PERMIT-TO-CONSTRUCT (PTC) APPLICATION

St. Luke's Nampa Medical Center
Nampa, Idaho

RECEIVED
MAR 24 2016
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

Prepared for

St. Luke's Health Services

Submitted to

Idaho Department of Environmental Quality

March 2016

RECEIVED
MAR 23 2016
By [signature]

CH2M HILL, Inc.
322 East Front Street
Suite 200
Boise, ID 83702

Table of Contents

SECTION 1

Introduction

St. Luke's Health System (SLHS) is proposing to expand operations and construct a medical center located at 16850 Midland Avenue in Nampa, Idaho. This new hospital will be referred to as St. Luke Nampa Medical Center (SLNMC) which triggers the requirement for an air quality Permit-to-Construct (PTC) with the addition of the following stationary emission sources:

- Three (3) Hurst dual-fuel boilers
- Four (4) Caterpillar diesel-fired emergency engine generators; and
- Two water cooling towers

A pre-permit application meeting was held with the Idaho Department of Environmental Quality (IDEQ) on October 26, 2015. The permit application and modeling approach were discussed.

An application fee of $1,000 has been included with the application submittal in accordance with IDAPA 58.01.01.226 and the applicable IDEQ forms are provided in Appendix A.

This PTC application includes a project description, plot plan, emission estimates, state and federal regulatory review, modeling protocol and results. An air quality impact analysis has been performed in support of this PTC application required under IDAPA 58.01.01.200. Idaho regulations require a facility applying for a PTC to demonstrate compliance with the NAAQS.

Project Description

SLHS operates a medical office building located at 16850 Midland Avenue in Nampa, Idaho. SLHS is expanding operations to include a medical center and supporting central plant equipped with dual-fuel boilers, emergency generators, and wet cooling towers for heating and cooling purposes. This new hospital will be referred to as SLNMC.

The medical office building currently utilizes a 744 kilowatt diesel-fired engine generator for electric emergency power. This existing emergency generator will be taken out of service once the four emergency generators are commissioned at the central plant. This emergency generator satisfies the Category II exemption criteria per IDAPA 58.01.01.222.01.d and is not included in this PTC application.

SLNMC is located on the corner of Midland Avenue and Cherry Lane in Nampa, Idaho (Figure 1).
The stationary emission sources will be located in a central plant on the northern end of the facility. A scaled plot plan is provided in Figure 2. A plan view of the Central Plant shows a more detailed layout of the emission sources included in Figure 3.

The proposed stationary emission sources are listed below:

- Three dual-fuel boilers
  - Hurst Model 350 hp -Series 500
  - 14.25 MMBTU/hr
  - Power Flame burner
- Four diesel-fired emergency engine generators
  - Caterpillar Model C27
  - 800 kW or 1,214 hp
  - Maintenance/Testing diesel operations are proposed to be limited to 12 hours per day and 100 hr/yr PTE for each unit
- Two water cooling towers
  - Baltimore Aircoil Company Inc. Model XES3E-1424-07M
  - 1500 gpm water flow rate
  - Continuous operations 8,760 hr/yr PTE

The primary purpose of the three boilers will be to generate steam for space heating at the hospital.
Each boiler is dual-fired and capable of combusting natural gas as the primary fuel or diesel as the secondary fuel. Four emergency engine generators are proposed to provide electrical power to the hospital in the event of a power interruption. Additionally, there are two water cooling towers proposed for cooling purposes.

Manufacturer specification sheets for the proposed emission sources or equivalent units are provided in Appendix B.

SECTION 3

Emission Estimates

3.1 Potential Emission Estimates

Criteria pollutant and toxic air pollutant (TAP) potential emission estimates have been prepared for three boilers operating on both natural gas and diesel fuel, four emergency diesel-fired engine generators, and two water cooling towers.

Potential emission estimates for the stationary emission sources were based on the following hours of operation:

- Three dual-fuel boilers
  - Uncontrolled NG operations 8,760 hr/yr for each unit
  - Maintenance/Testing diesel operations 48 hr/yr for each unit
- Four diesel-fired emergency engine generators
  - Maintenance/Testing diesel operations limited to 12 hour per day and 100 hr/yr for each unit
- Two water cooling towers
  - Continuous operations 8,760 hr/yr

CH2M utilized available manufacturer emissions data to calculate potential emission estimates. If manufacturer emissions data was not available, EPA AP-42 emission factors were used. The Climate Registry 2014 default emission factors, Tables 12.1 and 12.9 were used to calculate the greenhouse gas (GHG) pollutants of carbon dioxide (CO_2) nitrogen oxide (N_2O), and methane (CH_4).

The Tier 1 Methodology and equation C-8 outlined in 40 Code of Federal Regulations (CFR) Part 98 Subpart C was used to calculate the greenhouse gas (GHG) pollutants of carbon dioxide (CO_2) nitrogen oxide (N_2O), and methane (CH_4). In addition, Carbon dioxide equivalents (CO_2e) were calculated as described in 40 CFR 98 Subpart C, revised in 2013.

Table 1 provides a criteria pollutant summary of uncontrolled PTE for the facility. For the boilers, the worst-case short term emission rates between natural gas and diesel combustion are shown.

Table 1. Criteria Summary

Pollutant	Units	Boilers	Emergency Generator	Cooling Towers	Facility Totals
PM10	lb/hr	0.315	0.48	0.0095	**0.80**
	tpy	0.902	0.024	0.041	**0.97**
PM2.5	lb/hr	0.205	0.48	0.0095	**0.69**
	tpy	0.896	0.024	0.041	**0.96**
CO	lb/hr	1.58	4.56	-	**6.14**
	tpy	6.93	0.23	-	**7.16**
NOx	lb/hr	5.29	66.52	-	**71.81**
	tpy	6.27	3.33	-	**9.60**
SOx	lb/hr	0.067	0.049	-	**0.12**
	tpy	0.29	0.002	-	**0.30**
VOC	lb/hr	1.07	0.60	-	**1.67**
	tpy	4.66	0.030	-	**4.69**
Lead	lb/hr	2.10E-05	-	-	**2.10E-05**
	tpy	9.13E-05	-	-	**9.13E-05**

lb/hr = pounds per hour
tpy = tons per year

A summary of potential toxic air pollutant (TAP) emission estimates for the facility are included in Appendix C. TAPs from the emergency generators may be excluded from the modeling analysis because they are already being assessed through 40 CFR 60 Subpart IIII and 40 CFR 63 Subpart ZZZZ. The cooling towers will not yield Idaho TAPs. However, there are no TAPS identified in 40 CFR 60 Subpart Dc; therefore, TAPS from the boilers will be included in the analysis.

Table 2 provides a TAP summary of uncontrolled PTE from the 3 boilers.

Table 2. TAPs Summary

Pollutant	3 Boilers (lb/hr)	IDAPA Screening Level (lb/hr)	Modeling Required ?
Formaldehyde	3.14E-03	5.10E-04	**Yes**
Arsenic	2.79E-06	1.50E-06	**Yes**
Cadmium	1.54E-05	3.70E-06	**Yes**
Nickel	2.93E-05	2.70E-05	**Yes**

lb/hr = pounds per hour

3.2 Facility Classification

The SLNMC is not a major facility as defined in IDAPA 58.01.01.008.10, nor is it a designated facility as defined in IDAPA 58.01.01.006.26. The primary Standard Industrial Classification (SIC) code for the facility is 8062, *General Medical and Surgical Hospitals.* The facility emits less than 100 tons per year of any regulated pollutant. The site is a minor source for Hazardous Air Pollutants (HAPs) with total potential aggregate HAP emissions of less than 25 tons per year and emissions of any single HAP of less than 10 tons per year. SLNMC is not a listed facility in 40 CFR Part 52 (100 tons per year threshold) and is not otherwise subject to Part 52 New Source Review (PSD) requirements due to potential emissions less than all applicable PSD major source thresholds.

The SLNMC will be located in Canyon County. Canyon County is located in an attainment area for carbon monoxide (CO), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), ozone (O_3), and lead (Pb). There are no Class I areas within 10 kilometers of the facility.

SECTION 4

Ambient Impact Analysis

A modeling protocol was submitted to on November 09, 2015 and a protocol addendum for use of seasonal hourly 1-hr NO_2 background data was submitted on December 11, 2015. Conditional DEQ protocol approval was provided to Rick McCormick/CH2M on February 03, 2016. A copy of the modeling protocol, protocol addendum and DEQ protocol approval are provided in Appendix D.

Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the protocol and in the Idaho Air Quality Modeling Guideline. Concerns identified by DEQ in the protocol approval notice have been addressed in the analyses performed and in the modeling report.

A modeling report containing the modeling methodology and details is provided in Appendix G. A CD containing modeling files and emission calculations for the cumulative NAAQS impact analyses are attached with this application.

SECTION 5

Applicable Requirements

A regulatory analysis was performed for SLNMC to determine the applicability of state and federal air quality regulations. The regulatory applicability determinations are included in this section.

The following sections address air quality regulatory compliance requirements for the medical center. As detailed below, the source will comply with all applicable Idaho air quality regulations codified in IDAPA 58.01.01, as well as applicable EPA Code of Federal Regulations (CFR).

5.1 Federal Regulations

5.1.1 New Source Review and Prevention of Significant Deterioration Applicability—40 CFR Parts 51 and 52

In accordance with EPA and IDAPA 58.01.01 205 rules, SLNMC will not be required to submit a construction permit application subject to the requirements of New Source Review (NSR) as it is not a major source. The requirements of NSR vary, depending on whether the proposed facility will be located in a non-attainment or attainment area for NAAQS.

5.1.1.1 New Source Review for Non-Attainment Areas

Non-Attainment Area NSR is the portion of NSR that applies to areas that are not in attainment of NAAQS. Canyon County is classified as attainment or unclassifiable for all NAAQS. Therefore, Non-Attainment Area NSR is not required for SLNMC.

5.1.1.2 New Source Review for Attainment or Unclassifiable Areas

Prevention of Significant Deterioration (PSD) is the portion of NSR that applies to pollutants that are in attainment of NAAQS, or are unclassifiable. Canyon County is classified as attainment or unclassifiable for the criteria pollutants NO_X, CO, SO_2, ozone, lead, PM_{10}, and $PM_{2.5}$. Therefore, new or modified air emission sources are potentially subject to PSD review for these pollutants, depending on the facility's major source status and on the emission rates of NO_X, CO, SO_2, VOC, PM_{10}, and $PM_{2.5}$.

A PSD review is required if the proposed facility is a major PSD source. A source is considered to be major if:

- It is included in a list of 28 specific source categories and its potential to emit (PTE) any of the NSR-regulated pollutants exceeds 100 tons per year, or
- Its PTE exceeds 250 tons per year for any other source category.

The list of 28 specific source categories with the 100 tons per year threshold does not include steel fabrication plants; therefore, the proposed facility is not subject to a 100 tons per year major source threshold for PSD review. In addition, its PTE does not exceed 250 tons per year. Therefore, PSD review is not required.

5.1.2 New Source Performance Standards – 40 CFR Part 60

The emergency generator engines will be subject to NSPS Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* and NSPS Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.* The applicable requirements of these Subparts are identified through a regulatory review provided in Appendix A (FRA form –Attachment). An applicability review of 40 CFR Part 60, Subpart IIII and Subpart Dc are provided in Appendix E.

5.1.3 National Emission Standards for Hazardous Air Pollutants - 40 CFR Part 63

Part 63 National Emission Standards for Hazardous Air Pollutants (NESHAPS) apply to both major sources of HAPs, defined as PTE equal to or greater than 10 tons per year for any single HAP or PTE equal to or greater than 25 tons per year for total HAP, and area sources of HAPs as defined as any stationary source of HAPs that is not a major source. As HAP emissions are below major source thresholds, the SLNMC is not a major source of HAPs. The applicable requirements of Subpart ZZZZ are identified through a regulatory review provided in Appendix A (FRA form –Attachment). However, the facility will be an area source of HAPs subject to Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.* An applicability review of 40 CFR Part 63, Subpart ZZZZ is included in Appendix E.

The facility is exempt from the requirements of Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*. A non-applicability review of 40 CFR 63, Subpart JJJJJJ is included in Appendix F.

5.1.4 Acid Rain Deposition Control Program—40 CFR Part 72, 73, 74, and 75

The acid rain deposition control program applies to electric utility steam-generating units. SLNMC is not a utility steam generating unit and not subject to the acid rain deposition control program based on the definition of an affected unit.

5.1.5 Compliance Assurance Monitoring —40 CFR Part 64

The Compliance Assurance Monitoring (CAM) rule (40 CFR 64) applies to each Pollutant Specific Emissions Unit (PSEU) when it is located at a major source that is required to obtain Title V, Part 70 or 71 permit and it meets all of the following criteria:

The PSEU must:

- be subject to an emission limitation or standard
- use a control device to achieve compliance
- have potential pre-control emissions that exceed or are equivalent to the major source threshold.

SLNMC is not a major source. Therefore, the CAM rule is not applicable.

5.2 IDAPA Regulations

IDAPA 58.01.01.123
CERTIFICATION OF DOCUMENTS

> "All documents, including but not limited to, application forms for permits to construct, application forms for operating permits, progress reports, records, monitoring data, supporting information, requests for confidential treatment, testing reports or compliance certifications submitted to the Department shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

SLNMC will comply with the regulation outlined in this section.

IDAPA 58.01.01.124
TRUTH, ACCURACY AND COMPLETENESS OF DOCUMENTS

> "All documents submitted to the Department shall be truthful, accurate and complete."

SLNMC will comply with the regulation outlined in this section.

<u>IDAPA 58.01.01.125</u>
FALSE STATEMENTS

> "No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under any permit, or any applicable rule or order in force pursuant thereto."

SLNMC will comply with the regulation outlined in this section.

<u>IDAPA 58.01.01.156</u>
TOTAL COMPLIANCE

> "Where more than one (1) section of these rules applies to a particular situation, all such rules must be met for total compliance, unless otherwise provided for in these rules."

SLNMC will comply with the regulations outlined in this section.

<u>IDAPA 58.01.01.161</u>
TOXIC SUBSTANCES

> "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."

See emission calculations in Appendix C and modeling results report.

<u>IDAPA 58.01.01.200</u>
PROCEDURES AND REQUIREMENTS FOR PERMITS TO CONSTRUCT

Upon approval of the PTC by IDEQ, SLNMC will follow the procedures and requirements outlined under IDAPA 58.01.01.200 for obtaining a PTC.

<u>IDAPA 58.01.01.210</u>
DEMONSTRATION OF PRECONSTRUCTION COMPLIANCE WITH TOXIC STANDARDS

> "In accordance with Subsection 203.03, the applicant shall demonstrate preconstruction compliance with Section 161 to the satisfaction of the Department. The accuracy, completeness, execution and results of the demonstration are all subject to review and approval by the Department."

See emission calculations in Appendix C and modeling results report.

<u>IDAPA 58.01.01.220</u>
GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS

<u>IDAPA 58.01.01.220</u>a Major Source or Major Modification

"The maximum capacity of a source to emit an air pollutant under its physical and operational design without consideration of limitations on emission such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed would not:

i. Equal or exceed one hundred (100) tons per year of any regulated air pollutant.

ii. Cause an increase in the emissions of a major facility that equals or exceeds the significant emissions rates set out in the definition of significant at Section 006."

<u>IDAPA 58.01.01.220b</u> Combination

The source is not part of a proposed new major facility or part of a proposed major modification.

SLNMC will not have the PTE equal to or exceeding 100 tons per year for any regulated air pollutant and will not be a major facility or part of a proposed new major facility or part of a proposed major modification.

IDAPA 58.01.01.221 Category I Exemption

"No permit to construct is required for a source that satisfies the criteria set forth in Section 220 and the following:"

IDAPA 58.01.01.221.01 Below Regulatory Concern.

"The maximum capacity of a source to emit an air pollutant under its physical and operational design considering limitations on emissions such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed shall be less than ten percent (10%) of the significant emission rates set out in the definition of significant at Section 006."

SLNMC does not meet the BRC criteria of a Category I exemption outlined in IDAPA 58.01.01.221.01 (Below Regulatory Concern).

IDAPA 58.01.01.300
PROCEDURES AND REQUIREMENTS FOR TIER I OPERATING PERMITS

"The purposes of Sections 300 through 399 are to establish requirements and procedures for the issuance of Tier I operating permits."

SLNMC does not contain any Tier I sources and is therefore not subject to the applicable requirements in Section 300 through 399.

IDAPA 58.01.01.578
DESIGNATION OF ATTAINMENT, UNCLASSIFIABLE, AND NONATTAINMENT AREAS

SLNMC is located in Canyon County, it is in an attainment or unclassifiable area for NO_x, CO, SO_2, ozone, lead, PM_{10}, and $PM_{2.5}$; the appropriate modeling parameters reflect this designation.

IDAPA 58.01.01.590
NEW SOURCE PERFORMANCE STANDARDS

Refer to the applicability review of 40 CFR Part 60, Subpart IIII and Subpart Dc provided in Appendix E.

IDAPA 58.01.01.591
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Refer to the applicability review of 40 CFR Part 63, Subpart ZZZZ included in Appendix E and non-applicability review of 40 CFR 63, Subpart JJJJJJ included in Appendix F.

IDAPA 58.01.01.625
VISIBLE EMISSIONS

"A person shall not discharge any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than twenty percent (20%) opacity as determined by this section."

IDAPA 58.01.01.650
RULES FOR CONTROL OF FUGITIVE DUST

SLNMC will take all reasonable precautions to prevent the generation of fugitive dust as outlined under IDAPA 58.01.01.650-651.

IDAPA 58.01.01.651
GENERAL RULES

"All reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions which might affect the movement of particulate matter. Some of the reasonable precautions may include, but are not limited to, the following:"

IDAPA 58.01.01.651.01 Use of Water or Chemicals

"Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land."

IDAPA 58.01.01.651.02 Application of Dust Suppressants

"Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust."

IDAPA 58.01.01.651.04 Covering of Trucks

"Covering, when practical, open bodied trucks transporting materials likely to give rise to airborne dusts."

IDAPA 58.01.01.651.05 Paving

"Paving of roadways and their maintenance in a clean condition, where practical."

IDAPA 58.01.01.651.06 Removal of Materials

"Prompt removal of earth or other stored material from streets, where practical."

IDAPA 58.01.01.675
FUEL BURNING EQUIPMENT — PARTICULATE MATTER

SLNMC will adhere to guidelines under IDAPA 58.01.01.675 through IDAPA 58.01.01.681 with regards to particulate emissions for fuel burning equipment.

IDAPA 58.01.01.676
STANDARDS FOR NEW SOURCES

"A person shall not discharge into the atmosphere from any fuel burning equipment with a maximum rated input of ten (10) million BTUs per hour or more, and commencing operation on or after October 1, 1979, particulate matter in excess of the concentrations shown in the following table:"

Fuel Type	Allowable Particulate gr/dscf	Emissions, @Oxygen
Gas	0.015	3%
Diesel Fuel	0.050	3%

SLNMC will maintain 3 dual-fuel Hurst boilers each with a rated heat input of 14.25 MMBTU/hr. Each dual fuel boiler complies with the allowable particulate limit identified in the table above and included in Appendix C.

IDAPA 58.01.01.775
RULES FOR CONTROL OF ODORS

SLNMC will follow the guidelines set under IDAPA 58.01.01.775 through IDAPA 58.01.01.776 to control odorous emissions from all sources for which no gaseous emission control rules apply.

IDAPA 58.01.01.776
GENERAL RULES

IDAPA 58.01.01.776.01 General Restrictions

"No person shall allow, suffer, cause or permit the emission of odorous gases, liquids or solids into the atmosphere in such quantities as to cause air pollution."

SLNMC will follow the guidelines set under IDAPA 58.01.01.775 through IDAPA 58.01.01.776 to control odorous emissions from all sources for which no gaseous emission control rules apply.

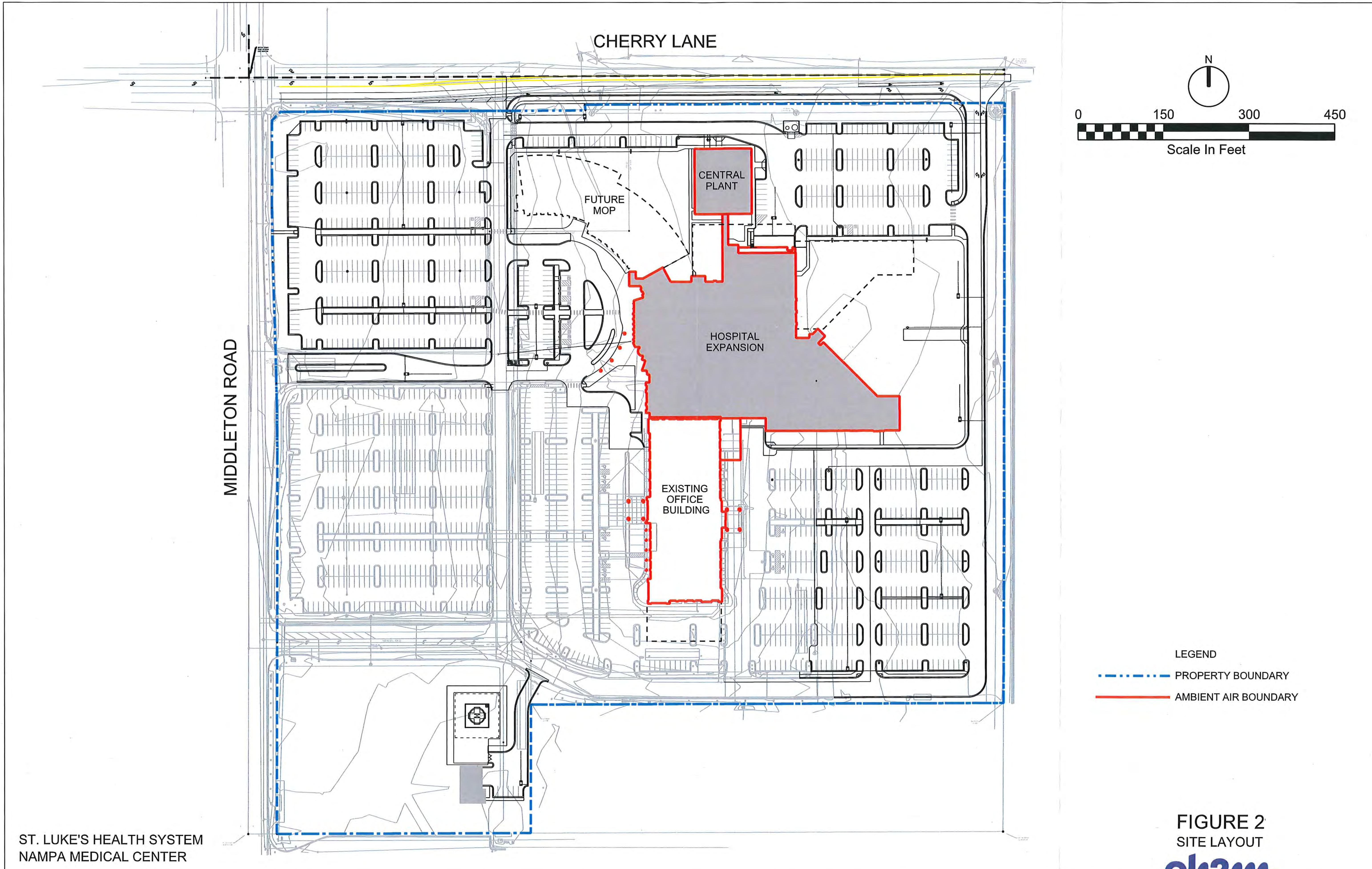
Figures

SITE LOCATION
NTS

ST. LUKE'S HEALTH SYSTEM
NAMPA MEDICAL CENTER

FIGURE 1
SITE LOCATION

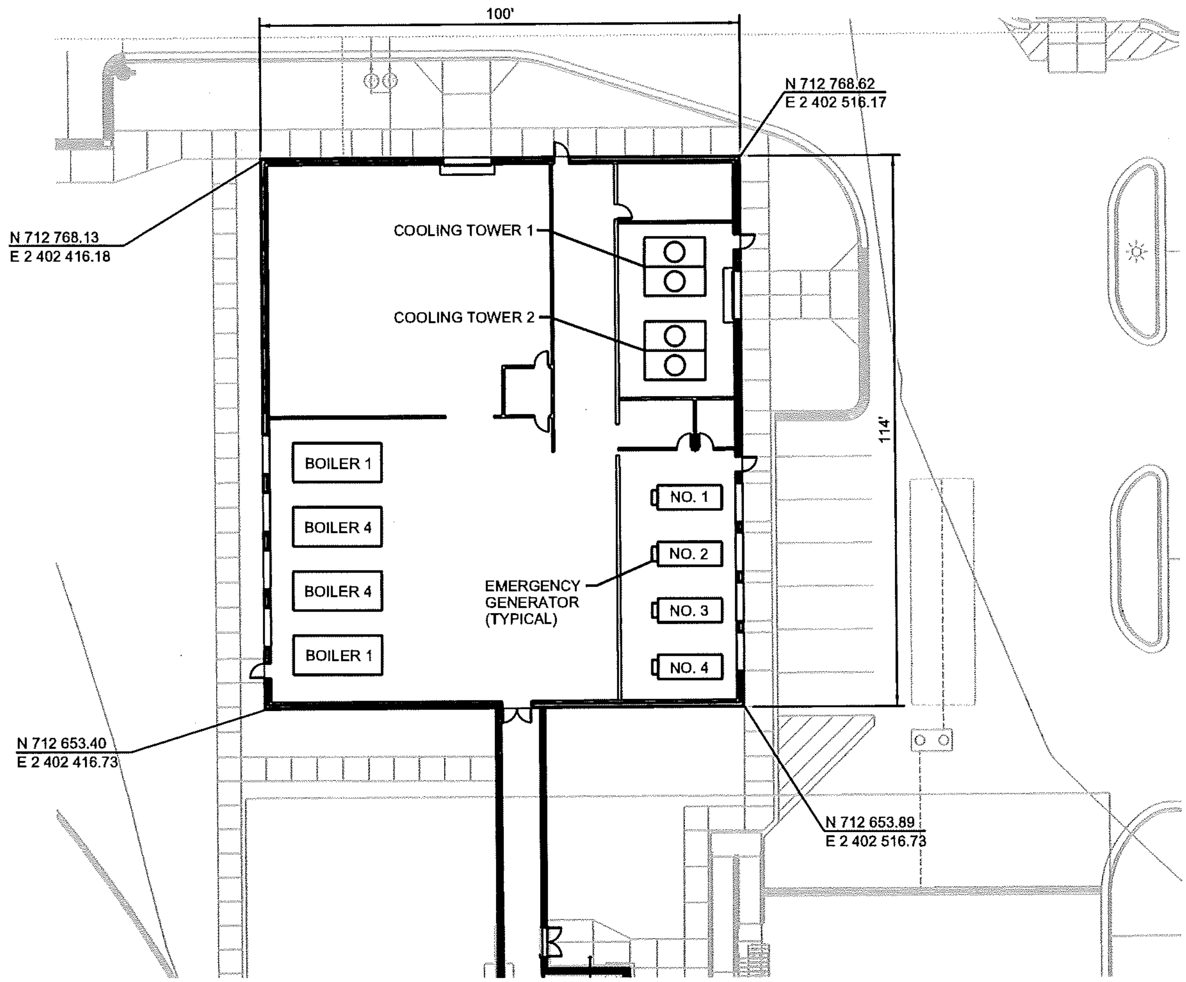
ch2m.



ST. LUKE'S HEALTH SYSTEM
NAMPA MEDICAL CENTER

FIGURE 2
SITE LAYOUT

ch2m



CENTRAL PLANT PLAN

1"=40"

FIGURE 3
CENTRAL PLANT

ST. LUKE'S HEALTH SYSTEM
NAMPA MEDICAL CENTER

ch2m

Appendix A
IDEQ Application Forms

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline: 1-877-5PERMIT

General Information **Form GI**
Revision 7
6/29/12

Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

Identification

1. Facility name: St Luke's ~~Meridian~~ Nampa Medical Center

2. Existing facility identification number:

☒ **Check if new facility (not yet operating)**

3. Brief project description: Construct a full-service medical center in Nampa, Idaho.

Facility Information

4. Primary facility permitting contact name: Russ Harbaugh — **Contact type**: Responsible official

Telephone number: 208-706-6215 — **E-mail**: harbaugr@slhs.org

5. Alternate facility permitting contact name: Mark Ericksen — **Alternate contact type**:

Telephone number: 208-381-2542 — **E-mail**: ericksen@slhs.org

6. Mailing address where permit will be sent (street/city/county/state/zip code): 190 East Bannock Street / Boise / Ada / Idaho / 83712

7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code): 16850 Midland Avenue Nampa Idaho 83687

8. Is the equipment portable? ☐ **Yes*** ☒ **No** ***If yes, complete and attach PERF; see instructions.**

9. NAICS codes: Primary NAICS: 622110 — **Secondary NAICS**:

10. Brief business description and principal product produced: General surgical and medical hospital

11. Identify any adjacent or contiguous facility this company owns and/or operates:

12. Specify type of application ☒ **Permit to construct (PTC); application fee of $1,000 required. See instructions.**

☐ **Tier I permit** ☐ **Tier II permit** ☐ **Tier II/Permit to construct**

For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.

☐ **Co-process Tier I modification and PTC** ☐ **Incorporate PTC at the time of Tier I renewal** ☐ **Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)**

Certification

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name: Russ Harbaugh — **Official's title**: Director of Operations Building Services

Official's address: 190 East Bannock Street, Boise, Idaho 83712

Telephone number: 208-706-6215 — **E-mail**: harbaugr@slhs.org

Official's signature: Russell L Harbaugh — **Date**: 3/16/2016

☒ **14. Check here to indicate that you want to review the draft permit before final issuance.**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	St. Luke's Health Services		
2. Facility Name	St. Luke's Nampa Medical Center	3. Facility ID No.	
4. Brief Project Description - One sentence or less	Construct a medical center in Nampa, Idaho.		

PERMIT APPLICATION TYPE

5. ☒ New Source ☐ New Source at Existing Facility ☐ PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c
☐ Unpermitted Existing Source ☐ Facility Emissions Cap ☐ Modify Existing Source: Permit No.:____ Date Issued:____
☐ Required by Enforcement Action: Case No.:____

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☐	☐	Form EU0 – Emissions Units General		☐
☒	☐	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: 4	☐
☐	☐	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: ____	☐
☐	☐	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: ____	☐
☒	☐	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: 1	☐
☒	☐	Form EU5 – Boiler Information	Please specify number of EU4s attached: 3	☐
☐	☐	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: ____	☐
☐	☐	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: ____	☐
☐	☐	PERF – Portable Equipment Relocation Form		☐
☐	☐	Form AO – Afterburner/Oxidizer		☐
☐	☐	Form CA – Carbon Adsorber		☐
☐	☐	Form CYS – Cyclone Separator		☐
☐	☐	Form ESP – Electrostatic Precipitator		☐
☐	☐	Form BCE– Baghouses Control Equipment		☐
☐	☐	Form SCE– Scrubbers Control Equipment		☐
☐	☐	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☐	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Forms EI-– Emissions Inventory		☐
☒	☐	PP – Plot Plan		☐
☒	☐	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

Instructions for Form CSPTC

This form is the cover sheet for an air quality permit application. It provides DEQ with basic information regarding the company and the proposed permitting action. This form helps DEQ efficiently determine whether the application is administratively complete. This form also provides the applicant with a list of forms available to aid the applicant to successfully submit a complete application.

Company Name, Facility Name, and Facility ID Number

1-3. Provide the name of your company, the name of the facility (if different than company name), and the facility identification (ID) number (Facility ID No.) in the boxes provided. The facility ID number is also known as the AIRS number or AIRS/AFS number (example: 095-00077). If you already have a permit, the facility ID number is located in the upper right hand corner of the cover page. The facility ID number must be provided unless your facility has not received one, in which case you may leave this box empty. **Use these same names and ID number on all forms**. This is useful in case any pages of the application are separated.

4. Provide a brief description of this permitting project in one sentence or less. Examples might be "Install/construct a new boiler" or "Increase the allowable process throughput." **This description will be used by DEQ as a unique identifier for this permitting project, in conjunction with the name(s) and ID number referenced in 1-3.** You will need to put this description, using the exact same words, on all other forms that are part of this project application. This is useful in case any pages of the application are separated.

Permit Application Type

5. Provide the reason you are submitting the permit application by checking the appropriate box (e.g., a new facility being constructed, a new source being constructed at an existing facility, an unpermitted existing source (as-built) applying for a permit for the first time, a permitted source to be modified, or the permit application is the result of an enforcement action, in which case provide the case number). If you are modifying an existing permitted source, provide the number and issue date of the most recent permit.

   If this PTC is for a Tier I source issued pursuant to the procedures contained at IDAPA 58.01.01.209.05.c, the source or modification may operate upon submittal of a Tier I Administrative Amendment issued pursuant to IDAPA 58.01.01.381.

6. Indicate if the application is a minor permit to construct application or a major permit to construct application by checking the appropriate box (e.g., major PTC or minor PTC). If the permit to construct application is for a major new source or major modification, you must ensure that all necessary information required by IDAPA 58.01.01.202, and .204, or .205, as applicable, is provided.

Forms Included

Check the "Included" box for each form included in this permit to construct application. If there are multiples of a form for multiple units of that type, check the box and fill in the number of forms in the blank provided.

The "N/A" box should only be checked if the form is absolutely unnecessary to complete the application. Additional information may be requested.

Application Fee

All applicants for a PTC shall submit a PTC application fee of $1000.00 to DEQ <u>at the time of the original submission of the application</u> as required by IDAPA 58.01.01.224. An application fee is not required for exemption applicability determinations, typographical errors, and name or ownership changes. An application fee can be paid by check, credit card, or Electronic Funds Transfer (EFT). If you choose to pay by credit card or EFT, call DEQs Fiscal Office to complete the necessary paperwork. Paper checks must be submitted with the original application as described below.

Submit Application

When complete, enclose a check for the application fee along with the hardcopy application certified by a responsible official (as defined in IDAPA 58.01.01.006.94), and send to:

Air Quality Program Office – Application Processing
Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706-1255

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units Industrial IC Engine Information - **Form EU1**
Revision 9
10/23/13

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name	2. Facility Name:
St. Luke's Health Services	St. Luke's Nampa Medical Center

3. Brief Project Description:	Construct a full-service medical center in Nampa, Idaho.

IC ENGINE DESCRIPTION AND SPECIFICATIONS

4. Type of unit:
- ☒ New unit ☐ Unpermitted existing unit ☐ Modification to an existing permitted unit? Permit number: ________
- ☐ Full-time operation (non-emergency standby use)?
- ☒ Emergency standby use only (operation limited to 100 hrs/yr for maintenance and testing and emergency use only)?
- ☐ Emergency fire pump use only?
- ☐ Stationary test cell/stand operation only (as defined in NSPS Subpart ZZZZ)?
- ☐ National security operation only (as defined in NSPS Subpart ZZZZ)?
- ☐ Institutional emergency standby IC engine (as defined in NSPS Subpart ZZZZ)?

IC ENGINE SPECIFICATIONS

Questions 5 through 15 apply to **all IC engines**.

5. IC Engine Manufacturer: Caterpillar 6. Model: C27 7. Date manufactured: New 8. Model year: 2016
9. Date of installation (if an existing IC engine): ________ 10. IC Engine cylinder displacement: 2.25 liters per cylinder
11. Maximum rated horsepower (per the data plate/manufacturer specifications): 1,214 bhp
12. EPA Certification: Tier certification number ________ or ☒ None/not tier certified
13. Ignition type: ☐ Spark ☒ Compression
14. Fuel combusted in the IC engine? ☒ Distillate fuel oil ☐ Natural gas/LNG ☐ LPG/propane
If distillate fuel oil (#1, #2, or a mixture) is used, what is the maximum sulfur content? ☒ 15 ppm (0.0015% by weight) ☐ 500 ppm (0.05% by weight)
15. IC engine exhaust stack parameters: Diameter 10 inches Height 5 feet Temperature 763 °F Flow rate 14,257 acfm

IC ENGINE EMISSIONS PARAMETERS

Questions 16 through 27 apply to **full-time** non-Tier certified IC engines or Tier certified IC engines manufactured prior to July 11, 2005. If you are proposing a Tier certified IC engine manufactured on and after July 11, 2005 or an emergency standby IC engine do not answer questions 17 through 27.

16. Testing schedule (for emergency standby IC engines only): ______ hrs/day ______ hrs/mon ______ hrs/qtr 100 hrs/yr
17. Maximum daily operation: ______ hrs/day 18. Maximum annual operation: ______ hrs/yr **Note:** These operational limits will be placed in the permit.
19. Will CO emissions be limited to a specific ppmvd (i.e. 49 or 23 ppmvd)? ☐ Yes ☒ No 20. What will the CO emissions limit be? ______ ppmvd
21. Will CO emissions be reduced by 70% or more? ☐ Yes ☒ No
22. Will a CEMS (Continuous Emissions Monitoring System) be used to measure pollutants in the IC engine exhaust stream? ☐ Yes ☒ No
23. Will a CPMS (Continuous Parameters Monitoring System) be used to measure parameters of the IC engine exhaust stream? ☐ Yes ☒ No
24. Will the IC engine be equipped with an oxidation catalyst? ☐ Yes ☒ No
25. If applicable, will the oxidation catalyst be equipped with a temperature measurement system to ensure it is operating properly? ☐ Yes ☐ No
26. Will the IC engine be equipped with a diesel particulate filter? ☐ Yes ☒ No
27. If applicable, will the diesel particulate filter be equipped with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached? ☐ Yes ☐ No

Instructions for Form EU1

Please refer to IDAPA 58.01.01.220 for a list of the general exemption criteria for Permit to Construct exemptions.

1 – 3. Provide the same company name, facility name (if different), and brief project description as on Form GI. This is useful if the application pages are separated.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

General Information:

4. Indicate whether the IC engine is a new unit, unpermitted existing unit, being modified, and whether it will be permitted to operate full-time or for emergency use only.

IC Engine Specifications:

5-8. Provide the IC engine manufacturer, model, date the IC engine was manufactured, and the model year (used for EPA certification purposes) of the IC engine.

9. Provide the date of installation of the IC engine.

10. Provide the IC engine cylinder displacement (i.e. 12 liter engine with 8 cylinders = 1.5 liters per cylinder).

11. Provide the maximum horsepower of the IC engine (per the data plate) in bhp.

12. Provide the EPA Tier certification number of the IC engine (i.e. 1, 2, 3, or 4).

13. Provide the IC engine ignition type.

14. Check which fuel is combusted in the IC engine. If distillate fuel oil is combusted, check the maximum proposed sulfur content of the fuel.

15. Provide the IC engine exhaust stack parameters. The temperature and flow rate should be per the IC engine manufacturer. If the stack height is very tall, provide a justification for the exhaust gas temperature.

IC Engine Emissions Parameters:

Questions 16 through 27 apply to **full-time** non-Tier certified IC engines or Tier certified IC engines manufactured prior to July 11, 2005. If you are proposing a Tier certified IC engine manufactured on and after July 11, 2005 or an emergency standby IC engine do not answer questions 17 through 27.

16. For emergency IC engines only, propose a testing schedule.

17. Propose a maximum daily IC engine hourly limit. **Note:** Unless it is 24 hours per day of operation, this proposed daily hourly limit will be placed in the permit.

18. Propose a maximum annual IC engine hourly limit. **Note:** Unless it is 8,760 hours per year of operation, this proposed annual hourly limit will be placed in the permit.

19-21. Subpart ZZZZ requires that CO emissions in the exhaust from existing non-Tier certified IC engines are either limited to a specific concentration, 49 ppmvd for engines rated at 300 bhp to ≤ 500 bhp or 23 ppmvd for engines rated at > 500 bhp, or are to reduce the CO concentration by 70% or more. Therefore, "yes" should only be answered to one of these two questions.

22-23. Subpart ZZZZ requires that, for IC engines rated at > 500 bhp, Applicants either install a CEMS (Continuous Emissions Monitoring System) or a CPMS (Continuous Parameters Monitoring System) in the exhaust stream to demonstrate compliance with the emissions limitations. Therefore, "yes" should only be answered to one of these two questions.

24. Specify if the IC engine is equipped, or will need to be equipped, with an oxidation catalyst to comply with the emissions limitations of Subpart ZZZZ.

25. Specify if the oxidation catalyst will be equipped with a temperature measurement system to ensure that is operating properly to comply with the emissions limitations of Subpart ZZZZ.

