emergency Generator Engines

The approach taken by CH2M in establishing the modeled release parameters for the emergency generator engines was based on a combination of on-site parameter measurements and application of historical DEQ exhaust velocity acceptance threshold values. All emergency generator engine stack release height and exit diameter were observed by St. Luke's Meridian staff.

Main Building GEN01:

A manufacturer's specification sheet was not submitted for this emissions unit. The exit velocity was set at 50 meters per second (m/s) by CH2M as a reasonably conservative value.

Central Plant GEN02:

SLHS and CH2M submitted a photo of the Caterpillar serial and specification plate attached to Central Plant emergency generator engine GEN02. The rated capacity of 1,879 kW power output of the genset was confirmed. A Caterpillar equipment specification sheet listing the serial number of the emissions unit identified the power output of the engine as 2,520 horsepower. The exit velocity was set at 50 m/s by CH2M.

Meadow Lake Building GEN03:

A Cummins manufacturer specification sheet for this unit was supplied in the application for this 70 kW natural gas-fired unit. The exhaust flow rate of 539 cubic feet per minute (cfm) and the exhaust temperature of 1,233 degrees Fahrenheit (°F) while operating at rated load capacity were listed in the materials. This engine's release temperature was not measured by SLHS staff and was based on the manufacturer's specification sheet. The exit velocity was 31.4 m/s and was based on the 100% operational load volumetric flow rate listed in the specification sheet of 533 cubic feet per minute (cfm). The modeled release height was set at ground level and DEQ accepted this low release height as accurate or conservative.

Table 10. ST. LUKE'S POINT SOURCE EMISSIONS RELEASE PARAMETERS

Release Point	Description	UTM ^a Coordinates, Zone 11		Stack Base Elevation (m)	Stack Height (m)	Modeled Diameter (m)	Stack Gas Temp (K) ^c	Stack Flow Velocity (m/s) ^d	Stack Release Type
		Easting (m) ^b	Northing (m)						
BOI01	Hurst Dual Fuel Boiler 1-Central Plant	552,337.54	4,827,735.93	808.92	7.62	0.52	455.15	10.6	RAINCAP
BOI02	Hurst Dual Fuel Boiler 2-Central Plant	552,341.75	4,827,735.93	808.92	7.62	0.52	455.98	10.7	RAINCAP
BOI0306	Boilers 3, 4, 5, and 6 (common stack - Main Building)	552,268.52	4,827,661.93	811.97	21.18	0.61	393.48	11.2	RAINCAP
BOI07	Boiler 7 - Surgery Center - Hurst	552,201.43	4,827,727.84	812.33	16.5	0.61	483.71	2.3	RAINCAP
BOI08	Boiler 8 - Surgery Center - Hurst	552,205.14	4,827,727.84	812.33	16.5	0.61	516.48	2.4	RAINCAP
BOI09	Boiler 9 - Surgery Center - Lochinvar	552,198.49	4,827,725.18	812.33	16.5	0.61	328.71	0.9	RAINCAP
BOI10	Boiler 10 - Surgery Center - Lochinvar	552,198.49	4,827,727.20	812.33	16.5	0.61	329.82	0.9	RAINCAP
BOI11	Boiler 11 - Surgery Center - Lochinvar	552,198.49	4,827,729.01	812.33	16.5	0.61	363.15	1	RAINCAP
GEN01	Diesel-fired Emergency generator 1 - Main building	552,266.84	4,827,661.93	811.97	21.03	0.30	602.59	50	Default ^f
GEN02	Diesel-fired Emergency generator 2 - Central Plant	552,347.80	4,827,756.30	808.92	7.62	0.30	783.15	50	Default ^f
BOI12	Boiler 12 - Portico East Bldg - Laars	552,256.11	4,827,823.35	812.21	20.3	0.18	0 ^e	7.5	Horizontal
BOI13	Boiler 13 - Portico East Bldg - Laars	552,256.11	4,827,821.56	812.21	20.3	0.18	0 ^e	7.5	Horizontal
BOI14	Boiler 14 - Portico East Bldg - Laars	552,256.11	4,827,820.46	812.21	20.3	0.18	0 ^e	7.5	Horizontal
BOI1516	Meadow Lake Bldg boilers 4 and 5 - common stack	552,446.24	4,827,842.16	811.7	27.9	0.30	0 ^e	2.6	RAINCAP
HWH01	Hot water heater 1 - Meadow Lake Bldg	552,449.69	4,827,839.19	811.7	27.9	0.10	0 ^e	0.8	RAINCAP
HWH02	Hot water heater 2 - Meadow Lake Bldg	552,449.03	4,827,839.19	811.7	27.6	0.10	0 ^e	0.8	RAINCAP
HWH03	Hot water heater 3 - Meadow Lake Bldg	552,427.17	4,827,846.89	811.7	23.6	0.15	0 ^e	0.8	RAINCAP
GEN01	Diesel-fired Emergency generator 1 - Main building	552,266.84	4,827,661.93	811.97	21.03	0.30	602.59	50	Default ^f
GEN02	Diesel-fired Emergency generator 2 - Central Plant	552,347.80	4,827,756.30	808.92	7.62	0.30	783.15	50	Default ^f
GEN03	Emergency generator #3 - natural gas - Meadow Lake Bldg	552,478.65	4,827,860.32	811.7	0	0.10	940.37	31.4	Default ^f

