Statement of Basis

Permit to Construct P-2007.0079
Project No. 60608

St. Luke's Magic Valley Medical Center
Twin Falls, Idaho

Facility ID No. 083-00098

Final

February 14, 2011
Dan Pitman, P.E.
Permit Writer

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CAA	Clean Air Act
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hr/yr	hours per year
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NSPS	New Source Performance Standards
O&M	operation and maintenance
PAH	polyaromatic hydrocarbons
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
RAP	recycled asphalt pavement
Rules	Rules for the Control of Air Pollution in Idaho
SCL	significant contribution limits
SIC	Standard Industrial Classification
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_X	sulfur oxides
T/yr	tons per consecutive 12-calendar month period
TAP	toxic air pollutants
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

St. Luke's Magic Valley Medical Center provides medical services including an emergency room, X-ray, MSTI (cancer center), ICU, Labor and delivery services, in-patient rooms for medical and surgical patients, in-patient and out-patient operating facilities, employee daycare, pharmacy, chapel, education/conference facilities, pathobiology laboratory, and physician offices.

Permitting History

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

August 31, 2007	P-2007.0079, Initial Permit for the Hospital, Permit status (A, but will become S upon issuance of this permit)

Application Scope

This PTC modification will include the addition of two Fulton Pulse boilers each with a rated heat input capacity of 2.0 million British thermal units per hour (MMBtu/hr) to supply heat to the Hospital. These two boilers will be fueled primarily by natural gas each operating 8,760 hours per year with the ability for each boiler to combust propane gas as back-up fuel operating 96 hr/yr. This permit modification will also include a fuel change for back-up fuel from propane gas to low sulfur diesel for the four Hurst steam boilers. The Hurst boilers are each rated at 4.2 MMBtu/hr and are currently permitted to combust natural gas operating 8,760 hr/yr and propane gas 96 hr/yr. The ability to burn propane gas as back-up fuel will be removed and replaced with low sulfur diesel fuel. The Hurst Boilers may only operate a total of one hour per day when combusting diesel fuel for maintenance and testing. Each Hurst boiler will have the capability to combust low sulfur diesel fuel as back-up fuel for no more than 48 hr/yr. The facility will also be adding two 15,000 gallon under ground diesel fuel storage tanks and a 12,000 gallon underground jet fuel storage tank for helicopters.

Application Chronology

October 8, 2010	DEQ received the PTC application fee[1].
October 20, 2010	DEQ received the application.
November 1 – 16, 2010	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
December 7, 2011	DEQ determined that the application was complete.
January 21, 2011	DEQ made available the draft permit and statement of basis for applicant review.
February 9, 2011	DEQ received the PTC processing fee.

1 The PTC application fee was transferred from project No. 60598 to this project. Project 60598 was withdrawn by the applicant and replaced with this project.

TECHNICAL ANALYSIS

Emissions Units and Control Devices

Table 1 EMISSIONS UNIT AND CONTROL DEVICE INFORMATION

ID No.	Source Description	Control Equipment Description	Emissions Point ID No. and Description
HBOIL17 & HBOIL18	Manufacturer: Fulton Pulse Boilers (2) Model: PHW2000 Heat input rating: 2.0 MMBtu/hr Fuel: Natural Gas/Propane	None	Exit height: 10.1 m Exit diameter: 0.56 m Exit flow rate: 5,264 acfm Exit temperature: 204 °C
SBOIL 1- 4	Manufacturer: Hurst Boilers (4) Model: 4VTCyclone Heat input rating: 4.2 MMBtu/hr Fuel: Natural Gas/Diesel	None	Exit height: 10.1 m Exit diameter: 0.71 m Exit flow rate: 6,580 acfm Exit temperature: 105 °C

Emissions Inventories

An emissions inventory was developed for the two new 2.0 MMBtu/hr natural gas and propane fired boilers, and for the four 4.2 MMBtu/hr boilers while firing diesel. See the December 7, 2010 application for the emission inventory details for this proposed project. The applicant provided an Excel spreadsheet[2] with all of the calculations; DEQ has reviewed and approved the emission estimates. Emissions estimates of criteria pollutants were based on emission factors from AP-42. For the 2.0 MMBtu/hr boilers emission estimates were provided for 8,760 hours per year of operation while combusting natural gas, and for of 96 hours per year while combusting propane. For the four 4.2 MMBtu/hr boilers an emission inventory was provided for 48 hours of operation per year on #2 diesel fuel. Summaries of the estimated emissions of criteria pollutants, TAPs, and HAPs from the facility are provided in the following tables.