26. Specify if the IC engine is equipped, or will need to be equipped, with a diesel particulate filter to comply with the emissions limitations of Subpart ZZZZ.

27. Specify if the diesel particulate filter will be equipped with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Cooling Towers Information **Form EU4**
Revision 5
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION		
1. Company Name: St. Luke's Health Services	2. Facility Name: St. Luke's Nampa Medical Center	3. Facility ID No:
4. Brief Project Description:	Construct a medical center in Nampa, Idaho.	

COOLING TOWER IDENTIFICATION AND DESCRIPTION				
	Tower 1	Tower 2	Tower 3	Tower 4
5. Emission Unit Name	Cooling Tower 1	Cooling Tower 2		
6. Emission Unit ID Number	CT1A/CT1B	CT2A/CT2B		
7. Stack/Vent ID Number	CT1A/CT1B	CT1A/CT1B		
8. Tower Type (N: New, U: Unpermitted, M: Modification)	☒ N, ☐ U, ☐ M	☒ N, ☐ U, ☐ M	☐ N, ☐ U, ☐ M	☐ N, ☐ U, ☐ M
9. Current Permit Number	N/A	N/A		
10. Tower Construction Date	TBD	TBD		
11. Tower Manufacturer	Baltimore Aircoil Company Inc.	Baltimore Aircoil Company Inc.		
12. Tower Model Number	XES3E-1424-07M	XES3E-1424-07M		
13. Number of Cells in Tower	2	2		
14. Tower Maximum Water Flow Rate	1,500 gpm	1,500 gpm		
15. Measured TDS Content (if known)	1,500 mg/L	1,500 mg/L		
16. Do you use additives in the water? If Yes, provide an MSDS form for each additive	☒ No ☐ Yes	☒ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
CONTROL EQUIPMENT INFORMATION				
17. Control Equipment	☒ No ☐ Yes	☒ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
18. Control Equipment ID Number				
19. Control Equipment Efficiency				
OPERATING SCHEDULE				
20. Actual Operation (hours per year)	8,760	8,760		
21. Maximum Operation (hours per year)	8,760	8,760		

REQUEST FOR PERMIT LIMITATIONS				
22 Are you requesting any permit limits?	☒ No ☐ Yes. If Yes, fill in all that apply below.			
Tower Served	Operation Hour Limits:	TDS Limits (ppm):	Material Usage Limits:	Other:
Tower 1				
Tower 2				
Tower 3				
Tower 4				
23. Rationale for Requesting the Limit(s):				

Instructions for Form EU4

This form is intended for cooling towers only and may be used *in place of* Form EU0 and control equipment forms.

1 – 4. Provide the same company name, facility name (if different), facility ID number, and brief project description as on Form CS. This is useful if application pages are separated.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

Cooling Tower Identification and Description:

5. Provide the name of the emission unit, such as "Tower 1," "Cooling Tower," etc.

6. & 7. Provide the identification number for the emission unit and emission point. The ID number should match ID numbers used on other construction permit applications and within this application. It can be any number. However, if you submitted an operating permit application, the numbers used for identification purposes in this application should be consistent with the ID numbers used in your operating permit application.

8. Mark whether your cooling tower is new, existing but unpermitted, or being modified.

9. If this is a modification to a permit, provide the current construction permit number of the cooling tower.

10. Provide the date of construction (month, day, and year) on which construction or modification was commenced.

11. & 12. Provide the manufacturer's name and model number of the emission unit. If the unit is custom-designed or homemade, indicate so.

13. Provide the number of cells in this cooling tower.

14. Provide the maximum water flow rate, and units of that rate, of this cooling tower.

15. If you have data regarding the Total Dissolved Solids (TDS) content of the water, please provide that data.

16. If any additives are used in the water (biocide, anti-corrosion agents, etc.) provide a Material Safety Data Sheet (MSDS) form for each additive.

Control Equipment Information

17. & 18. If there is control equipment associated with this cooling tower, provide the identification number of the control.

19. Provide the control efficiency of the control equipment.

Operating Schedule

20. Provide the operation schedule of the tower under a general condition.

21. Provide the schedule for projected maximum operation.

Request for Permit Limitations

22. If you wish to have permit limits placed on the cooling tower, mark "Yes." Then, check each type of limit that applies to this emission unit and write down the requested limit. For example, operation hours limits may be in terms of hours per year, material usage limits may be in gallons of additive per year.

23. Please provide the reason for any requested limit(s). This helps the DEQ and the applicant determine whether the limits are necessary, and whether they will accomplish the desired purpose.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Industrial Boiler Information **Form EU5**
Revision 5
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3 Facility ID No:
St. Luke's Health Services	St. Luke's Nampa Medical Center	
4. Brief Project Description:	Construct a full-service medical center in Nampa, Idaho.	

EXEMPTION

Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.

BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

5. Type of Request: ☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:		
6. Use of Boiler: ☐ % Used For Process ☒ % Used For Space Heat ☐ % Used For Generating Electricity ☐ Other: 100		
7. Boiler ID Number: Boiler #1	8. Rated Capacity: ☒ 14.25 Million British Thermal Units Per Hour (MMBtu/hr) ☒ 12.075 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)	
9. Construction Date: TBD, 2016	10. Manufacturer: Hurst	11. Model: Series 500
12. Date of Modification (if applicable):	13. Serial Number (if available):	14. Control Device (if any): **Note: Attach applicable control equipment form(s)**

FUEL DESCRIPTION AND SPECIFICATIONS

15. Fuel Type	☒ Diesel Fuel (# 2) 105 (gal/hr)	☒ Natural Gas 13,973 (cf/hr)	☐ Coal (unit: /hr)	☐ Other Fuels (unit: /hr)
16. Full Load Consumption Rate	105 gal/hr	13,973 cf/hr		
17. Actual Consumption Rate	5,040 gal/yr	122 MMcf/yr		
18. Fuel Heat Content (Btu/unit, LHV)	140,000 Btu/gal	1,020 Btu/scf		
19. Sulfur Content wt%	0.0015%	-		
20. Ash Content wt%	-	N/A		

STEAM DESCRIPTION AND SPECIFICATIONS

21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	☐ Saturated ☐ Superheated	☐ Saturated ☐ Superheated

OPERATING LIMITS & SCHEDULE

25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):	8.760 hr/yr natural gas / 48 hr/yr diesel
26. Operating Schedule (hours/day, months/year, etc.):	8,760 hr/yr
27. NSPS Applicability: ☒ Yes ☐ No — If Yes, which subpart:	NSPS Subpart Dc

Instructions for Form EU5

Please refer to IDAPA 58.01.01.222 for a list of industrial boilers which are exempt from the Permit to Construct requirements.

1 – 4. Provide the same company name, facility name (if different), and facility ID number as on Form CS. This is useful in case any pages of the application are separated.

Boiler Description and Specification:

5. Indicate whether the unit is new, existing but unpermitted, or being modified.

6. Indicate the percentage of the steam used for process, space heat, generating electricity, or others.

7. Provide the boiler identification (ID) number. Each boiler in the application must have its own number. If boilers included in this permit application are not identical in make and model, fill out a separate EU5 form for each boiler. If the boilers are identical, attach a separate sheet labeled EU5A listing them by ID number and date of construction or modification. The boiler ID numbers should match the boiler ID numbers used on other construction permit applications and within this application. It can be any number. However, if you submitted an operating permit application, the numbers used for identification purposes in this application should be consistent with the ID numbers used in your operating permit application.

8. The boiler's rated capacity should be read from the boiler's nameplate or from the manufacturer's literature.

9. The date of construction of the emission unit is the date, month, and year in which construction or modification begins as defined in EU0 Form Instruction item 7.

10. Provide the name of the manufacturer of the boiler.

11. Provide the model number of the boiler. This number should be available from the nameplate of the boiler.

12. If the boiler has been or will be modified, give the date, month and year of the most recent or future modification.

13. Provide the manufacturer's serial number for this boiler, if available.

14. Provide the control device name and number if a pollution control device is attached to this emission unit. The name and number of the control device should be consistent with control equipment forms throughout the application. **Note: a separate control equipment form(s) should be attached for all applicable control equipment serving this unit.**

Fuel Description and Specifications:

15. Indicate the fuel type used by the boiler. If diesel fuel is used, you need to indicate the ranking number. If the boiler is a dual-fuel engine, please check all appropriate fuel type boxes in this row.

16. The full-load consumption rate is the fuel consumption rate at the boiler's rated capacity.

17. The actual consumption rate is the fuel consumption rate (usually daily average) under typical operational conditions.

18. Provide fuel net or lower heating value (LHV).

19. Provide the weight percentage of the sulfur content in the fuel.

20. Provide the weight percentage of the ash content in the fuel. For gaseous fuel, this information is not required.

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Preapplication Meeting Information
Form FRA (Federal Requirements Applicability) - Regulatory Review

In each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name: St. Luke's Health Service	2. Facility Name: St. Luke's Nampa Medical Center
3. Brief Project Description: Construct a full-service medical center.	
APPLICABILITY DETERMINATION	
4. List all applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). List all non-applicable subparts of the NSPS which may appear to apply to the facility but do not. Examples of NSPS-affected emissions units include internal combustion engines, boilers, turbines, etc. Applicant must thoroughly review the list of affected emissions units.	List of all applicable subpart(s): **NSPS Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*** **NSPS Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*** List of all non-applicable subpart(s) which may appear to apply but do not: ☐ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR part 61 and 40 CFR part 63). List all non-applicable subparts of the NESHAP which may appear to apply to the facility but do not. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. Reference EPA's webpage on NESHAPs for more information.	List of all applicable subpart(s): **NESHAP Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*** List of all non-applicable subpart(s) which may appear to apply but do not: **Exempt from Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*** ☐ Not Applicable

6. For each subpart identified above, conduct a complete regulatory analysis using the instructions and referencing the example on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation does or does not apply. Regulatory reviews submitted with insufficient detail will be determined incomplete.	☑ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT.

It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand those requirements prior to submittal of the application but that DEQ will not perform the required technical or regulatory analyses on the applicant's behalf.

Appendix B
Manufacturer Data and MSDS

P.O. Box 530 / 100 Boilermaker Lane / Coolidge, GA 31738 / U.S.A.
Ph: 229-346-3970 Fax: 229-346-3837
Cell: 229-221-3342 E-Mail: rpierce@hurstboiler.com

Date: 19 Aug '15

To: Norbryhn Equipment Co.

Attn: Randy Reed

Re: St. Lukes Hospital Nampa

For: Hurst 350 hp, Series 500, Natural Gas Fired, 100 PSIG Steam Operating Pressure

Boiler Shell ID	84"
Stack OD	20"
Burner Input (w/o economizer), mbh	14,252
Boiler Efficiency, Fuel to Steam % w/o Economizer	82.3
Flue Gas Flow Rate, SCFM	2,840
Saturated Steam Produced, lbs / hr.	12,075
Stack Temp, d/f (before economizer)	391
Furnace Volume, Cubic Feet	100.4
Furnace Heat Release, BTU / Cu. Ft.	141,901
Feed Water Temp to StackMaster Economizer, d/f	220
Fouling Factor	0.0005
Water Temperature from Economizer to Boiler	239
Flue Gas Temp Exiting Economizer	324
Heat Recovered Through Economizer, BTU/ HR	226,513
Boiler Input w/ Economizer, mbh	13,960,799
Total Boiler Efficiency w/ StackMaster, %	**83.9**

Converting SCFM to ACFM

$ACFM = SCFM * (P_{std} / P_{act}) * (T_{act} / T_{std})$

Where

ACFM = Actual cubic feet per minute
SCFM = Standard cubic feet per minute
Pstd = Standard absolute air pressure (psia)
Pact = Absolute pressure at the actual level (psia)
Tact = Actual ambient air temperature (°R)
Tstd = Standard temperature (°R)

Hurst 350 hp Boiler

SCFM =	2840.00			
Pstd =	14.7	psia		
Pact =	13.3	psia (2,800 ft elevation)		
Tact =	324	°F	784	°R
Tstd =	77	°F	537	°R

ACFM = 4,582.75

Power Flame Incorporated

9/28/2006
Rev. 02/28/2012

Typical Flue Product Emissions Data for Power Flame Burners

	Natural Gas	L.P. Gas	# 2 Fuel Oil [1]
Carbon Monoxide - CO	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb per 10^6 BTU INPUT (50 PPM)
Sulfur Dioxide - SO_2	(1.05) x (% Sulfur by weight in fuel) = lb SO_2 per 10^6 BTU Input		
Particulate Matter	.0048 lb PM per 10^6 BTU input	.0048 lb PM per 10^6 BTU input	.0143 lb PM per 10^6 BTU input
Hydrocarbons	.025 lb HC's per 10^6 BTU input	.025 lb HC's per 10^6 BTU input	.038 lb HC's per 10^6 BTU input
CO_2	9 % to 10%	10% to 12%	10% to 13%
Nitrogen Oxides - NO_x			
Standard J, EDM & X4 Gas Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	N/A N/A
Standard C(R) Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIC(R) Burners Fire box/Cast Iron boilers	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIC(R) Burners Water tube boilers	.024 lb NO_x per 10^6 BTU input (20 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIAC Burners	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM
CM Burners	.070 lb NO_x per 10^6 BTU input (60 PPM)[4]	.074 lb NO_x per 10^6 BTU input (60 PPM)[4]	.146 lb NO_x per 10^6 BTU Input (110) PPM
LNICM Burners Scotch Boiler	.033 lb NO_x per 10^6 BTU input (30) PPM	.033 lb NO_x per 10^6 BTU input (30) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
LNICM Burners Fire box/Cast Iron boilers	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
LNICM Burners Water tube boilers	.029 lb NO_x per 10^6 BTU input (20) PPM	.031 lb NO_x per 10^6 BTU input (20) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
NPM Premix Burners	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	N/A N/A
Nova Plus Burners NVC AND NP2	.010 lb NO_x per 10^6 BTU input (9) PPM	.015 lb NO_x per 10^6 BTU input (12) PPM	N/A N/A

(1) NOx emissions at 3 % 02 will vary based on the percent of fuel bound nitrogen (these are based on .02%) and boiler or heat exchanger configurations

(2) 90 PPM NOx on cast iron sectional, fire box and water tube boiler, 120 PPM on fire tube boilers. (.159 lb NOx per 10^6 BTU Input)

(3) Burning natural gas the VOC are estimated at 0.003 # per million BTU and SO_X are 0.0005 # per million BTU.

(4) In some applications the CMAX will achieve less than 60 PPM without flue gas recirculation - consult factory.

These emission rates are general estimates and do not constitute guarantees by Power Flame Inc.
In instances where guarantees are required, please consult the factory with the specific application information.
All NOx numbers stated are corrected to 3% O_2

PERFORMANCE DATA

OCTOBER 05, 2015

For Help Desk Phone Numbers Click here

Perf No: DM7696

Change Level: 02

General | Heat Rejection | Emissions | Regulatory | Altitude Derate | Cross Reference | Perf Param Ref

View PDF

SALES MODEL:	C27	**COMBUSTION:**	DI
ENGINE POWER (BHP):	1,214	**ENGINE SPEED (RPM):**	1,800
GEN POWER WITH FAN (EKW):	800.0	**HERTZ:**	60
COMPRESSION RATIO:	16.5	**FAN POWER (HP):**	39.3
RATING LEVEL:	STANDBY	**ADDITIONAL PARASITICS (HP):**	52.2
PUMP QUANTITY:	1	**ASPIRATION:**	TA
FUEL TYPE:	DIESEL	**AFTERCOOLER TYPE:**	ATAAC
MANIFOLD TYPE:	DRY	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
GOVERNOR TYPE:	ADEM4	**INLET MANIFOLD AIR TEMP (F):**	120
ELECTRONICS TYPE:	ADEM4	**JACKET WATER TEMP (F):**	210.2
IGNITION TYPE:	CI	**TURBO CONFIGURATION:**	PARALLEL
INJECTOR TYPE:	EUI	**TURBO QUANTITY:**	2
REF EXH STACK DIAMETER (IN):	10	**TURBOCHARGER MODEL:**	GTA5008BS-56T-1.60
MAX OPERATING ALTITUDE (FT):	7,999	**CERTIFICATION YEAR:**	2010
		PISTON SPD @ RATED ENG SPD (FT/MIN):	1,800.0

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
800.0	100	1,214	324	0.330	57.3	58.6	120.5	1,230.6	41.1	952.5
720.0	90	1,100	294	0.334	52.5	53.7	115.2	1,195.3	37.5	932.4
640.0	80	988	264	0.339	47.8	48.4	113.4	1,168.6	33.4	919.7
600.0	75	932	249	0.341	45.4	45.5	113.0	1,155.3	31.2	913.8
560.0	70	876	234	0.342	42.9	42.2	111.6	1,138.9	28.8	906.0
480.0	60	765	204	0.344	37.6	34.9	107.3	1,095.6	23.9	882.8
400.0	50	654	175	0.346	32.3	27.3	102.5	1,039.6	19.1	850.4
320.0	40	545	145	0.349	27.1	20.4	98.3	967.7	14.9	804.3
240.0	30	436	116	0.355	22.1	14.5	95.0	875.5	11.4	739.0
200.0	25	380	101	0.359	19.5	11.7	93.6	822.1	9.9	699.4
160.0	20	324	86	0.366	17.0	9.1	92.4	763.2	8.5	654.7
80.0	10	210	56	0.402	12.0	5.1	92.2	626.6	6.3	544.7

GENSET POWER WITH	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL	ENGINE OUTLET WET EXH GAS VOL	WET INLET AIR MASS	WET EXH GAS MASS	WET EXH VOL FLOW RATE (32 DEG F AND	DRY EXH VOL FLOW RATE (32 DEG F AND

FAN					FLOW RATE	FLOW RATE	FLOW RATE	FLOW RATE	29.98 IN HG)	29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
800.0	100	1,214	61	362.1	2,216.4	6,011.7	9,543.1	9,944.2	2,093.1	1,894.9
720.0	90	1,100	57	341.6	2,124.9	5,659.3	9,125.9	9,493.8	1,998.8	1,815.5
640.0	80	988	51	320.7	2,001.3	5,260.8	8,572.1	8,906.9	1,875.2	1,707.1
600.0	75	932	48	309.9	1,930.4	5,042.0	8,257.4	8,575.1	1,805.0	1,645.1
560.0	70	876	44	295.4	1,851.1	4,797.3	7,907.3	8,207.3	1,727.2	1,576.0
480.0	60	765	37	264.1	1,678.1	4,260.9	7,148.0	7,411.6	1,560.5	1,427.2
400.0	50	654	29	233.3	1,497.7	3,697.0	6,361.6	6,588.0	1,387.5	1,272.0
320.0	40	545	22	203.3	1,329.0	3,157.0	5,630.4	5,820.5	1,228.0	1,129.6
240.0	30	436	16	173.6	1,175.4	2,643.8	4,970.3	5,124.7	1,084.4	1,003.3
200.0	25	380	13	158.7	1,102.8	2,392.1	4,660.7	4,797.2	1,014.7	942.2
160.0	20	324	10	143.8	1,032.8	2,142.5	4,363.5	4,482.1	945.3	881.3
80.0	10	210	6	121.2	926.9	1,716.6	3,911.4	3,995.6	840.3	792.1

Heat Rejection Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
800.0	100	1,214	18,785	6,240	45,257	25,637	6,549	9,235	51,468	122,961	130,984
720.0	90	1,100	18,137	5,061	42,000	23,586	6,007	8,276	46,664	112,779	120,138
640.0	80	988	17,141	4,437	38,642	21,600	5,462	7,119	41,902	102,550	109,241
600.0	75	932	16,243	4,573	36,868	20,559	5,186	6,513	39,533	97,376	103,729
560.0	70	876	15,133	4,950	34,899	19,383	4,898	5,822	37,162	91,965	97,965
480.0	60	765	13,933	4,599	30,563	16,728	4,301	4,488	32,445	80,759	86,028
400.0	50	654	12,297	4,489	26,024	13,914	3,694	3,331	27,748	69,364	73,890
320.0	40	545	10,665	4,336	21,575	11,109	3,103	2,367	23,120	58,261	62,063
240.0	30	436	9,960	3,213	17,222	8,311	2,521	1,564	18,469	47,340	50,429
200.0	25	380	9,576	2,592	15,113	6,955	2,231	1,215	16,122	41,885	44,618
160.0	20	324	9,057	2,021	13,057	5,639	1,939	898	13,745	36,402	38,778
80.0	10	210	7,177	1,693	9,288	3,167	1,375	455	8,885	25,814	27,498

Emissions Data Top

Units Filter All Units

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	800.0 1,214	600.0 932	400.0 654	200.0 380	80.0 210
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	7,541	4,507	2,865	1,989	1,253
TOTAL CO		G/HR	517	644	630	514	567
TOTAL HC		G/HR	66	83	90	71	85
PART MATTER		G/HR	55.4	52.1	86.3	99.7	101.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,121.8	2,374.5	2,149.1	2,626.2	2,606.8
TOTAL CO	(CORR 5% O2)	MG/NM3	215.2	343.4	483.1	717.2	1,372.2
TOTAL HC	(CORR 5% O2)	MG/NM3	23.7	38.9	59.2	87.9	183.2
PART MATTER	(CORR 5% O2)	MG/NM3	18.9	22.9	55.1	113.5	210.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,521	1,157	1,047	1,279	1,270
TOTAL CO	(CORR 5% O2)	PPM	172	275	386	574	1,098
TOTAL HC	(CORR 5% O2)	PPM	44	73	111	164	342
TOTAL NOX (AS NO2)		G/HP-HR	6.27	4.86	4.40	5.25	6.00
TOTAL CO		G/HP-HR	0.43	0.69	0.97	1.36	2.72
TOTAL HC		G/HP-HR	0.05	0.09	0.14	0.19	0.41
PART MATTER		G/HP-HR	0.05	0.06	0.13	0.26	0.49
TOTAL NOX (AS NO2)		LB/HR	16.63	9.94	6.32	4.38	2.76
TOTAL CO		LB/HR	1.14	1.42	1.39	1.13	1.25
TOTAL HC		LB/HR	0.15	0.18	0.20	0.16	0.19

PART MATTER		LB/HR	0.12	0.11	0.19	0.22	0.22

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		**EKW**	**800.0**	**600.0**	**400.0**	**200.0**	**80.0**
ENGINE POWER		**BHP**	**1,214**	**932**	**654**	**380**	**210**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL NOX (AS NO2)		G/HR	6,233	3,725	2,368	1,644	1,036
TOTAL CO		G/HR	276	344	337	275	303
TOTAL HC		G/HR	35	44	48	37	45
TOTAL CO2		KG/HR	563	445	315	188	116
PART MATTER		G/HR	28.4	26.7	44.2	51.1	52.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,580.0	1,962.4	1,776.1	2,170.4	2,154.4
TOTAL CO	(CORR 5% O2)	MG/NM3	115.1	183.6	258.3	383.5	733.8
TOTAL HC	(CORR 5% O2)	MG/NM3	12.5	20.6	31.3	46.5	96.9
PART MATTER	(CORR 5% O2)	MG/NM3	9.7	11.8	28.3	58.2	107.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,257	956	865	1,057	1,049
TOTAL CO	(CORR 5% O2)	PPM	92	147	207	307	587
TOTAL HC	(CORR 5% O2)	PPM	23	38	58	87	181
TOTAL NOX (AS NO2)		G/HP-HR	5.18	4.02	3.63	4.34	4.96
TOTAL CO		G/HP-HR	0.23	0.37	0.52	0.72	1.45
TOTAL HC		G/HP-HR	0.03	0.05	0.07	0.10	0.22
PART MATTER		G/HP-HR	0.02	0.03	0.07	0.13	0.25
TOTAL NOX (AS NO2)		LB/HR	13.74	8.21	5.22	3.62	2.28
TOTAL CO		LB/HR	0.61	0.76	0.74	0.61	0.67
TOTAL HC		LB/HR	0.08	0.10	0.11	0.08	0.10
TOTAL CO2		LB/HR	1,240	982	694	414	255
PART MATTER		LB/HR	0.06	0.06	0.10	0.11	0.12
OXYGEN IN EXH		%	8.9	10.0	11.1	13.1	15.4
DRY SMOKE OPACITY		%	0.2	1.1	2.6	4.3	5.3
BOSCH SMOKE NUMBER			0.14	0.39	0.96	1.51	1.69

Regulatory Information Top

EPA TIER 2 **2006 - 2010**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY **2011 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**NORMAL**
ALTITUDE (FT)										
0	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214
1,000	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214

Converting SCFM to ACFM

$ACFM = SCFM * (P_{std} / P_{act}) * (T_{act} / T_{std})$

Where

ACFM = Actual cubic feet per minute
SCFM = Standard cubic feet per minute
Pstd = Standard absolute air pressure (psia)
Pact = Absolute pressure at the actual level (psia)
Tact = Actual ambient air temperature (°R)
Tstd = Standard temperature (°R)

Caterpillar C27-800

SCFM =	6011.70	maximum flow		
SCFM =	5042.00	75% load		
Pstd =	14.7	psia		
Pact =	13.3	psia (2,800 ft elevation)		
Tact =	913.8	°F (75% load)	1373.8	°R
Tstd =	77	°F	537	°R

ACFM = 14,256.66

McCormick, Rick/BOI

To: Randy Drake
Subject: RE: SL Nampa -Emergency Generators

From: Randy Drake [mailto:RandyD@engineeringinc.com]
Sent: Wednesday, November 04, 2015 11:29 AM
To: McCormick, Rick/BOI <Rick.McCormick@CH2M.com>
Subject: RE: SL Nampa -Emergency Generators

Ok, I will proceed in that direction. Thanks for the heads up.

Randy Drake
Mechanical P.E.

From: Rick.McCormick@CH2M.com [mailto:Rick.McCormick@CH2M.com]
Sent: Wednesday, November 04, 2015 10:20 AM
To: Randy Drake
Cc: Michael Grefenson; Estee.Lafrenz@ch2m.com
Subject: RE: SL Nampa -Emergency Generators

Randy

Vertically through the roof would be our preferred approach if this does not cause problems on your end. I think all that would be needed is a pressure relief valve (or flapper) not to allow moisture into a vertical stack. (Need anywhere from 2-5 feet above the roof line).

Let me know if this works.

Thanks

Rick McCormick, P.E.
Project Manager
D 208 383 6457
M 208 890 0219

CH2M
322 East Front Street
Suite 200
Boise, ID 83702
www.ch2m.com | LinkedIn | Twitter | Facebook

From: Randy Drake [mailto:RandyD@engineeringinc.com]
Sent: Wednesday, November 04, 2015 10:11 AM
To: McCormick, Rick/BOI <Rick.McCormick@CH2M.com>
Cc: Michael Grefenson <michaelg@engineeringinc.com>
Subject: RE: SL Nampa -Emergency Generators

Rick, we can run the generator exhaust vertically through or above the roof. The initial ideal was twofold, to gain separation from the

medical air compressor intake at the roof and to direct sound away from the hospital. However if this complicates thing with the air
quality compliance we will re-route to vertical outlets.

Randy Drake
Mechanical P.E.

Baltimore Aircoil Company, Inc.

Cooling Tower Selection Program

Version:	8.5.2 NA
Product data correct as of:	February 12, 2015

Project Name:	SLRMC Nampa
Selection Name:	DRAFT CT
Project State/Province:	Idaho
Project Country:	United States
Date:	February 25, 2015

Model Information

Product Line:	New Series 3000
Model:	XES3E-1424-07M
Number of Units:	2
Fan Type:	Standard Fan
Fan Motor:	(1) 20.00 = 20.00 HP/Unit
Total Standard Fan Power:	Full Speed, 20.00 BHP/Unit
Intake Option:	None
Internal Option:	None
Discharge Option:	None

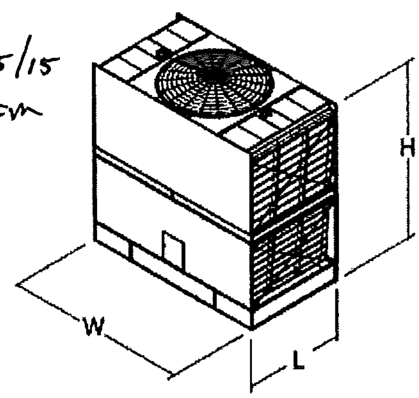
Design Conditions

Flow Rate:	1,500.00	USGPM
Hot Water Temp.:	80.00	°F
Cold Water Temp.:	70.00	°F
Wet Bulb Temp.:	67.00	°F
Tower Pumping Head:	4.91	psi
Reserve Capability:	5.38	%

Engineering Data, per Unit

Unit Length:	13' 11.25"	
Unit Width:	24' 00.50"	
Unit Height:	12' 03.25"	
Air Flow:	136,250	CFM — corrected ACFM
Approximate Shipping Weight:	16,270	pounds
Heaviest Section:	16,270	pounds
Approximate Operating Weight:	34,310	pounds
Heater kW Data (Optional)		
0°F (-17.8°C) Ambient Heaters:	(2) 14	kW
-20°F (-28.9°C) Ambient Heaters:	(2) 18	kW

RM 11/5/15



Minimum Distance Required

From Solid Wall:	6	ft.
From 50% Open Wall:	3	ft.

Energy Rating:

98.80 per ASHRAE 90.1, ASHRAE 189 and CA Title 24.
This XE model is an extremely efficient model, with a base energy rating that meets or exceeds 2x the minimum ASHRAE 90.1 energy rating.

Note: These unit dimensions account for the selected fan type for the standard cataloged drive configuration, but they do not account for other options/accessories. Please contact your local BAC sales representative for dimensions of units with other options/accessories.

Warning

1. One or more selection parameters are outside of CTI Certification limits.

St. Luke Nampa Medical Center Expansion

Wet Cooling Tower

Water Flow Rate (gal/min)	1,500	Design
Flow of cooling water (lbs/hr)	750,600	Calculated
TDS of blowdown (mg/l or ppmw) - Maximum ppm at blowdown	1,500	Design
Flow of dissolved solids (lbs/hr)	1,126	Calculated
Fraction of flow producing PM_{10} drift (See Note 2)	0.840	See Note 2
Control efficiency of drift eliminators (gal drift/gal flow)	0.000005	Design
PM emissions from tower (lb/hr)	0.006	Calculated
PM_{10} emissions from tower (lb/hr)	0.005	Calculated
PM emissions from tower (tpy)	0.025	Calculated
PM_{10} emissions from tower (tpy)	0.021	Calculated

Other Parameters

Number of cells per tower (outlet fans)	2	Two (2 cell) towers -4 total
Height at cell release (ft):	12.3	
Height at cell release (m):	3.75	
Discharge flow per cell (ACFM):	136,250	
Diameter of each cell (ft):	13.9	
Diameter of each cell (m):	4.24	
Area of cell discharge (ft^2):	152	
Average Temperature of cell discharge (degF):	77	
Average Temperature of cell discharge (K):	298.16	
Exit Velocity (ft/s):	15.0	
Exit Velocity (m/s):	4.56	

Notes:

(1) Cooling Tower design data from Kewiet.

(2) From "Calculating Realistic PM_{10} Emissions From Cooling Towers" (J. Reisman, G. Frisbie). Presented at 2001 AWMA Annual Meeting.

(3) TDS based on data from Idaho Power.

(4) Emission Calculation Method from AP 42, Sect.13.4-1

(5) Assume PM10 emissions equal PM2.5 emissions

Appendix C
Emission Estimates

St Lukes Nampa Medical Center
Criteria Pollutant Summary

Criteria Pollutants	PM10		PM2.5		CO		NOx		SOx		Lead		VOC	
Emissions Unit Name	**(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)**
Gen 1	0.12	0.01	0.12	0.01	1.14	0.06	16.63	0.83	0.012	0.001			0.15	0.01
Gen 2	0.12	0.01	0.12	0.01	1.14	0.06	16.63	0.83	0.012	0.001			0.15	0.01
Gen 3	0.12	0.01	0.12	0.01	1.14	0.06	16.63	0.83	0.012	0.001			0.15	0.01
Gen 4	0.12	0.01	0.12	0.01	1.14	0.06	16.63	0.83	0.012	0.001			0.15	0.01
Boiler #1 (NG)		0.30	0.068	0.30	0.53	2.31		2.09	0.022	0.098	6.99E-06	3.04E-05	0.356	1.55
Boiler #1 (ULSD)	**0.105**						**1.76**							
Boiler #2 (NG)		0.30	0.068	0.30	0.53	2.31		2.09	0.022	0.098	6.99E-06	3.04E-05	0.356	1.55
Boiler #2 (ULSD)	**0.105**						**1.76**							
Boiler #3 (NG)		0.30	0.068	0.30	0.53	2.31		2.09	0.022	0.098	6.99E-06	3.04E-05	0.356	1.55
Boiler #3 (ULSD)	**0.105**						**1.76**							
Cooling Tower 1A	0.0024	0.01	0.0024	0.01										
Cooling Tower 1B	0.0024	0.01	0.0024	0.01										
Cooling Tower 2A	0.0024	0.01	0.0024	0.01										
Cooling Tower 2B	0.0024	0.01	0.0024	0.01										
Totals	**0.80**	**0.97**	**0.69**	**0.96**	**6.14**	**7.16**	**71.81**	**9.60**	**0.116**	**0.30**	**2.10E-05**	**9.13E-05**	**1.67**	**4.69**

Note:
For Boilers #1 through #3 used worse-case emission factors between NG and ULSD.

St Lukes Nampa Medical Center
Toxic and Hazardous Air Pollutants Summary

Current Baseline

TAPs/HAPs	HAPs	Boilers 1-3		Gens 1-4		Facility Wide Total		
		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)[1]	(ton/yr)	
2-Methylnaphthalene	No	1.01E-06	4.41E-06			1.01E-06	4.41E-06	
3-Methylchloranthrene	No	7.55E-08	3.30E-07			7.55E-08	3.30E-07	
7,12-Dimethylbenz(a)anthracene	No	6.71E-07	2.94E-06			6.71E-07	2.94E-06	
Acenaphthene	No	7.55E-08	3.30E-07	1.71E-06	7.51E-06	7.55E-08	7.84E-06	
Acenaphthylene	No	7.55E-08	3.30E-07	3.38E-06	1.48E-05	7.55E-08	1.51E-05	
Acetaldehyde	**Yes**			9.23E-06	4.04E-05	0.00E+00	4.04E-05	
Acrolein	**Yes**			2.89E-06	1.26E-05	0.00E+00	1.26E-05	
Anthracene	No	1.01E-07	4.41E-07	4.51E-07	1.97E-06	1.01E-07	2.41E-06	
Benzo(a)anthracene	No	7.55E-08	3.30E-07	2.28E-07	9.98E-07	7.55E-08	1.33E-06	
Benzene	**Yes**	8.80E-05	3.86E-04	2.84E-04	1.25E-03	8.80E-05	1.63E-03	Annual Ave
Benzo(a)pyrene	No	5.03E-08	2.20E-07	9.41E-08	4.12E-07	5.03E-08	6.33E-07	
Benzo(b)fluoranthene	No	7.55E-08	3.30E-07	4.07E-07	1.78E-06	7.55E-08	2.11E-06	
Benzo(g,h,i)perylene	No	5.03E-08	2.20E-07	2.04E-07	8.92E-07	5.03E-08	1.11E-06	
Benzo(k)fluoranthene	No	7.55E-08	3.30E-07	7.99E-08	3.50E-07	7.55E-08	6.80E-07	
Chrysene	No	7.55E-08	3.30E-07	5.60E-07	2.45E-06	7.55E-08	2.79E-06	
Dibenz(a,h)anthracene	No	5.03E-08	2.20E-07	1.27E-07	5.55E-07	5.03E-08	7.75E-07	
Dichlorobenzene	No	5.03E-05	2.20E-04			5.03E-05	2.20E-04	
Ethylbenzene	**Yes**	1.10E-07	4.81E-07			1.10E-07	4.81E-07	
Fluoranthene	No	1.26E-07	5.51E-07	1.48E-06	6.47E-06	1.26E-07	7.02E-06	
Fluorene	No	1.17E-07	5.14E-07	4.69E-06	2.05E-05	1.17E-07	2.11E-05	
Formaldehyde	**Yes**	3.14E-03	1.38E-02	2.89E-05	1.27E-04	3.14E-03	1.39E-02	Annual Ave
Hexane	**Yes**	7.55E-02	3.30E-01			7.55E-02	3.30E-01	
Indeno(1,2,3-cd)pyrene	No	7.55E-08	3.30E-07	1.52E-07	6.64E-07	7.55E-08	9.95E-07	
Naphthalene	**Yes**	2.56E-05	1.12E-04	4.76E-05	2.09E-04	2.56E-05	3.21E-04	Annual Ave
Phenanthrene	No	7.13E-07	3.12E-06	1.49E-05	6.55E-05	7.13E-07	6.86E-05	
Propylene	No			1.02E-03	4.48E-03	0.00E+00	4.48E-03	
Pyrene	No	2.10E-07	9.18E-07	1.36E-06	5.95E-06	2.10E-07	6.87E-06	
Toluene	**Yes**	1.43E-04	6.24E-04	1.03E-04	4.51E-04	1.43E-04	1.08E-03	
o-Xylene	**Yes**	1.88E-07	8.24E-07	7.07E-05	3.10E-04	1.88E-07	3.10E-04	
PAH	No			7.77E-05	7.21E-06	0.00E+00	7.21E-06	Annual Ave
POM	**Yes**	4.78E-07	1.98E-06	1.65E-06	1.34E-05	4.78E-07	1.54E-05	Annual Ave
TAPs/HAPs Metals								
Arsenic	**Yes**	2.79E-06	1.22E-05			2.79E-06	1.22E-05	Annual Ave
Barium	No	6.15E-05	2.69E-04			6.15E-05	2.69E-04	
Beryllium	**Yes**	1.93E-07	8.44E-07			1.93E-07	8.44E-07	
Cadmium	**Yes**	1.54E-05	6.73E-05			1.54E-05	6.73E-05	Annual Ave
Chromium	**Yes**	1.96E-05	8.57E-05			1.96E-05	8.57E-05	
Cobalt	**Yes**	1.17E-06	5.14E-06			1.17E-06	5.14E-06	
Copper	No	1.19E-05	5.20E-05			1.19E-05	5.20E-05	
Manganese	**Yes**	5.31E-06	2.33E-05			5.31E-06	2.33E-05	

St Lukes Nampa Medical Center
Toxic Air Pollutants Emissions Screening

TAPs/HAPs	HAPs	Boilers 1-3	Screening Level (EL)	Requires Modeling
		(lb/hr)	(lb/hr)[1]	(Y/N)
2-Methylnaphthalene	No	1.01E-06	-	N
3-Methylchloranthrene	No	7.55E-08	2.50E-06	N
7,12-Dimethylbenz(a)anthracene	No	6.71E-07	-	N
Acenaphthene	No	7.55E-08	-	N
Acenaphthylene	No	7.55E-08	-	N
Anthracene	No	1.01E-07	-	N
Benzo(a)anthracene	No	7.55E-08	-	N
Benzene	**Yes**	8.80E-05	8.00E-04	N
Benzo(a)pyrene	No	5.03E-08	2.00E-06	N
Benzo(b)fluoranthene	No	7.55E-08	-	N
Benzo(g,h,i)perylene	No	5.03E-08	-	N
Benzo(k)fluoranthene	No	7.55E-08	-	N
Chrysene	No	7.55E-08	-	N
Dibenz(a,h)anthracene	No	5.03E-08	-	N
Dichlorobenzene	No	5.03E-05	2.00E+01	N
Ethylbenzene	**Yes**	1.10E-07	-	N
Fluoranthene	No	1.26E-07	-	N
Fluorene	No	1.17E-07	-	N
Formaldehyde	**Yes**	3.14E-03	5.10E-04	Y
Hexane	**Yes**	7.55E-02	1.20E+01	N
Indeno(1,2,3-cd)pyrene	No	7.55E-08	-	N
Naphthalene	**Yes**	2.56E-05	3.33	N
Phenanthrene	No	7.13E-07	-	N
Pyrene	No	2.10E-07	-	N
Toluene	**Yes**	1.43E-04	25	N
o-Xylene	**Yes**	1.88E-07	29	N
POM	**Yes**	4.78E-07	-	N
TAPs/HAPs Metals				
Arsenic	**Yes**	2.79E-06	1.50E-06	Y
Barium	No	6.15E-05	0.033	N
Beryllium	**Yes**	1.93E-07	2.80E-05	N
Cadmium	**Yes**	1.54E-05	3.70E-06	Y
Chromium	**Yes**	1.96E-05	0.033	N
Cobalt	**Yes**	1.17E-06	0.0033	N
Copper	No	1.19E-05	0.013	N
Manganese	**Yes**	5.31E-06	0.067	N

St Lukes Nampa Medical Center

Greenhouse Gas Emissions Summary

Criteria Pollutants **Emissions Unit Name**	**CO_2** Metric Tons/Yr	**CO_2** Short Tons/Yr	**N_2O** Metric Tons/Yr	**N_2O** Short Tons/Yr	**CH_4** Metric Tons/Yr	**CH_4** Short Tons/Yr	**CO2e** Metric Tons/Yr	**CO2e** Short Tons/Yr
Gen 1	58	64	0.0005	0.0005	0.002	0.003	59	65
Gen 2	58	64	0.0005	0.0005	0.002	0.003	59	65
Gen 3	58	64	0.00047	0.0005	0.002	0.003	59	65
Gen 4	58	64	0.00047	0.0005	0.002	0.003	59	65
Boiler #1 (NG)	6,641	7,320	0.013	0.014	0.13	0.14	6,648	7,328
Boiler #1 (ULSD)	51	57	0.0004	0.0005	0.002	0.002	52	57
Boiler #2 (NG)	6,641	7,320	0.013	0.014	0.13	0.14	6,648	7,328
Boiler #2 (ULSD)	51	57	0.0004	0.0005	0.002	0.002	52	57
Boiler #3 (NG)	6,641	7,320	0.013	0.014	0.13	0.14	6,648	7,328
Boiler #3 (ULSD)	51	57	0.0004	0.0005	0.002	0.002	52	57
Boiler #4 (NG)	6,641	7,320	0.013	0.014	0.13	0.14	6,648	7,328
Boiler #4 (ULSD)	51	57	0.0004	0.0005	0.002	0.002	52	57
Total Facility Wide	**27,004**	**29,766**	**0.054**	**0.059**	**0.52**	**0.57**	**27,033**	**29,798**

Notes:

In June 2014, the Supreme Court partially invalidated EPA's GHG Tailoring Rule.