a. Universal Transverse Mercator.

b. Meters.

c. Kelvin.

d. Meters per second.

e. Ambient temperature.

f. Default release represents a vertical orientation with an uninterrupted release point.

Portico East and Meadow Lake Medical Office Building Hot Water Heaters and Boilers (BOI12, BOI13, BOI14, BOI1516, HWH01, HWH02, HWH03)

The modeled release temperature was set equal to the ambient temperature. This is a conservative approach given that these are combustion units. The temperature values for these stacks were not measured by SLHS staff and volumetric flow rate for each unit was established by adjusting standard temperature flow rate to a single average value of 53 °F. Actual release temperatures will be substantially higher, which will increase plume rise and consequently decrease ground-level pollutant levels.

CH2M supplied supporting documentation and justification for the boiler and hot water heater emission units in Attachment B to the application’s modeling report. Actual volumetric exhaust flow rates were calculated by CH2M using the rated heat input capacity of each unit and a standard temperature and pressure conditions flow rate at 5% excess air for combustion. Some of these values were slightly different than the modeled volumetric flow rates. As a check, DEQ calculated flow rates using the EPA Reference Method 19 F-Factor for natural gas combustion using the listed heat input for each unit, 68°F standard temperature and the SLHS on-site measured exit temperature. Where the ambient temperature was modeled for the release temperature, DEQ used the same assumed 53°F as CH2M applied to their calculations.

Modeled flow rates compared favorably to flow rates estimated by DEQ using the EPA F-Factor and the modeled exit temperatures as shown below in Table 11.

Table 11. BOILER AND HOT WATER HEATER FLOW RATE AND EXIT TEMPERATURE						
Source ID	Heat Input Capacity (MMBtu/hr)^a	Support Documentation^b Exit Temperature (°F)^c	Modeled Exit Temperature (°F)	Support Documentation^b Flow Rate (ACFM)^d	Modeled Flow Rate (ACFM)	EPA F-Factor Flow Rate^e (ACFM)
BOI01	15	450	360	5,085	4,770	4,553
BOI02	15	450	361	5,085	4,815	4,559
BOI0306	25.24	200	249	6,448	6,935	6,620
BOI07	4.2	200	411	1,073	1,424	1,354
BOI08	4.2	200	470	1,073	1,486	1,446
BOI09	2.5	200	132	639	557	548
BOI10	2.5	200	134	639	557	550
BOI11	2.5	200	194	639	619	605
BOI12	2	53	Ambient	397 ^f	404	380 ^f
BOI13	2	53	Ambient	397 ^f	404	380 ^f
BOI14	2	53	Ambient	397 ^f	404	380 ^f
BOI1516	2	53	Ambient	397 ^f	389	380 ^f
HWH01	0.07	53	Ambient	14 ^f	13	13 ^f
HWH02	0.07	53	Ambient	14 ^f	13	13 ^f
HWH03	0.16	53	Ambient	32 ^f	30	30 ^f

- ^a. Million British thermal units per hour.
- ^b. Modeling Report Attachment B - Boiler Exhaust Stack Flow Rates
- ^c. Degrees Fahrenheit.
- ^d. Actual cubic feet per minute.
- ^e. EPA F-Factor for natural gas, wet basis, 10,610 standard cubic feet per million Btu heat input, corrected for facility elevation and release temperature. EPA Reference Method 19, Table 19-2
- ^f. Attachment B calculation and DEQ comparison using EPA F-Factor

DEQ concludes that the release parameters used in the modeling analyses were adequately supported and were appropriate for this project.