If a source exceeds major source thresholds for conventional criteria pollutants, then BACT for GHG shall be applied.

Since the St. Luke's Nampa facility is not a major source, it is not subject to GHG BACT requirements.

St. Lukes Nampa Medical Center - Emergency Generators

Generator Name	**Caterpillar**	
Model No.	**C27**	
Engine Power Rating (kW)	800	
Engine Power Rating (hp)	1,214	
Fuel Type	Distillate #2	
- maximum sulfur content (%)	0.0015	ULSD
Maximum Firing Rate (gals/hr)*	57.30	
(MMBtu/hr)	8.02	
Maximum Hours of Operation	100	Assume: Uncontrolled PTE is equal to Controlled PTE
Maximum Firing Rate (gals/yr)	5,730	
Annual Maint Limit (hrs/yr)	100	
Heat Value of Fuel (Btu/gal)	140,000	AP42- Appendix A

			Uncontrolled Potential to Emit		
Pollutant	**CAS No.**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM)[1,2]			0.12	12	0.006
Nitrogen Oxides (NOx)[1] as NO_2			16.63	1,663	0.83
Sulfur Oxides[3]		0.0015	0.012	1.2	0.001
Carbon Monoxide (CO)[1]			1.14	114	0.06
HC[1,4]			0.15	15	0.008

			Uncontrolled Potential to Emit		
Toxics[5]	**CAS Number**	**Emission Factor (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Benzene	71-43-2	7.76E-04	7.11E-05	6.23E-01	3.11E-04
Formaldehyde	50-00-0	7.89E-05	7.23E-06	6.33E-02	3.16E-05
Naphthalene	91-20-3	1.30E-04	1.19E-05	1.04E-01	5.21E-05
Toluene	108-88-3	2.81E-04	2.57E-05	2.25E-01	1.13E-04
o-Xylenes	1330-20-7	1.93E-04	1.77E-05	1.55E-01	7.74E-05
Acetaldehyde	75-07-0	2.52E-05	2.31E-06	2.02E-02	1.01E-05
Acrolein	107-02-8	7.88E-06	7.22E-07	6.32E-03	3.16E-06
Propylene	115-07-1	2.79E-03	2.55E-04	2.24E+00	1.12E-03
Acenaphthalylene	203-96-8	9.23E-06	8.45E-07	7.40E-03	3.70E-06
Acenaphthene	83-32-9	4.68E-06	4.29E-07	3.75E-03	1.88E-06
Fluorene	86-73-7	1.28E-05	1.17E-06	1.03E-02	5.13E-06
Phenanthrene	85-01-8	4.08E-05	3.74E-06	3.27E-02	1.64E-05
Anthracene	120-12-7	1.23E-06	1.13E-07	9.87E-04	4.93E-07
Fluoranthene	206-44-0	4.03E-06	3.69E-07	3.23E-03	1.62E-06
Pyrene	129-00-0	3.71E-06	3.40E-07	2.98E-03	1.49E-06
Benzo(g,h,l)pyrlene	191-24-2	5.56E-07	5.09E-08	4.46E-04	2.23E-07
Benz(a)anthracene	56-55-3	6.22E-07	5.70E-08	4.99E-04	2.49E-07
Benzo(b)fluoranthene	205-99-2	1.11E-06	1.02E-07	8.90E-04	4.45E-07
Benzo(k)fluoranthene	205-82-3	2.18E-07	2.00E-08	1.75E-04	8.74E-08
Chrysene	218-01-9	1.53E-06	1.40E-07	1.23E-03	6.14E-07
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	3.17E-08	2.78E-04	1.39E-07
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	3.79E-08	3.32E-04	1.66E-07
Benzo(a)pyrene	50-32-8	2.57E-07	2.35E-08	2.06E-04	1.03E-07
Total PAH		2.12E-04	1.94E-05	1.70E-01	1.80E-06
POM [6]			4.12E-07	3.61E-03	3.36E-06

[1] PM, NOx, CO, and HC emission factors are derived from Caterpillar performance data

[2] PM emission factor is assumed to equal PM_{10} and $PM_{2.5}$

[3] SO_2 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

[4] HC emission factor is used to equal VOCs.

[5] Toxic emission factors are derived from EPA AP-41, Table 3.4-3 and Table 3.4-4.

[6]POM (polycyclic organic matter) 7-PAH group, 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[9]	CO_2e
CO_2	58.48	1	58.483
CH_4	0.0024	25	0.059
N_2O	0.00047	298	0.141
Total	58.49		58.68

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	=	58.48
Fuel = Volume of fuel used (gallons)	=	5,730
HHV = High Heat Value from Table C-1 (mmBTU/short ton)	=	0.138
EFCO2 = 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	=	0.0024
N2O = Annual N2O mass emissions in Metric Tons	=	0.00047
Fuel = Volume of fuel used (gallons)	=	5,730
HHV = High Heat Value from Table C-1 (mmBTU/short ton)	=	0.138
EFCH4 = Emission factor (kg/mmBTU)	=	3.00E-03
EFCH4 = Emission factor (kg/mmBTU)	=	6.00E-04

Notes

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

[9] GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1, revised 2013 GWP.

St. Lukes Nampa Medical Center - Boilers (Dual-fueled)

Boiler (MMBtu/hr)	**14.25**
Manufacturer	**Hurst**
Fuel Type (Primary)	**Natural Gas**
Fuel Type (Backup)	**ULSD**
Boiler Horsepower (BHP)	**350**
Maximum Heat Input Rating (Btu/hr)	**11,717,650**
Natural Gas*	
Maximum Operation Limit (hrs/yr)	**8,760**
Maximum Firing Rate (MMcf/yr)	**122**
Heat Value of NG (Btu/scf)	**1,020**
Maximum Firing Rate (MMcf/hr)	**1.40E-02**
Ultra Low Sulfur Diesel**	
Maximum Operating Limit (hrs/yr)	**48**
NG Operating Hours (hrs/yr)	**8,712**
Sulfur Content in Fuel (%)	**0.0015**
Maximum Fuel Usage (gal/hr)	**105**
Maximum Fuel Usage (gal/yr)	**5,040**
Heat Value of ULSD (Btu/gal)	**140,000**

* Note: Annual worst-case assumed 8712 annual hours of operation using natural gas + 48 hours using diesel fuel.

** Ultra low sulfur diesel (ULSD) is 0.0015% sulfur content

			NG Uncontrolled Potential to Emit[1]			ULSD Uncontrolled Potential to Emit[1]			Worst Case*		
Criteria Pollutant	Natural Gas Emission Factor (lb/10⁶ BTU)[2]	ULSD Emission Factor (lb/Mgal)[3]	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)[4]	Emission Rate (lb/yr)[5]	Emission Rate (ton/yr)[5]	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Total Particulate Matter (PM)[6]	0.0048	2.0	0.068	**596**	**0.30**	**0.210**	10	0.01	0.210	606	0.30
PM_{10}[6,7]	0.0048	1.0	0.068	**596**	**0.30**	**0.105**	5	0.00	0.105	601	0.30
$PM_{2.5}$[6,7]	0.0048	0.25	**0.068**	**596**	**0.30**	0.026	1	0.00	0.068	597	0.30
Nitrogen Oxides (NOx)	0.033	16.8	0.470	**4,097**	**2.05**	**1.764**	85	0.04	1.764	4,182	2.09
Sulfur Oxides	0.0016	0.2	**0.022**	**196**	**0.10**	0.022	1	0.001	0.022	197	0.10
Carbon Monoxide (CO)	0.037	5.0	**0.527**	**4,594**	**2.30**	0.525	25	0.01	0.527	4,619	2.31
VOC[8]	0.0250	0.252	**0.356**	**3,104**	**1.55**	0.026	1	0.00	0.356	3,105	1.55
Lead[9]			**6.99E-06**	**0.061**	**3.04E-05**	5.78E-07	2.77E-05	1.39E-08	6.99E-06	0.061	3.04E-05

				NG Uncontrolled Potential to Emit			ULSD Uncontrolled Potential to Emit			Worst Case		
Toxics	CAS No.	NG Emission Factor[10] (lb/10⁶ scf)	ULSD Emission Factor[11] (lb/Mgal)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)[4]	Emission Rate (lb/yr)[5]	Emission Rate (ton/yr)[5]	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
2-Methylnaphthalene	91-57-6	2.40E-05		3.35E-07	2.94E-03	1.47E-06	0	0	0	3.35E-07	2.94E-03	1.47E-06
3-Methylchloranthrene	56-49-5	1.80E-06		2.52E-08	2.20E-04	1.10E-07	0	0	0	2.52E-08	2.20E-04	1.10E-07
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05		2.24E-07	1.96E-03	9.79E-07	0	0	0	2.24E-07	1.96E-03	9.79E-07
Acenaphthene	83-32-9	1.80E-06	2.11E-05	2.52E-08	2.20E-04	1.10E-07	1.21E-08	1.06E-04	5.32E-08	2.52E-08	2.20E-04	1.10E-07
Acenaphthylene	203-96-8	1.80E-06	2.53E-07	2.52E-08	2.20E-04	1.10E-07	1.46E-10	1.28E-06	6.38E-10	2.52E-08	2.20E-04	1.10E-07
Anthracene	120-12-7	2.40E-06	1.22E-06	3.35E-08	2.94E-04	1.47E-07	7.02E-10	6.15E-06	3.07E-09	3.35E-08	2.94E-04	1.47E-07
Benzo(a)anthracene	56-55-3	1.80E-06	4.01E-06	2.52E-08	2.20E-04	1.10E-07	2.31E-09	2.02E-05	1.01E-08	2.52E-08	2.20E-04	1.10E-07
Benzene	71-43-2	2.10E-03	2.14E-04	2.93E-05	2.57E-01	1.29E-04	1.23E-07	1.08E-03	5.39E-07	2.93E-05	2.57E-01	1.29E-04
Benzo(a)pyrene	50-32-8	1.20E-06		1.68E-08	1.47E-04	7.34E-08	0	0	0	1.68E-08	1.47E-04	7.34E-08
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.48E-06	2.52E-08	2.20E-04	1.10E-07	8.52E-10	7.46E-06	3.73E-09	2.52E-08	2.20E-04	1.10E-07
Benzo(g,h,i)perylene	191-24-2	1.20E-06	2.26E-06	1.68E-08	1.47E-04	7.34E-08	1.30E-09	1.14E-05	5.70E-09	1.68E-08	1.47E-04	7.34E-08
Benzo(k)fluoranthene	205-82-3	1.80E-06	1.48E-06	2.52E-08	2.20E-04	1.10E-07	8.52E-10	7.46E-06	3.73E-09	2.52E-08	2.20E-04	1.10E-07
Chrysene	218-01-9	1.80E-06	2.38E-06	2.52E-08	2.20E-04	1.10E-07	1.37E-09	1.20E-05	6.00E-09	2.52E-08	2.20E-04	1.10E-07
Dibenz(a,h)anthracene	53.70-3	1.20E-06	1.67E-06	1.68E-08	1.47E-04	7.34E-08	9.61E-10	8.42E-06	4.21E-09	1.68E-08	1.47E-04	7.34E-08
Dichlorobenzene	25321-22-6	1.20E-03		1.68E-05	1.47E-01	7.34E-05	0	0	0	1.68E-05	1.47E-01	7.34E-05
Ethylbenzene	100-41-4		6.36E-05	0	0	0	3.66E-08	3.21E-04	1.60E-07	3.66E-08	3.21E-04	1.60E-07
Fluoranthene	206-44-0	3.00E-06	4.84E-06	4.19E-08	3.67E-04	1.84E-07	2.78E-09	2.44E-05	1.22E-08	4.19E-08	3.67E-04	1.84E-07
Fluorene	86-73-7	2.80E-06	4.47E-06	3.91E-08	3.43E-04	1.71E-07	2.57E-09	2.25E-05	1.13E-08	3.91E-08	3.43E-04	1.71E-07
Formaldehyde	50-00-0	7.50E-02	3.30E-02	**1.05E-03**	9.18E+00	4.59E-03	1.90E-05	1.66E-01	8.32E-05	**1.05E-03**	9.18E+00	4.59E-03
Hexane	110-54-3	1.80E+00		2.52E-02	2.20E+02	1.10E-01	0	0	0	2.52E-02	2.20E+02	1.10E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	2.14E-06	2.52E-08	2.20E-04	1.10E-07	1.23E-09	1.08E-05	5.39E-09	2.52E-08	2.20E-04	1.10E-07
Naphthalene	91-20-3	6.10E-04	1.13E-03	8.52E-06	7.47E-02	3.73E-05	6.50E-07	5.70E-03	2.85E-06	8.52E-06	7.47E-02	3.73E-05
Phenanthrene	85-01-8	1.70E-05	1.05E-05	2.38E-07	2.08E-03	1.04E-06	6.04E-09	5.29E-05	2.65E-08	2.38E-07	2.08E-03	1.04E-06
Pyrene	129-00-0	5.00E-06	4.25E-06	6.99E-08	6.12E-04	3.06E-07	2.45E-09	2.14E-05	1.07E-08	6.99E-08	6.12E-04	3.06E-07
Toluene	108-88-3	3.40E-03	6.20E-03	4.75E-05	4.16E-01	2.08E-04	3.57E-06	3.12E-02	1.56E-05	4.75E-05	4.16E-01	2.08E-04
o-Xylene	1330-20-7		1.09E-04	0	0	0	6.27E-08	5.49E-04	2.75E-07	6.27E-08	5.49E-04	2.75E-07
POM[14]				1.59E-07	1.32E-03	6.61E-07	7.57E-09	6.63E-05	3.51E-08	1.59E-07	1.32E-03	6.61E-07

NG Uncontrolled Potential to Emit	ULSD Uncontrolled Potential to Emit	Worst Case

Toxic-Metals	CAS Number	NG Emission Factor [12] (lb/10^6 scf)	ULSD Emission Factor [13] (lb/10^{12} BTU)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr) [4]	Emission Rate (lb/yr) [5]	Emission Rate (ton/yr) [5]	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Arsenic	7440-38-2	2.00E-04	4.00E+00	2.79E-06	2.45E-02	1.22E-05	2.57E-07	2.25E-03	1.12E-06	2.79E-06	2.45E-02	1.22E-05
Barium	7440-39-3	4.40E-03		6.15E-05	5.39E-01	2.69E-04				6.15E-05	5.39E-01	2.69E-04
Beryllium	7440-41-7	1.20E-05	3.00E+00	1.68E-07	1.47E-03	7.34E-07	1.93E-07	1.69E-03	8.44E-07	1.93E-07	1.69E-03	8.44E-07
Cadmium	7440-43-9	1.10E-03	3.00E+00	1.54E-05	1.35E-01	6.73E-05	1.93E-07	1.69E-03	8.44E-07	1.54E-05	1.35E-01	6.73E-05
Chromium	7440-47-3	1.40E-03	3.00E+00	1.96E-05	1.71E-01	8.57E-05	1.93E-07	1.69E-03	8.44E-07	1.96E-05	1.71E-01	8.57E-05
Cobalt	7440-48-4	8.40E-05		1.17E-06	1.03E-02	5.14E-06				1.17E-06	1.03E-02	5.14E-06
Copper	7440-50-8	8.50E-04	6.00E+00	1.19E-05	1.04E-01	5.20E-05	3.85E-07	3.37E-03	1.69E-06	1.19E-05	1.04E-01	5.20E-05
Lead			9.00E+00				5.78E-07	5.06E-03	2.53E-06	5.78E-07	5.06E-03	2.53E-06
Manganese	7439-96-5	3.80E-04	6.00E+00	5.31E-06	4.65E-02	2.33E-05	3.85E-07	3.37E-03	1.69E-06	5.31E-06	4.65E-02	2.33E-05
Mercury	7439-97-6	2.60E-04	3.00E+00	3.63E-06	3.18E-02	1.59E-05	1.93E-07	1.69E-03	8.44E-07	3.63E-06	3.18E-02	1.59E-05
Molybdenum	7439-98-7	1.10E-03		1.54E-05	1.35E-01	6.73E-05				1.54E-05	1.35E-01	6.73E-05
Nickel	7440-02-0	2.10E-03	3.00E+00	2.93E-05	2.57E-01	1.29E-04	1.93E-07	1.69E-03	8.44E-07	2.93E-05	2.57E-01	1.29E-04
Selenium	7782-49-2	2.40E-05	1.50E+01	3.35E-07	2.94E-03	1.47E-06	9.63E-07	8.44E-03	4.22E-06	9.63E-07	8.44E-03	4.22E-06
Vanadium	1314-62-1	3.30E-03		4.61E-05	4.04E-01	2.02E-04				4.61E-05	4.04E-01	2.02E-04
Zinc	7440-66-6	2.90E-02	4.00E+00	4.05E-04	3.55E+00	1.77E-03	2.57E-07	2.25E-03	1.12E-06	4.05E-04	3.55E+00	1.77E-03

Notes:

[1] Uncontrolled emissions are equal to controlled emissions and are based on potential worst case

[2] PM, NOx, SOx, CO, and VOC emission factors obtained from Power Flame manufacturer.

[3] NOx emission factor for #2 fuel oil obtained from Power Flame Manufacturer. PM, $PM_{2.5}$, PM_{10}, SOx, CO, and VOC emission factors for industrial boilers firing No 2 Fuel oil use, EPA AP-42, Section 1.3, Tables 1.3-1, 1.3-3, and 1.3-6

[4] For ULSD, pound per hour emissions based on 48 hours of operation over 8,760 hours per year

[5] For ULSD, annual emissions based on 48 hours of operation over 8,760 hours per year

[6] For Natural Gas, PM emission factor equals PM10 and PM2.5

[7] For No 2 Fuel Oil, emission factors for PM, PM10, and PM2.5 come from Table 1.3-6.

[8] VOC are assumed to equal hydrocarbons per emission factors obtained from Power Flame manufacturer.

[9] Natural gas lead emissions based on 0.0005 lb/10^6 scf from small uncontrolled boilers (EPA AP-42, Section 1.4 Natural Gas Combustion, Tables 1.4-1 and 1.4-2).

[10] Toxic Air Pollutants (EPA AP-42, Section 1.4 Natural Gas Combustion, Table 1.4-3).

[11] Toxic Air Pollutants (EPA AP-42, Section 1.3 Fuel Oil Combustion, Table 1.3-9).

[12] Metals from Natural Gas Combustion (EPA AP-42, Section 1.4 Natural Gas Combustion, Table 1.4-4).

[13] Metals from Natural Gas Combustion (EPA AP-42, Section 1.3 Fuel Oil Combustion, Table 1.3-10).

[14] POM (Polycyclic organic matter) 7 PAH group 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

GHG Emissions Compound [15]	NG Emissions (metric tons)	ULSD Emissions (metric tons)	GWP[16]	NG CO_2e	ULSD CO_2e
CO_2	6641.03	51.44	1	6641.03	51.44
CH_4	0.13	0.00	25	3.13	0.05
N_2O	0.013	0.000	298	3.73	0.12
Total	6641.17	51.44		6647.89	51.62

For CO2, Use Equation C-1 from 40 CFR 98 Subpart C:		**ULSD & NG** (ULSD)	(NG)
CO2 = 1x10-3 x Fuel x HHV x EF			
CO2 = Annual CO2 mass emissions in Metric Tons	=	51.44	6641.03
Fuel = Volume of fuel used (standard cubic feet)	=		121,728,847
Fuel = Volume of fuel used (gallons)	=	5,040	
HHV = High Heat Value from Table C-1 (mmBTU/short ton)	=	0.138	0.001028
EFCO2 = Emission factor (kg/mmBTU)	=	73.96	53.07
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	=	0.0021	0.1251
N2O = Annual N2O mass emissions in Metric Tons	=	0.00042	0.01251
Fuel = Volume of fuel used (standard cubic feet)	=		121,728,847
Fuel = Volume of fuel used (gallons)	=	5,040	
HHV = High Heat Value from Table C-1 (mmBTU/short ton)	=	0.138	1.03E-03
EFCH4 = Emission factor (kg/mmBTU)	=	3.00E-03	1.00E-03
EFCH4 = Emission factor (kg/mmBTU)	=	6.00E-04	1.00E-04

Notes

[15] 40 CFR 98.32 - For stationary fuel combustion sources only, report CO2, CH4, and N2O

[16] GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1, revisions effective Jan 1, 2014.

St. Luke Nampa Medical Center Expansion

Wet Cooling Tower

Water Flow Rate (gal/min)	1,500	Design
Flow of cooling water (lbs/hr)	750,600	Calculated
TDS of blowdown (mg/l or ppmw) - Maximum ppm at blowdown	1,500	Design
Flow of dissolved solids (lbs/hr)	1,126	Calculated
Fraction of flow producing PM_{10} drift (See Note 2)	0.840	See Note 2
Control efficiency of drift eliminators (gal drift/gal flow)	0.000005	Design
PM emissions from tower (lb/hr)	0.006	Calculated
PM_{10} emissions from tower (lb/hr)	0.005	Calculated
PM emissions from tower (tpy)	0.025	Calculated
PM_{10} emissions from tower (tpy)	0.021	Calculated

Other Parameters

Number of cells per tower (outlet fans)	2	Two (2 cell) towers -4 total
Height at cell release (ft):	12.3	
Height at cell release (m):	3.75	
Discharge flow per cell (ACFM):	136,250	
Diameter of each cell (ft):	13.9	
Diameter of each cell (m):	4.24	
Area of cell discharge (ft^2):	152	
Average Temperature of cell discharge (degF):	77	
Average Temperature of cell discharge (K):	298.16	
Exit Velocity (ft/s):	15.0	
Exit Velocity (m/s):	4.56	

Notes:

(1) Cooling Tower design data from Kewiet.

(2) From "Calculating Realistic PM_{10} Emissions From Cooling Towers" (J. Reisman, G. Frisbie). Presented at 2001 AWMA Annual Meeting.

(3) TDS based on data from Idaho Power.

(4) Emission Calculation Method from AP 42, Sect.13.4-1

(5) Assume PM10 emissions equal PM2.5 emissions

St Lukes Nampa Medical Center
AERMOD Modeling Stack Parameters

Stack Name	Stack ID	Stack Height (Above Roof)	Diameter	Flow Rate	Temperature
		(ft)	(ft)	acfm	(K)
Gen 1	GEN1	5	0.8333	14257	763
Gen 2	GEN2	5	0.8333	14257	763
Gen 3	GEN3	5	0.8333	14257	763
Gen 4	GEN4	5	0.8333	14257	763
Boiler 1	BLR1	10	1.667	4583	435.37
Boiler 2	BLR2	10	1.667	4583	435.37
Boiler 3	BLR3	10	1.667	4583	435.37
Cooling Tower 1A/1B	CT1A/CT1B	12.30	13.94	136,250	298
Cooling Tower 2A/2B	CT2A/CT2B	12.30	13.94	136,250	298

Notes:
[a]Converted boiler flow rates from manufacturer data sheet SCFM to ACFM (Appendix C).

Notes
DEQ velocity default limit is 50 m/s
DEQ velocity default limit is 50 m/s
DEQ velocity default limit is 50 m/s
DEQ velocity default limit is 50 m/s

St. Luke's Nampa Medical Center
PM Standard Calculations

Compliance with IDAPA Rule 677 PM Standard for Fuel Burning Equipment

Unit	Hurst Dual Fuel
Fuel	No. 2 Diesel
Rated Heat Input (MM Btu/hr)	14.25
PM Emission Rate (lb/hr)	0.21
Exit/Flue Gas Flowrate Calculation	
F_d (Table 19-2, EPA Method 19) (dscf/MM Btu) [1,2]	9,190
Exit flowrate @ 0% O_2: (acfm)	4,583
Exit flowrate @ 0% O_2: (dscfm)[5]	2,121
Exit flowrate @ 3% O_2 for Natural Gas: (dscfm) [3]	2,476
Calculated Grain Loading (gr/dscf @ 3% O_2) [4]	0.010
PM Loading Standard (IDAPA 58.01.01.677) (gr/dscf @ 3% 02)	0.050
Compliance w/ PM Loading Standard	Yes

[1] Appendix A-7 to 40 CFR part 60, Method 19—Determination of sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates, Table 19-2 (F Factors for Various Fuels)

[2] Fd, Volumes of combustion components per unit of heat content (scf/million Btu). Fd for No. 2 diesel fuel is 9,190 dscf/106 Btu.

[3] $(Flow_{3\%}) = (Flow_{0\%}) x (20.9/(20.9 - 3))$, where 20.9 = Oxygen concentration in ambient air

[4] (Flow (dscfm) x (7,000 gr/lb) x (PM lb/hr) x (60 min/ hr) = gr/dscf

St. Luke's Nampa Medical Center

PM Standard Calculations

Compliance with IDAPA Rule 677 PM Standard for Fuel Burning Equipment

Unit	Hurst Dual Fuel
Fuel	Natural Gas
Rated Heat Input (MM Btu/hr)	14.25
PM Emission Rate (lb/hr)	0.07
Exit/Flue Gas Flowrate Calculation	
F_d (Table 19-2, EPA Method 19) (dscf/MM Btu) [1,2]	8,710
Exit flowrate @ 0% O_2: (acfm)	4,583
Exit flowrate @ 0% O_2: (dscfm)[5]	2,121
Exit flowrate @ 3% O_2 for Natural Gas: (dscfm) [3]	2,476
Calculated Grain Loading (gr/dscf @ 3% O_2) [4]	0.003
PM Loading Standard (IDAPA 58.01.01.677) (gr/dscf @ 3% 02)	0.050
Compliance w/ PM Loading Standard	Yes

[1] Appendix A-7 to 40 CFR part 60, Method 19—Determination of sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates, Table 19-2 (F Factors for Various Fuels)

[2] Fd, Volumes of combustion components per unit of heat content (scf/million Btu). Fd for Natural gas fuel is 8710 dscf/106 Btu.

[3] $(Flow_{3\%}) = (Flow_{0\%}) \times (20.9/(20.9 - 3))$, where 20.9 = Oxygen concentration in ambient air

[4] (Flow (dscfm) x (7,000 gr/lb) x (PM lb/hr) x (60 min/ hr) = gr/dscf

[5] dscfm = acfm *(Standard Temp {R}) / (Stack Temp {R}) * (Stack Pressure {in Hg}) / (Standard Pressure {in Hg})

Appendix D
Air Dispersion Modeling Protocol with IDEQ Approval Letter

Air Dispersion Modeling Protocol
St. Luke's Nampa Medical Center
Nampa, Idaho

Prepared for

St. Luke's Health Services

Submitted to

Idaho Department of Environmental Quality

November 2015

CH2M HILL, Inc.
322 East Front Street
Suite 200
Boise, ID 83702

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Project Background

St. Luke's Health System (SLHS) is proposing to expand operations and construct a medical center located at 16850 Midland Avenue in Nampa, Idaho. The St. Luke's Nampa Medical Center (SLNMC) triggers the requirement for an air quality Permit-to-Construct (PTC) with the addition of the following stationary emission sources:

- Four Hurst dual-fuel boilers
- Four Caterpillar diesel-fired emergency engine generators
- Two water cooling towers

The SLNMC is located on the corner of Midland Avenue and Cherry Lane in Nampa, Idaho (Figure 1). The stationary emission sources will be located in a Central Plant on the northern end of the facility. A scaled plot plan with stack locations are provided in Figure 2. A plan view of the Central Plant shows a more detailed layout of the emission sources included in Figure 3.

This air quality impact analysis will be performed in support of the PTC application required under IDAPA 58.01.01.200. Idaho regulations require a facility applying for a PTC to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS).

This air dispersion modeling protocol is being submitted to the Idaho Department of Environmental Quality (IDEQ) on behalf of SLHS. This document summarizes the modeling methodology that will be used to evaluate the facility's impacts to air quality with respect to criteria and state toxic air pollutant (TAPs) emissions. It has been prepared based on the U.S. Environmental Protection Agency (EPA) *Guidelines on Air Quality Models* (GAQM), and the *State of Idaho Guideline for Performing Air Quality impact Analyses* (ID AQ-011, July 2, 2011).

Area Classification

The SLNMC facility will be located in Canyon County, Idaho and is designated as attainment or unclassified for all criteria pollutants.

The SLNMC is not a major facility as defined in IDAPA 58.01.01.008.10, nor is it a designated facility as defined in IDAPA 58.01.01.006.26. The primary Standard Industrial Classification (SIC) code for the facility is 8062, *General Medical and Surgical Hospitals.* The facility emits less than 100 tons per year of any regulated pollutant. The site is a minor source for Hazardous Air Pollutants (HAPs) with total potential aggregate HAP emissions of less than 25 tons per year and emissions of any single HAP of less than 10 tons per year. SLNMC is not a listed facility in 40 CFR Part 52 (100 tons per year threshold) and is not otherwise subject to Part 52 New Source Review (PSD) requirements due to potential emissions less than all applicable PSD major source thresholds.

Project Description

Boilers

The primary purpose of the four boilers will be to generate steam for space heating at the hospital. All of SLNMC's boilers are required to be dual-fueled. The primary fuel source will be natural gas with diesel as a backup. Air emissions from these sources are those associated with natural gas or diesel combustion.

Diesel-fired Emergency Generators

Four emergency engine generators are proposed to provide electrical power to the hospital in the event of a power interruption and for backing up all critical Life Safety Systems. The emergency generators will combust ultra-low-sulfur diesel (ULSD) and are routinely tested to ensure proper operation. For permitting purposes, air emissions are limited to periods when the emergency equipment is tested and maintained. Emergency generator testing will be limited to 100 hours per year. Additional operating restrictions may be included to better represent the actual testing schedule as defined in the application.

Cooling Towers

The facility has mechanically induced (i.e., fan-driven) wet cell cooling towers that are open to the atmosphere. The cooling towers are used to dissipate the large heat loads generated by the facility and to condition the incoming air to the correct temperature required by the facility. The cooling towers are a source of particulate matter. Cooling towers have dual fans that are part of a single cooling tower assembly and will be modeled using the center of each fan. The diameter and flow for each source will be the diameter and flow of a single fan.

The proposed emission sources are listed below:

- Four (4) dual-fuel boilers
    - Hurst Model 350 hp -Series 500
    - 11.72 MMBTU/hr
- Four (4) diesel-fired emergency engine generators
    - Caterpillar Model C27
    - 800 kW or 1,214 hp
    - Maintenance/Testing diesel operations 100 hr/yr PTE for each unit
- Two (2) water cooling towers
    - Baltimore Air Cooling, Co. Model XES3E-1424-07M
    - 1500 gpm water flow rate
    - Two cells per tower (outlet fans)

Manufacturer specification sheets for the proposed emission sources or equivalent units are provided in Appendix A.

Estimated Emissions

Criteria pollutant emission estimates have been prepared for four boilers, operating on both natural gas and diesel fuel, three emergency diesel-fired engine generators, and two water cooling towers.

Potential emission estimates for the stationary emission sources were based on the following hours of operation:

- Four dual-fuel boilers
    - Uncontrolled NG operations 8,760 hr/yr for each unit
    - Maintenance/Testing diesel operations 48 hr/yr for each unit
- Three diesel-fired emergency engine generators
    - Maintenance/Testing diesel operations 100 hr/yr for each unit
- Two water cooling towers
    - Uncontrolled operations 8,760 hr/yr

Available manufacturer emissions data were used to calculate potential emission estimates. If manufacturer emissions data were not available, EPA AP-42 emission factors were used. The Climate

Registry default emission factors, Tables 12.1 and 12.9 were used to calculate the greenhouse gas (GHG) pollutants of carbon dioxide (CO_2) nitrogen oxide (N_2O), and methane (CH_4).

The Tier 1 Methodology and equation C-8 outlined in 40 Code of Federal Regulations (CFR) Part 98 Subpart C was used to calculate the greenhouse gas (GHG) pollutants of carbon dioxide (CO_2) nitrogen oxide (N_2O), and methane (CH_4). In addition, Carbon dioxide equivalents (CO2e) were calculated as described in 40 CFR 98 Subpart C.

Criteria Pollutants

Criteria pollutants evaluated for modeling applicability are Particulate Matter less than 10 Micrometers in Aerodynamic Diameter (PM_{10}), Particulate Matter less than 2.5 Micrometers in Aerodynamic Diameter ($PM_{2.5}$), nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb). Based on preliminary emission estimates, an air dispersion modeling analysis would be required and is proposed for PM_{10}, $PM_{2.5}$, NO_X, SO_2, and CO. Table 1 shows the comparison between the facility wide emissions and the SEL.

Toxic Air Pollutants (TAPs)

Toxic air pollutants (TAPs) from the emergency generators and boilers can be excluded from the modeling analysis because they are already being assessed through 40 CFR 60 Subpart IIII, 40 CFR 63 Subpart ZZZZ, and 40 CFR 60 Subpart Dc; respectively.

The cooling towers will not yield Idaho TAPs. Therefore, no modeling analysis will be performed for TAPs under this project.

Methodology

Modeled concentrations of criteria pollutants will be compared to the applicable Significant Impact Level (SIL) shown in Table 2. If the predicted impacts are not significant (that is, less than the SIL), the modeling is complete for that pollutant and averaging period and compliance with the NAAQS is demonstrated. If impacts are significant, a more refined analysis will be conducted for demonstration of compliance with the NAAQS.

For all criteria pollutants the modeled emission rates used for comparison to the SIL will reflect all emissions from the facility for each scenario.

Table 1. Emission Estimates

	PM_{10}		$PM_{2.5}$		NO_X		SO_X		CO		Lead			Total VOC	
Source	**(lb/hr)**	**(ton/yr)**	**(lb/hr)**	**(ton/yr)**	**(lb/hr)**	**(ton/yr)**	**(lb/hr)**	**(ton/yr)**	**(lb/hr)**	**(ton/yr)**	**(lb/hr)**	**(lb/yr)**	**(ton/yr)**	**(lb/hr)**	**(ton/yr)**
Gen 1	0.12	0.01	0.12	0.01	16.63	0.83	0.012	0.001	1.14	0.06				0.15	0.01
Gen 2	0.12	0.01	0.12	0.01	16.63	0.83	0.012	0.001	1.14	0.06				0.15	0.01
Gen 3	0.12	0.01	0.12	0.01	16.63	0.83	0.012	0.001	1.14	0.06				0.15	0.01
Gen 4	0.12	0.01	0.12	0.01	16.63	0.83	0.012	0.001	1.14	0.06				0.15	0.01
Boiler 1 (NG)		0.30	0.068	0.30		2.06	0.022	0.098	0.53	2.31	6.99E-06	0.06	3.06E-05	0.356	1.56
Boiler 1 (ULSD)	0.105				2.10										
Boiler 2 (NG)		0.30	0.068	0.30		2.06	0.022	0.098	0.53	2.31	6.99E-06	0.06	3.06E-05	0.356	1.56
Boiler 2 (ULSD)	0.105				2.10										
Boiler 3 (NG)		0.30	0.068	0.30		2.06	0.022	0.098	0.53	2.31	6.99E-06	0.06	3.06E-05	0.356	1.56
Boiler 3 (ULSD)	0.105				2.10										
Boiler 4 (NG)		0.30	0.068	0.30		2.06	0.022	0.098	0.53	2.31	6.99E-06	0.06	3.06E-05	0.356	1.56
Boiler 4 (ULSD)	0.105				2.10										
Cooling Tower 1A	0.0024	0.01	0.0024	0.01											
Cooling Tower 1B	0.0024	0.01	0.0024	0.01											
Cooling Tower 2A	0.0024	0.01	0.0024	0.01											
Cooling Tower 2B	0.0024	0.01	0.0024	0.01											
Total	**0.91**	**1.26**	**0.76**	**1.26**	**74.92**	**11.57**	**0.138**	**0.40**	**6.67**	**9.47**	**2.79E-06**	**0.24**	**1.22E-04**	**2.03**	**6.27**
10% SER	**0.34**	**1.50**	**0.23**	**1.50**	**0.91**	**4.00**	**0.91**	**4.00**	**2.28**	**10.00**		**0.06**		**0.91**	**4.00**
Category 1 Exemption	**No**		**No**		**No**		**Yes**		**No**			**No**		**No**	
Level I Threshold	**0.22**	**N/A**	**0.054**	**0.35**	**0.2**	**1.2**	**0.21**	**1.2**	**15**	**N/A**					
Level II Threshold	**2.6**	**N/A**	**0.63**	**4.1**	**2.4**	**14**	**2.5**	**14.00**	**175.0**	**N/A**	**N/A**	**14**	**N/A**	**N/A**	**N/A**
Modeling Required	**Yes**	**N/A**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**N/A**	**N/A**	**No**	**N/A**		

Notes:

*Emissions for lead in lb/yr divided by 12 to obtain lb/month for comparison to the lead standard.

N/A – not applicable
lb/hr – pounds per hour
SER – Significant Emission Rate
tpy – tons per year

Standards and Criteria Levels

Table 2 summarizes applicable criteria including:

- Significant impact levels (SILs)
- National Ambient Air Quality Standards (NAAQS)

Table 2. Summary of Air Quality Standards and Criteria

Pollutant	Averaging Period	Primary NAAQS[a] (µg/m³)	Significant Impact Level[b] (µg/m³)
PM_{10}	24-Hour	150[c]	5
PM_{10}	Annual	--	1
$PM_{2.5}$	24-Hour	35[d]	1.2
$PM_{2.5}$	Annual	12[e]	0.3
NO_2	1-Hour	188[f]	7.5
NO_2	Annual	100[g]	1
SO_2	1-Hour	7.9[h]	196
SO_2	3-Hour[f]	25[i]	1,300
SO_2	24-Hour[f]	5[i]	365
SO_2	Annual	1[g]	80
Pb	3 month rolling	--	0.15
CO	1-Hour	40,000[i]	2,000
CO	8-Hour	10,000[i]	500

[a] The national ambient air quality standards (NAAQS) for the pollutants included in this modeling analysis are equivalent to the Idaho state ambient air quality standards for those pollutants.

[b] Maximum modeled concentration

[c] Not to be exceeded more than once per year on average over 3 years.

[d] 3-year average of the 98th percentile of the 24-hour concentration

[e] Three-year average of the annual mean concentrations not to exceed standard.

[f] 98th percentile maximum daily 1-hour average, averaged over 3 years.

[g] Not to be exceeded in any calendar year

[h] Three-year average of the 99th percentile of the annual distribution of 1-hour average daily maximum concentrations not to exceed standard

[i] Allowed to be exceeded once per year.

Notes:

-- = no standard

µg/m³ = microgram(s) per cubic meter

CO = carbon monoxide

NO_2 = nitrogen dioxide

PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter

$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter

Dispersion Model

The air quality analysis will utilize the EPA-approved AERMOD (Version 15181) model and supporting programs. AERMOD is a steady-state Gaussian plume model that simulates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD is recommended for short-range (< 50 kilometers [km]) dispersion from the source. The model incorporates the Plume Rise Model Enhancement (PRIME) algorithm for modeling building downwash. AERMOD is designed to accept input data prepared by two specific preprocessor programs, AERMET and AERMAP. AERMOD will be run with the following options:

- Use stack-tip downwash
- Model accounts for elevated terrain effects
- Use sequential meteorological date checking
- Use of the PRIME algorithm for sources influenced by building downwash
- Use Missing Data Processing routine
- No exponential decay calculated
- Actual receptor elevations and hill-height scales obtained from AERMAP
- URBAN option if site meets criteria
- Use of the Beta POINTCAP option for all stacks with rain caps.

Source Characterization

For the SIL and NAAQS demonstration modeling, all sources, unless considered part of the background, will be modeled as point sources in AERMOD. In general, all of the emission rates and other source parameters will be determined from manufacturer's data, EPA-established emission factors, design plans, or a combination of methods. Final source characteristics and maximum emission rates will be presented in the Application.

Point Source Stack Parameters

Stack release parameters for the emission sources are identified in Table 3 for the dispersion modeling analysis.

Table 3. Stack Parameters

Stack Name	Stack ID	Stack Height above roof (m)	Diameter (m)	Flow Rate (acfm)	Temperature (K)	Notes
Emergency Generator[a]	GEN1	0.91	0.254	14,257	763	Vertical w/pressure relief valve
Emergency Generator[a]	GEN2	0.91	0.254	14,257	763	Vertical w/pressure relief valve
Emergency Generator[a]	GEN3	0.91	0.254	14,257	763	Vertical w/pressure relief valve
Boiler #1[b]	BLR1	3.05	0.508	4,583	435.37	Vertical with cap
Boiler #2[b]	BLR2	3.05	0.508	4,583	435.37	Vertical with cap
Boiler #3[b]	BLR3	3.05	0.508	4,583	435.37	Vertical with cap
Boiler #4[b]	BLR4	3.05	0.508	4,583	435.37	Vertical with cap
Cooling Tower 1A	CT1A	3.75	4.25	136,250	298	Vertical
Cooling Tower 1B	CT1B	3.75	4.25	136,250	298	Vertical
Cooling Tower 2A	CT2A	3.75	4.25	136,250	298	Vertical
Cooling Tower 2B	CT2B	3.75	4.25	136,250	298	Vertical

Notes:

[a]Converted boiler flow rates from manufacturer data sheet SCFM to ACFM (Appendix A1).

[b]Converted boiler flow rates from manufacturer data sheet SCFM to ACFM (Appendix A2).

Boiler Stack Parameter Justification

Boiler emissions and stack parameters were derived from using Hurst manufacturer's engineering specifications and design stack configurations proposed for SLNMC. The boiler stack heights are based on a vertical exit design of 10 feet above the central plant roofline. Each boiler will contain a raincap. The Hurst boiler manufacturer specification sheet provides stack parameters for the following:

- Burner rated heat input: 14.252 MMBtu/hr
- Flue gas flow rate: 2,840 scfm
- Flue gas temp exiting economizer: 324 F
- Exit stack diameter: 20 in

The Hurst Boiler manufacturer specification sheet is included in Appendix A1.

Emergency Generator Stack Parameter Justification

Emergency generator emissions and stack parameters were derived from using Caterpillar manufacturer's engineering specifications and design stack configurations proposed for SLNMC. The emergency generator stack heights are based on a vertical exit design of approximately 3 feet above the central plant roofline. Each emergency generator will contain a pressure relief valve or flapper over the exit stack. The Caterpillar emergency generator engine, model C27-800, performance data sheet provides stack parameters for the following:

- Engine power (100% load): 1,214 bhp
- Flow rate (75% load): 5,042 scfm
- Exit engine temperature (75% load): 913.8 F
- Exit stack diameter: 10 in

The Caterpillar manufacturer performance data specification sheet is included in Appendix A2.

Cooling Tower Stack Parameter Justification

The cooling tower emissions and stack parameters were derived from using Baltimore Aircoil Company, Inc. manufacturer's engineering specifications. The two-cell cooling towers are considered part of a single cooling tower assembly and will be modeled using the center of each fan. The Baltimore Aircoil cooling tower specification sheet provides stack parameters for the following:

- Water flow rate: 1,500 gpm
- Cell exit height: 12.3 ft
- Diameter of each cell: 13.9 ft
- Discharge air flow per cell: 136,250 acfm
- Ambient temperature: 77 F

The Baltimore Aircoil Company, Inc. cooling tower specification sheet is included in Appendix A3.

Rural vs Urban Option

The land use surrounding the facility will be evaluated for use as either rural or urban classification. To determine the urban/rural classification for the SLNMC emission sources, a land use analysis will be performed using the Auer land use methodology (Auer, 1978). Land use data within a 3-km radius for the site will be obtained from the USGS. The 2006 USGS NLCD data classify the land use for individual 30m x 30m cells into 16 primary land use categories. Of the 16 land use categories, the following three categories would be considered urban under the Auer Methodology for dispersion modeling purposes:

- Developed, Low Intensity (NLDC Code 22) - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49 percent of total cover. These areas most commonly include single-family housing units.

- Developed, Medium Intensity (NLCD Code 23) – This classification includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of the total cover.
- Developed, High Intensity (NLCD Code 24) – This classification includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

If the area within 3 km is more than 50 percent classified as urban land use, the URBAN option will be used for AERMOD modeling of the Facility and the urban population of the modeling domain will be set to be equal to the population of the counties contained within the modeling domain.

Building Downwash

Building influences on stacks are calculated by incorporating the updated EPA Building Profile Input Program for use with the PRIME algorithm (BPIP-PRIME). The stack heights used in the dispersion modeling will be the actual stack height or Good Engineering Practice stack height, whichever is less.

Source terrain elevations will be determined using AERMAP (Version 11103) with National Elevation Dataset files prepared by the USGS.

Meteorological Data for AERMOD

SLHS proposes to use the Boise pre-processed meteorological data from 2010 through 2014 identified in the On Semiconductor modeling protocol submitted to DEQ on October 7, 2015. This data was combined into AERMOD-ready surface and upper air input files using the EPA-approved meteorological data preprocessor for the AERMOD dispersion model, AERMET (v15181).

Receptors

The ambient air boundary will be the perimeter of the facility buildings since the public has direct access to the medical buildings. The selection of receptors in AERMOD will be as follows:

- Discrete Receptors 25 meters around the property line.
- A 100-meter grid extended approximately 1 kilometer.
- A 500-meter grid extended approximately 5 kilometers.

U.S. Geological Survey (USGS) National Elevation Dataset (NED) terrain data will be used in conjunction with the AERMAP pre-processor (version 11103) to determine receptor elevations and terrain maxima.

Ambient Background Pollutant Concentrations

As discussed in the pre-application meeting, IDEQ will provide ambient background concentration data for each model pollutant and averaging time. Background concentrations will be added to model results for comparison to the NAAQS.

Co-Contributing Source

The Amalgamated Sugar Company is located within approximately one mile of the SLNMC. The impacts from this facility will only be included for cumulative analysis if it is required to demonstrate compliance with the ambient air quality standards.

Preliminary Analysis

This section describes the preliminary SIL analysis proposed for each criteria and toxic pollutant.

The preliminary analysis of the project for each pollutant will be conducted as follows:

- If the predicted impacts of the PTE emissions are not significant (that is, less than the EL or the SIL) for a criteria pollutant, the modeling is complete for that pollutant under that averaging time and compliance with NAAQS is demonstrated.
- If impacts are significant for any of the defined modeling, a more refined analysis will be conducted as described below.

Refined Analysis

This section describes the refined analyses proposed for each criteria pollutant.

Comparison to the NAAQS will involve the following:

- For pollutants with concentrations greater than the respective SIL, the specific receptors over the SIL will be identified and used for the refined analysis.
- The maximum modeled concentration will be determined and compared to the NAAQS at receptors that were over the SIL for the given pollutant and averaging time. For the NAAQS analysis, this maximum concentration will include contributions from the Facility, competing nearby sources not included in the background, and general background concentrations
- The impacts from the Amalgamated Sugar Company will be included if a cumulative analysis is required.

Refined Analyses—24-hour $PM_{2.5}$

In May 2014, the EPA released guidance for $PM_{2.5}$ permit modeling that provided additional guidance on demonstrating compliance with the $PM_{2.5}$ NAAQS and PSD increments (EPA, 2014). This guidance incorporates changes resulting from the January 22, 2013 decision from the U.S. Court of Appeals for the District of Columbia Circuit on the screening assessment of primary and secondary $PM_{2.5}$ using a SIL. The EPA indicated that when the sum of the background concentration and the $PM_{2.5}$ SIL are less than the $PM_{2.5}$ NAAQS, the use of the SIL would be sufficient to conclude that a source impact equal to or below the SIL will not cause or contribute to a violation of the NAAQS. If the sum of the background $PM_{2.5}$ concentration and the SIL are less than the NAAQS, compliance with the NAAQS will be demonstrated if the modeled emission rates from equipment added to the source on or after May 1, 2011 are below the SIL. If impacts are above the SIL, a NAAQS compliance demonstration that accounts for the combined impacts of the Project sources and the monitored background concentration will be required. The cumulative impacts will also be compared to Class II PSD increments to determine compliance. The May 2014 $PM_{2.5}$ permit modeling guidance indicates that it is appropriate to add a modeled design value (the 98th percentile of the modeled daily concentration averaged over five years on a receptor by receptor basis) to the background value. This is considered a First Tier approach and should be acceptable without further justification. For this analysis, the Second Tier approach, using seasonal background values, is proposed to account for temporally varying monitored background concentrations.

Refined Analyses—1-hour NO_2

If the modeled project impacts are greater than the 1-hour NO_2 SIL of 7.5 microgram(s) per cubic meter ($\mu g/m^3$) a more refined modeling is required to demonstrate that the combination of emissions modeled from the project, nearby facilities emitting NOx, and background concentrations would not exceed the NAAQS (cumulative modeling analysis). Receptors from the significant impact analysis below the SIL would be removed from the NAAQS analysis and only receptors exceeding the SIL of 7.5 $\mu g/m^3$ would be included in the NAAQS analysis. The cumulative NAAQS analysis would follow the EPA-recommended three-tier approach to characterize the conversion of modeled total NO_X to NO_2 for comparison to the NAAQS (40 *Code of Federal Regulations* 51 Appendix W).

Initially, the Tier 1 method for NO_X to NO_2 conversion performed for the 1-hour NO_2 NAAQS modeling will assume that the modeled emissions of NOx will completely convert to NO_2. This is an overly conservative assumption, so one of the Tier 2 modeling options may be used to refine the modeling impacts. The Tier 2 modeling options consist of the default Ambient Ratio Method (ARM) and the Ambient Ratio Method Version 2 (ARM2). ARM accounts for the conversion of NOx to NO_2 by assuming a constant ratio of 0.75 for NO_2/NO_x for the annual predicted impacts and 0.8 for 1-hr predicted impacts (EPA, 2010). ARM2 performs a similar conversion but the ambient ratio is based on an evaluation of the ambient ratios of NO_2/NO_x from EPA's Air Quality System (AQS) record of ambient air quality data instead of a fixed value (RTP, 2013). Since SLNMC has several point sources, it may be necessary to use the Tier 3 ozone-limiting method (OLM) approach for 1-hour NO_2 modeling. OLM is the EPA-recommended method for multiple sources in the same vicinity where individual plume overlap is likely to occur (EPA, 2011). Using the ARM2 or the Tier 3 OLM method would require DEQ consultation on the model inputs prior to submittal of the Air Permit Application.

Boilers—Backup Diesel Fuel

Hospital boilers are required to be dual-fueled per hospital code. Therefore, SLNMC plans to use natural gas as the primary fuel and diesel fuel as backup. The worse-case emission rate is proposed to be modeled between the fuel types for operational flexibility.

Note that SLNMC is requesting 48 hours per year for use of diesel fuel for maintenance and testing. Since the boilers will only operate for a short duration using diesel fuel, we may propose to use a randomized met data set for this emission scenario. However, we are not requesting a randomized file from DEQ at this time nor are we requesting it as a condition for approval for this modeling protocol. We will notify IDEQ if a randomized file is deemed necessary for this modeling assessment.

Output – Presentation of Results

The results of the air dispersion modeling analyses will be presented as follows:

- A description of modeling methodologies and input data,
- A summary of the results in tabular and, where appropriate, graphical form,
- Modeling files used for the AERMOD analysis will be provided with the application on compact disk,
- Any deviations from the methodology proposed in this protocol will be presented.

References

Auer, A.H. 1978. "Correlation of Land Use and Cover with Meteorological Anomalies." *Journal of Applied Meteorology*. No. 17, pages 636-643.

IDEQ 2013. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Doc. I D AQ-011. State of Idaho Department of Environmental Quality, Boise, Idaho 83706.

RTP Environmental Associates, Inc (RTP). 2013. Ambient Ratio Method Version 2 (ARM2) for use with AERMOD for 1-hr NO2 Modeling. Development and Evaluation Report. September 20, 2013.

U.S. Environmental Protection Agency (EPA). 2005. *Appendix W of 40 CFR Part 51—Guideline On Air Quality Models (Revised)*, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, November.

U.S. Environmental Protection Agency (EPA). 2010. *EPA Guidance Concerning the Implementation of the 1-Hour NO_2 NAAQS for the PSD Program*. EPA Office of Air Quality Planning and Standards. June 29.

U.S. Environmental Protection Agency (EPA). 2011. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO2 National Ambient Air Quality Standard.* Tyler Fox. EPA Air Quality Modeling Group. March 1, 2011.

U.S. Environmental Protection Agency (EPA). 2014a. *Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO_2 National Ambient Air Quality Standard.* Robert Chris Owen and Rodger Brode. Air Quality Modeling Group. September 30, 2014.

U.S. Environmental Protection Agency (EPA). 2014b. *Guidance for $PM_{2.5}$ Permit Modeling.* Office of Air Quality Planning and Standards. May 20, 2014.

U.S. Geological Survey (USGS). 2006. National Land Cover Database 2006. Available from: http://www.mrlc.gov/nlcd06_data.php

Appendix A1
Hurst Boiler Manufacturer Specifications

P.O. Box 530 / 100 Boilermaker Lane / Coolidge, GA 31738 / U.S.A.
Ph: 229-346-3970 Fax: 229-346-3837
Cell: 229-221-3342 E-Mail: rpierce@hurstboiler.com

Date: 19 Aug '15

To: Norbryhn Equipment Co.

Attn: Randy Reed

Re: St. Lukes Hospital Nampa

For: Hurst 350 hp, Series 500, Natural Gas Fired, 100 PSIG Steam Operating Pressure

Boiler Shell ID	84"
Stack OD	20"
Burner Input (w/o economizer), mbh	14,252
Boiler Efficiency, Fuel to Steam % w/o Economizer	82.3
Flue Gas Flow Rate, SCFM	2,840
Saturated Steam Produced, lbs / hr.	12,075
Stack Temp, d/f (before economizer)	391
Furnace Volume, Cubic Feet	100.4
Furnace Heat Release, BTU / Cu. Ft.	141,901
Feed Water Temp to StackMaster Economizer, d/f	220
Fouling Factor	0.0005
Water Temperature from Economizer to Boiler	239
Flue Gas Temp Exiting Economizer	324
Heat Recovered Through Economizer, BTU/ HR	226,513
Boiler Input w/ Economizer, mbh	13,960,799
Total Boiler Efficiency w/ StackMaster, %	**83.9**

Converting SCFM to ACFM

ACFM = SCFM * (P_{std} / P_{act}) * (T_{act} / T_{std})

Where

ACFM = Actual cubic feet per minute
SCFM = Standard cubic feet per minute
Pstd = Standard absolute air pressure (psia)
Pact = Absolute pressure at the actual level (psia)
Tact = Actual ambient air temperature (°R)
Tstd = Standard temperature (°R)

Hurst 350 hp Boiler

SCFM =	2840.00			
Pstd =	14.7	psia		
Pact =	13.3	psia (2,800 ft elevation)		
Tact =	324	°F	784	°R
Tstd =	77	°F	537	°R

ACFM = 4,582.75

Appendix A2
Caterpillar Emergency Engine Generator Specifications

PERFORMANCE DATA

OCTOBER 05, 2015

For Help Desk Phone Numbers Click here

Perf No: DM7696 **Change Level:** 02

General Heat Rejection Emissions Regulatory Altitude Derate Cross Reference Perf Param Ref

View PDF

SALES MODEL:	C27	COMBUSTION:	DI
ENGINE POWER (BHP):	1,214	ENGINE SPEED (RPM):	1,800
GEN POWER WITH FAN (EKW):	800.0	HERTZ:	60
COMPRESSION RATIO:	16.5	FAN POWER (HP):	39.3
RATING LEVEL:	STANDBY	ADDITIONAL PARASITICS (HP):	52.2
PUMP QUANTITY:	1	ASPIRATION:	TA
FUEL TYPE:	DIESEL	AFTERCOOLER TYPE:	ATAAC
MANIFOLD TYPE:	DRY	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
GOVERNOR TYPE:	ADEM4	INLET MANIFOLD AIR TEMP (F):	120
ELECTRONICS TYPE:	ADEM4	JACKET WATER TEMP (F):	210.2
IGNITION TYPE:	CI	TURBO CONFIGURATION:	PARALLEL
INJECTOR TYPE:	EUI	TURBO QUANTITY:	2
REF EXH STACK DIAMETER (IN):	10	TURBOCHARGER MODEL:	GTA5008BS-56T-1.60
MAX OPERATING ALTITUDE (FT):	7,999	CERTIFICATION YEAR:	2010
		PISTON SPD @ RATED ENG SPD (FT/MIN):	1,800.0

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
800.0	100	1,214	324	0.330	57.3	58.6	120.5	1,230.6	41.1	952.5
720.0	90	1,100	294	0.334	52.5	53.7	115.2	1,195.3	37.5	932.4
640.0	80	988	264	0.339	47.8	48.4	113.4	1,168.6	33.4	919.7
600.0	75	932	249	0.341	45.4	45.5	113.0	1,155.3	31.2	913.8
560.0	70	876	234	0.342	42.9	42.2	111.6	1,138.9	28.8	906.0
480.0	60	765	204	0.344	37.6	34.9	107.3	1,095.6	23.9	882.8
400.0	50	654	175	0.346	32.3	27.3	102.5	1,039.6	19.1	850.4
320.0	40	545	145	0.349	27.1	20.4	98.3	967.7	14.9	804.3
240.0	30	436	116	0.355	22.1	14.5	95.0	875.5	11.4	739.0
200.0	25	380	101	0.359	19.5	11.7	93.6	822.1	9.9	699.4
160.0	20	324	86	0.366	17.0	9.1	92.4	763.2	8.5	654.7
80.0	10	210	56	0.402	12.0	5.1	92.2	626.6	6.3	544.7

GENSET POWER WITH	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL	ENGINE OUTLET WET EXH GAS VOL	WET INLET AIR MASS	WET EXH GAS MASS	WET EXH VOL FLOW RATE (32 DEG F AND	DRY EXH VOL FLOW RATE (32 DEG F AND

FAN					FLOW RATE	FLOW RATE	FLOW RATE	FLOW RATE	29.98 IN HG)	29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
800.0	100	1,214	61	362.1	2,216.4	6,011.7	9,543.1	9,944.2	2,093.1	1,894.9
720.0	90	1,100	57	341.6	2,124.9	5,659.3	9,125.9	9,493.8	1,998.8	1,815.5
640.0	80	988	51	320.7	2,001.3	5,260.8	8,572.1	8,906.9	1,875.2	1,707.1
600.0	75	932	48	309.9	1,930.4	5,042.0	8,257.4	8,575.1	1,805.0	1,645.1
560.0	70	876	44	295.4	1,851.1	4,797.3	7,907.3	8,207.3	1,727.2	1,576.0
480.0	60	765	37	264.1	1,678.1	4,260.9	7,148.0	7,411.6	1,560.5	1,427.2
400.0	50	654	29	233.3	1,497.7	3,697.0	6,361.6	6,588.0	1,387.5	1,272.0
320.0	40	545	22	203.3	1,329.0	3,157.0	5,630.4	5,820.5	1,228.0	1,129.6
240.0	30	436	16	173.6	1,175.4	2,643.8	4,970.3	5,124.7	1,084.4	1,003.3
200.0	25	380	13	158.7	1,102.8	2,392.1	4,660.7	4,797.2	1,014.7	942.2
160.0	20	324	10	143.8	1,032.8	2,142.5	4,363.5	4,482.1	945.3	881.3
80.0	10	210	6	121.2	926.9	1,716.6	3,911.4	3,995.6	840.3	792.1

Heat Rejection Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
800.0	100	1,214	18,785	6,240	45,257	25,637	6,549	9,235	51,468	122,961	130,984
720.0	90	1,100	18,137	5,061	42,000	23,586	6,007	8,276	46,664	112,779	120,138
640.0	80	988	17,141	4,437	38,642	21,600	5,462	7,119	41,902	102,550	109,241
600.0	75	932	16,243	4,573	36,868	20,559	5,186	6,513	39,533	97,376	103,729
560.0	70	876	15,133	4,950	34,899	19,383	4,898	5,822	37,162	91,965	97,965
480.0	60	765	13,933	4,599	30,563	16,728	4,301	4,488	32,445	80,759	86,028
400.0	50	654	12,297	4,489	26,024	13,914	3,694	3,331	27,748	69,364	73,890
320.0	40	545	10,665	4,336	21,575	11,109	3,103	2,367	23,120	58,261	62,063
240.0	30	436	9,960	3,213	17,222	8,311	2,521	1,564	18,469	47,340	50,429
200.0	25	380	9,576	2,592	15,113	6,955	2,231	1,215	16,122	41,885	44,618
160.0	20	324	9,057	2,021	13,057	5,639	1,939	898	13,745	36,402	38,778
80.0	10	210	7,177	1,693	9,288	3,167	1,375	455	8,885	25,814	27,498

Emissions Data Top

Units Filter All Units

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	800.0 1,214	600.0 932	400.0 654	200.0 380	80.0 210
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	7,541	4,507	2,865	1,989	1,253
TOTAL CO		G/HR	517	644	630	514	567
TOTAL HC		G/HR	66	83	90	71	85
PART MATTER		G/HR	55.4	52.1	86.3	99.7	101.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,121.8	2,374.5	2,149.1	2,626.2	2,606.8
TOTAL CO	(CORR 5% O2)	MG/NM3	215.2	343.4	483.1	717.2	1,372.2
TOTAL HC	(CORR 5% O2)	MG/NM3	23.7	38.9	59.2	87.9	183.2
PART MATTER	(CORR 5% O2)	MG/NM3	18.9	22.9	55.1	113.5	210.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,521	1,157	1,047	1,279	1,270
TOTAL CO	(CORR 5% O2)	PPM	172	275	386	574	1,098
TOTAL HC	(CORR 5% O2)	PPM	44	73	111	164	342
TOTAL NOX (AS NO2)		G/HP-HR	6.27	4.86	4.40	5.25	6.00
TOTAL CO		G/HP-HR	0.43	0.69	0.97	1.36	2.72
TOTAL HC		G/HP-HR	0.05	0.09	0.14	0.19	0.41
PART MATTER		G/HP-HR	0.05	0.06	0.13	0.26	0.49
TOTAL NOX (AS NO2)		LB/HR	16.63	9.94	6.32	4.38	2.76
TOTAL CO		LB/HR	1.14	1.42	1.39	1.13	1.25
TOTAL HC		LB/HR	0.15	0.18	0.20	0.16	0.19

PART MATTER		LB/HR	0.12	0.11	0.19	0.22	0.22

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		**EKW**	**800.0**	**600.0**	**400.0**	**200.0**	**80.0**
ENGINE POWER		**BHP**	**1,214**	**932**	**654**	**380**	**210**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL NOX (AS NO2)		G/HR	6,233	3,725	2,368	1,644	1,036
TOTAL CO		G/HR	276	344	337	275	303
TOTAL HC		G/HR	35	44	48	37	45
TOTAL CO2		KG/HR	563	445	315	188	116
PART MATTER		G/HR	28.4	26.7	44.2	51.1	52.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,580.0	1,962.4	1,776.1	2,170.4	2,154.4
TOTAL CO	(CORR 5% O2)	MG/NM3	115.1	183.6	258.3	383.5	733.8
TOTAL HC	(CORR 5% O2)	MG/NM3	12.5	20.6	31.3	46.5	96.9
PART MATTER	(CORR 5% O2)	MG/NM3	9.7	11.8	28.3	58.2	107.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,257	956	865	1,057	1,049
TOTAL CO	(CORR 5% O2)	PPM	92	147	207	307	587
TOTAL HC	(CORR 5% O2)	PPM	23	38	58	87	181
TOTAL NOX (AS NO2)		G/HP-HR	5.18	4.02	3.63	4.34	4.96
TOTAL CO		G/HP-HR	0.23	0.37	0.52	0.72	1.45
TOTAL HC		G/HP-HR	0.03	0.05	0.07	0.10	0.22
PART MATTER		G/HP-HR	0.02	0.03	0.07	0.13	0.25
TOTAL NOX (AS NO2)		LB/HR	13.74	8.21	5.22	3.62	2.28
TOTAL CO		LB/HR	0.61	0.76	0.74	0.61	0.67
TOTAL HC		LB/HR	0.08	0.10	0.11	0.08	0.10
TOTAL CO2		LB/HR	1,240	982	694	414	255
PART MATTER		LB/HR	0.06	0.06	0.10	0.11	0.12
OXYGEN IN EXH		%	8.9	10.0	11.1	13.1	15.4
DRY SMOKE OPACITY		%	0.2	1.1	2.6	4.3	5.3
BOSCH SMOKE NUMBER			0.14	0.39	0.96	1.51	1.69

Regulatory Information Top

EPA TIER 2 **2006 - 2010**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY **2011 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**NORMAL**
ALTITUDE (FT)										
0	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214
1,000	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214

Converting SCFM to ACFM

ACFM = SCFM * (P_{std} / P_{act}) * (T_{act} / T_{std})

Where

ACFM = Actual cubic feet per minute
SCFM = Standard cubic feet per minute
Pstd = Standard absolute air pressure (psia)
Pact = Absolute pressure at the actual level (psia)
Tact = Actual ambient air temperature (°R)
Tstd = Standard temperature (°R)

Caterpillar C27-800

SCFM =	6011.70	maximum flow		
SCFM =	5042.00	75% load		
Pstd =	14.7	psia		
Pact =	13.3	psia (2,800 ft elevation)		
Tact =	913.8	°F (75% load)	1373.8	°R
Tstd =	77	°F	537	°R

ACFM = 14,256.66

McCormick, Rick/BOI

To: Randy Drake
Subject: RE: SL Nampa -Emergency Generators

From: Randy Drake [mailto:RandyD@engineeringinc.com]
Sent: Wednesday, November 04, 2015 11:29 AM
To: McCormick, Rick/BOI <Rick.McCormick@CH2M.com>
Subject: RE: SL Nampa -Emergency Generators

Ok, I will proceed in that direction. Thanks for the heads up.

Randy Drake
Mechanical P.E.

From: Rick.McCormick@CH2M.com [mailto:Rick.McCormick@CH2M.com]
Sent: Wednesday, November 04, 2015 10:20 AM
To: Randy Drake
Cc: Michael Grefenson; Estee.Lafrenz@ch2m.com
Subject: RE: SL Nampa -Emergency Generators

Randy

Vertically through the roof would be our preferred approach if this does not cause problems on your end. I think all that would be needed is a pressure relief valve (or flapper) not to allow moisture into a vertical stack. (Need anywhere from 2-5 feet above the roof line).

Let me know if this works.

Thanks

Rick McCormick, P.E.
Project Manager
D 208 383 6457
M 208 890 0219

CH2M
322 East Front Street
Suite 200
Boise, ID 83702
www.ch2m.com | LinkedIn | Twitter | Facebook

From: Randy Drake [mailto:RandyD@engineeringinc.com]
Sent: Wednesday, November 04, 2015 10:11 AM
To: McCormick, Rick/BOI <Rick.McCormick@CH2M.com>
Cc: Michael Grefenson <michaelg@engineeringinc.com>
Subject: RE: SL Nampa -Emergency Generators

Rick, we can run the generator exhaust vertically through or above the roof. The initial ideal was twofold, to gain separation from the

medical air compressor intake at the roof and to direct sound away from the hospital. However if this complicates thing with the air
quality compliance we will re-route to vertical outlets.

Randy Drake
Mechanical P.E.

Appendix A3
Baltimore Aircoil Company Inc. Cooling Tower Specifications

Baltimore Aircoil Company, Inc.

Cooling Tower Selection Program

Version: 8.5.2 NA
Product data correct as of: February 12, 2015

Project Name:	SLRMC Nampa
Selection Name:	DRAFT CT
Project State/Province:	Idaho
Project Country:	United States
Date:	February 25, 2015

Model Information

Product Line:	New Series 3000
Model:	XES3E-1424-07M
Number of Units:	2
Fan Type:	Standard Fan
Fan Motor:	(1) 20.00 = 20.00 HP/Unit
Total Standard Fan Power:	Full Speed, 20.00 BHP/Unit
Intake Option:	None
Internal Option:	None
Discharge Option:	None

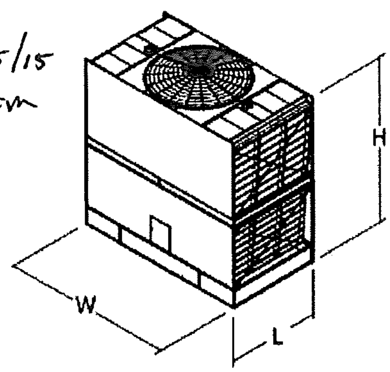
Design Conditions

Flow Rate:	1,500.00	USGPM
Hot Water Temp.:	80.00	°F
Cold Water Temp.:	70.00	°F
Wet Bulb Temp.:	67.00	°F
Tower Pumping Head:	4.91	psi
Reserve Capability:	5.38	%

Engineering Data, per Unit

Unit Length:	13' 11.25"	
Unit Width:	24' 00.50"	
Unit Height:	12' 03.25"	
Air Flow:	136,250	CFM — corrected ACFM
Approximate Shipping Weight:	16,270	pounds
Heaviest Section:	16,270	pounds
Approximate Operating Weight:	34,310	pounds
Heater kW Data (Optional)		
0°F (-17.8°C) Ambient Heaters:	(2) 14	kW
-20°F (-28.9°C) Ambient Heaters:	(2) 18	kW

RM 11/5/15



Minimum Distance Required

From Solid Wall:	6	ft.
From 50% Open Wall:	3	ft.

Energy Rating:
98.80 per ASHRAE 90.1, ASHRAE 189 and CA Title 24.
This XE model is an extremely efficient model, with a base energy rating that meets or exceeds 2x the minimum ASHRAE 90.1 energy rating.

Note: These unit dimensions account for the selected fan type for the standard cataloged drive configuration, but they do not account for other options/accessories. Please contact your local BAC sales representative for dimensions of units with other options/accessories.

Warning

1. One or more selection parameters are outside of CTI Certification limits.

St. Luke Nampa Medical Center Expansion

Wet Cooling Tower

Water Flow Rate (gal/min)	1,500	Design
Flow of cooling water (lbs/hr)	750,600	Calculated
TDS of blowdown (mg/l or ppmw) - Maximum ppm at blowdown	1,500	Design
Flow of dissolved solids (lbs/hr)	1,126	Calculated
Fraction of flow producing PM_{10} drift (See Note 2)	0.840	See Note 2
Control efficiency of drift eliminators (gal drift/gal flow)	0.000005	Design
PM emissions from tower (lb/hr)	0.006	Calculated
PM_{10} emissions from tower (lb/hr)	0.005	Calculated
PM emissions from tower (tpy)	0.025	Calculated
PM_{10} emissions from tower (tpy)	0.021	Calculated

Other Parameters

Number of cells per tower (outlet fans)	2	Two (2 cell) towers -4 total
Height at cell release (ft):	12.3	
Height at cell release (m):	3.75	
Discharge flow per cell (ACFM):	136,250	
Diameter of each cell (ft):	13.9	
Diameter of each cell (m):	4.24	
Area of cell discharge (ft^2):	152	
Average Temperature of cell discharge (degF):	77	
Average Temperature of cell discharge (K):	298.16	
Exit Velocity (ft/s):	15.0	
Exit Velocity (m/s):	4.56	

Notes:

(1) Cooling Tower design data from Kewiet.

(2) From "Calculating Realistic PM_{10} Emissions From Cooling Towers" (J. Reisman, G. Frisbie). Presented at 2001 AWMA Annual Meeting.

(3) TDS based on data from Idaho Power.

(4) Emission Calculation Method from AP 42, Sect.13.4-1

(5) Assume PM10 emissions equal PM2.5 emissions

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 NORTH HILTON, BOISE, ID 83706 · (208) 373-0502

C. L. "BUTCH" OTTER, GOVERNOR
JOHN H. TIPPETS, DIRECTOR

February 3, 2016 **VIA EMAIL**

Rick McCormick, P.E.
Project Manager
CH2M
322 E. Front St.
Suite 200
Boise, ID 83702

RE: Modeling Protocol Conditional Approval for the Permit to Construct Application for the St. Luke's Nampa Medical Center Facility in Nampa, Idaho.

Dear Mr. McCormick:

DEQ received a dispersion modeling protocol from CH2M, on November 9, 2015, via email. The modeling protocol was submitted on behalf of St. Luke's Health Standard (SLHS). The modeling protocol proposes methods and data for use in Class II area ambient air impact analyses in support of an application for an initial facility-wide Permit to Construct (PTC) for the proposed expansion and the existing Nampa facility. The facility will be referred to as St. Luke's Nampa Medical Center (SLNMC).

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

- **Comment 1: Modeling Exemptions for Specific Pollutants.** BRC is defined as the annual level of emissions equal to 10 percent of the significant emissions rate. Modeling requirements for the project do not apply if the project qualifies for an exemption under DEQ's policy[1] for NAAQS modeling compliance demonstrations for emissions that are Below Regulatory Concern (BRC) and do not require any alterations of a permit limitation for that pollutant. BRC applicability is based on annual emissions only. Short term averaging periods, such as 1-hour and 24-hour periods, do not factor into evaluation of the BRC exemption. If potential emissions of a NAAQS pollutant for the project—issued as a final permitting action by DEQ meets these requirements, that pollutant is exempt from modeling for all short and long-term averaging periods. This project is the initial permit for this facility so there are no alterations to existing permit requirement criteria pollutant limitations to consider.

  Annual emissions listed in Table 1 of the modeling protocol indicate that SO_2 emissions for the project will be 0.40 tons per year (T/yr) and the CO emissions will be 9.47 T/yr. The BRC threshold for SO_2 is 4 T/yr and for CO is 10 T/yr. At these levels of emissions the project is BRC for these pollutants.

The $PM_{2.5}$ significant emission rate is 10 T/yr, and the $PM_{2.5}$ BRC modeling threshold is 1.0 T/yr. The estimated annual $PM_{2.5}$ emissions rate listed in Table 1 is 1.26 T/yr, which exceeds the BRC threshold.

For PM_{10}, the significant emission rate and BRC threshold are 15 T/yr and 1.5 T/yr. The project's annual PM_{10} emissions are listed as 1.26 T/yr which qualifies this project as exempt from PM_{10} modeling requirements—provided the final permitting project reflects an annual PM_{10} potential to emit below 1.5 T/yr.

For lead emissions, annual potential emissions were predicted to be 0.24 lb/yr, which is below the BRC threshold of 120 lb/yr.

At 6.3 T/yr of VOCs, there is no requirement to evaluate ozone impacts for this facility. An emission rate of 40 T/yr is used to evaluate whether the VOC emissions should be evaluated as a precursor to $PM_{2.5}$ impacts.

DEQ will apply Level I modeling thresholds for this project due to the hospital's required treatment of ambient air immediately exterior to all buildings where the general public may gain access so there is no setback distance between Central Plant emissions sources and ambient air. Modeling will be required for 24-hour and annual $PM_{2.5}$, and 1-hour and annual NO_2 based upon your modeling protocol PTE. A cumulative NAAQS demonstration will be required for any pollutant and averaging period exceeding the significant contribution level specified in Section 006.108 of the Idaho Air Rules.

- **Comment 2: Existing Sources.** The protocol does not address any existing emissions units located within the existing facility. If there are any existing sources that contribute to the facility's potential to emit the modeling applicability discussed in Comment 1 may be affected.

- **Comment 3: Background Concentrations.** DEQ's standard method of generating background concentrations for use in minor source permit modeling is to use the Northwest AIRQUEST (NW-AIRQUEST) look-up design value concentration tool. Appropriate background concentrations from the NW-AIRQUEST tool for the Nampa site are provided in Table 1 below. All pollutants of concern were listed in case any emission rates change for this project and are subject to modeling requirements.

  CH2M submitted an addendum to the modeling protocol on December 11, 2015. The addendum proposed a seasonal diurnal value approach for the 1-hour NO_2 ambient background concentrations for use in the 1-hr NO_2 NAAQS modeling demonstration. DEQ provided comments and additional monitoring data for consideration on February 2, 2016 via email. CH2M intends to respond with a revised 1-hour average NO_2 ambient background analysis and justification. DEQ will review this submittal after it is received. DEQ approval of the 1-hour NO_2 background addendum will be issued under a separate letter.

Table 1. DEQ-RECOMMENDED AMBIENT BACKGROUND CONCENTRATIONS		
Pollutant	**Averaging Period**	**Background Concentration ($\mu g/m^3$)[a, b]**
PM_{10}[g]	24-hour	74[c]
$PM_{2.5}$[h]	24-hour	25[d]
	Annual	9.6
Ozone[e]	Annualized value	59 ppb[f]
NO_2[i]	1-hour	80.8 (43 ppb)
	Annual	10.9 (5.8 ppb)
SO_2[j]	1-hour	17.8 (6.8 ppb)
Lead	Rolling 3-month	0.03[l]
CO[k]	1-hour	1,657 (1,447 ppb)
	8-hour	996 (870 ppb)

a. Micrograms per cubic meter, except where noted otherwise.
b. Northwest AirQuest ambient background lookup tool, December 8, 2015 access date. See http://lar.wsu.edu/nw-airquest/lookup.html, except where noted otherwise.
c. Without extreme values.
d. Northwest Airquest design value used a 3-year median value instead of a 3-year average of annual 98[th] percentile values to take into account high modeled values during modeled wildfires episodes.
e. Ozone for use in 1-hour nitrogen dioxide modeling using Tier 3 Ozone Limiting Method or Tier 3 Plume Volume Molar Ratio Method.
f. Parts per billion by volume.
g. Particulate matter with an aerodynamic diameter of 10 microns.
h. Particulate matter with an aerodynamic diameter of 2.5 microns.
i. Nitrogen dioxide.
j. Sulfur dioxide.
k. Carbon monoxide.
l. Default value for small town/suburban areas. The lead background was obtained from the following DEQ source: *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum from Hardy, Rick and Schilling, Kevin to Anderson, Mary, dated March 14, 2003.

- **Comment 4: Justification of Release Parameters.** Documentation and justification of release parameters must be provided in the application. Refer to Section 6.4.2 of the *State of Idaho Guideline for Performing Air Quality Impact Analyses*, July 2011. The modeling protocol listed emission point release parameters and documentation and justification of the release parameters for the proposed facility's emissions units. A complete review of release parameter justification will be conducted during the application's completeness review and the completeness determination will incorporate the *Guideline's* substantiation requirements. Modeling with appropriate exhaust parameters is as important as modeling with appropriate emissions rates.

  In most instances, typical values should be used rather than extreme values, and should represent the conditions at the point of exhaust plume release to the atmosphere. Conservative assumed values may be used where supporting documentation is unavailable. Documentation can include performance test reports, manufacturer's specifications sheets or design documents, or engineering design calculations, including assumptions. It is important to evaluate where in the exhaust stream any measurements for manufacturer specifications were made. For example, internal combustion engine measurements taken at the exhaust manifold and do not accurately reflect conditions after a muffler and cooling in the stack. In general, stack exit velocities greater than 50 meters/second will be considered suspect for any sources and will require a higher degree of documentation.