4.0 Results for Air Impact Analyses

CH2M elected to demonstrate compliance for annual average NO₂ significant impacts level analyses (SIL) and NAAQS analyses using the Tier 1 NO₂ method. This is the most conservative method and DEQ approval is not required. The Tier 2 Ambient Ratio Method 2 (Tier 2 ARM2) method was used for the 1-hour average NO₂ SIL and NAAQS analyses, using the conservative default value of 0.5 for the minimum ambient ratio (ARM2_MIN) value. DEQ approval was provided for the ARM2 method based on the Tier 1 project impact and the conservative default ARM2_MIN value applied in the model.

4.1 Results for Significant Impact Analyses

Table 12 provides results for the 24-hour and annual PM_{2.5}, 24-hour PM₁₀, annual and 1-hour NO₂, and 1-hour and 8-hour CO significant impacts level analyses (SIL) analyses. Emissions increases of other criteria pollutants resulting from the proposed project (or facility-wide emissions levels) were below applicable DEQ BRC permitting or DEQ modeling thresholds that trigger site-specific impact analyses. Cumulative NAAQS impact analyses were needed for all pollutants modeled in the SIL analyses because the applicable SILs were exceeded.

Pollutant	Averaging Period	Modeled Design Value Concentration (µg/m³)^a	SIL^b (µg/m³)	Percent of SIL
PM _{2.5} ^c	24-hour	6.56 ^b	1.2	547%
	Annual	1.44 ^h	0.3	480%
PM ₁₀ ^d	24-hour	21.5 ⁱ	5.0	430%
NO ₂ ^e	1-hour	291.58 ^j	7.5	3,888%
	Annual	232.28 ^k (33.0) ^l	1.0	23,228% (3,300%)
CO ^f	1-hour	2,781.8 ^m	2,000	139%
	8-hour	1,312.7 ⁿ	500	263%

^a Micrograms per cubic meter.

^b Significant impact level.

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

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

^e Nitrogen dioxide.

^f Carbon monoxide

^g Modeled design value is the maximum 5-year mean of highest 24-hour values from each year of a 5-year meteorological dataset.

^h Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.

ⁱ Modeled design value is the maximum of highest 24-hour values from a 5-year meteorological dataset, or the maximum of 24-hour value from five individual years of meteorological data.

^j Modeled design value is the maximum 5-year mean of maximum 1st highest daily 1-hour maximum impacts for each year of a 5-year meteorological dataset. The SIL compliance design value was calculated assuming complete conversion of total NO_x to NO₂.

^k Modeled design value is the maximum annual impact of the individual years of a 5-year meteorological dataset. Complete conversion of NO_x to NO₂ was assumed. Value listed in May 11, 2017 application modeling report.

^l Value in annual average NO₂ AERMOD output file, 2012 annual, May 11, 2017 submittal. Complete conversion of NO_x to NO₂ was assumed.

^m Modeled design value is the maximum 1-hour average impact of any of 5 individual years of meteorological data.

ⁿ Modeled design value is the maximum 8-hour average impact of any of 5 individual years of meteorological data.

4.2 Results for Cumulative NAAQS Impact Analyses

The results for the cumulative impact analyses are listed in Table 13. Ambient impacts for the facility were below the applicable NAAQS.

Table 13. RESULTS FOR CUMULATIVE IMPACT ANALYSES						
Pollutant	Averaging Period	Modeled Design Value Concentration ($\mu\text{g}/\text{m}^3$) ^a	Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Ambient Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ^b ($\mu\text{g}/\text{m}^3$)	Percent of NAAQS
PM _{2.5} ^c	24-hour	5.72 ^B	29	34.72	35	99%
	Annual	1.44 ^h	10	11.44	12	95%
PM ₁₀ ^d	24-hour	19.76 ⁱ	88	107.8	150	72%
NO ₂ ^e	1-hour	182.24 ^j	Seasonally and diurnally-varying background included in impact	182.24	188	97%
	Annual	32.38 ^k		18.2	50.6	100
CO ^f	1-hour	2,485.8 ^l	2,383	4,869	40,000	12%
	8-hour	1,208.4 ^l	1,407	2,615	10,000	26%

^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 2.5 micrometers.

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

^e. Nitrogen dioxide.

^f. Carbon monoxide.

^B. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.

^h. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.

ⁱ. Modeled design value is the maximum 6th highest 24-hour values from a 5-year meteorological dataset. Nunhems used the 4th highest value of five individual years of meteorological data, which is a conservative approach.

^j. Modeled design value is the maximum 5-year mean of 8th highest daily 1-hour maximum impacts for each year of a 5-year meteorological dataset.

^k. Modeled design value is the maximum annual impact of the individual years of a 5-year meteorological dataset.

^l. Maximum 2nd highest impact of each of 5 individual years of meteorological data modeled.

4.3 Results for Toxic Air Pollutant Impact Analyses

Table 14 presents results for TAPs impact modeling. The impacts listed below are attributed to the facility-wide emissions. All design impacts are the maximum impacts. Annual average carcinogenic TAP impacts used the maximum impact averaged over 5 years of meteorological data. All TAP impacts were below the applicable increments.

Table 14. RESULTS FOR TOXIC AIR POLLUTANT ANALYSES

Pollutant	CAS^a Number	Averaging Period	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)^b	AACC^c ($\mu\text{g}/\text{m}^3$)	Percent of Increment
Arsenic	7440-38-2	Annual	5.38E-05 ^d	2.3E-04	23%
Cadmium	7440-43-9	Annual	2.96E-04 ^d	5.6E-04	53%
Formaldehyde	50-00-0	Annual	2.01E-02	7.7E-02	26%
Nickel	7440-02-0	Annual	5.62E-04 ^d	4.2E-03	13%

^a Chemical Abstract Service

^b Micrograms per cubic meter.

^c Ambient Concentration for Carcinogens (Toxic Air Pollutant allowable increments listed in Idaho Air Rules Section 586).

^d CH2M's modeled emission rate was the project emission increase multiplied by a factor of 1,000 to develop significant figure resolution. This impact value was divided by 1,000 to remove this effect.

5.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the SLMC facility will not cause or significantly contribute to a violation of any NAAQS and will not exceed allowable TAP increments.

References

1. *Policy on NAAQS Compliance Demonstration Requirements of IDAPA 58.01.01.203.02 and 01.403.02*. Idaho Department of Environmental Quality Policy Memorandum. Tiffany Floyd, Administrator, Air Quality Division, June 10, 2014.
2. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at <http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf>.
3. *Ambient Ratio Method Version 2 (ARM2) for use with AERMOD for 1-hr NO₂ Modeling Development and Evaluation Report*, Prepared for American Petroleum Institute, 1220 L Street NW, Washington, DC 20005, by M. Podrez, RTP Environmental Associates, Inc., 2031 Broadway, Suite 2, Boulder, Colorado 80302, September 20, 2013.
4. *Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO₂ National Ambient Air Quality Standard*, R. Chris Owen and Roger Brode, Environmental Protection Agency, Office of Air Quality Planning and Standards, September 30, 2014.
5. *DEQ Guidance for Minor New Source Review Modeling of 1-Hour NO₂ from Intermittent Testing of Emergency Engines*, State of Idaho Department of Environmental Quality September 2013, Doc. I D AQ-011 (September 2013).

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on April 12, 2018:

Facility Comment: Condition 2.9 -Remove 2nd bullet: Please remove. This requirement has been met.

DEQ Response: DEQ Boise Regional Office has received documentation that this requirement has been met. Requirement was removed.

Facility Comment: Condition 3.5- Remove "once" in the verbage:

DEQ Response: Verbiage was unnecessary and was removed.

APPENDIX D – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

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

Company: St. Luke's Meridian Medical Center
Address: 520 South Eagle Road
City: Meridian
State: ID
Zip Code: 83642
Facility Contact: Russ Harbaugh
Title: Director of Operations Building Services, Meridian
AIRS No.: 001-00182

- N** Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
- Y** Did this permit require engineering analysis? Y/N
- N** Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.3	0	0.3
SO ₂	0.0	0	0.0
CO	0.2	0	0.2
PM10	0.0	0	0.0
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0.02	0.0
Total:	0.0	0.02	0.5
Fee Due	\$ 1,000.00		

Comments: P-2012.0057 Project 61991