  The protocol indicated emergency generator engine exhaust parameters for each of the four identical generators would be based on manufacturer specification sheets. The specification sheet "engine outlet wet exhaust gas volumetric flow rate" is listed in units of "CFM" –or cubic feet per minute". CH2M interpreted the 5,042 cfm value as standard cubic feet per minute and converted this value to the Nampa site elevation pressure and the listed "engine outlet temperature" at the 75% load condition. Based on the 10-inch exit diameter highlighted on the specification sheet and "engine outlet temperature" of 913.8 degrees Fahrenheit, this was converted to 14,257 actual cubic feet per minute. Note that this volumetric flow rate from a 10-inch diameter stack has an exit velocity of 436 feet per second (or 133 meters per second). DEQ believes this is a very high exit velocity given DEQ requests in-depth justification for stack velocities greater than 50 meters per second. Additional validation is requested in the modeling report. Please verify with the engine manufacturer that "CFM" is meant to reflect "standard cubic feet per minute."

Each of the Hurst boilers will be equipped with an economizer that will drop the final exhaust exit temperature from 391 to 324 degrees Fahrenheit. A flue gas flow rate of 2,840 scfm is listed on the boiler equipment documentation but it is not conclusive whether the value is for a pre- or post-economizer location. Please clarify in the modeling report and revise flow rate and stack exit velocity as appropriate.

- **Comment 5: Receptor Grid.** The description of the proposed receptor grid is unclear. Figure 2 titled "SITE LAYOUT" presents the ambient air boundary and the property boundary for the facility. The protocol language suggests that 25-meter spacing will be placed around the property boundary. The finely-spaced receptors should be applied immediately exterior to the buildings as ambient air for this project rather than the SLMNC property boundary. A jump from 25-meter receptor spacing to 100-meter spacing may not adequately resolve the maximum predicted impacts. Placement of additional densely-spaced receptor grids may be needed to resolve maximum concentrations. DEQ will review the results of the modeling demonstration to note whether a significant concentration gradient occurs between adjoining receptors. If review of the submitted modeling results does not clearly show that maximum modeled impacts are resolved to the point that NAAQS and TAPs compliance is assured, the applicant will be asked to rerun the analyses using a tighter receptor grid. Alternatively, if DEQ performs a sensitivity analysis using a more densely-spaced receptor grid and any applicable ambient standards are exceeded, the permit will be denied. Approval of an initial receptor grid described in a modeling protocol does not qualify for final approval of a receptor grid layout for this project.

- **Comment 6: Meteorological Dataset.** CH2M proposes to use a 5-year meteorological dataset spanning 2010-2014 for the project based on Boise surface, ASOS, and upper air data, as described in the recently-approved Nampa Aptina/ON Semiconductor project's modeling protocol. DEQ requests that the raw data, all AERMINUTE, AERSURFACE, and AERMET input, output, processing message summary files, and a report on the methods used to generate the met data be included in the SLNMC permit application's modeling submittal.

- **Comment 7: 1-Hour Average NO_2 SIL and NAAQS Modeling.** The modeling protocol indicates that Tier 2 ARM2 or Tier 3 Ozone Limiting Method (OLM) will be used if the facility does not demonstrate compliance with the 1-hour and annual NO_2 NAAQS using either Tier 1 or Tier 2 ARM methods. The modeling protocol did not provide a justification for Tier 2 ARM2 or Tier 3 OLM compliance methods, but indicated that one of these methods may be used in the modeling demonstration. Please include the appropriate justification and support documentation for the method used in your analyses, per EPA guidance. The justification must address why the analyses used OLM, PVMRM, or PVMRM2 over the other methods if a Tier 3 compliance method is applied. NO_2 to NO_x in-stack ratio (ISR) documentation and justification must be included unless the default ISR value of 0.5 is used for all sources in Tier 2 ARM2 or a Tier 3 compliance method.

Based on past communication with EPA Region 10 regarding Idaho DEQ's review and approval of the Tier 2 ARM2 non-regulatory guideline method, additional consultation with EPA Region 10 will not be necessary unless unusual circumstances arise. DEQ will evaluate approval for this minor source modeling demonstration.

- **Comment 8: Diesel-Fired Emergency Generator Engine Testing Schedule.** Modeling of NO_2 emissions from the testing of emergency engines to demonstrate compliance with the 1-hour NO_2 NAAQS is not required per DEQ policy, but is still required for all other SILs and NAAQS, if modeling is applicable. In most instances, EPA has established a 500 hours per year potential operating rate as representative of PTE for emergency engines (this includes both the 100 hours per year for maintenance and testing as well as potential operations during power outages). A value of 100 hours per year (hr/yr) maximum annual operation capacity was specified in the protocol. Because this level is below the recommended 500 hr/yr level, modeling staff will include a permit recommendation for an operating condition limitation of 100 hr/yr for any generator applying this assumption.

  Short-term testing and maintenance operations were not specified. An acceptable option for $PM_{2.5}$ and PM_{10} 24-hour average standards is to average the requested allowable hours of operation per 24 hour period. Emergency generator emission rates modeled to demonstrate compliance with other ambient air quality standards with averaging periods less than 24 hours may follow the same approach. Alternative methods to model the generators were not identified in the modeling protocol. Please contact DEQ with a protocol addendum if pre-approval for a specific method is requested.

- **Comment 9: DEQ Modeling Report Template.** Please use the DEQ modeling report template for your project. The template can be accessed using the following link: http://www.deq.idaho.gov/media/60176968/air-impact-modeling-analysis-report-template-form.docx.

- **Comment 10: Base Elevations.** Please include an explanation of how building, source and ambient air boundary receptor base elevations were established in the modeling report. Site grading plans provide more accurate data for base elevations of buildings, emission source stacks, and the facility property boundary than those derived using AERMAP and the National Elevation Dataset (NED) files.

- **Comment 11: Co-Contributing Sources.** The Amalgamated Sugar Company's (TASCO's) Nampa facility was identified as an additional source for this project's NAAQS modeling. Actual emissions are allowed to be modeled for the co-contributing source rather than potential emissions.

  The TASCO facility's most recent reporting of actual emissions was submitted for the National Emissions Inventory. The 2014 actual emissions inventory and exhaust parameter documentation is contained in the electronic format spreadsheet titled "2014 TASCO Nampa Process Emissions.xls." Hours of operation and seasonal levels of operation data were included in the 2014 inventory information. Please contact DEQ if clarification of the data is needed.

The modeling report should contain a description and documentation of assumptions on how the co-contributing source emissions were reflected in the modeling, especially if the emissions varied by season or other time interval. This is an important point considering TASCO is known to operate emissions units at different levels depending on season, and if a seasonal 1-hr NO_2 ambient background is used, the appropriate level of emissions should be modeled for the co-contributing source to the extent provided by the NEI.

DEQ has not identified any other facilities to include in cumulative impact analyses as co-contributing sources.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of the modeling protocol is not meant to imply approval of completed dispersion modeling analyses. The protocol approval does not provide an exhaustive review of all issues that may factor into the completeness of the modeling demonstration, and more extensive documentation in the permit application's modeling report may be necessary where the modeling protocol does not provide supporting documentation and detail. Completeness determinations weigh the materials presented in permit application and modeling report in evaluating whether the modeling analyses adequately demonstrate compliance with the applicable standards and increments. Please refer to the State of Idaho Air Quality Modeling Guideline, which is available on the Internet at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf, for further guidance.

To ensure a complete and timely review of any analyses submitted to the Idaho Department of Environmental Quality, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP and AERMAP) be submitted with analyses reports. Also, please include a copy of the protocol and this approval notice with the submitted application. If you have any further questions or comments, please contact me at (208) 373-0536.

Sincerely,

Darrin Mehr

Darrin Mehr
Air Quality Analyst
Monitoring, Modeling, and Emission Inventories
Air Quality Stationary Source Program

Email Attachment: 2014 TASCO electronic spreadsheet file, "2014 TASCO Nampa Process Emissions.xls"

REFERENCES

1 *Policy on NAAQS Compliance Determination Requirements*. Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.

TECHNICAL MEMORANDUM

Modeling Protocol Addendum: Proposed Use of Seasonal Hourly 1-Hour NO_2 Background Data

PREPARED FOR:	Kevin Schilling, IDEQ
COPY TO:	Darrin Mehr, IDEQ
PREPARED BY:	Monica Wright and Estee Lafrenz, CH2M
DATE:	December 11, 2015
PROJECT NUMBER:	664262.N3.03.31.60.01
REVISION NO.:	Modeling Protocol Addendum
REVIEWED BY:	Rick McCormick, CH2M

The St. Luke's Nampa facility, located in Nampa, Idaho, is in the process of performing air dispersion modeling in support of an air quality Permit-to-Construct (PTC) application. As part of the process, the facility is required to model the impacts from 1-Hour NO_2.

A modeling protocol was submitted to IDEQ on November 9th, 2015 and is currently being reviewed. This document is submitted as an addendum to the modeling protocol, to include an additional option for using seasonal hourly background values.

This technical memorandum summarizes the proposed 1-Hour NO_2 seasonal hourly background values and the approach used to determine the proposed values.

Background

The preliminary 1-hour NO_2 modeling analysis for St. Luke's Nampa indicates a cumulative analysis will be necessary. An important aspect of the cumulative impact assessment is the method for combining modeled concentrations with monitored background concentrations to determine the cumulative ambient impact. The use of a single uniform monitored background contribution is overly conservative for this project because the use of this value is likely reflecting source-oriented impacts from nearby sources and double-counting of modeled and monitored contributions.

The EPA guidance outlined in the March 1, 2011 EPA guidance provided in the Memorandum by Tyler Fox, "*Additional Clarification Regarding Application of Appendix W Modeling Guidance for the l-hour NO2*" allows for additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values and states that temporal paring may be considered on a case-by-case basis. Since the 1-Hour NO_2 standard is based on the annual distribution of daily maximum 1-hour values, the diurnal patterns of ambient impacts and monitored ambient 1-hour NO_2 need to be considered when combining modeled and monitored data.

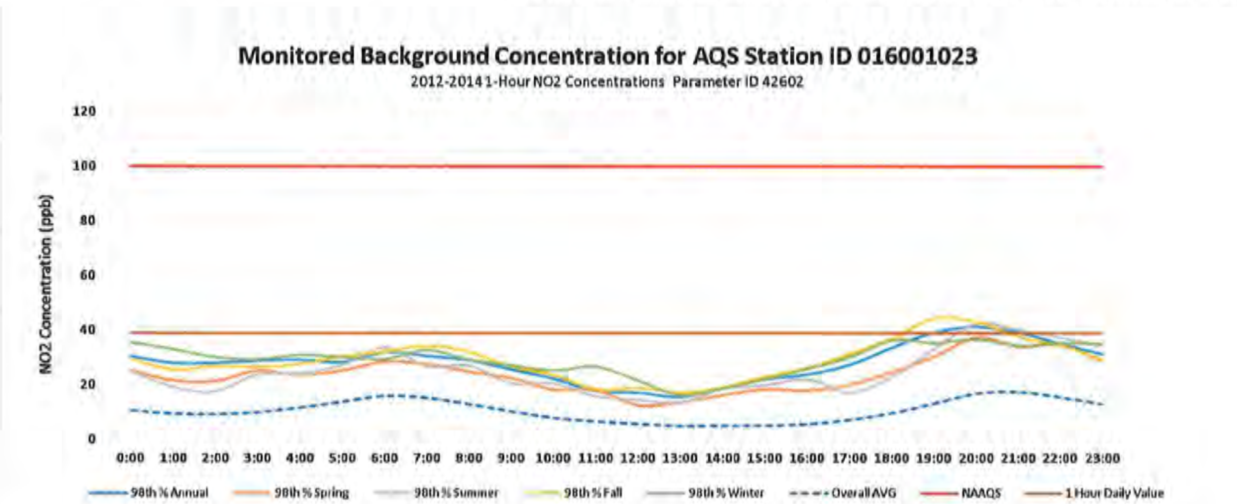
Approach and Justification

The proposed background values were determined using the ambient 1-hour NO_2 data obtained from the EPA AQS data mart database (available on line at https://aqs.epa.gov/api). The most recent three years of 1-hour NO_2 data available (2012-2014) from the Nampa monitor (ID# 016001023, Parameter ID# 42602) were downloaded and evaluated.

In general the steps used to determine these seasonal hourly background values followed the EPA guidance. Data were organized data by year, season and hour. The completeness of the data was determined and then the 98th percentile (or the third highest value for each season and hour for complete data) was determined for each season and hour. For the annual hourly value, the seventh highest value was determined. Once this was complete for all three years, the maximum value over the three years was determined for each season and hour. This is a deviation from the guidance that calls for averaging over three years and was done to account for the missing data.

The available background data shows a clear diurnal variation in the ambient NO_2 concentrations. Figure 1 illustrates the hourly and seasonal breakdown of the 98th percentile values of the ambient 1-hour NO_2 concentrations. Several hours in the evening are near the 1-hour daily value provided by IDEQ (38.98 ppb) with the remainder under this value, indicating the use of this value will likely result in an overly conservative monitored background value for the cumulative analysis. A seasonal variation is also indicated with the minimums and maximums occurring at different hours of the day in the different seasons.

Figure 1. Seasonal Hourly Ambient 1-Hour NO_2 Concentrations (ppb)



Incorporating a seasonal component to the variability of background monitored concentrations should help to account for some of the variability in meteorological conditions that may contribute to high hourly impacts and will more accurately represent the actual local conditions. The EPA guidance recommends this technique as a "...reasonable and efficient method for ensuring that the monitored contribution to the cumulative impact assessment will be representative of the meteorological conditions accompanying the concentrations of concern...."

Proposed Values

Since the use of a seasonal hourly background value is indicated by the diurnal and seasonal trend in the ambient data as well as the high Tier 1 modeled impacts, the use of these data are proposed for use in the PTC modeling for the Nampa ID area.

The seasonal hourly background values proposed are shown in Table 1.

Table 1

2012-2014 Ambient 98th Percentile Season Hour of Day NO2 Concentrations (ppb)

Hour of Day	Winter	Spring	Summer	Autumn
1	35.5	25.3	25.0	29.2
2	33.0	21.6	19.3	25.7
3	30.1	21.4	17.7	26.9
4	29.4	25.2	24.0	26.6
5	30.9	23.6	24.3	27.7
6	30.1	25.3	27.4	30.4
7	29.4	28.5	33.8	32.2
8	32.7	27.6	26.9	34.3
9	29.3	24.8	27.2	32.1
10	27.2	22.5	20.6	26.7
11	25.3	18.3	20.7	23.6
12	26.7	18.2	15.9	18.5
13	21.7	12.6	14.6	18.9
14	16.5	13.7	13.6	17.2
15	18.9	16.3	18.7	19.0
16	22.2	18.4	20.0	23.0
17	25.9	18.0	22.1	26.2
18	30.1	20.1	17.4	31.4
19	36.2	24.7	23.0	37.0
20	35.4	30.4	33.3	44.4
21	36.6	37.3	42.5	43.2
22	34.4	34.1	40.4	37.7
23	35.3	34.6	37.5	34.5
24	34.9	28.6	34.5	29.5

Method of Inclusion in AERMOD Modeling

The seasonal hourly background data will be included in the AERMOD input file using the SO BACKGRND SEASHR cards. This will allow AERMOD to properly match the appropriate season and hour background to the modeled impacts.

Please review the attached calculations and the proposed seasonal hourly values and confirm that these values are acceptable for use in PTC modeling for the Nampa area.

2014 TASCO Nampa Emissions

Facility ID	Facility Name	EU ID	Pr ID	SCC	Pollutant	2014 TPY
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	7439921	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	CO	0.46
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	NOX	1.54
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	PM10-FIL	0.12
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	PM25-FIL	0.06
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	SO2	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	1	10200601	VOC	0.03
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	CO	5.06
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	NOX	139.98
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	PM10-FIL	24.83
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	PM25-FIL	12.42
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	SO2	278.24
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	2	10200222	VOC	0.71
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	CO	5.14
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	NOX	142.58
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	PM10-FIL	25.75
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	PM25-FIL	12.62
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	SO2	282.80
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	1	10200222	VOC	0.72
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	7439921	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	CO	0.62
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	NOX	2.09
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	PM10-FIL	0.16

2014 TASCO Nampa Emissions

Facility ID	Facility Name	EU ID	Pr ID	SCC	Pollutant	2014 TPY
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	PM25-FIL	0.08
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	SO2	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	2	10200601	VOC	0.04
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	CO	18.56
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	NOX	667.44
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	PM10-FIL	93.29
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	PM25-FIL	46.62
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	SO2	1,016.39
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	1	10200222	VOC	2.60
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	7439921	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	CO	2.65
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	NOX	8.82
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	PM10-FIL	0.68
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	PM25-FIL	0.34
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	SO2	0.02
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	2	10200601	VOC	0.17
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	7439921	0.00
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	CO	9.51
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	NOX	11.32
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	PM10-FIL	2.45
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	PM25-FIL	1.22
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	SO2	0.07
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	1	10200602	VOC	0.74

2014 TASCO Nampa Emissions

Facility ID	Facility Name	EU ID	Pr ID	SCC	Pollutant	2014 TPY
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	1	30501603	CO	190.16
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	1	30501603	N2O	4.80
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	1	30501603	PM10-FIL	0.31
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	1	30501603	PM25-FIL	0.15
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	2	39000889	SO2	0.12
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	2	39000889	VOC	0.16
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	1	30501603	CO	221.62
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	1	30501603	N2O	5.59
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	1	30501603	PM10-FIL	0.36
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	1	30501603	PM25-FIL	0.18
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	2	39000889	SO2	0.14
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	2	39000889	VOC	0.19
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	220	1	30201682	PM10-FIL	0.49
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	220	1	30201682	PM25-FIL	0.27
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	250	1	30201616	PM10-FIL	0.66
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	250	1	30201616	PM25-FIL	0.31
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	270	1	30201688	PM10-FIL	1.57
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	270	1	30201688	PM25-FIL	0.78
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	1	30201641	NH3	72.32
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	1	30201641	VOC	29.38
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	2	30201684	SO2	0.10
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	3	30501603	CO	1,235.04
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	3	30501603	NOX	34.12

2014 TASCO Nampa Emissions

Facility ID	Facility Name	EU ID	Pr ID	SCC	Pollutant	2014 TPY
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	300	1	30102323	SO2	5.80
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	305	1	30102323	SO2	2.26
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	310	1	30201651	PM10-FIL	3.60
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	310	1	30201651	PM25-FIL	1.44
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	320	1	30201655	PM10-FIL	0.66
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	320	1	30201655	PM25-FIL	0.38
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	330	1	30201658	PM10-FIL	0.66
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	330	1	30201658	PM25-FIL	0.38
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	340	1	30201661	PM10-FIL	0.46
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	340	1	30201661	PM25-FIL	0.23
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	360	1	30201661	PM10-FIL	0.28
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	360	1	30201661	PM25-FIL	0.14
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	370	1	30201661	PM10-FIL	0.20
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	370	1	30201661	PM25-FIL	0.10
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	400	1	30201699	NH3	146.52
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	400	1	30201699	PM10-FIL	5.30
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	400	1	30201699	PM25-FIL	2.48

2014 Operating

Facility ID	UnitIdentifier	EmissionsProcessIdentifier	ActualHoursPerPeriod	AverageDaysPerWeek	AverageHoursPerDay	AverageWeeksPerPeriod
02700010	010	1	487	7	24	2.9
02700010	010	2	3444	7	24	20.5
02700010	020	1	3444	7	24	20.5
02700010	020	2	386	7	24	2.3
02700010	030	1	7627	7	24	45.4
02700010	030	2	940	7	24	5.6
02700010	040	1	5577	7	24	33.2
02700010	090	1	3444	7	24	20.5
02700010	090	2	3444	7	24	20.5
02700010	100	1	3444	7	24	20.5
02700010	100	2	3444	7	24	20.5
02700010	220	1	3444	7	24	20.5
02700010	250	1	3544	7	24	21.1
02700010	270	1	3444	7	24	20.5
02700010	290	1	3444	7	24	20.5
02700010	290	2	3444	7	24	20.5
02700010	290	3	3444	7	24	20.5
02700010	300	1	3444	7	24	20.5
02700010	305	1	8114	7	24	48.3
02700010	310	1	8164	7	24	48.6
02700010	320	1	8164	7	24	48.6
02700010	330	1	8164	7	24	48.6
02700010	340	1	8164	7	24	48.6
02700010	360	1	8164	7	24	48.6
02700010	370	1	8164	7	24	48.6
02700010	400	1	3544	7	24	21.1

2014 Operating

Facility ID	PercentWinterActivity	PercentSpringActivity	PercentSummerActivity	PercentFallActivity
02700010	41	24	4	31
02700010	47	12	9	32
02700010	45	13	11	31
02700010	29	27	15	29
02700010	34	14	18	34
02700010	50	5	17	28
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	59	0	0	41
02700010	28	15	29	28
02700010	28	15	29	28
02700010	28	15	29	28
02700010	28	15	29	28
02700010	27	19	27	27
02700010	25	25	25	25
02700010	25	25	25	25
02700010	59	0	0	41

2014 Release Points

Facility ID	ReleasePointIdentifier	ReleasePointTypeCode	ReleasePointDescription	ReleasePointStackHeightMeasure
02700010	030	2	Riley Boiler	245
02700010	040	2	Union Boiler	66
02700010	095	2	Lime Kiln A/B	82
02700010	220	2	Lime Kiln Dust	79
02700010	250	2	Pellet Cooler System	6
02700010	270	2	A&B Process Slakers	6.6
02700010	290	2	Main Mill Vents	60
02700010	300	2	A Side Sulfur Stove	56
02700010	305	2	B Side Sulfur Stove	82
02700010	310	2	Drying Granulator	66
02700010	320	2	Cooling Granulator #1	52
02700010	330	2	Cooling Granulator #2	52
02700010	340	2	Process #2 Bag	36
02700010	360	2	Specialties Sugar Handling	30
02700010	370	2	Packaging line	26
02700010	400	1	FACILITY FUGITIVES (raw beets)	
02700010	410	2	Carbonation Vent #1	108

2014 Release Points

Facility ID	ReleasePointStackHeightUnitofMeasureCode	ReleasePointStackDiameterMeasure	mete	ReleasePointExitGasVelocityMeasure	eloci
02700010	FT	7	FT	52.5	FPS
02700010	FT	4	FT	25.1	FPS
02700010	FT	3	FT	33	FPS
02700010	FT	2.5	FT	16.7	FPS
02700010	FT	3.9	FT	48.3	FPS
02700010	FT	2.5	FT	16.7	FPS
02700010	FT	8.9	FT	11	FPS
02700010	FT	1	FT	16.7	FPS
02700010	FT	1	FT	16.7	FPS
02700010	FT	2	FT	80.4	FPS
02700010	FT	2	FT	26.9	FPS
02700010	FT	2	FT	26.9	FPS
02700010	FT	4.6	FT	27.2	FPS
02700010	FT	3.5	FT	13.3	FPS
02700010	FT	1.6	FT	99.5	FPS
02700010					
02700010	FT	3.3	FT	22	FPS

2014 Release Points

Facility ID	ReleasePointExitGasFlowRateMeasure	owRat	ReleasePointExitGasTemperatureMeasure	ReleasePointFenceLineDistanceMeasure
02700010	2020.49295	ACFS	350	650
02700010	315.424672	ACFS	325	500
02700010	233.26974	ACFS	175	350
02700010	81.9782125	ACFS	90	600
02700010	577.00330506	ACFS	90	400
02700010	81.9782125	ACFS	80	600
02700010	684.3443002	ACFS	135	241
02700010	13.116514	ACFS	225	300
02700010	13.116514	ACFS	225	300
02700010	252.591072	ACFS	128	300
02700010	84.511192	ACFS	122	250
02700010	84.511192	ACFS	122	250
02700010	452.05005184	ACFS	100	300
02700010	127.9645535	ACFS	100	300
02700010	200.0621824	ACFS	100	300
02700010				
02700010	188.1709236	ACFS	180	350

2014 Release Points

Facility ID	Distan	ReleasePointFugitiveHeightMeasure	Heigh	ReleasePointFugitiveWidthMeasure	Widt	ReleasePointFugitiveLengthMeasure	eng
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010	FT						
02700010		30	FT	40	FT	50	FT
02700010	FT						

2014 Release Points

Facility ID	ReleasePointFugitiveAngleMeasure	ReleasePointComment	ReleasePointStatusCode	ointStatus(	LatitudeMeasure
02700010			OP	2014	43.60446
02700010			OP	2014	43.6046
02700010			OP	2014	43.60435
02700010			OP	2014	43.60438
02700010			OP	2014	43.60534
02700010			OP	2014	43.60445
02700010			OP	2014	43.60445
02700010			OP	2014	43.60409
02700010			OP	2014	43.6038
02700010			OP	2014	43.60394
02700010			OP	2014	43.6041
02700010			OP	2014	43.60403
02700010			OP	2014	43.6041
02700010			OP	2014	43.60422
02700010			OP	2014	43.60432
02700010	89		OP	2014	43.60446
02700010			OP	2014	43.60429

2014 Release Points

Facility ID	LongitudeMeasure	SourceMapScaleNumber	HorizontalAccuracyMeasure	racy	HorizontalCollectionMethodCode
02700010	-116.57368	1	1	M	020
02700010	-116.57403	1	1	M	020
02700010	-116.57446	1	1	M	020
02700010	-116.57446	1	1	M	020
02700010	-116.57369	1	1	M	020
02700010	-116.57434	1	1	M	020
02700010	-116.57452	1	1	M	020
02700010	-116.5744	1	1	M	020
02700010	-116.57462	1	1	M	020
02700010	-116.57375	1	1	M	020
02700010	-116.57365	1	1	M	020
02700010	-116.57357	1	1	M	020
02700010	-116.57332	1	1	M	020
02700010	-116.57319	1	1	M	020
02700010	-116.57305	1	1	M	020
02700010	-116.57368	1	1	M	020
02700010	-116.57461		10	M	028

2014 Release Points

Facility ID	HorizontalReferenceDatumCode	GeographicReferencePointCode	DataCollectionDate	GeographicComment	VerticalMeasure
02700010	001	106	2002-08-02		829
02700010	001	106	2002-08-02		774
02700010	001	106	2002-08-02		779
02700010	001	106	2002-08-02		778
02700010	001	106	2002-08-02		756
02700010	001	106	2002-08-02		756
02700010	001	106	2002-08-02		951
02700010	001	106	2002-08-02		771
02700010	001	106	2002-08-02		779
02700010	001	106	2002-08-02		774
02700010	001	106	2002-08-02		770
02700010	001	106	2002-08-02		770
02700010	001	106	2002-08-02		765
02700010	001	106	2002-08-02		763
02700010	001	106	2002-08-02		762
02700010	001	106	2002-08-02		784
02700010	003	106	2013-03-22	Used Google earth	586

2014 Release Points

Facility ID	VerticalUnitofMeasureCode	VerticalCollectionMethodCode	VerticalReferenceDatumCode	VerificationMethodCode
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	002
02700010	M	008	002	009
02700010	M	006	001	002

2014 Release Points

Facility ID	CoordinateDataSourceCode	GeometricTypeCode
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	001
02700010	016	003
02700010	085	001

014 EU PR RP

ID	name	Emissions Unit	Fac ID	Status	status_year	l_scc_code	Emissions Unit Desc	Process ID	Process Desc	Release Point ID	Fac RP ID	Release Point Desc
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	SB1	OP	2014	10200222	B&W Boiler #1	2	B&W Boiler #1 - Coal Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	010	SB1	OP	2014	10200601	B&W Boiler #1	1	B&W Boiler #1 - Gas Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	SB2	OP	2014	10200222	B&W Boiler #2	1	B&W #2 - Coal Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	020	SB2	OP	2014	10200601	B&W Boiler #2	2	B&W Boiler #2 - Gas Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	SB3	OP	2014	10200601	Riley Boiler	2	Riley Boiler - Gas Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	030	SB3	OP	2014	10200222	Riley Boiler	1	Riley Boiler - Coal Fired	030	PB3	Riley Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	040	SB4	OP	2014	10200602	Union Boiler (gas)	1	Union Boiler (Gas fired)	040	PB4	Union Boiler
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	SK1	OP	2014	30501603	Lime Kiln A	1	CaO/CO2 Production	095	PK 1/2	Lime Kiln A/B
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	090	SK1	OP	2014	39000889	Lime Kiln A	2	Anthracite Coal Consumption	095	PK 1/2	Lime Kiln A/B
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	SK2	OP	2014	30501603	Lime Kiln B	1	CaO/CO2 Production	095	PK 1/2	Lime Kiln A/B
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	100	SK2	OP	2014	39000889	Lime Kiln B	2	Anthracite Coal Consumption	095	PK 1/2	Lime Kiln A/B
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	220	SK3	OP	2014	30201682	Lime Kiln Building Material Handling	1	Lime Kiln Building Material Handling	220	PK3	Lime Kiln Dust
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	250	SD9	OP	2014	30201616	Pellet Mill Cooler Baghouse	1	Pellet Mill Cooler System	250	PD9	Pellet Cooler System
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	270	SK4	OP	2014	30201688	A&B Process Slakers	1	A & B Process Slakers	340	PW4	Process #2 Bag
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	SO1	OP	2014	30501603	Main Mill	3	Main Mill Kiln Process Exhaust	410	C-01	Carbonation Vent #1
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	SO1	OP	2014	30201684	Main Mill	2	Main Mill Kiln Process Exhaust	410	C-01	Carbonation Vent #1
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	290	SO1	OP	2014	30201641	Main Mill	1	Main Mill	290	SO1	Main Mill Vents
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	300	SO2	OP	2014	30102323	Thin Juice Sulfur Stove	1	"A" Side Sulfur Stove	300	PO2	A Side Sulfur Stove
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	305	SO3	OP	2014	30102323	Standard Liquor Sulfur Stove	1	"B" Side Sulfur Stove	305	PO3	B Side Sulfur Stove
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	310	SW1	OP	2014	30201651	Drying Granulator	1	Drying Granulator	310	PW1	Drying Granulator
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	320	SW2	OP	2014	30201655	Cooling Granulator #1	1	#1 Cooling Granulator	320	PW2	Cooling Granulator #1
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	330	SW3	OP	2014	30201658	Cooling Granulator #2	1	Sugar Cooling - Granulator #2	330	PW3	Cooling Granulator #2
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	340	SW4	OP	2014	30201661	Sugar Handling (Process #2)	1	Sugar Handling (Process #2)	340	PW4	Process #2 Bag
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	360	SW6	OP	2014	30201661	Sugar Handling (Specialties)	1	Sugar Handling (Specialities)	360	PW6	Specialties Sugar Handling
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	370	SW7	OP	2014	30201661	Sugar Handling (Retail Packaging)	1	Sugar Handling (Packaging Line)	370	PW7	Packaging line
02700010	AMALGAMATED SUGAR (TASCO - NAMPA)	400	FO1	OP	2014	30201699	Facility Fugitives - Raw Beets	1	Facility Fugitive Emissions Coal and Raw Beet Handling	400	FO1	FACILITY FUGITIVES (raw beets)

Appendix E
Applicability Review

Title 40: Protection of Environment
Part 60, Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

§ 60.40c Am I subject to this subpart?

You are subject to this subpart if you own or operate a steam generating unit with a maximum design heat input rating of 10 to 100 million Btu/hr that was constructed, modified, or reconstructed since June 9, 1989.

(a) Except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).

The facility proposes to install three (3) dual-fuel boilers, after June 9, 1989, with ratings of 14.25 MMBtu/hr. Each boiler is dual-fired and capable of combusting natural gas as the primary fuel or diesel as the secondary fuel.

Emission Standards for Operators

§ 60.42c What sulfur dioxide (SO_2) emission standards must I meet for natural gas and diesel fired boilers with a design heat input capacity input greater than 10 MMBtu/hr, but less than 100 MMBtu/hr?

(a) Except as provided in paragraphs (b), (c), and (e) of this section, on and after the date on which the performance test is completed or required to be completed under §60.8, whichever date comes first, the owner or operator of an affected facility that combusts only coal shall neither: cause to be discharged into the atmosphere from the affected facility any gases that contain SO_2 in excess of 87 ng/J (0.20 lb/MMBtu) heat input or 10 percent (0.10) of the potential SO_2 emission rate (90 percent reduction), nor cause to be discharged into the atmosphere from the affected facility any gases that contain SO_2 in excess of 520 ng/J (1.2 lb/MMBtu) heat input. If coal is combusted with other fuels, the affected facility shall neither: cause to be discharged into the atmosphere from the affected facility any gases that contain SO_2 in excess of 87 ng/J (0.20 lb/MMBtu) heat input or 10 percent (0.10) of the potential SO_2 emission rate (90 percent reduction), nor cause to be discharged into the atmosphere from the affected facility any gases that contain SO_2 in excess of the emission limit is determined pursuant to paragraph (e)(2) of this section.

(d) On and after the date on which the initial performance test is completed or required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO_2 in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur. The percent reduction requirements are not applicable to affected facilities under this paragraph.

(h) For affected facilities listed under paragraphs (h)(1), (2), (3), or (4) of this section, compliance with the emission limits or fuel oil sulfur limits under this section may be determined based on a certification from the fuel supplier, as described under §60.48c(f), as applicable.
(1) Distillate oil-fired affected facilities with heat input capacities between 2.9 and 29 MW (10 and 100 MMBtu/hr).
(2) Residual oil-fired affected facilities with heat input capacities between 2.9 and 8.7 MW (10 and 30 MMBtu/hr).
(3) Coal-fired affected facilities with heat input capacities between 2.9 and 8.7 MW (10 and 30 MMBtu/h).
(4) Other fuels-fired affected facilities with heat input capacities between 2.9 and 8.7 MW (10 and 30 MMBtu/h).
(i) The SO_2 emission limits, fuel oil sulfur limits, and percent reduction requirements under this section apply at all times, including periods of startup, shutdown, and malfunction.

Since the SLNMC boilers will utilize fuel oil as a secondary fuel source, this standard will apply. If distillate is burned you must submit a semi-annual report to EPA. The report must contain the following information: the calendar dates of the reporting period; and, a fuel "supplier" certification demonstrating fuel used does not exceed the sulfur content limitation of 0.5% by weight.

§ 60.43c What particulate matter (PM) emission standards must I meet for natural gas and diesel fired boilers with a design heat input capacity input greater than 10 MMBtu/hr, but less than 100 MMBtu/hr?

(c) On and after the date on which the initial performance test is completed or required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that combusts coal, wood, or oil and has a heat input capacity of 8.7 MW (30 MMBtu/h) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity. Owners and operators of an affected facility that elect to install, calibrate, maintain, and operate a continuous emissions monitoring system (CEMS) for measuring PM emissions according to the requirements of this subpart and are subject to a federally enforceable PM limit of 0.030 lb/MMBtu or less are exempt from the opacity standard specified in this paragraph (c).

The PM Standard applies to boilers with a heat input capacity between 30 MMBtu/hr and 100 MMBtu/hr. Since the SLNMC boilers have a rated heat input capacity of 14.25 MMBtu/hr, the PM standard does not apply.

§ 60.44c Compliance and Performance Test Methods and Procedures for Sulfur Dioxide

(a) Except as provided in paragraphs (g) and (h) of this section and §60.8(b), performance tests required under §60.8 shall be conducted following the procedures specified in paragraphs (b), (c), (d), (e), and (f) of this section, as applicable. Section 60.8(f) does not apply to this section. The 30-day notice required in §60.8(d) applies only to the initial performance test unless otherwise specified by the Administrator.

(b) The initial performance test required under §60.8 shall be conducted over 30 consecutive operating days of the steam generating unit. Compliance with the percent reduction requirements and SO_2 emission limits under §60.42c shall be determined using a 30-day average. The first operating day included in the initial performance test shall be scheduled within 30 days after achieving the maximum production rate at which the affect facility will be operated, but not later than 180 days after the initial startup of the facility. The steam generating unit load during the 30-day period does not have to be the maximum design heat input capacity, but must be representative of future operating conditions

Performance testing of the boilers will be conducted within 30 days after reaching maximum production, but within 180 days of initial startup.

Emission Monitoring Requirements

§ 60.46c Emission Monitoring for Sulfur Dioxide

(a) Except as provided in paragraphs (d) and (e) of this section, the owner or operator of an affected facility subject to the SO_2 emission limits under §60.42c shall install, calibrate, maintain, and operate a CEMS for measuring SO_2concentrations and either O_2 or CO_2 concentrations at the outlet of the SO_2 control device (or the outlet of the steam generating unit if no SO_2 control device is used), and shall record the output of the system. The owner or operator of an affected facility subject to the percent reduction requirements under §60.42c shall measure SO_2 concentrations and either O_2 or CO_2 concentrations at both the inlet and outlet of the SO_2 control device.

(b) The 1-hour average SO_2 emission rates measured by a CEMS shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under §60.42c. Each 1-hour average SO_2 emission rate must be based on at least 30 minutes of operation, and shall be calculated using the data points required under

§60.13(h)(2). Hourly SO_2 emission rates are not calculated if the affected facility is operated less than 30 minutes in a 1-hour period and are not counted toward determination of a steam generating unit operating day.

(c) The procedures under §60.13 shall be followed for installation, evaluation, and operation of the CEMS.

(1) All CEMS shall be operated in accordance with the applicable procedures under Performance Specifications 1, 2, and 3 of appendix B of this part.

(2) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with Procedure 1 of appendix F of this part.

(3) For affected facilities subject to the percent reduction requirements under §60.42c, the span value of the SO_2CEMS at the inlet to the SO_2 control device shall be 125 percent of the maximum estimated hourly potential SO_2emission rate of the fuel combusted, and the span value of the SO_2 CEMS at the outlet from the SO_2 control device shall be 50 percent of the maximum estimated hourly potential SO_2 emission rate of the fuel combusted.

(4) For affected facilities that are not subject to the percent reduction requirements of §60.42c, the span value of the SO_2 CEMS at the outlet from the SO_2 control device (or outlet of the steam generating unit if no SO_2 control device is used) shall be 125 percent of the maximum estimated hourly potential SO_2 emission rate of the fuel combusted.

(d) As an alternative to operating a CEMS at the inlet to the SO_2 control device (or outlet of the steam generating unit if no SO_2 control device is used) as required under paragraph (a) of this section, an owner or operator may elect to determine the average SO_2 emission rate by sampling the fuel prior to combustion. As an alternative to operating a CEMS at the outlet from the SO_2 control device (or outlet of the steam generating unit if no SO_2 control device is used) as required under paragraph (a) of this section, an owner or operator may elect to determine the average SO_2 emission rate by using Method 6B of appendix A of this part. Fuel sampling shall be conducted pursuant to either paragraph (d)(1) or (d)(2) of this section. Method 6B of appendix A of this part shall be conducted pursuant to paragraph (d)(3) of this section.

(1) For affected facilities combusting coal or oil, coal or oil samples shall be collected daily in an as-fired condition at the inlet to the steam generating unit and analyzed for sulfur content and heat content according the Method 19 of appendix A of this part. Method 19 of appendix A of this part provides procedures for converting these measurements into the format to be used in calculating the average SO_2 input rate.

(2) As an alternative fuel sampling procedure for affected facilities combusting oil, oil samples may be collected from the fuel tank for each steam generating unit immediately after the fuel tank is filled and before any oil is combusted. The owner or operator of the affected facility shall analyze the oil sample to determine the sulfur content of the oil. If a partially empty fuel tank is refilled, a new sample and analysis of the fuel in the tank would be required upon filling. Results of the fuel analysis taken after each new shipment of oil is received shall be used as the daily value when calculating the 30-day rolling average until the next shipment is received. If the fuel analysis shows that the sulfur content in the fuel tank is greater than 0.5 weight percent sulfur, the owner or operator shall ensure that the sulfur content of subsequent oil shipments is low enough to cause the 30-day rolling average sulfur content to be 0.5 weight percent sulfur or less.

(3) Method 6B of appendix A of this part may be used in lieu of CEMS to measure SO_2 at the inlet or outlet of the SO_2 control system. An initial stratification test is required to verify the adequacy of the Method 6B of appendix A of this part sampling location. The stratification test shall consist of three paired runs of a suitable SO_2 and CO_2 measurement train operated at the candidate location and a second similar train operated according to the procedures in §3.2 and the applicable procedures in section 7 of Performance Specification 2 of appendix B of this part. Method 6B of appendix A of this part, Method 6A of appendix A of this part, or a combination of Methods 6 and 3 of appendix A of this part or Methods 6C and 3A of appendix A of this part are suitable measurement techniques. If Method 6B of appendix A of this part is used for the second train, sampling time and timer operation may be adjusted for the stratification test as long as an adequate sample volume is collected; however, both sampling trains are to be operated similarly. For the location to be adequate for Method 6B of appendix A of this part 24-hour tests, the mean of the absolute difference between the three paired runs must be less than 10 percent (0.10).

(e) The monitoring requirements of paragraphs (a) and (d) of this section shall not apply to affected facilities subject to §60.42c(h) (1), (2), or (3) where the owner or operator of the affected facility seeks to demonstrate compliance with the SO_2 standards based on fuel supplier certification, as described under §60.48c(f), as applicable.

(f) The owner or operator of an affected facility operating a CEMS pursuant to paragraph (a) of this section, or conducting as-fired fuel sampling pursuant to paragraph (d)(1) of this section, shall obtain emission data for at least 75 percent of the operating hours in at least 22 out of 30 successive steam generating unit operating days. If this minimum data requirement is not met with a single monitoring system, the owner or operator of the affected facility shall supplement the emission data with data collected with other monitoring systems as approved by the Administrator

SLNMC will demonstrate that the fuel sulfur content is less than or equal to 0.5 percent by weight. The following procedures/methodologies will be used to demonstrate that all fuel supplied to the boiler meets the SO_2 standard. 1. Conduct ongoing shipment fuel sampling, including an initial performance test of the oil in the first fuel tank to be fired in the steam generating unit, and fuel sampling analyses conducted after each shipment of oil is received and prior to its use in the boiler. OR 2. Obtain fuel supplier certifications for all fuel supplied to the boiler, and maintain certified statements that the fuel certifications represent all of the fuel combusted during the reporting period. Fuel supplier certifications will be maintained for at least two years and made available upon request.

Reporting and Recordkeeping Requirements

§ 60.48c What records are to be kept and what are the reporting requirements?

(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup, as provided by §60.7 of this part. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.
(2) If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under §60.42c, or §60.43c.
(3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.
(4) Notification if an emerging technology will be used for controlling SO_2 emissions. The Administrator will examine the description of the control device and will determine whether the technology qualifies as an emerging technology. In making this determination, the Administrator may require the owner or operator of the affected facility to submit additional information concerning the control device. The affected facility is subject to the provisions of §60.42c(a) or (b)(1), unless and until this determination is made by the Administrator.

(b) The owner or operator of each affected facility subject to the SO_2 emission limits of §60.42c, or the PM or opacity limits of §60.43c, shall submit to the Administrator the performance test data from the initial and any subsequent performance tests and, if applicable, the performance evaluation of the CEMS and/or COMS using the applicable performance specifications in appendix B of this part.

(c) In addition to the applicable requirements in §60.7, the owner or operator of an affected facility subject to the opacity limits in §60.43c(c) shall submit excess emission reports for any excess emissions from the affected facility that occur during the reporting period and maintain records according to the requirements specified in paragraphs (c)(1) through (3) of this section, as applicable to the visible emissions monitoring method used.

(1) For each performance test conducted using Method 9 of appendix A-4 of this part, the owner or operator shall keep the records including the information specified in paragraphs (c)(1)(i) through (iii) of this section.
(i) Dates and time intervals of all opacity observation periods;
(ii) Name, affiliation, and copy of current visible emission reading certification for each visible emission observer participating in the performance test; and
(iii) Copies of all visible emission observer opacity field data sheets;
(2) For each performance test conducted using Method 22 of appendix A-4 of this part, the owner or operator shall keep the records including the information specified in paragraphs (c)(2)(i) through (iv) of this section.
(i) Dates and time intervals of all visible emissions observation periods;
(ii) Name and affiliation for each visible emission observer participating in the performance test;

(iii) Copies of all visible emission observer opacity field data sheets; and
(iv) Documentation of any adjustments made and the time the adjustments were completed to the affected facility operation by the owner or operator to demonstrate compliance with the applicable monitoring requirements.
(3) For each digital opacity compliance system, the owner or operator shall maintain records and submit reports according to the requirements specified in the site-specific monitoring plan approved by the Administrator
(d) The owner or operator of each affected facility subject to the SO_2 emission limits, fuel oil sulfur limits, or percent reduction requirements under §60.42c shall submit reports to the Administrator.
(e) The owner or operator of each affected facility subject to the SO_2 emission limits, fuel oil sulfur limits, or percent reduction requirements under §60.42c shall keep records and submit reports as required under paragraph (d) of this section, including the following information, as applicable.
(1) Calendar dates covered in the reporting period.
(2) Each 30-day average SO_2 emission rate (ng/J or lb/MMBtu), or 30-day average sulfur content (weight percent), calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance with the emission standards; and a description of corrective actions taken.
(3) Each 30-day average percent of potential SO_2 emission rate calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance with the emission standards; and a description of the corrective actions taken.
(4) Identification of any steam generating unit operating days for which SO_2 or diluent (O_2 or CO_2) data have not been obtained by an approved method for at least 75 percent of the operating hours; justification for not obtaining sufficient data; and a description of corrective actions taken.
(5) Identification of any times when emissions data have been excluded from the calculation of average emission rates; justification for excluding data; and a description of corrective actions taken if data have been excluded for periods other than those during which coal or oil were not combusted in the steam generating unit.
(6) Identification of the F factor used in calculations, method of determination, and type of fuel combusted.
(7) Identification of whether averages have been obtained based on CEMS rather than manual sampling methods.
(8) If a CEMS is used, identification of any times when the pollutant concentration exceeded the full span of the CEMS.
(9) If a CEMS is used, description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specifications 2 or 3 of appendix B of this part.
(10) If a CEMS is used, results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1 of this part.
(11) If fuel supplier certification is used to demonstrate compliance, records of fuel supplier certification as described under paragraph (f)(1), (2), (3), or (4) of this section, as applicable. In addition to records of fuel supplier certifications, the report shall include a certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.
(f) Fuel supplier certification shall include the following information:
(1) For distillate oil:
(i) The name of the oil supplier;
(ii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in §60.41c; and
(iii) The sulfur content or maximum sulfur content of the oil.
(2) For residual oil:
(i) The name of the oil supplier;
(ii) The location of the oil when the sample was drawn for analysis to determine the sulfur content of the oil, specifically including whether the oil was sampled as delivered to the affected facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location;
(iii) The sulfur content of the oil from which the shipment came (or of the shipment itself); and
(iv) The method used to determine the sulfur content of the oil.
(3) For coal:
(i) The name of the coal supplier;
(ii) The location of the coal when the sample was collected for analysis to determine the properties of the coal, specifically including whether the coal was sampled as delivered to the affected facility or whether the sample was collected from coal in storage at the mine, at a coal preparation plant, at a coal supplier's facility, or at another location. The certification shall include the name of the coal mine (and coal seam), coal storage facility, or coal preparation plant (where the sample was collected);
(iii) The results of the analysis of the coal from which the shipment came (or of the shipment itself) including the sulfur content, moisture content, ash content, and heat content; and
(iv) The methods used to determine the properties of the coal.
(4) For other fuels:

(i) The name of the supplier of the fuel;
(ii) The potential sulfur emissions rate or maximum potential sulfur emissions rate of the fuel in ng/J heat input; and
(iii) The method used to determine the potential sulfur emissions rate of the fuel.

(g)(1) Except as provided under paragraphs (g)(2) and (g)(3) of this section, the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.
(2) As an alternative to meeting the requirements of paragraph (g)(1) of this section, the owner or operator of an affected facility that combusts only natural gas, wood, fuels using fuel certification in §60.48c(f) to demonstrate compliance with the SO_2 standard, fuels not subject to an emissions standard (excluding opacity), or a mixture of these fuels may elect to record and maintain records of the amount of each fuel combusted during each calendar month.
(3) As an alternative to meeting the requirements of paragraph (g)(1) of this section, the owner or operator of an affected facility or multiple affected facilities located on a contiguous property unit where the only fuels combusted in any steam generating unit (including steam generating units not subject to this subpart) at that property are natural gas, wood, distillate oil meeting the most current requirements in §60.42C to use fuel certification to demonstrate compliance with the SO_2 standard, and/or fuels, excluding coal and residual oil, not subject to an emissions standard (excluding opacity) may elect to record and maintain records of the total amount of each steam generating unit fuel delivered to that property during each calendar month.

(h) The owner or operator of each affected facility subject to a federally enforceable requirement limiting the annual capacity factor for any fuel or mixture of fuels under §60.42c or §60.43c shall calculate the annual capacity factor individually for each fuel combusted. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of the calendar month.
(i) All records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record.
(j) The reporting period for the reports required under this subpart is each six-month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

SLNMC will report and maintain records of their operations. Records must be maintained for at least two years. Records will include notification of the date of boiler construction or reconstruction, and anticipated and actual startup dates (within the timeframe specified in subpart A of the NSPS), including: 1) The design heat-input capacity of the boiler and identification of the fuels to be combusted in the boiler; 2) the annual capacity at which you anticipate operating the boiler based on all fuels fired and based on each individual fuel fired.

Records of the amounts of each fuel combusted during each day will be kept. Owners or operators that only burn very low (or ultra low) sulfur fuel oil (<15 ppm or .0015 weight percent sulfur) can record and maintain records of the fuels combusted during each calendar month instead of daily.

Since SLNMC is subject to SO_2 emission limits, they will submit a semi-annual (every 6 months) report as described in 60.48c(d). Reports will be postmarked by the 30th day following the end of the reporting period.

Facilities using the fuel supplier certification to demonstrate compliance with the SO_2 Standard must also submit the semi-annual report as described in Section 60.48c(e)(11). The report must include the following: 1) Calendar dates covered in the report period. 2) A certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represents all of the fuel combusted during the reporting period and; 3) Records of fuel supplier certifications for the reporting period.

The fuel supplier certification will state that the fuel oil complies with the specifications under the definition of distillate oil in Subpart Dc 60.41c.

Title 40: Protection of Environment
Part 60,Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

60.4200 Am I subject to this subpart?

(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;

SLNMC will utilize four (4) emergency internal combustion engine generators. The engines are manufactured by Caterpillar, Model C27, and rated at 800 kW each (1214 HP rating). They are manufactured after 2011.

Emission Standards for Operators

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

(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in table 1 to this subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

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

800 kW rated emergency standby generators with total displacement = 27 liters/ 12 cylinders = 2.25 liter/cylinder. (See manufacturer data sheet in PTC application)

Comply with emission standards (Table 1 per 40 CFR 89.112): NHMC + NOx = 6.4 g/kw-hr; CO = 3.5 g/kw-hr; PM= 0.20 g/kw-hr (See emission calculations for emergency generators in PTC application)

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.

(d) Owners and operators of emergency stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in paragraphs (d)(1) and (2) of this section.

(1) Reduce NO_x emissions by 90 percent or more, or limit the emissions of NO_xin the stationary CI internal combustion engine exhaust to 1.6 grams per KW-hour (1.2 grams per HP-hour).

(2) Reduce PM emissions by 60 percent or more, or limit the emissions of PM in the stationary CI internal combustion engine exhaust to 0.15 g/KW-hr (0.11 g/HP-hr).

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

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section.

(1) For engines with a maximum engine power less than 37 KW (50 HP):

(i) The certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants for model year 2007 engines, and

(ii) The certification emission standards for new nonroad CI engines in 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, 40 CFR 1039.115, and table 2 to this subpart, for 2008 model year and later engines.

(2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007.

800 kW rated emergency standby generator with total displacement = 27 liters/ 12 cylinders = 2.25 liter/cylinder. (See manufacturer data sheet in PTC application)

Comply with emission standards (Table 1 per 40 CFR 89.112): NHMC + NOx = 6.4 g/kw-hr; CO = 3.5 g/kw-hr; PM= 0.20 g/kw-hr (See emission calculations for emergency generators in PTC application)

(b) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (b)(1) through (2) of this section.

(1) For 2007 through 2010 model years, the emission standards in table 1 to this subpart, for all pollutants, for the same maximum engine power.

(2) For 2011 model year and later, the certification emission standards for new nonroad CI engines for engines of the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants.

(c) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power.

(d) Beginning with the model years in table 3 to this subpart, stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

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

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Fuel Requirements for Owners and Operators

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

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

The emergency generators will be required to use ultra low sulfur diesel fuel with a maximum sulfur content of 15 ppmv.

(c) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(d) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart that are located in areas of Alaska not accessible by the Federal Aid Highway System may petition the Administrator for approval to use any fuels mixed with used lubricating oil that do not meet the fuel requirements of paragraphs (a) and (b) of this section. Owners and operators must demonstrate in their petition to the Administrator that there is no other place to use the lubricating oil. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

Other Requirements for Owners and Operators

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

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.

(h) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

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

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine.

A non-resettable hour meter will be installed on each emergency generator.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Compliance Requirements

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

(a) Stationary CI internal combustion engine manufacturers must certify their stationary CI ICE with a displacement of less than 10 liters per cylinder to the emission standards specified in §60.4201(a) through (c) and §60.4202(a), (b) and (d) using the certification procedures required in 40 CFR part 89, subpart B, or 40 CFR part 1039, subpart C, as applicable, and must test their engines as specified in those parts. For the purposes of this subpart, engines certified to the standards in table 1 to this subpart shall be subject to the same requirements as engines certified to the standards in 40 CFR part 89. For the purposes of this subpart, engines certified to the standards in table 4 to this subpart shall be subject to the same requirements as engines certified to the standards in 40 CFR part 89, except that engines with NFPA nameplate power of less than 37 KW (50 HP) certified to model year 2011 or later standards shall be subject to the same requirements as engines certified to the standards in 40 CFR part 1039.

(b) Stationary CI internal combustion engine manufacturers must certify their stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder to the emission standards specified in §60.4201(d) and §60.4202(c) using the certification procedures required in 40 CFR part 94 subpart C, and must test their engines as specified in 40 CFR part 94.

(c) Stationary CI internal combustion engine manufacturers must meet the requirements of 40 CFR 1039.120, 40 CFR 1039.125, 40 CFR 1039.130, 40 CFR 1039.135, and 40 CFR part 1068 for engines that are certified to the emission standards in 40 CFR part 1039. Stationary CI internal combustion engine manufacturers must meet the corresponding provisions of 40 CFR part 89 or 40 CFR part 94 for engines that would be covered by that part if they were nonroad (including marine) engines. Labels on such engines must refer to stationary engines, rather than or in addition to nonroad or marine engines, as appropriate. Stationary CI internal combustion engine manufacturers must label their engines according to paragraphs (c)(1) through (3) of this section.

(1) Stationary CI internal combustion engines manufactured from January 1, 2006 to March 31, 2006 (January 1, 2006 to June 30, 2006 for fire pump engines), other than those that are part of certified engine families under the nonroad CI engine regulations, must be labeled according to 40 CFR 1039.20.

(2) Stationary CI internal combustion engines manufactured from April 1, 2006 to December 31, 2006 (or, for fire pump engines, July 1, 2006 to December 31 of the year preceding the year listed in table 3 to this subpart) must be labeled according to paragraphs (c)(2)(i) through (iii) of this section:

(i) Stationary CI internal combustion engines that are part of certified engine families under the nonroad regulations must meet the labeling requirements for nonroad CI engines, but do not have to meet the labeling requirements in 40 CFR 1039.20.

(ii) Stationary CI internal combustion engines that meet Tier 1 requirements (or requirements for fire pumps) under this subpart, but do not meet the requirements applicable to nonroad CI engines must be labeled according to 40 CFR 1039.20. The engine manufacturer may add language to the label clarifying that the engine meets Tier 1 requirements (or requirements for fire pumps) of this subpart.

(iii) Stationary CI internal combustion engines manufactured after April 1, 2006 that do not meet Tier 1 requirements of this subpart, or fire pumps engines manufactured after July 1, 2006 that do not meet the requirements for fire pumps under this subpart, may not be used in the U.S. If any such engines are manufactured in the U.S. after April 1, 2006 (July 1, 2006 for fire pump engines), they must be exported or must be brought into compliance with the appropriate standards prior to initial operation. The export provisions of 40 CFR 1068.230 would apply to engines for export and the manufacturers must label such engines according to 40 CFR 1068.230.

(3) Stationary CI internal combustion engines manufactured after January 1, 2007 (for fire pump engines, after January 1 of the year listed in table 3 to this subpart, as applicable) must be labeled according to paragraphs (c)(3)(i) through (iii) of this section.

(i) Stationary CI internal combustion engines that meet the requirements of this subpart and the corresponding requirements for nonroad (including marine) engines of the same model year and HP must be labeled according to the provisions in part 89, 94 or 1039, as appropriate.

(ii) Stationary CI internal combustion engines that meet the requirements of this subpart, but are not certified to the standards applicable to nonroad (including marine) engines of the same model year and HP must be labeled according to the provisions in part 89, 94 or 1039, as appropriate, but the words "stationary" must be included instead of "nonroad" or "marine" on the label. In addition, such engines must be labeled according to 40 CFR 1039.20.

(iii) Stationary CI internal combustion engines that do not meet the requirements of this subpart must be labeled according to 40 CFR 1068.230 and must be exported under the provisions of 40 CFR 1068.230.

(d) An engine manufacturer certifying an engine family or families to standards under this subpart that are identical to standards applicable under parts 89, 94, or 1039 for that model year may certify any such family that contains both nonroad (including marine) and stationary engines as a single engine family and/or may include any such family containing stationary engines in the averaging, banking and trading provisions applicable for such engines under those parts.

(e) Manufacturers of engine families discussed in paragraph (d) of this section may meet the labeling requirements referred to in paragraph (c) of this section for stationary CI ICE by either adding a separate label containing the information required in paragraph (c) of this section or by adding the words "and stationary" after the word "nonroad" or "marine," as appropriate, to the label.

(f) Starting with the model years shown in table 5 to this subpart, stationary CI internal combustion engine manufacturers must add a permanent label stating that the engine is for stationary emergency use only to each new emergency stationary CI internal combustion engine greater than or equal to 19 KW (25 HP) that meets all the emission standards for emergency engines in §60.4202 but does not meet all the emission standards for non-emergency engines in §60.4201. The label must be added according to the labeling requirements specified in 40 CFR 1039.135(b). Engine manufacturers must specify in the owner's manual that operation of emergency engines is limited to emergency operations and required maintenance and testing.

(g) Manufacturers of fire pump engines may use the test cycle in table 6 to this subpart for testing fire pump engines and may test at the NFPA certified nameplate HP, provided that the engine is labeled as "Fire Pump Applications Only".

(h) Engine manufacturers, including importers, may introduce into commerce uncertified engines or engines certified to earlier standards that were manufactured before the new or changed standards took effect until inventories are depleted, as long as such engines are part of normal inventory. For example, if the engine manufacturers' normal industry practice is to keep on hand a one-month supply of engines based on its projected sales, and a new tier of standards starts to apply for the 2009 model year, the engine manufacturer may manufacture engines based on the normal inventory requirements late in the 2008 model year, and sell those engines for installation. The engine manufacturer may not circumvent the provisions of §§60.4201 or 60.4202 by stockpiling engines that are built before new or changed standards take effect. Stockpiling of such engines beyond normal industry practice is a violation of this subpart.

(i) The replacement engine provisions of 40 CFR 89.1003(b)(7), 40 CFR 94.1103(b)(3), 40 CFR 94.1103(b)(4) and 40 CFR 1068.240 are applicable to stationary CI engines replacing existing equipment that is less than 15 years old.

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

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

(1) Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in §60.4213.

(2) Establishing operating parameters to be monitored continuously to ensure the stationary internal combustion engine continues to meet the emission standards. The owner or operator must petition the Administrator for approval of operating parameters to be monitored continuously. The petition must include the information described in paragraphs (d)(2)(i) through (v) of this section.

(i) Identification of the specific parameters you propose to monitor continuously;

(ii) A discussion of the relationship between these parameters and NO_X and PM emissions, identifying how the emissions of these pollutants change with changes in these parameters, and how limitations on these parameters will serve to limit NO_X and PM emissions;

(iii) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(iv) A discussion identifying the methods and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(v) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(3) For non-emergency engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in §60.4213.

(e) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. For owners and operators of emergency engines meeting standards under §60.4205 but not §60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

Maintenance and testing hours of operation for the emergency generators will not exceed 100 hr/yr.

Testing Requirements for Owners and Operators

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

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

(a) The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F.

(b) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

(c) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \qquad \text{(Eq. 1)}$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in §60.4213 of this subpart, as appropriate.

(d) Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in §60.4204(a), §60.4205(a), or §60.4205(c), determined from the equation in paragraph (c) of this section.

Where:

STD = The standard specified for that pollutant in §60.4204(a), §60.4205(a), or §60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) may follow the testing procedures specified in §60.4213, as appropriate.

Notification, Reports, and Records for Owners and Operators

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

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(1) Submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.

(i) Name and address of the owner or operator;

(ii) The address of the affected source;

(iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(iv) Emission control equipment; and

(v) Fuel used.

(2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.

(i) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(ii) Maintenance conducted on the engine.

(iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

(iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

Title 40: Protection of Environment
Part 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§ 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?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

SLNMC maintains and operates 4 emergency internal combustion engine installed after June 12, 2006. This facility is classified as an area source of HAP emissions defined as potential-to-emit (PTE) 10 tons per year (tpy) or less for any single HAP or PTE less than 25 tpy for total HAPs.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

(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).

§ 63.6590 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

(a) Affected source. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

(1) *Existing stationary RICE.*

(i) For stationary RICE with a site rating of more than 500 brake horsepower (HP) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

(ii) For stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iv) A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

(2) *New stationary RICE.* (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(3) *Reconstructed stationary RICE.* (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(b) *Stationary RICE subject to limited requirements.* (1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f).

(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that does not operate or is 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).

(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(2) A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an

annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

(3) The following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

(i) Existing spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(ii) Existing spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(iii) Existing emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that does not operate or is 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).

(iv) Existing limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(v) Existing stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

(c) *Stationary RICE subject to Regulations under 40 CFR Part 60.* An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

(1) A new or reconstructed stationary RICE located at an area source;

Refer to the SLNMC applicability review per 40 CFR Part 60, Subpart IIII for the 4 emergency compression ignition engines.

(2) A new or reconstructed 2SLB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(3) A new or reconstructed 4SLB stationary RICE with a site rating of less than 250 brake HP located at a major source of HAP emissions;

(4) A new or reconstructed spark ignition 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(5) A new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

(6) A new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(7) A new or reconstructed compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

Appendix F
Non-Applicability Review

40 CFR 63 Subpart JJJJJJ—National Emission Standards for Hazardous Air Pollutants 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 St. Luke Nampa Medical Center (SLNMC) because the facility is an area source that owns and 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.

(a) Any boiler specifically listed as, or included in the definition of, an affected source in another standard(s) under this part.

(b) Any boiler specifically listed as an affected source in another standard(s) established under section 129 of the Clean Air Act.

(c) A boiler required to have a permit under section 3005 of the Solid Waste Disposal Act or covered by subpart EEE of this part (e.g., hazardous waste boilers), unless such units do not combust hazardous waste and combust comparable fuels.

(d) A boiler that is used specifically for research and development. This exemption does not include boilers that solely or primarily provide steam (or heat) to a process or for heating at a research and development facility. This exemption does not prohibit the use of the steam (or heat) generated from the boiler during research and development, however, the boiler must be concurrently and primarily engaged in research and development for the exemption to apply.

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

SLNMC will maintain boilers that satisfy the definition of gas-fired boilers in this section. Therefore, all of the SLNMC boilers are not subject to this subpart nor 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 (the 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.

The SLNMC boilers will have the ability to fire both natural gas as the primary fuel and diesel fuel as backup. During an electric power failure event, diesel fuel will only be used in

an emergency situation if the natural gas supply to the SLNMC is disrupted. SLNMC will limit periodic maintenance testing of diesel fuel to less than 48 hours per calendar year per boiler. Furthermore, SLNMC recommends a permit condition that monitors and records the hours of operation when using diesel fuel for maintenance testing.

Appendix G
Modeling Report

Impact Modeling Analyses Report

1.0 Summary

St. Luke's Health System (SLHS) is proposing to expand operations and construct a medical center located at 16850 Midland Avenue in Nampa, Idaho. The St. Luke Nampa Medical Center (SLNMC) triggers the requirement for an air quality Permit-to-Construct (PTC) with the addition of the following stationary emission sources:

- Three (3) Hurst dual-fuel boilers
- Four (4) Caterpillar diesel-fired emergency engine generators; and
- Two water cooling towers

SLHS is submitting this PTC application in accordance with IDAPA 58.01.01.200. The objective of this PTC application is to evaluate the terms and conditions used in establishing ambient air concentrations to comply with the National Ambient Air Quality Standards (NAAQS) and Idaho Ambient Air Quality Standards (IAAQS).

The PTC application requires a facility-wide air dispersion modeling analysis using the most current version of AERMOD (v 15181) to demonstrate the predicted pollutant concentrations associated with facility emission profiles would be below the significant contribution levels (SCL) or when combined with background concentrations impacts will be below acceptable air quality standards at all receptor locations.

This air dispersion modeling report is being submitted to the Idaho Department of Environmental Quality (IDEQ) on behalf of SLHS. This document summarizes the modeling approach and results for the facility's impacts to air quality with respect to criteria and state toxic air pollutant (TAPs) emissions. It has been prepared based on the U.S. Environmental Protection Agency (EPA) *Guidelines on Air Quality Models* (GAQM), and the *State of Idaho Guideline for Performing Air Quality impact Analyses* (ID AQ-011, July 2, 2011).

This Impact Analysis Report describes the modeling methodology and results to support the PTC application.

2.0 Project Description and Background as it Relates to Modeling Analyses

The SLNMC is not a major facility as defined in IDAPA 58.01.01.008.10, nor is it a designated facility as defined in IDAPA 58.01.01.006.26. The primary Standard Industrial Classification (SIC) code for the facility is 8062, *General Medical and Surgical Hospitals.* The facility emits less than 100 tons per year of any regulated pollutant. The site is a minor source for Hazardous Air Pollutants (HAPs) with total potential aggregate HAP emissions of less than 25 tons per year and emissions of any single HAP of less than 10 tons per year. SLNMC is not a listed facility in 40 CFR Part 52 (100 tons per year threshold) and is not otherwise subject to Part 52 New Source Review (PSD) requirements due to potential emissions less than all applicable PSD major source thresholds.

The SLNMC will be located in Canyon County. Canyon County is located in an attainment area for carbon monoxide (CO), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), ozone (O_3), and lead (Pb). There are no Class I areas within 10 kilometers of the facility.

2.1 General Facility/Project Description

SLNMC is located on the corner of Midland Avenue and Cherry Lane in Nampa, Idaho (Figure 1). The stationary emission sources will be located in a central plant on the northern end of the facility. A scaled facility layout is provided in Figure 2. The proposed stationary emission sources are listed below:

- Three dual-fuel boilers
  - Hurst Model 350 hp -Series 500
  - 14.25 MMBTU/hr
  - Power Flame burner

- Four diesel-fired emergency engine generators
  - Caterpillar Model C27
  - 800 kW or 1,214 hp
  - Maintenance/Testing diesel operations are proposed to be limited to 12 hours per day and 100 hr/yr PTE for each unit

- Two water cooling towers
  - Baltimore Aircoil Company Inc. Model XES3E-1424-07M
  - 1500 gpm water flow rate
  - Continuous operations 8,760 hr/yr PTE

The primary purpose of the three boilers will be to generate steam for space heating at the hospital. Each boiler is dual-fired and capable of combusting natural gas as the primary fuel or diesel as the secondary fuel. Four emergency engine generators are proposed to provide electrical power to the hospital in the event of a power interruption. Additionally, there are two water cooling towers proposed for cooling purposes.

2.2 Location of Project

The SLNMC facility will be located in Canyon County, Idaho and is designated as attainment or unclassified for all criteria pollutants.

SLNMC is located on the corner of Midland Avenue and Cherry Lane in Nampa, Idaho. The stationary emission sources will be located in a central plant on the northern end of the facility. Figures 1 and 2 show the location of the facility and the site layout respectively.

Figure 1. Project Site Location

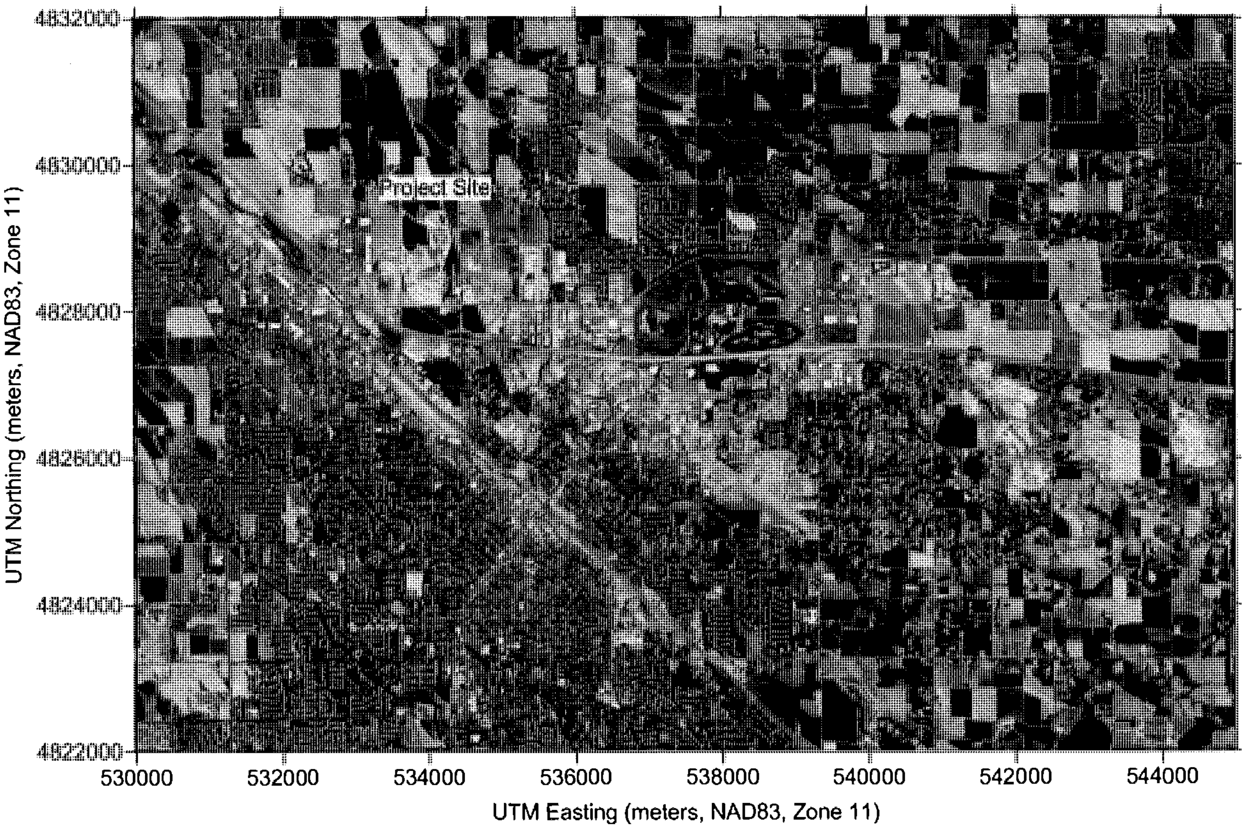
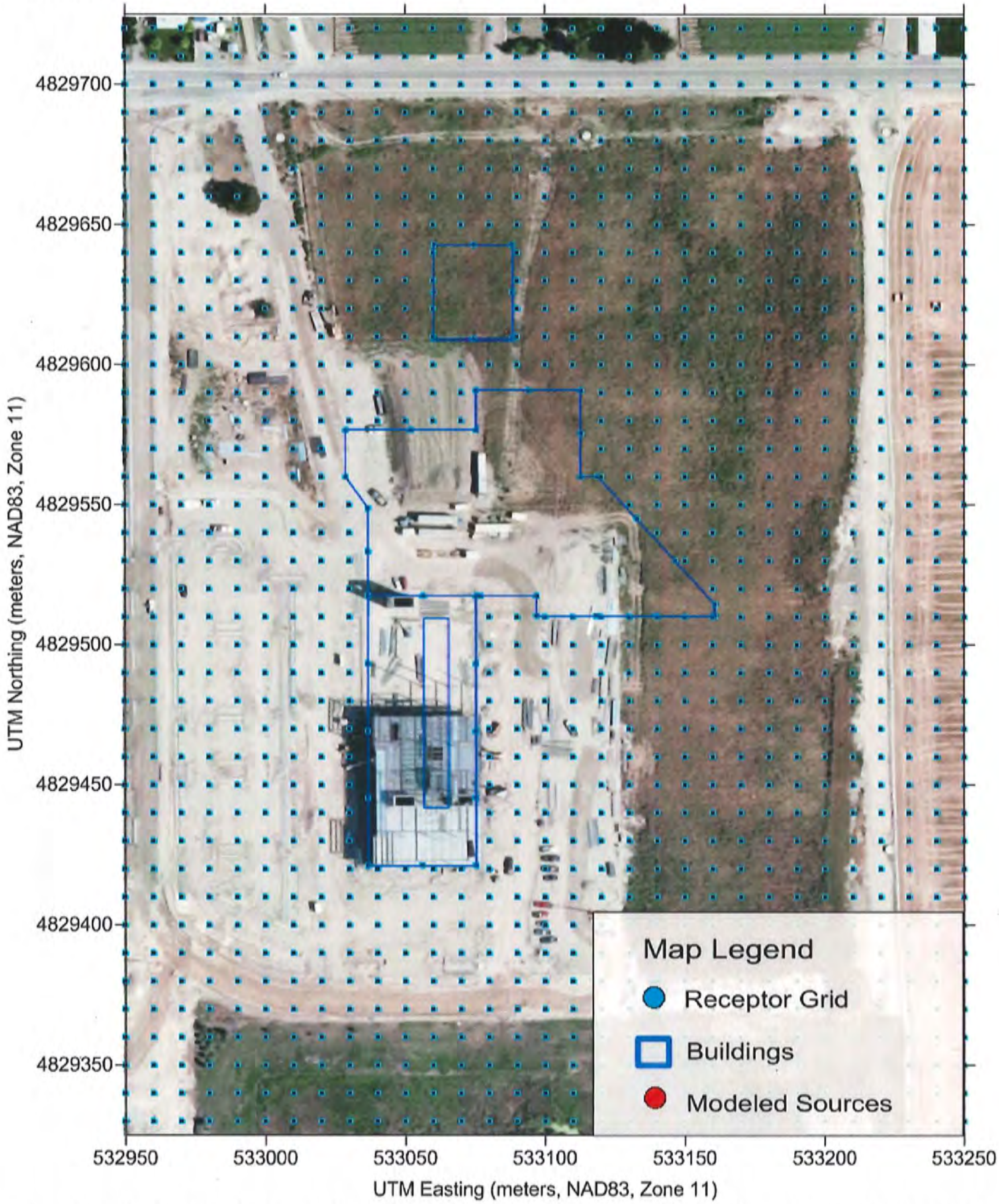


Figure 2. Facility Layout



_X_ A map showing the geographical location of the facility is provided in this section or a reference is provided to another location in the application where a map is provided. Refer to Figures 1-3 in the PTC application for the location of the facility and emission sources.

3.0 Modeling Analyses Applicability and Protocol

This section of the Modeling Report describes why modeling was performed for each criteria pollutant and TAP.

3.1 Applicable Standards

Criteria pollutant National Ambient Air Quality Standards are listed in Table 1, along with significant impact levels (SILs).

TABLE 1. APPLICABLE REGULATORY LIMITS

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

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

TAP-specific increment standards are provided in Idaho Air Rules Section 585 and 586. A table of identified TAP emission standards resulting from the proposed project are provided in Table 2.

Table 2. TAP ELS AND AACS/AACCS			
TAP	Non-Carcinogen or Carcinogen	Screening Emissions Level (EL)[a]	AAC or AACC[b]
		(lb/hr)	(µg/m³)
3-methylcholanthrene	Carcinogen	0.0000025	0.00037
Benzene	Carcinogen	0.0008	0.12
Benzo(a)pyrene or POM	Carcinogen	0.000002	0.0003
Formaldehyde	Carcinogen	0.00051	0.077
Hexane (n-Hexane)	Non-Carcinogen	12	9000
Naphthalene	Non-Carcinogen	3.33	2500
Toluene (toluol)	Non-Carcinogen	25	18750
o-Dichlorobenzene	Non-Carcinogen	20	15000
Xylene (o-, m-, p-isomers)	Non-Carcinogen	29	21750
Ethyl benzene	Non-Carcinogen	29	21750
Arsenic compounds	Carcinogen	0.0000015	0.00023
Barium, soluble compounds, as Ba	Non-Carcinogen	0.033	25
Beryllium & compounds	Carcinogen	0.000028	0.0042
Cadmium and compounds	Carcinogen	0.0000037	0.00056
Chromium (II) compounds, as Cr	Non-Carcinogen	0.033	25
Cobalt metal, dust, and fume	Non-Carcinogen	0.0033	2.5
Copper: Fume	Non-Carcinogen	0.013	10
Manganese as Mn (Fume)	Non-Carcinogen	0.067	50
Molybdenum as Mo, Soluble compounds	Non-Carcinogen	0.333	250
Nickel	Carcinogen	0.000027	0.0042
Selenium	Non-Carcinogen	0.013	10

Table 2. TAP ELS AND AACS/AACCS			
TAP	Non-Carcinogen or Carcinogen	Screening Emissions Level (EL)[a]	AAC or AACC[b]
		(lb/hr)	(µg/m³)
Vanadium, as V2O5 Respirable Dust & fume	Non-Carcinogen	0.003	2.5
Zinc metal (ID)	Non-Carcinogen	0.667	500
Polycyclic Organic Matter or 7-PAH group	Carcinogen	0.000002	0.0003
a. ELs from Idaho Air Rules Section 585 and 586 in pounds/hour.			
b. Acceptable Ambient Concentration (AAC) or Acceptable Ambient Concentration for a Carcinogen (AACC) from Idaho Air Rules Section 585 and 586, in micrograms/cubic meter or milligrams/cubic meter. Note that AACs listed in Idaho Air Rules Section 585 are expressed in units of milligrams/cubic meter rather than micrograms/cubic meter.			

_X_ All TAPs identified in the emissions inventory for the project are listed in the TAPs EL and AAC/AACC Table in this section.

3.2 Criteria Pollutant Modeling Applicability

Based on the policy that modeling is not required for any criteria pollutant with controlled emission less than 10% of the significant emissions rate, ambient air modeling was done only for CO, PM_{10}, $PM_{2.5}$, and NOx for this application. In addition, 1-hr NO_2 modeling for the three emergency generators was excluded (see comment 8 of Protocol Approval Letter, T2/PTC application in Appendix F).

Criteria pollutants and toxic emissions were evaluated to establish a new potential to emit using actual baseline emissions including emissions for known growth and operational variability.

Table 3 lists criteria pollutants for which site-specific modeling analyses were performed to demonstrate compliance with NAAQS.

TABLE 3. MODELING APPLICABILITY		
Criteria Pollutant	Modeled (yes/no)	Basis for Exclusion from Modeling
$PM_{2.5}$ 24-hour	yes	___BRC Exempt[a] ___Emissions Below Level I Thresholds[b] ___Emissions Below Level II Thresholds[c]
$PM_{2.5}$ annual	yes	___BRC Exempt ___Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds
PM_{10} 24-hour	yes	___BRC Exempt ___Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds
NO_2 1-hour	yes	___BRC Exempt ___Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds
NO_2 annual	yes	___BRC Exempt ___Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds
SO_2 1-hour, 3-hour	no	___BRC Exempt _X_Emissions Below Level I Thresholds

TABLE 3. MODELING APPLICABILITY		
Criteria Pollutant	**Modeled (yes/no)**	**Basis for Exclusion from Modeling**
		___Emissions Below Level II Thresholds
SO_2 annual	no	___BRC Exempt _X_Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds
CO 1-hour, 8-hour	no	___BRC Exempt _X_Emissions Below Level I Thresholds ___Emissions Below Level II Thresholds

[a.] If the project would have qualified for a Category I BRC permitting exemption for the criteria pollutant in question, as per Idaho Air Rules Section 221.01, except for the emissions quantities of another criteria pollutant, then a NAAQS compliance analysis is not required under Section 203.02 or 403.02 for that criteria pollutant.

[b.] Level I Modeling Thresholds from Table 2 in Section 3 of the DEQ Modeling Guideline. NAAQS compliance is assured through DEQ's non-site-specific modeling analyses.

[c.] Level II Modeling Thresholds from Table 2 in Section 3 of the DEQ Modeling Guideline. NAAQS compliance is assured through DEQ's non-site-specific modeling analyses. Level II Modeling Thresholds can only be used with prior DEQ approval.

_X_ Explanations/documentation why modeling was or was not performed for each criteria pollutant are provided in this section. Refer to emission estimates in Appendix C of the T2/PTC application.

_X__ Emissions calculations that clearly show how the modeling applicability determination was performed are provided in this section.

3.3 TAP Modeling Applicability

Facility-wide TAP emissions were calculated for each emission source with exception of the emergency generators. TAP emissions were calculated as uncontrolled for all emission sources which includes the 3 dual-fuel boilers.. Uncontrolled emission rates were compared to the TAP applicable screening emissions level (EL) listed in IDAPA 58.01.01.585 and 586.

All TAPs above the EL shown in Table 4 were modeled and compared to either the acceptable ambient concentrations for non-carcinogens (AAC) or acceptable ambient concentrations for carcinogens (AACC). TAPs below the EL were not considered in the modeling analysis.

TABLE 4 FACILITY-WIDE TAPS			
Pollutant	**Facility-Wide Total PTE[1] (lb/hr)**	**IDAPA.01.01.585/586 EL (lb/hr)**	**EL Exceeded**
Formaldehyde	3.14E-03	5.10E-04	Yes
Arsenic	2.79E-06	1.50E-06	Yes
Cadmium	1.54E-05	3.70E-06	Yes
Nickel	2.93E-05	2.75E-05	Yes
3-Methylchloranthrene	7.55E-08	2.50E-06	No
Benzene	8.80E-05	8.00E-04	No
Benzo(a)pyrene	5.03E-08	2.00E-06	No
Dichlorobenzene	5.03E-05	2.00E+01	No
Hexane	7.55E-02	1.20E+01	No
Naphthalene	2.56E-05	3.33	No
Toluene	1.43E-04	25	No
o-Xylene	1.88E-07	29	No
Barium	6.15E-05	0.033	No
Beryllium	1.93E-07	2.80E-05	No
Chromium	1.96E-05	0.033	No
Cobalt	1.17E-06	0.0033	No
Copper	1.19E-05	0.013	No

TABLE 4 FACILITY-WIDE TAPS			
Pollutant	**Facility-Wide Total PTE[1] (lb/hr)**	**IDAPA.01.01.585/586 EL (lb/hr)**	**EL Exceeded**
Manganese	5.31E-06	0.067	No
Molybdenum	1.54E-05	0.333	No
Selenium	9.63E-07	0.013	No
Vanadium	4.61E-05	3.00E-03	No
Zinc	4.05E-04	0.667	No

Notes:

[1] PTE – TAP emissions from the emergency generators may be excluded from the modeling analysis because they will be addressed through 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ.

_X_ Explanation/documentation on why modeling was or was not performed for emissions of each TAP identified in the emissions inventory of the application are provided in this section.

3.4 Modeling Protocol

A modeling protocol was submitted to on November 09, 2015 and a protocol addendum for use of seasonal hourly 1-hr NO_2 background data was submitted on December 11, 2015.Conditional DEQ protocol approval was provided to Rick McCormick/CH2M on February 03, 2016. Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the protocol and in the *Idaho Air Quality Modeling Guideline.*

_X_ If a protocol was submitted to DEQ prior to performing the modeling analyses, the protocol and DEQ's conditional protocol approval notice is included in Appendix D of the PTC application.

__X_ Concerns identified by DEQ in the protocol approval notice have been addressed in the analyses performed and in this Modeling Report.

4.0 Modeled Emissions Sources

For the ambient air impact modeling, all sources, unless considered part of the background, were modeled as point sources in AERMOD. In general, all of the emission rates and other source parameters were determined from manufacturer's data, source testing, EPA-established emission factors, design plans, or a combination of methods. Criteria emission rates are provided in Table 6 for SIL analyses and Table 7 for NAAQS analyses. Modeled emissions rates for TAP analyses are provided in Table 8. Support Equipment

4.1.1 Boilers

The primary purpose of the three boilers will be to generate steam for space heating at the hospital. All of SLNMC's boilers are required to be dual-fueled. The primary fuel source will be natural gas with diesel as a backup. Air emissions from these sources are those associated with natural gas or diesel combustion. Each Hurst boiler will be equipped with an economizer that will drop the final exhaust exit temperature from 391 to 324 degrees Fahrenheit. A flue gas flow rate of 2,840 scfm is listed on the boiler equipment documentation. A Hurst boiler manufacture was contacted on March 18, 2016 and verified that the flue gas flow rate of 2,840 scfm is for post economizer. Exit exhaust flowrate conversions were made from 2840 scfm to 4583 acfm.

4.1.2 Diesel-fired Emergency Generators

Four emergency engine generators are proposed to provide electrical power to the hospital in the event of a power interruption and for backing up all critical Life Safety Systems. The emergency generators will combust ultra-low-sulfur diesel (ULSD) and are routinely tested to ensure proper operation. For permitting purposes, air emissions are limited to periods when the emergency equipment is tested and maintained. Emergency generator testing will be limited to 100 hours per year. Additionally, generator testing and maintenance will be limited to a maximum of 12 hours during a calendar day.

Emergency generator emissions and stack properties were determined using manufacturer's engineering specifications, regulatory guidance, and engineering calculations.

Exit exhaust flowrate conversions were made from manufacturer supplied data of standard cubic feet per minutes (SCFM) to actual cubic feet per minute (ACFM). The resulting exit velocities for each emergency generator was well above 50 meters per second (50 m/s). Based on conversations with the Caterpillar internal combustion engine manufacturers, measurements were assumed to have been taken at the exhaust manifold and do not accurately reflect conditions after a muffler and cooling in the stack. Therefore, a default stack exit velocity of 50 m/s was used for each of the four emergency generators.

4.1.3 Cooling Towers

The facility has mechanically induced (i.e., fan-driven) wet cell cooling towers that are open to the atmosphere. The cooling towers are used to dissipate the large heat loads generated by the facility and to condition the incoming air to the correct temperature required by the facility. The cooling towers are a source of particulate matter. Cooling towers have dual fans that are part of a single cooling tower assembly and will be modeled using the center of each fan. The diameter and flow for each source will be the diameter and flow of a single fan.

The cooling tower emissions were determined using the manufacturer's engineering specifications and engineering calculations.

__X_ The modeling emissions inventory and the emissions inventory presented in other parts of the permit application are consistent, and if they are not identical numbers, it is clearly shown, with calculations submitted, how the modeled value was derived from the value provided in the emissions inventory. Refer to the manufacturer's engineering specifications and engineering calculations in Appendix B.

4.2 Criteria Pollutants

Criteria pollutants evaluated for modeling applicability are Particulate Matter less than 10 Micrometers in Aerodynamic Diameter (PM_{10}), Particulate Matter less than 2.5 Micrometers in Aerodynamic Diameter ($PM_{2.5}$), nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb). An air dispersion modeling analysis was required for PM_{10}, $PM_{2.5}$, and NO_X.

4.2.1 Modeled Emissions Rates for Significant Impact Level Analyses

The specific emissions rates used in the Significant Impact Level (SIL) analyses are listed in this section.

Section 5.1.1 of the DEQ Modeling Guideline was followed for the SIL analyses. The emergency generator PM2.5 and PM10 emissions were calculated by assuming the generators could run a maximum of 12 hours in a 24 hour period.

Table 6 lists criteria pollutant emissions rates used in the SIL analyses.

TABLE 6. MODELED EMISSIONS RATES FOR SIL ANALYSES

Source ID	Source Description	Pollutant	Averaging Period	Emissions[a] (lb/hr)
GEN1	Caterpillar Model C27 Emergency Generator 1,214 hp	$PM_{2.5}$	24-hour	0.06000
			Annual	0.00137
		PM_{10}	24-hour	0.06000
		NOx	1-hour	NA
			Annual	0.18900
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
GEN2	Caterpillar Model C27 Emergency Generator 1,214 hp	$PM_{2.5}$	24-hour	0.06000
			Annual	0.00137
		PM_{10}	24-hour	0.06000
		NOx	1-hour	NA
			Annual	0.18900
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
GEN3	Caterpillar Model C27 Emergency Generator 1,214 hp	$PM_{2.5}$	24-hour	0.06000
			Annual	0.00137
		PM_{10}	24-hour	0.06000
		NOx	1-hour	NA
			Annual	0.18900
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
GEN4	Caterpillar Model C27 Emergency Generator 1,214 hp	$PM_{2.5}$	24-hour	0.06000
			Annual	0.00137
		PM_{10}	24-hour	0.06000
		NOx	1-hour	NA
			Annual	0.18900
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA

TABLE 6. MODELED EMISSIONS RATES FOR SIL ANALYSES				
Source ID	**Source Description**	**Pollutant**	**Averaging Period**	**Emissions[a] (lb/hr)**
BLR1	Hurst Boiler 14.25 MMBtu/hr Dual Fueled (ULSD short term emissions)	$PM_{2.5}$	24-hour	0.02600
			Annual	0.06820
		PM_{10}	24-hour	0.10500
		NOx	1-hour	1.76400
			Annual	0.47700
		SO_2	1-hour	0.02240
		CO	1-hour	NA
			8-hour	NA
BLR2	Hurst Boiler 14.25 MMBtu/hr Dual Fueled (NG short term emissions)	$PM_{2.5}$	24-hour	0.06840
			Annual	0.06820
		PM_{10}	24-hour	0.06840
		NOx	1-hour	0.47000
			Annual	0.47700
		SO_2	1-hour	0.02240
		CO	1-hour	NA
			8-hour	NA
BLR3	Hurst Boiler 14.25 MMBtu/hr Dual Fueled (NG short term emissions)	$PM_{2.5}$	24-hour	0.06840
			Annual	0.06820
		PM_{10}	24-hour	0.06840
		NOx	1-hour	0.47000
			Annual	0.47700
		SO_2	1-hour	0.02240
		CO	1-hour	NA
			8-hour	NA
CT1A	Wet Cooling Tower	$PM_{2.5}$	24-hour	0.00473
			Annual	0.00473
		PM_{10}	24-hour	0.00473
		NOx	1-hour	NA
			Annual	NA
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
CT1B	Wet Cooling Tower	$PM_{2.5}$	24-hour	0.00473
			Annual	0.00473
		PM_{10}	24-hour	0.00473
		NOx	1-hour	NA
			Annual	NA
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
CT2A	Wet Cooling Tower	$PM_{2.5}$	24-hour	0.00473
			Annual	0.00473
		PM_{10}	24-hour	0.00473
		NOx	1-hour	NA

TABLE 6. MODELED EMISSIONS RATES FOR SIL ANALYSES				
Source ID	**Source Description**	**Pollutant**	**Averaging Period**	**Emissions[a] (lb/hr)**
			Annual	NA
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
CT2B	Wet Cooling Tower	$PM_{2.5}$	24-hour	0.00473
			Annual	0.00473
		PM_{10}	24-hour	0.00473
		NOx	1-hour	NA
			Annual	NA
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA

a. Pound/hour emissions rate modeled is the project-specific increase in potential/allowable emissions increase for the averaging period specified for the pollutant.

_X__ Emissions rates in Table 6 are identical to those in the model input files for SIL analyses.

_X__ Calculation of modeled emissions are thoroughly documented in this section, and any unique handling of emissions in the model have been described.

4.2.2 Modeled Emissions Rates for Cumulative Impact Analyses

Table 7 lists criteria pollutant emissions rates used in the cumulative NAAQS impact analyses. All of the SLNMC emission sources are identical to the SIL values provided in Table 6. The competing source emission rates are detailed in this section.

In November, 2015 DEQ provided CH2M with the 2014 emissions and operating scenarios for the Amalgamated Sugar TASCO facility (Facility ID # 02700010). Several of the sources provided, including 40, 95, 220, 250, 270, 300 and 400 only operate in the Fall and Winter months so these sources were not modeled during Spring and Summer. Otherwise the emissions used in the model were calculated from the annual emissions and the hours the given source was operational.

TABLE 7. ADDITIONAL MODELED EMISSIONS RATES FOR NAAQS ANALYSES				
Source ID	**Source Description**	**Pollutant**	**Averaging Period**	**Emissions[a] (lb/hr)**
030	Riley Boiler	$PM_{2.5}$	24-hour	26.77000
			Annual	16.47032
		PM_{10}	24-hour	53.84000
		NOx	1-hour	339.11000
			Annual	219.73744
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
040	Union Boiler	$PM_{2.5}$	24-hour	0.44000
			Annual	0.27854
		PM_{10}	24-hour	0.88000
		NOx	1-hour	4.06000

TABLE 7. ADDITIONAL MODELED EMISSIONS RATES FOR NAAQS ANALYSES				
Source ID	**Source Description**	**Pollutant**	**Averaging Period**	**Emissions[a] (lb/hr)**
			Annual	2.58445
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
095	Lime Kiln A/B	$PM_{2.5}$	24-hour	0.19
			Annual	0.077626
		PM_{10}	24-hour	0.39000
		NOx	1-hour	6.03000
			Annual	2.36986
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
220	Lime Kiln Dust	$PM_{2.5}$	24-hour	0.16000
			Annual	0.06164
		PM_{10}	24-hour	0.28000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
250	Pellet Cooler System	$PM_{2.5}$	24-hour	0.18000
			Annual	0.07078
		PM_{10}	24-hour	0.37000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
270	A&B Process Slakers	$PM_{2.5}$	24-hour	0.46000
			Annual	0.17808
		PM_{10}	24-hour	0.91000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
290	Main Mill Vents	$PM_{2.5}$	24-hour	--
			Annual	--
		PM_{10}	24-hour	--
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
300	A Side Sulfur Stove	$PM_{2.5}$	24-hour	--

TABLE 7. ADDITIONAL MODELED EMISSIONS RATES FOR NAAQS ANALYSES				
Source ID	Source Description	Pollutant	Averaging Period	Emissions[a] (lb/hr)
			Annual	--
		PM_{10}	24-hour	--
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
305	B Side Sulfur Stove	$PM_{2.5}$	24-hour	--
			Annual	--
		PM_{10}	24-hour	--
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
310	Drying Granulator	$PM_{2.5}$	24-hour	0.35000
			Annual	0.32877
		PM_{10}	24-hour	0.88000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
320	Cooling Granulator #1	$PM_{2.5}$	24-hour	0.09000
			Annual	0.08676
		PM_{10}	24-hour	0.16000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
330	Cooling Granulator #2	$PM_{2.5}$	24-hour	0.09000
			Annual	0.08676
		PM_{10}	24-hour	0.16000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	0.03000
340	Process #2 Bag	$PM_{2.5}$	24-hour	0.06000
			Annual	0.05250
		PM_{10}	24-hour	0.01100
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA

TABLE 7. ADDITIONAL MODELED EMISSIONS RATES FOR NAAQS ANALYSES				
Source ID	**Source Description**	**Pollutant**	**Averaging Period**	**Emissions[a] (lb/hr)**
		CO	1-hour	--
			8-hour	--
360	Specialties Sugar Handling	$PM_{2.5}$	24-hour	0.03000
			Annual	0.03000
		PM_{10}	24-hour	0.07000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
370	Packaging line	$PM_{2.5}$	24-hour	0.02000
			Annual	0.02000
		PM_{10}	24-hour	0.05000
		NOx	1-hour	--
			Annual	--
		SO_2	1-hour	NA
		CO	1-hour	--
			8-hour	--
410	Carbonation Vent #1	$PM_{2.5}$	24-hour	--
			Annual	--
		PM_{10}	24-hour	--
		NOx	1-hour	19.81000
			Annual	7.79000
		SO_2	1-hour	NA
		CO	1-hour	NA
			8-hour	NA
400	FACILITY FUGITIVES (raw beets)	$PM_{2.5}$	24-hour	1.40000
			Annual	0.57000
		PM_{10}	24-hour	2.99000
		NOx	1-hour	0
			Annual	0
		SO_2	1-hour	NA
		CO	1-hour	0
			8-hour	0

_X__ Emissions rates in Table 7 are identical to those in the model input files for the cumulative NAAQS impact analyses.

_X__ Calculation of modeled emissions are thoroughly documented in this section (unless already described in Section 4.1.1), and any unique handling of emissions in the model have been described.

4.2.3 NO_2/NOx Ratio for NOx Chemistry Modeling

The modeling analysis for NO_X followed the EPA recommended 3-tier approach to characterize the conversion of modeled total NO_X emissions to NO_2 concentration for comparison to the NAAQS (40CFR51 Appendix W). The ARM2 method was used with a default (0.5 NO_2/NO_X) in-stack ratio.

4.2.4 Special Methods for Modeling Criterial Pollutant Emissions

The EPA 30 September 2014 Clarification Memorandum (EPA, 2014) details when the ARM2 application would be appropriate. These guidelines address the parameters that must be considered in determining the appropriateness of ARM2 for an application. The first consideration is that the Tier 1 impact assessment for the primary source should fall under the 150-200 ppb (282-376 µg/m3) range. For this project the Tier 1 impact for the project was 130.56 ug/m3, well under the guideline threshold range. Since the Tier I impact is under the threshold, the ARM2 method is an appropriate method for modeling the NO_2 impacts.

4.3 Toxic Air Pollutants

Toxic air pollutants (TAPs) for the facility are summarized in Table 4. Despite not being included in the Modeling Protocol, atmospheric dispersion modeling was required for all TAPs with controlled emissions rates that exceed ELs from the boilers. Modeling analyses were conducted in accordance with IDAPA 58.01.01.210.03. For carcinogen long-term increments, compliance was demonstrated by comparing the maximum modeled average concentration for the duration of the five-year data set to the Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586. All TAPs were below the acceptable ambient concentrations.

Table 8 lists TAP emissions rates that were included in modeling analyses. Modeling was performed for each TAP having total project emissions exceeding the TAP-specific Screening Emissions Level (EL).

TABLE 8. MODELED EMISSIONS RATES FOR TAP ANALYSES

Source ID	Source Description	TAP	Averaging Period	Emissions[a] (lb/hr)
BOI01	Hurst Boiler 14.25 MMBtu/hr Dual Fueled	Formaldehyde	Annual ave	0.00105
		Arsenic	Annual ave	2.79E-06
		Cadmium	Annual ave	1.54E-05
		Nickel	Annual ave	2.93E-05
BOI02	Hurst Boiler 14.25 MMBtu/hr Dual Fueled	Formaldehyde	Annual ave	0.00105
		Arsenic	Annual ave	2.79E-06
		Cadmium	Annual ave	1.54E-05
		Nickel	Annual ave	2.93E-05
BOI03	Hurst Boiler 14.25 MMBtu/hr Dual Fueled	Formaldehyde	Annual ave	.00105
		Arsenic	Annual ave	2.79E-06
		Cadmium	Annual ave	1.54E-05
		Nickel	Annual ave	2.93E-05

a. Pounds/hour emissions rate modeled is the project-specific increase in potential/allowable emissions increase for the averaging period specified for the TAP.

_X__ TAP emissions rates have been listed for each TAP that has project cumulative emissions exceeding the applicable EL.

_X__ Emissions rates in Table 8 are identical to those in the model input file for TAP analyses.

4.4 Emissions Release Parameters

For the ambient air impact modeling, all sources, unless considered part of the background, were modeled as point sources in AERMOD. The emission sources fall into one of three categories. A brief description of each source type and the properties are provided in Section 4.1. In general, all of the emission rates and other source parameters were determined from manufacturer's data or EPA-established emission factors, design plans, or a combination of methods. Refer to Appendix B of the PTC application.

Table 9 lists stack parameters for point sources and Table 10 lists release parameters for volume and area sources.

TABLE 9. POINT SOURCE STACK PARAMETERS								
Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temp. (K)[c]	Stack Gas Flow Velocity (m/sec)[d]	Modeled Stack Diameter (m)	Orient. Of Release[e]
		Easting-X (m)[b]	Northing-Y (m)					
GEN1	Caterpillar Model C27 Emergency Generator 1,214 hp	533085.74	4829624.17	13.716	763	50	0.254	V
GEN2	Caterpillar Model C27 Emergency Generator 1,214 hp	533085.74	4829620.18	13.716	763	50	0.254	V
GEN3	Caterpillar Model C27 Emergency Generator 1,214 hp	533085.74	4829616.17	13.716	763	50	0.254	V
GEN4	Caterpillar Model C27 Emergency Generator 1,214 hp	533085.74	4829612.17	13.716	763	50	0.254	V
BLR1	Hurst Boile4 14.25 MMBtu/hr Dual Fueled (ULSD short term emissions)	533064.57	4829624.18	15.24	435.37	10.67	0.508	Raincap
BLR2	Hurst Boile4 14.25 MMBtu/hr Dual Fueled (NG short term emissions)	533064.57	4829620.18	15.24	435.37	10.67	0.508	Raincap
BLR3	Hurst Boile4 14.25 MMBtu/hr Dual Fueled (NG short term emissions)	533064.57	4829616.17	15.24	435.37	10.67	0.508	Raincap
CT1A	Wet Cooling Tower Cell 1A	533085.74	4829640	15.942	298	4.53	4.25	V
CT1B	Wet Cooling Tower Cell 1B	533085.74	4829637	15.942	298	4.53	4.25	V
CT2A	Wet Cooling Tower Cell 2A	533085.74	4829634	15.942	298	4.53	4.25	V
CT2B	Wet Cooling Tower Cell 2B	533085.74	4829631	15.942	298	4.53	4.25	V
030	CS01-Riley Boiler	534374.00	4828205.00	74.68	449.82	16.00	2.13	V
040	CS02-Union Boiler	534345.67	4828220.41	20.12	435.93	7.65	1.22	V
095	CS03-Lime Kiln A/B	534311.11	4828192.46	24.99	352.59	10.06	0.91	V
220	CS04-Lime Kiln Dust	534311.10	4828195.79	24.08	305.37	5.09	0.76	V
250	CS05-Pellet Cooler System	534372.69	4828302.73	1.83	305.37	14.72	1.19	V
270	CS06-A&B Process Slakers	534320.74	4828203.62	2.01	299.82	5.09	0.76	V
290	CS07-Main Mill Vents	534306.21	4828203.54	18.29	330.37	3.35	2.71	V
300	CS08-A Side Sulfur Stove	534316.10	4828163.61	17.07	380.37	5.09	0.30	V
305	CS09-B Side Sulfur Stove	534298.51	4828131.31	24.99	380.37	5.09	0.30	V

TABLE 9. POINT SOURCE STACK PARAMETERS								
Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temp. (K)[c]	Stack Gas Flow Velocity (m/sec)[d]	Modeled Stack Diameter (m)	Orient. Of Release[e]
		Easting-X (m)[b]	Northing-Y (m)					
310	CS10-Drying Granulator	534368.65	4828147.22	20.12	326.48	24.51	0.61	V
320	CS11-Cooling Granulator #1	534376.62	4828165.03	15.85	323.15	8.20	0.61	V
330	CS12-Cooling Granulator #2	534383.12	4828157.29	15.85	323.15	8.20	0.61	V
340	CS13-Process #2 Bag	534403.26	4828165.17	10.97	310.93	8.29	1.40	V
360	CS14-Specialties Sugar Handling	534413.68	4828178.55	9.14	310.93	4.05	1.07	V
370	CS15-Packaging line	534424.92	4828189.71	7.92	310.93	30.33	0.49	V
410	CS16-Carbonation Vent #1	534299.04	4828185.74	32.92	355.37	6.71	1.01	V

a. Universal Transverse Mercator.
b. Meters.
c. Kelvin.
d. Meters per second.
e. Vertical uninterrupted, rain-capped, or horizontal release.

TABLE 10. VOLUME AND AREA SOURCE RELEASE PARAMETERS							
Source	Description	UTM[a] Coordinates		Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	Angle from North
		Easting - X (m)[a]	Northing - Y (m)				
400	CS17-FACILITY FUGITIVES (raw beets)	534406	4828031	9.14	40.00	50.00	89.00

a. Universal Transverse Mercator
b. Meters

___ Thorough justification/documentation of release parameters for all modeled sources is provided in this section.

___ The specific methods used to determine/calculate given release parameters is described in this section.

_X The release orientation of all point source stacks (horizontal, rain-capped, or uninterrupted vertical release) has been verified and is documented in this section.

5.0 Modeling Methodology

The SIL modeling was performed for all SLNMC sources. If the predicted impacts for the criteria pollutants PTE emissions are not significant (that is, less than the EL or the SIL) for a criteria pollutant, the modeling is complete for that pollutant under that averaging time and compliance with NAAQS is demonstrated. If impacts are significant, a more refined analysis are conducted for demonstration of compliance with the NAAQS.

- For the toxics modeling all carcinogens were modeled using the annual average.
- If impacts are significant for any of the defined modeling, a more refined analysis will be conducted as described below.

Table 11 summarizes the key modeling parameters used in the impact analyses.

TABLE 11. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Canyon County, ID	The SLNMC facility is located in Canyon County, Idaho and is designated as attainment or unclassified for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 15181.
Meteorological Data	The surface and upper air data are from the Boise Air Terminal (surface met ID: 726810, upper-air ID: 24131). No on-site data were used.	The meteorological model input files for this project were developed by CH2M. See Section 5.2 of this memorandum for additional details of the meteorological data.
Terrain	Considered	AERMAP (Version 11103) was used to process terrain elevation data for all sources and receptors using National Elevation Dataset files prepared by the USGS. AERMAP first determines the base elevation at each source and receptor. For complex terrain situations, AERMOD captures the physics of dispersion and creates elevation data for the surrounding terrain identified by a parameter called hill height scale. AERMAP creates hill height scale by searching for the terrain height and location that has the greatest influence on dispersion for each individual source and receptor. Both the base elevation and hill-height scale data are produced for each receptor by AERMAP as a file or files that can be directly accessed by AERMOD.
Building Downwash	Considered	Building influences on stacks are calculated by incorporating the updated EPA Building Profile Input Program for use with the PRIME algorithm (BPIP-PRIME). The stack heights used in the dispersion modeling were the actual stack height or Good Engineering Practice stack height, whichever is less.
NOx Chemistry	ARM2	ARM2 performs a similar conversion to ARM but the ambient ratio is based on an evaluation of the ambient ratios of NO2/NOx from EPA's Air Quality System (AQS) record of ambient air quality data instead of a fixed value (RTP, 2013).
Receptor Grid	**Significant Impact Analyses**	
	The ambient air boundary to be used in the air dispersion analysis is displayed in Figure 5. The ambient air boundary traces the fence surrounding the facility. The selection of receptors in AERMOD were as follows:	
	•	Discrete Receptors 25 meters around the property line.
	•	A 100-meter grid extended approximately 1 kilometer.
	•	A 500-meter grid extended approximately 5 kilometers.
	NAAQS Analyses	

TABLE 11. MODELING PARAMETERS		
Parameter	Description/Values	Documentation/Addition Description
	A trimmed SIL analysis grid to contain all receptors in exceedance of the $PM_{2.5}$ SIL	
	TAPs Analyses	
	Same grid as SIL analysis	

5.1 Model Selection

The air quality analysis utilized the EPA-approved AERMOD (Version 15181) model and supporting programs. AERMOD is a steady-state Gaussian plume model that simulates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD is recommended for short-range (< 50 kilometers [km]) dispersion from the source. The model incorporates the Plume Rise Model Enhancement (PRIME) algorithm for modeling building downwash. AERMOD is designed to accept input data prepared by two specific preprocessor programs, AERMET and AERMAP. AERMOD was run with the following options:

- Use stack-tip downwash
- Model accounts for elevated terrain effects
- Use sequential meteorological date checking
- Use of the PRIME algorithm for sources influenced by building downwash
- Use Missing Data Processing routine
- No exponential decay calculated
- Actual receptor elevations and hill-height scales obtained from AERMAP
- URBAN option if site meets criteria
- Use of the Beta POINTCAP option for all stacks with rain caps.

_X__ The current versions of all models and associated programs were used in analyses, or alternate versions were specifically approved by DEQ.

_X__ Any non-default model options used were approved by DEQ in advance.

5.2 Meteorological Data

Five years of meteorological data from 2010 through 2014 were combined into AERMOD-ready surface and upper air input files using the EPA-approved meteorological data preprocessor for the AERMOD dispersion model, AERMET (v15181).

5.2.1 Surface Meteorological Data

Data Selection and Representativeness

The project site is located at the corner of Midland Avenue and Cherry Lane in Nampa, Idaho, as shown in Figure 1. The closest National Weather Service (NWS) stations to the site is located at the Nampa Municipal Airport. (USAF: 720734, WBAN: 00264), the Boise Air Terminal (USAF: 726810, WBAN: 24131), and the Caldwell Industrial Airport (USAF: 726813, WBAN: 94195), shown in Figure 3. Of the three stations selected for data, the Nampa Municipal Airport NWS station served as the closest station to the project site. However, the station does not have Automated Surface Observing System (ASOS) data. In order to achieve the greatest accuracy, ASOS data is recommended to be included in the model[1]. Of the two remaining stations, the Caldwell Industrial Airport and the Boise Air Terminal, wind roses were generated for each location from the previous 5 years of data (2010-2014) and compared to the wind rose

[1] http://www.epa.gov/scram001/guidance/clarification/20130308_Met_Data_Clarification.pdf

of the same data at the Nampa Municipal Airport in Figures 4-6. The wind patterns of the Boise Air Terminal are similar to the Nampa Municipal Airport wind patterns, both having majority of wind blow form the southeast and the northwest. With similar wind data and available ASOS data, the Boise Air Terminal NWS station data was chosen as representative of the project location. The SLNMC is located 30 km from the Boise Airport. Prior to utilizing meteorological data collected at National Weather Service Station for air dispersion modeling, EPA recommends an analysis of the data collection site be conducted to determine if the NWS data is representative of the project site.

According to EPA's *Guideline on Air Quality Models* (EPA, 2005), representativeness of meteorological data used in dispersion modeling depends on the proximity of the meteorological monitoring site to the area under consideration; the complexity of the terrain; the exposure of the meteorological monitoring site; and the period of time during which data are collected.

Figure 3. Project Site and Meteorological Station Locations

Data Completeness

The surface and upper air data are from the Boise Air Terminal (surface met ID: 726810, upper-air ID: 24131). No on-site data were used. The AERMET preprocessor AERMINUTE was used to combine the ASOS 1-minute data for all years. Threshold wind speed was set to 0.5 m/s. Table 12 provides the number of missing and calm data for the each of the five meteorological years used for the ambient air analysis. AERMOD treats hours with calm conditions as missing data and no ambient air concentration is predicted for these hours. This data meets the completeness requirement of 90 percent (EPA 2011).

TABLE 12. DATA COMPLETENESS			
Year	**Total Hours**	**Number of Missing**	**Total Number of Calms Hours**
2010	8758	12	49
2011	8759	10	36
2012	8784	2	53
2013	8759	12	69

2014	8759	2	98

The aerial imagery shows the terrain between the project site and the NWS meteorological data collection site is generally flat and there are no complex or elevated terrain features. Land use and elevation above mean sea-level are predominantly the same between the locations as well. Additionally, there are no major obstacles which would cause a different wind regime at each location. Therefore, due to the relative proximity of the NWS observation station to the project site, similar terrain surrounding each site, and no major topography differences between the sites, the Boise Airport NWS data would be representative of the meteorological conditions at the project site based on the proximity of the locations and the similar terrain and land use.

Use of Automated Surface Observing System Data

The EPA developed an AERMET preprocessor, AERMINUTE, that can read 2-minute average ASOS winds (reported every minute) in the National Climatic Data Center (NCDC) DSI-6405 dataset (NCDC, 2006), and calculate hourly average wind speeds and directions. EPA recommended the use of ASOS minute data processed with AERMINUTE, when data are available, as a substitute for any standard NWS wind observation because the hourly-averaged winds from AERMINUTE are more appropriate inputs for dispersion modeling[2].ASOS data are available for the Boise airport during the years of interest (2010 to 2014) and were obtained from the NCDC ftp site[3]. The recommended value for the wind speed threshold of 0.5 m/s was used in the AERMET stage 3 processing.

5.2.2 Upper Air Meteorological Data

AERMET also requires concurrent daily upper air sounding data. The closest upper air station is located at the Boise airport (Station ID USAF: 726810, WBAN: 24131). Data from the Boise station from 2010 through 2014 were obtained from the NOAA website (http://www.esrl.noaa.gov/raobs/) for use in AERMET.

5.2.3 Surface Characteristics

Additionally, the noon-time albedo, daytime Bowen ratio, and surface roughness lengths are considered when conducting the stage 3 AERMET processing. Together these comprise the surface characteristics used by AERMET to calculate the boundary layer parameters. Surface characteristics can vary by month and sector around the data collection site. The mid-day albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. The daytime Bowen ratio is an indicator of surface moisture, which is the ratio of the sensible heat flux to the latent heat flux. The Bowen ratio is used to determine the planetary boundary layer parameters for convective conditions. Surface roughness length is related to the height of obstacles to the wind flow and is the height at which the mean horizontal wind speed is zero.

The EPA has developed a computer program called AERSURFACE (v.13016) to aid in obtaining realistic and reproducible surface characteristic values for the albedo, Bowen ratio, and surface roughness length for input to AERMET. The program uses publicly available national land cover datasets and look-up tables of surface characteristics that vary by land cover type and season. Land cover data from the USGS NLCD92 was used for the modeling as recommended by the AERSURFACE user guide[4]. Since surface conditions can vary by season, the Monthly option was chosen in AERSURFACE. For the albedo and Bowen ratio characterization, a 10-km radius was used. Surface roughness can vary by direction or sector so a 1-km radius circle split into 12 sectors was used for surface roughness determination. The surface characterization values from AERSURFACE were used in stage 3 of AERMET processing based on the moisture classification of the particular model year.

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[2] http://www.epa.gov/scram001/guidance/clarification/20130308_Met_Data_Clarification.pdf

[3] ftp://ftp.ncdc.noaa.gov/pub/data/asos-onemin

[4] http://www.epa.gov/ttn/scram/7thconf/aermod/aersurface_userguide.pdf

Moisture Analysis

In addition to location and land-use, the AERSURFACE preprocessor requires characterization of the surface moisture for the meteorological year being processed. Total precipitation for each year processed was determined from the NWS data and compared to the average of the precipitation record from 1940-2015 obtained from the Western Regional Climate Center[5] for the Boise Air Terminal COOP station (ID: 101022). The moisture characterization was then determined using +/- one standard deviation from the average. The yearly totals and moisture characterization for each year are summarized in Table 13.

TABLE 13. MOISTURE ANALYSIS FOR THE BOISE, IDAHO AREA

		Precipitation (inches)	Moisture Classification
Historic Data	Average (1940-2015)	11.71	Average
	Standard Deviation	2.45	
	+1 Std. Dev.	14.16+	Wet
	-1 Std. Dev.	9.26-	Dry
Model Years	2010	14.98	Wet
	2011	10.49	Average
	2012	11.45	Average
	2013	9.55	Average
	2014	15.47	Wet

Snow Cover Analysis

In addition to precipitation, the AERSURFACE preprocessor requires characterization of the snow level present during the year. The preprocessor requires whether or not snow was present on the ground for at least one month during the year. The presence of snow present on the ground was determined from data records of snow depth obtained from the Western Regional Climate Center for the Boise Air Terminal COOP (ID:101022). Using the average daily snow depth over the period 1940-2015, it was observed snow cover was present a minimum of 1 month per year.

5.2.4 Wind Roses

A cumulative wind rose for data from years 2010 through 2014 from the AERMET processed surface files for the Boise airport is shown in Figure 2. The predominant wind direction is from the southeast and the 5-year mean wind speed is 3.06 meters per second. Figures 3 and 4 show the wind roses from the Nampa Municipal Airport and the Caldwell Industrial Airport for comparison of the wind direction and wind speed. The wind directions and average wind speeds from the Nampa and Boise airports are similar, indicating the Boise meteorological data are representative of the project site.

[5] http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?id1022

Figure 4. 5-Year Cumulative Wind Rose for Boise Air Terminal from processed AERMET data

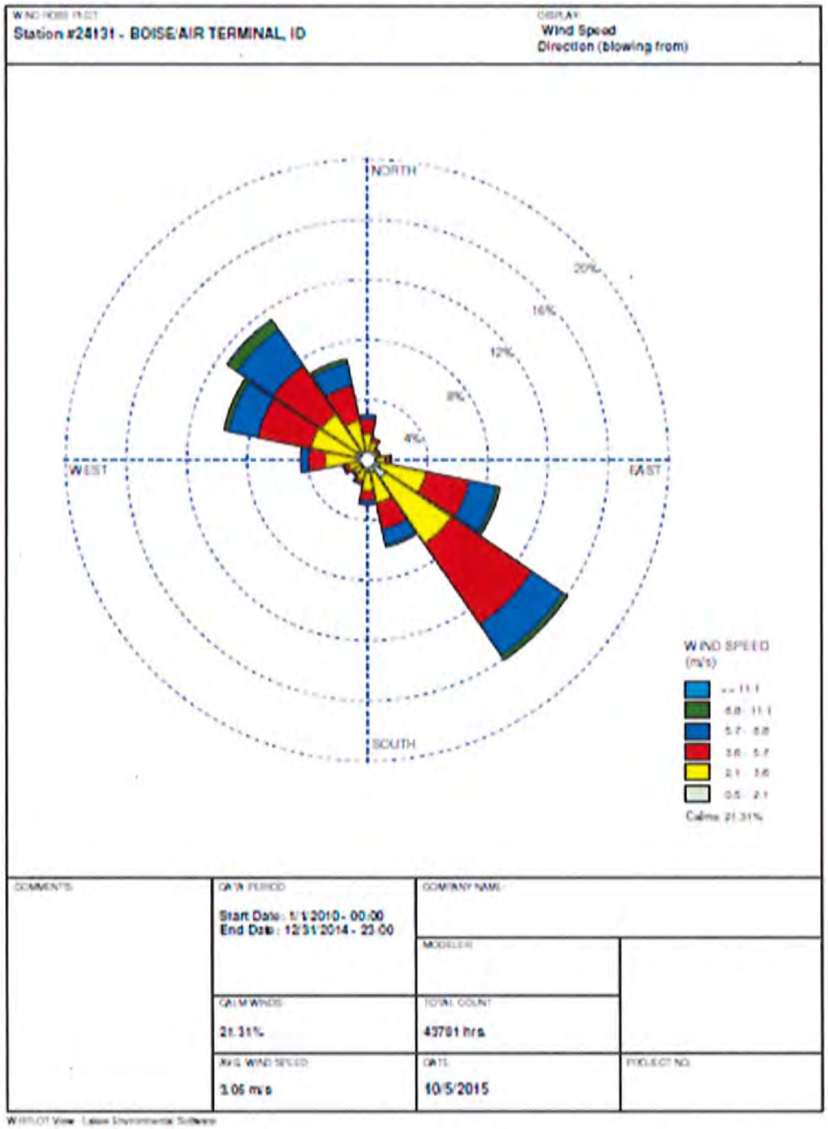


Figure 5. Nampa Municipal Airport Wind Rose

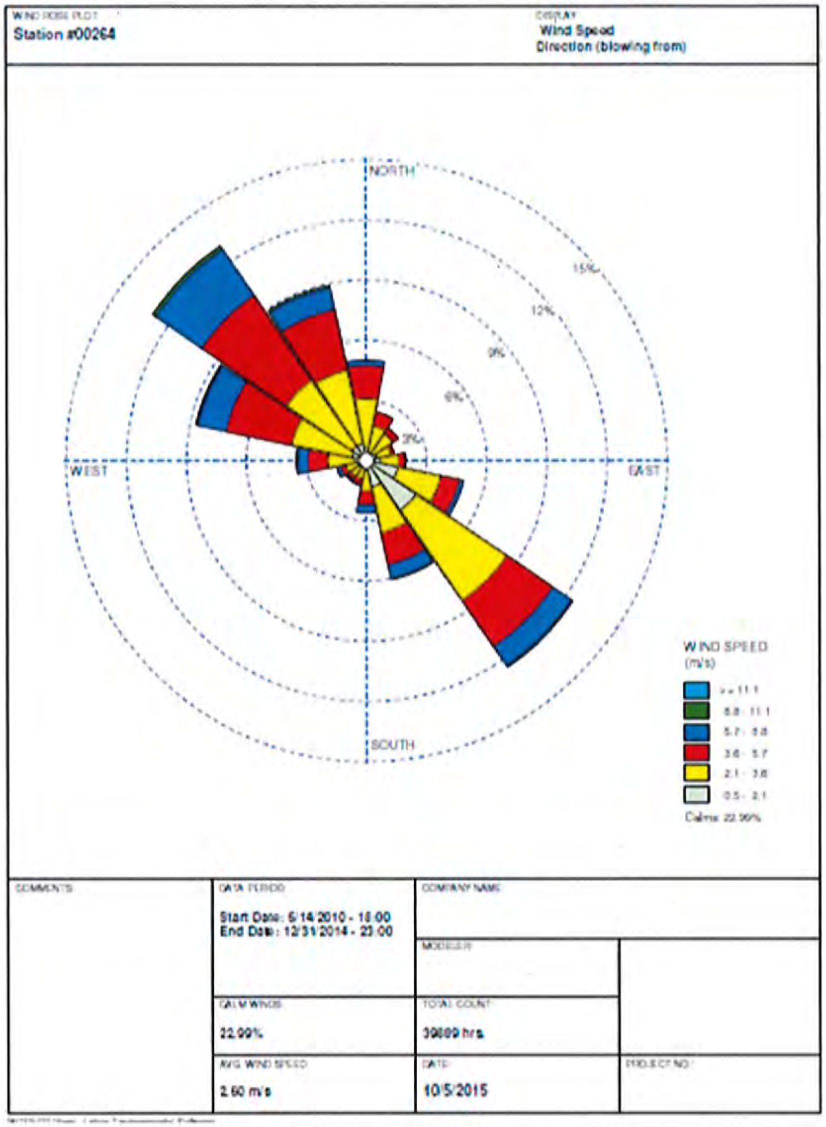
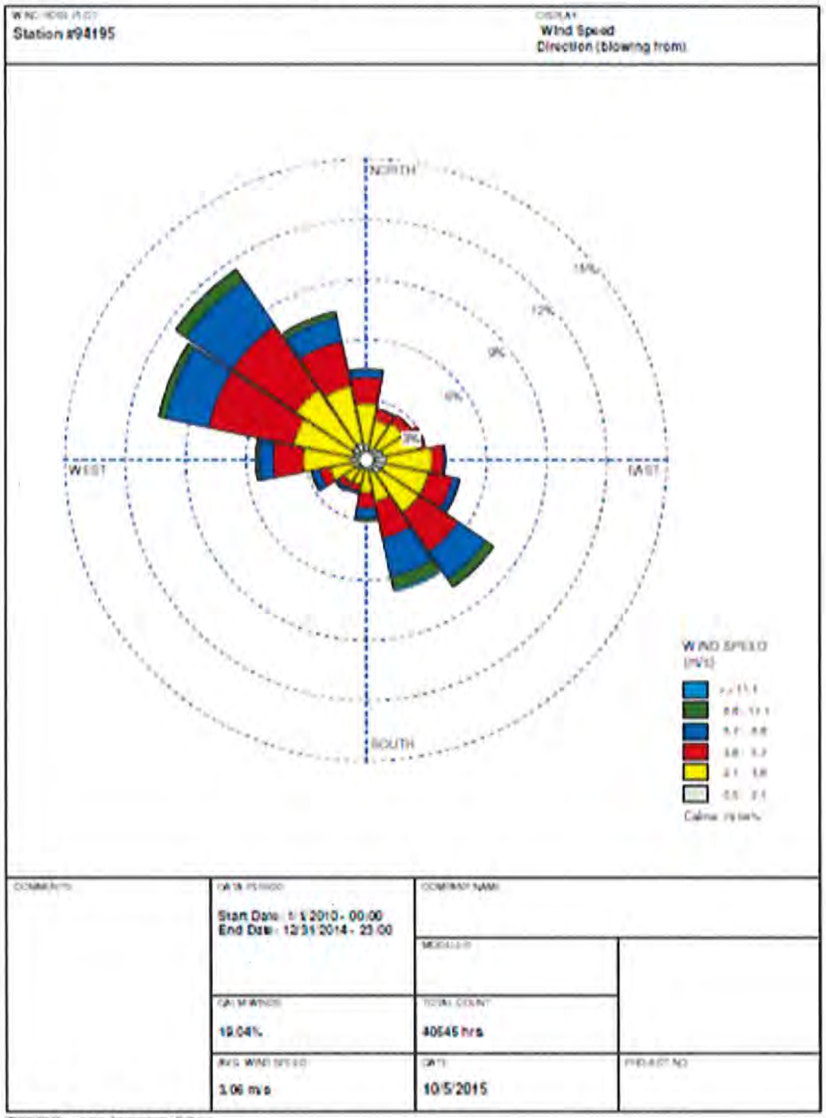


Figure 6. Caldwell Industrial Airport Wind Rose



_X__ Meteorological data files are provided with the application.

___ If meteorological data used for modeling were not provided by DEQ, then a detailed discussion of the data is provided along with documentation of the processing steps.

5.3 Effects of Terrain

AERMAP (Version 11103) was used to process terrain elevation data for all sources and receptors using National Elevation Dataset files prepared by the USGS. AERMAP first determines the base elevation at each source and receptor. For complex terrain situations, AERMOD captures the physics of dispersion and creates elevation data for the surrounding terrain identified by a parameter called hill height scale. AERMAP creates hill height scale by searching for the terrain height and location that has the greatest influence on dispersion for each individual source and receptor. Both the base elevation and hill-height scale data are produced for each receptor by AERMAP as a file or files that can be directly accessed by AERMOD.

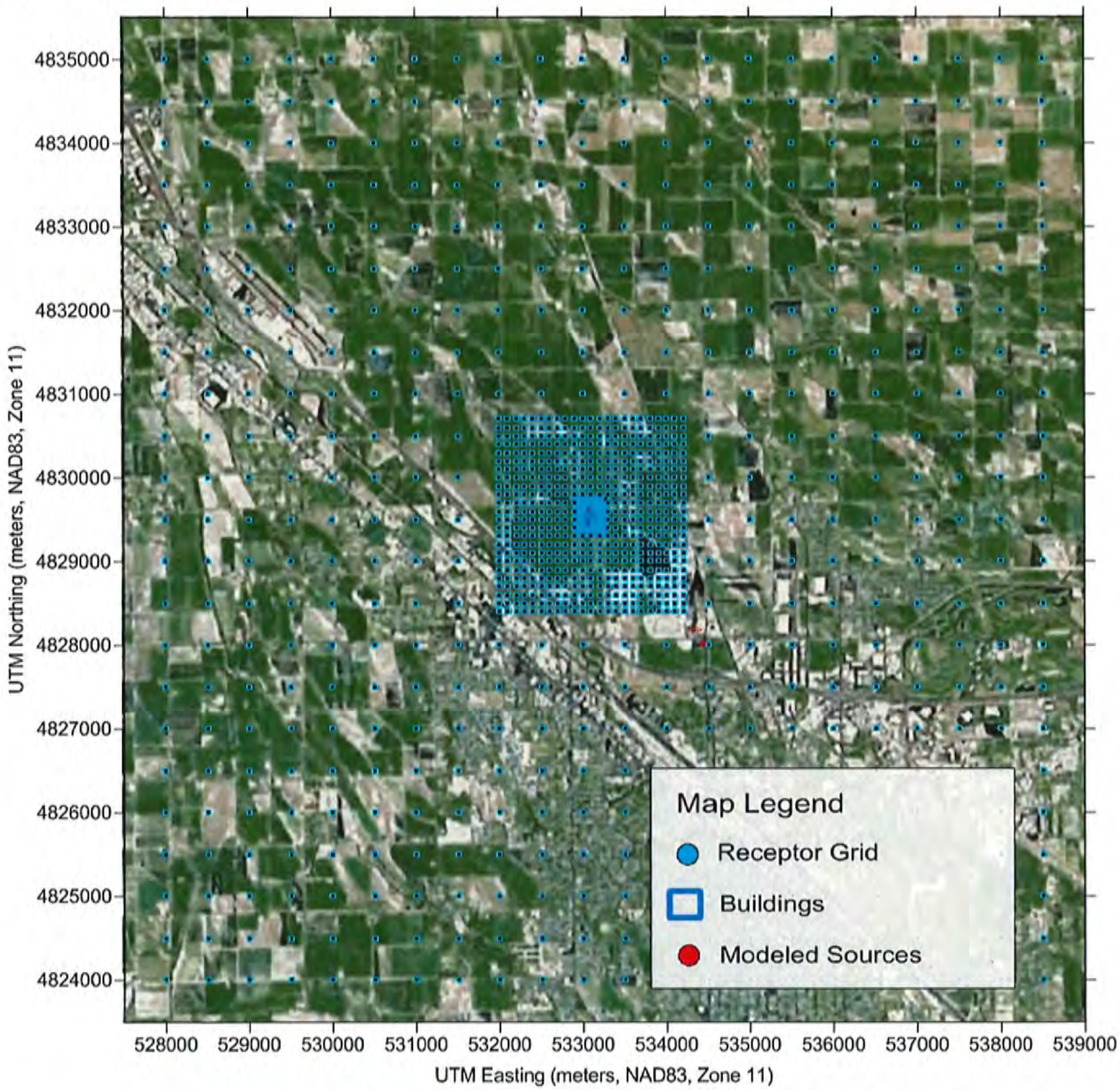
All receptors and source locations are expressed in the Universal Transverse Mercator North American Datum 1983 (NAD83), Zone 11 coordinate system.

_X__ The datum of terrain data, building corner locations, emissions sources, and the ambient air boundary are specified and are consistent such that the modeled plot plan accurately represents the facility and surroundings.

5.4 Facility Layout

The facility layout used in the air dispersion analysis is displayed in Figure 2. The full receptor grid is displayed in Figure 7.

Figure 7. Full Receptor Grid



_X__ The facility layout plot plan is provided in this section that clearly and accurately depicts buildings, emissions points, and the ambient air boundary. See Figure 2 in this report.

_X__ This section of the Modeling Report has thoroughly described how locations of emissions sources, building corners, and the ambient air boundary were determined, specifying the datum used.

5.5 Effects of Building Downwash

Building influences on stacks were calculated by incorporating the updated EPA Building Profile Input Program for use with the PRIME algorithm (BPIP-PRIME). The stack heights used in the dispersion modeling were the actual stack height.

5.6 Ambient Air Boundary

The ambient air boundary consists of all areas on the property where public access is allowed and shown in Figure 2. The public will have access in and out multiple areas surrounding the hospital. Therefore, the ambient air boundary will be defined as the building perimeter.

___ If any of the following apply, the effect on areas excluded from ambient air is thoroughly described in this section: a river/stream bisecting the facility; the facility is on leased property or is leasing property to another entity; the facility is not completely fenced; there are right-of-way areas on the facility; the nature of business is such that the general public have access to part or all of the facility.

X___ This section thoroughly describes how the facility can legally preclude public access (and practically preclude access) to areas excluded from ambient air in the modeling analyses.

5.7 Receptor Network

The selection of receptors in AERMOD are as follows:

- Discrete Receptors 25 meters around the property line and on site.
- A 100-meter grid extended approximately 1 kilometer.
- A 500-meter grid extended approximately 5 kilometers.

Figure 7 shows the receptor grid network used in SIL modeling.

_X__ This section of the Modeling Report provides justification that receptor spacing used in the air impact analyses was adequate to reasonably resolve the maximum modeled concentrations to the point that NAAQS or TAP compliance is assured.

5.8 Background Concentrations

Background concentrations used in the cumulative NAAQS impact analyses were provided by DEQ in the Protocol approval letter and are provided in Table 14 for reference. For short term NO_2 modeling, a season hour profile was used. This is described in detail in section 5.8.

TABLE 14. DEQ RECOMMENDED AMBIENT BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration (µg/m³)[a, b]
PM_{10}[g]	24-hour	74[c]
$PM_{2.5}$[h]	24-hour	25[d]
$PM_{2.5}$[h]	Annual	9.6
Ozone[e]	Annualized value	59 ppb[f]
NO_2[i]	1-hour	80.8 (43 ppb)
NO_2[i]	Annual	10.9 (5.8 ppb)
SO_2[j]	1-hour	17.8 (6.8 ppb)
Lead	Rolling 3-month	0.03[l]
CO[k]	1-hour	1,657 (1,447 ppb)
CO[k]	8-hour	996 (870 ppb)

a. Micrograms per cubic meter, except where noted otherwise.
b. Northwest AirQuest ambient background lookup tool, October 29, 2015 lookup date. See http://lar.wsu.edu/nw-airquest/lookup.html, except where noted otherwise.
c. Without extreme values.
d. Northwest Airquest design value used a 3-year median value instead of a 3-year average of annual 98th percentile values to take into account high modeled values during modeled wildfires episodes.
e. Ozone for use in 1-hour nitrogen dioxide modeling using Tier 3 Ozone Limiting Method or Tier 3 Plume Volume Molar Ratio Method.
f. Parts per billion by volume.
g. Particulate matter with an aerodynamic diameter of 10 microns.
h. Particulate matter with an aerodynamic diameter of 2.5 microns.
i. Nitrogen dioxide.
j. Sulfur dioxide.
k. Carbon monoxide.
l. Default value for small town/suburban areas. The lead background was obtained from the following DEQ source: Background Concentrations for Use in New Source Review Dispersion Modeling. Memorandum from Hardy, Rick and Schilling, Kevin to Anderson, Mary, dated March 14, 2003.

__X_ Background concentrations have been thoroughly documented and justified for all criteria pollutants where a cumulative NAAQS impact analysis was performed.

5.9 NOx Chemistry

The modeling analysis for NO_X followed the EPA recommended 3-tier approach to characterize the conversion of modeled total NO_X emissions to NO_2 concentration for comparison to the NAAQS (40CFR51 Appendix W). The ARM 2 method was used because the Tier 1 method was overly conservative. The ARM2 method use was chosen because the project meets all of the recommendations outlined by the EPA guidance as follows:

- The area around the project site has ozone levels that are not persistently above approximately 80-90 ppb, specifically the modeled 1-hour value provided by DEQ was 60 ppb.
- The initial Tier 1 modeling was below the NO_2 impact threshold for areas with low ozone background concentrations.
- The majority of sources are expected to have an in-stack ratio (ISR) of NO_2/NO_X below 0.2 based on a review of similar sources listed in the EPA ISR database. For this modeling demonstration the more conservative default ISR of 0.5 was used because documentation for all stack types was not available.

In addition to the modeling method, another important aspect of the cumulative impact assessment for 1-Hour NO_2 is the method for combining modeled concentrations with monitored background concentrations to determine the cumulative ambient impact. The use of a single uniform monitored background contribution is overly conservative for this project because the use of this value is likely reflecting source-oriented impacts from nearby sources and double-counting of modeled and monitored contributions.

The EPA guidance outlined in the March 1, 2011 EPA guidance provided in the Memorandum by Tyler Fox, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 " allows for additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values and states that temporal paring may be considered on a case-by-case basis. Since the 1-Hour NO_2 standard is based on the annual distribution of daily maximum 1-hour values, the diurnal patterns of ambient impacts and monitored ambient 1-hour NO_2 need to be considered when combining modeled and monitored data.

For this analysis a refined temporal pairing was used to determine the multiyear averages of the 98^{th}-percentile (or 99^{th}-percentile) of the available background 1-hour NO_2 concentrations from the DEQ Meridian Near Road monitoring data by season and hour-of-day. These season/hour of day profiles were added to ON and competing source impacts using the AERMOD SEASHR card.

5.9.1 Approach and Justification

The background profile values were determined using the ambient 1-hour NO_2 data obtained from the EPA AQS data mart database (available on line at https://aqs.epa.gov/api). The most recent three years of 1-hour NO2 data available (2012-2014) from the DEQ Meridian Near Road monitor (ID# 016001023, Parameter ID# 42602) were downloaded and evaluated.

In general the steps used to determine these seasonal hourly background values followed the EPA guidance. Data were organized data by year, season and hour. The completeness of the data was determined and then the 98th percentile (or the third highest value for each season and hour for complete data) was determined for each season and hour. DEQ requested the use of the second highest value for any seasons where data completeness was less than 90%. Additionally DEQ requested the use of data from both POC 1 and POC2. For the annual hourly value, the seventh highest value was determined. This is a deviation from the guidance was done to account for the missing data, ensuring conservatism.

The seasonal hourly background values used in this modeling demonstration are shown in Table 15.

TABLE 15. JUNE 2012-MAY 2015 AMBIENT 98TH PERCENTILE SEASON HOUR OF DAY NO_2 CONCENTRATIONS (PPB)				
Hour of Day	**Winter**	**Spring**	**Summer**	**Autumn**
1	30.5	26.3	23.7	24.3
2	28.0	21.8	18.2	21.6
3	26.2	20.6	17.5	21.0
4	25.5	23.9	19.0	22.3
5	26.7	26.2	23.3	22.1
6	28.1	27.2	26.7	25.3
7	28.4	31.8	30.3	28.4
8	29.7	32.4	25.8	30.3
9	30.8	27.1	21.9	26.5
10	26.5	22.2	20.4	24.3
11	25.6	18.5	18.4	21.5
12	24.0	16.6	14.9	17.9
13	19.8	15.7	13.9	17.1
14	17.6	16.6	13.5	16.3
15	18.7	15.7	16.2	18.0
16	21.4	15.7	14.8	21.0
17	23.5	17.1	13.7	23.3
18	27.6	18.4	16.4	28.6
19	32.6	24.3	18.7	34.6
20	34.1	32.5	28.8	41.4
21	34.3	40.1	37.5	39.6
22	33.7	39.2	39.9	34.6
23	31.5	35.3	34.1	31.5
24	31.1	31.5	29.2	26.5

___ If OLM or PVMRM was used to address NOx chemistry, reasons for selecting one algorithm over the other are provided in this section.

6.0 Results and Discussion

The model output results demonstrate compliance with Idaho Air Rules Section 203.02, 203.03, and/or 403.02. Details of all of the results are provided in the following sections. All modeling files are provided in electronic form.

6.1 Criteria Pollutant Impact Results

6.1.1 Significant Impact Level Analyses

All pollutants modeled were over the SIL except PM_{10}. Cumulative modeling were completed for annual and 24-hour $PM_{2.5}$, 24-hour PM_{10}, annual and 1-hour NO_2, and 8-hour and 1-hour CO. Table 16 provides results of the SIL analyses. Plots of SIL receptors are provided in Figures

TABLE 16. RESULTS FOR SIL ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m³)[a]	Significant Contribution Level (µg/m³)	Impact Percentage of Significant Contribution Level	Cumulative NAAQS Analysis Required
$PM_{2.5}$[b]	24-hour	11.87[f]	1.2	989%	Yes
	Annual	1.17[f]	0.3	391%	Yes
PM_{10}[c]	24-hour	7.91	5	158%	Yes
NO_2[d]	1-hour	130.56[f]	7.5	1741%	Yes
	Annual	7.69	1	769%	Yes
CO[e]	1-hour	250.88	2,000	13%	No
	8-hour	156.02	500	31%	No

a. Micrograms/cubic meter
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
d. Nitrogen dioxide.
e. Carbon Monoxide.
f. Maximum 5-year means of the maximum modeled concentration for each year modeled.

_X_ Model input and output files for SIL analyses have been provided with the application, with descriptions of the analyses associated with those files.

6.1.2 Cumulative NAAQS Impact Analyses

The cumulative NAAQS analysis used only those receptors where there was an impact from the project exceeding the SIL. Figures 8-12 show the SIL receptors used for the NAAQS analysis. Additionally the cumulative impact (modeled plus background) are indicated on the maps. Table 17 provides results of Cumulative NAAQS Impact analyses.

TABLE 17. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration (µg/m³)[a]	Background Concentration (µg/m³)	Total Impact (µg/m³)	NAAQS (µg/m³)
$PM_{2.5}$[b]	24-hour	5.2[e]	25	30.2	35
	Annual	1.38[f]	9.6	11.18	12
PM_{10}[c]	24-hour	50.5[g]	74	124.5	150
NO_2[d]	1-hour	182.03[e]	INCLUDED	182.03	188
	Annual	8.34	10.9	21.98	100

TABLE 17. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSES					
Pollutant	**Averaging Period**	**Modeled Design Concentration (µg/m³)[a]**	**Background Concentration (µg/m³)**	**Total Impact (µg/m³)**	**NAAQS (µg/m³)**

[a] Micrograms/cubic meter

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

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

[d] Nitrogen dioxide.

[e] Maximum of 5-year means of 8th highest modeled concentrations for each year modeled.

[f] Maximum of 5-year means of maximum modeled concentrations for each year modeled.

[g] Maximum of 6th highest modeled concentrations over 5 years modeled.

Figure 8. SIL Receptors and Cumulative Impact for 1-Hour NO2

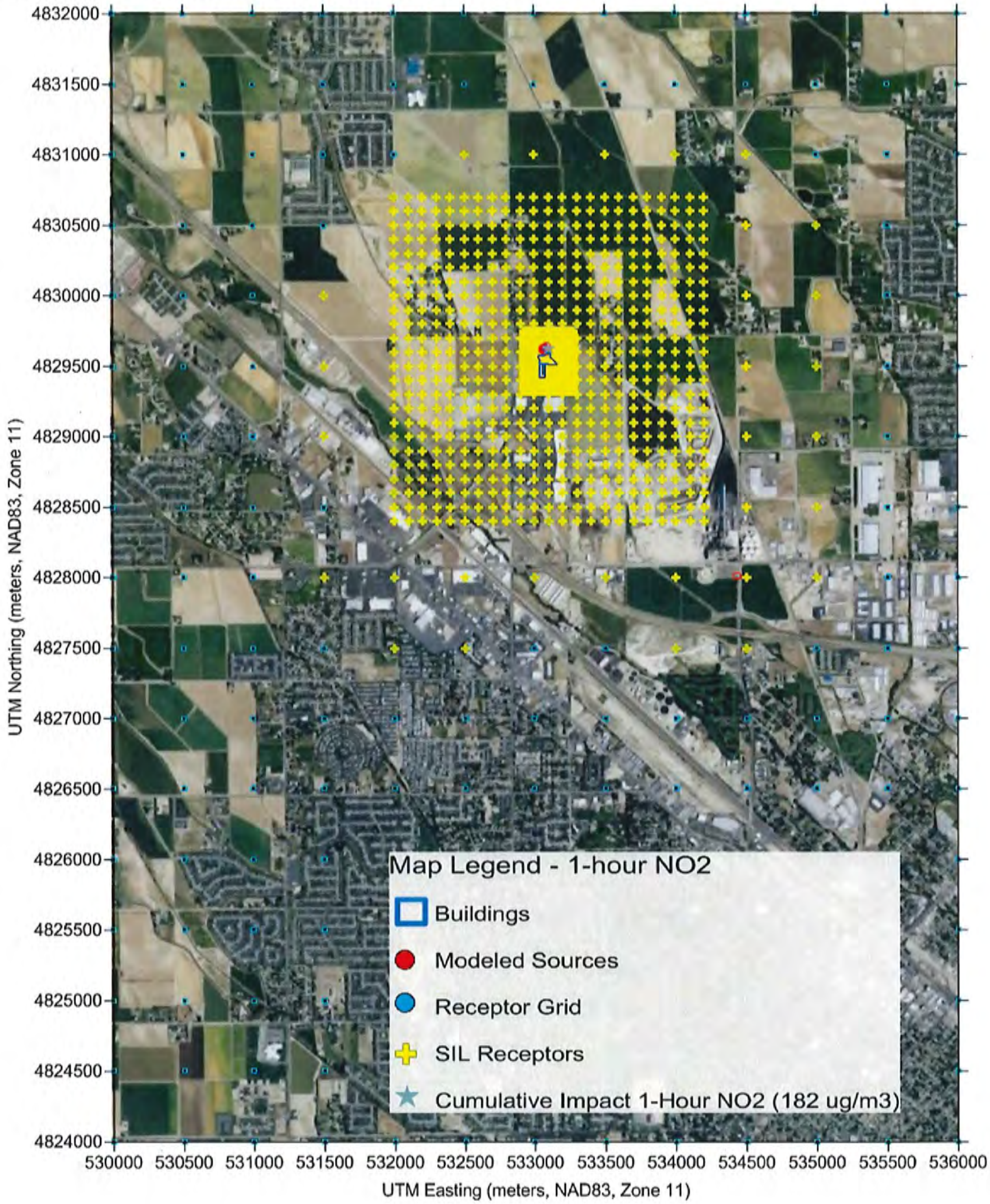


Figure 9. SIL Receptors and Cumulative Impact for Annual NO_2

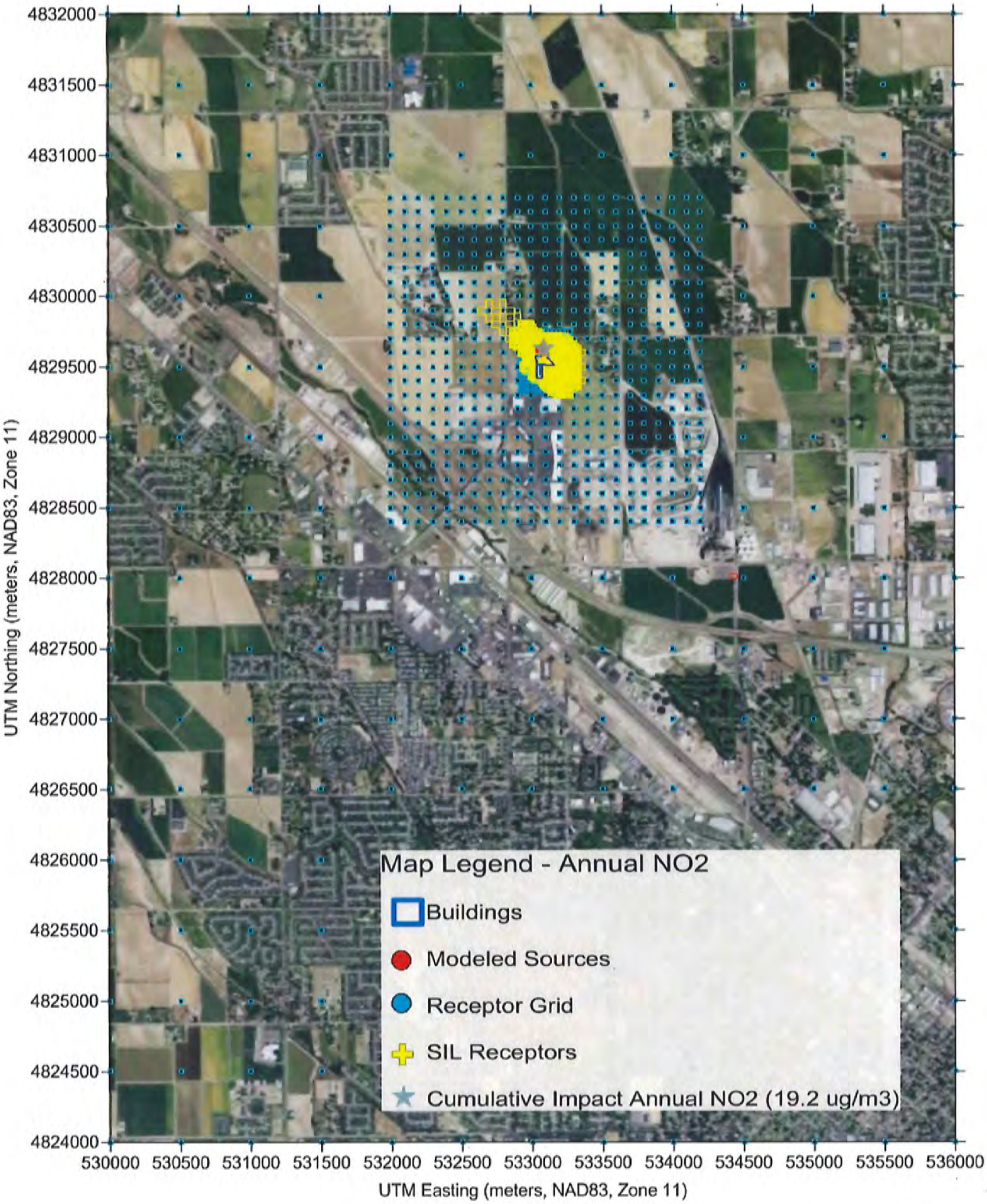


Figure 10. SIL Receptors and Cumulative Impact for 24-Hour $PM_{2.5}$

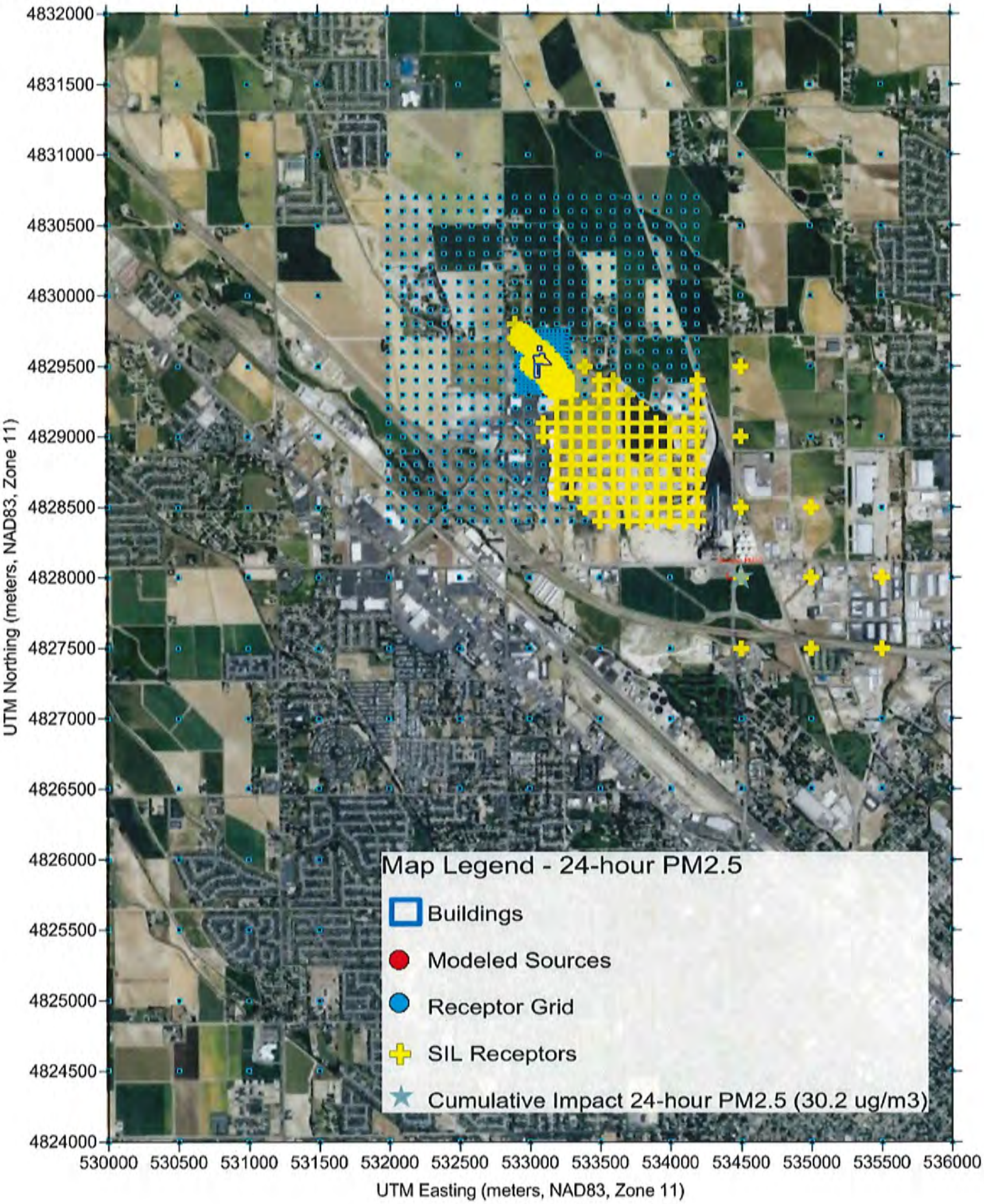


Figure 11. SIL Receptors and Cumulative Impact for Annual $PM_{2.5}$

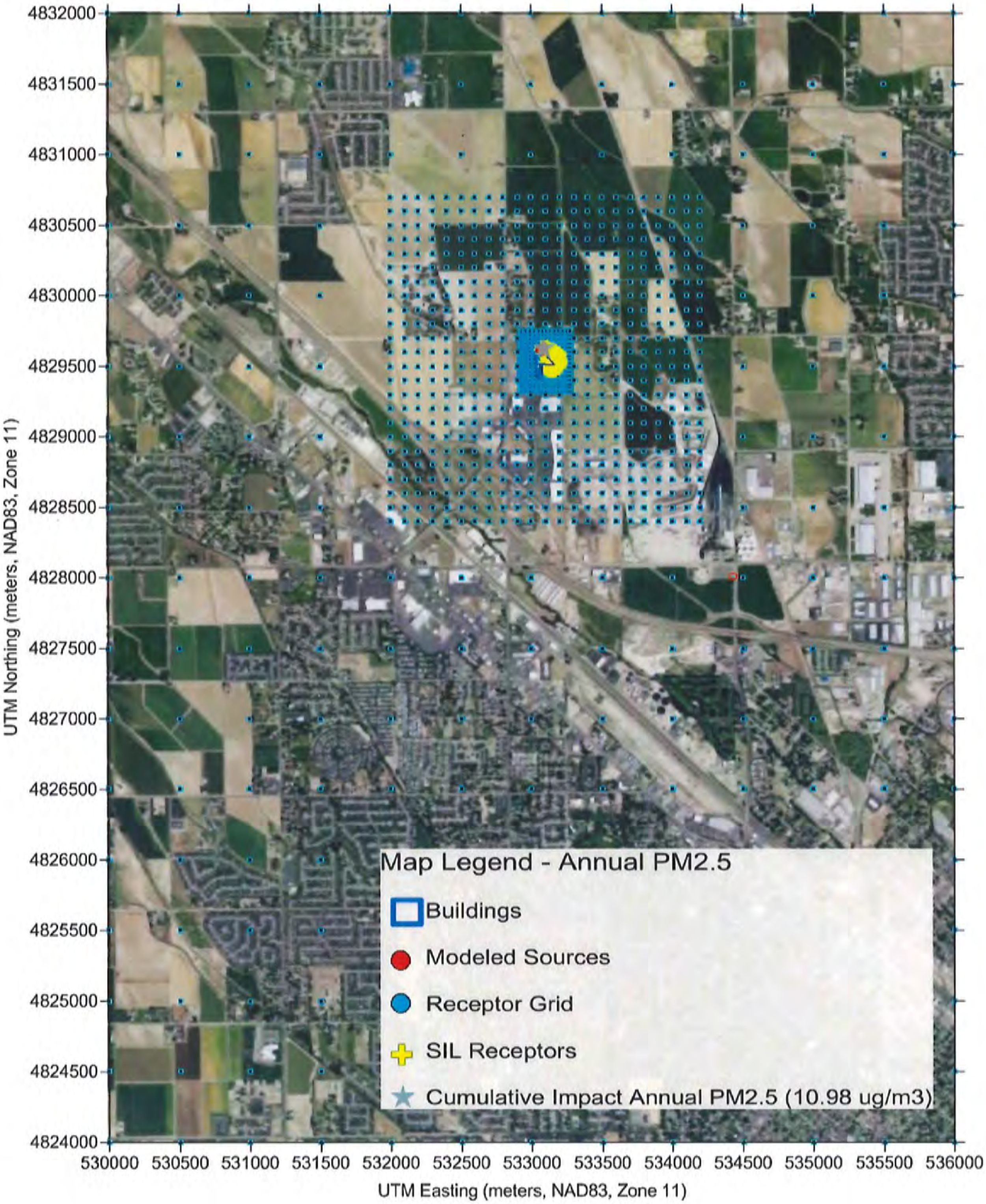
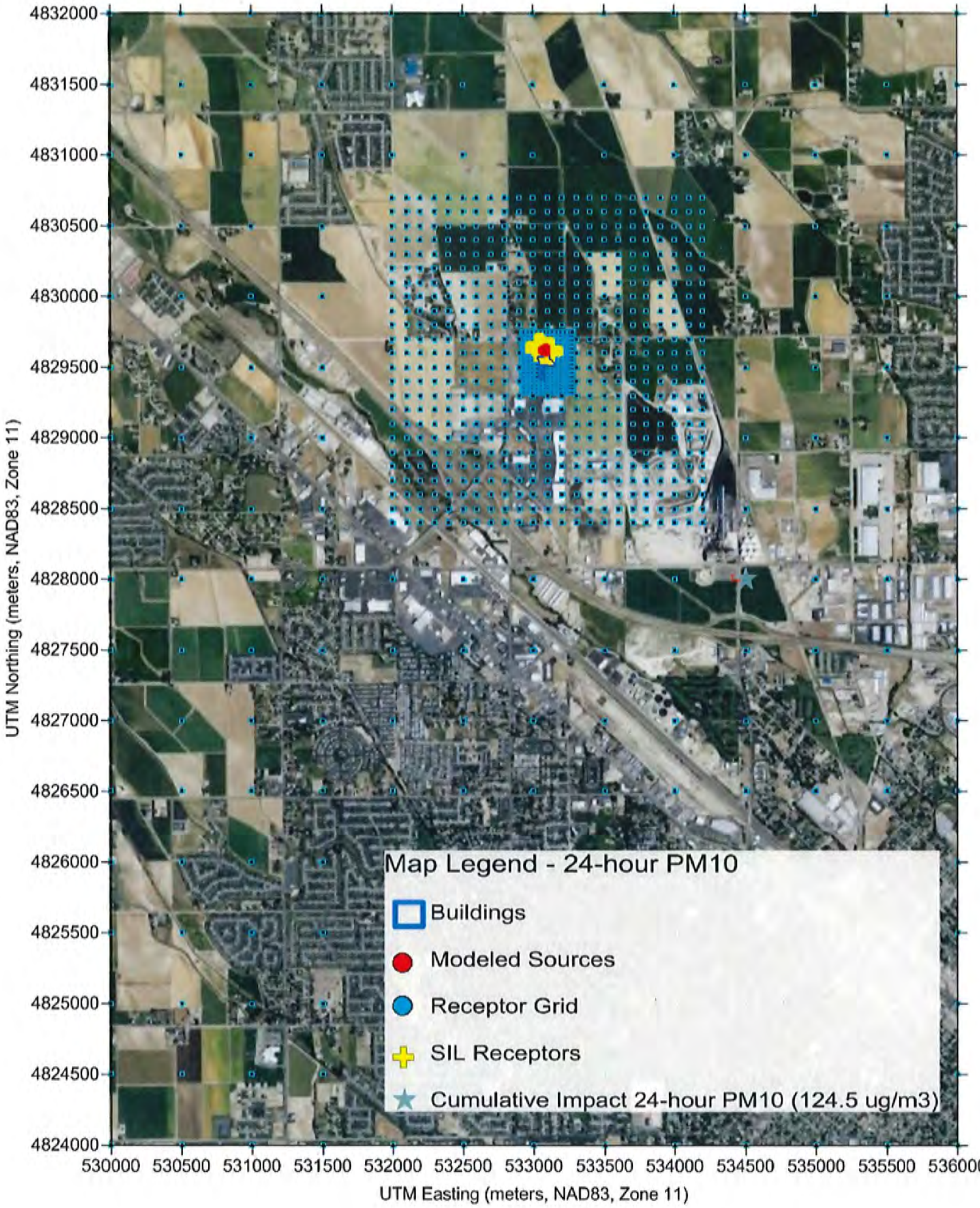


Figure 12. SIL Receptors and Cumulative Impact for 24-Hour PM_{10}



_X__ Model input and output files for the cumulative NAAQS impact analyses are provided with the application.

__X_ If there were modeled NAAQS violations, all violations were analyzed and clearly show that the project did not significantly contribute to those modeled violations. If there were multiple violations at a given receptor, all cumulative impacts (including background) for the averaging period analyzed were ranked along with the project contribution, and the project contributions were below the applicable SIL. A table was included to show all ranked impacts above the NAAQS along with the project contribution.

6.2 TAP Impact Analyses

Table 18 provides results for TAP impact analyses. All TAPs having project total emissions exceeding the ELs are below applicable AACs or AACCs. .

TABLE 18. RESULTS FOR TAP IMPACT ANALYSES			
TAP	**Averaging Period**	**Maximum Modeled Impact (μg/m³)[a]**	**AAC or AACC (μg/m³)**
Formaldehyde	Annual	1.7E-02	7.70E-02
Arsenic	Annual	5.0E-05	0.00023
Cadmium	Annual	2.5E-04	0.00056
Nickel	Annual	4.9E-04	4.20E-03

[a] Micrograms/cubic meter.

7.0 Quality Assurance/Control

Analyses and analyses reports have been prepared by air quality professionals experienced in dispersion modeling, and have been peer reviewed.

Attachment
Modeling Files and Emissions XL Spreadsheet Files CD