Uncontrolled Emissions

Uncontrolled emissions estimates are necessary to determine the facility's classification (i.e. SM, SM-80, B). The single highest emitting pollutant determines the facility's classification. The single highest potential to emit for this facility is nitrogen oxides. Potential nitrogen oxide emissions from the facility are 18.2 tons per year. Therefore, the facility classification is B because potential emissions are less than 100 tons per year.

Pre-Project Potential to Emit

The following table presents the pre-project potential to emit for all criteria pollutants from two new boilers and the modified existing 4 boilers as submitted by the Applicant and verified by DEQ staff. The 2 new 2MMBtu/hr boilers did not exist prior to the project therefore the pre-project emissions are zero. See the August 22, 2010 Statement of Basis which supports the issuance of PTC 2007.0079 issued August 31, 2007 for a detailed presentation of the calculations for the 4.2 MMBtu/hr boilers.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10} T/yr[a]	SO_2 T/yr[a]	NO_X T/yr[a]	CO T/yr[a]	VOC T/yr[a]	Lead T/yr[a]
Point Sources						
2 New 2MMBtu Boilers	0.00	0.00	0.00	0.00	0.00	0.00
4 Existing 4.2 MMBtu Boilers	0.56	0.04	3.6	6.04	0.40	negligible
Pre-Project Totals	0.56	0.04	3.6	6.04	0.40	negligible

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

2 DEQ Data Base – TRIM record number – 2011AAG352

Post Project Potential to Emit

The following table presents the post project potential to emit for criteria pollutants from the two new 2 MMBtu/hr gas fired boilers and the four 4.2 MMBtu/hr boilers as submitted by the Applicant and verified by DEQ staff. See the See the December 7, 2010 application for the emission inventory details for this proposed project. The applicant provided an Excel spreadsheet[3] with all of the calculations; DEQ has reviewed and approved the emission estimates.

Table3 POST PROJECT POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10} T/yr[a]	SO_2 T/yr[a]	NO_X T/yr[a]	CO T/yr[a]	VOC T/yr[a]	Lead T/yr[a]
Point Sources						
2 New 2MMBtu Boilers[b]	0.13	0.02	0.86	1.44	0.10	negligible
4 Existing 4.2 MMBtu Boilers[c]	0.57	0.04	3.64	6.04	0.40	negligible
Post-Project Totals	0.7	0.06	4.5	7.48	0.50	negligible

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
b) Annual emissions while combusting natural gas 8760 hours per year..
c) Annual emissions while combusting #2 Fuel oil 48 hours per year and while combusting natural gas for 8712 hours per year. Emissions increase over pre-project emission by substituting 48 hours per year of operation with natural with operating of 48 hours per year of #2 fuel oil.

Change in Potential to Emit

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

Table 4 CHANGES IN POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10} T/yr[a]	SO_2 T/yr[a]	NO_X T/yr[a]	CO T/yr[a]	VOC T/yr[a]	Lead T/yr[a]
Point Sources						
Pre-Project Potential to Emit	0.56	0.04	3.6	6.04	0.40	negligible
Post Project Potential to Emit	0.7	0.06	4.5	7.48	0.50	negligible
Changes in Potential to Emit	0.14	0.02	0.9	1.44	0.10	negligible

TAP Emissions

The estimated controlled emissions increases of those TAPs that exceeded applicable emissions screening levels (EL) are listed in Table 5. All other TAPs are emitted at levels below the screening emissions levels. See the December 7, 2010 application for the emission inventory details for this proposed project. The applicant provided an Excel spreadsheet[3] with all of the calculations; DEQ has reviewed and approved the emission estimates. It should be noted that the applicant conservatively estimated emission rates. For the annual carcinogenic TAPs the applicant presumed that the TAP was emitted at the estimated pound per hour emission rate 8,760 hours per year. However, the 4.2 MMBtu Boilers are only allowed to operate 48 hours apiece during any year. Therefore the applicant could have calculated an annual average pound per hour based on 48 hours of operation during any consecutive 8,760 hour period. Had the applicant used the annual average pound per hour methodology the carcinogenic TAP emissions from each boiler would be reduced by multiplying by a factor of 48/8760. Using this method of calculation the only pollutant that would have exceeded the screening emission level for the proposed changes is cadmium. However, as stated, the applicant conservatively estimated emission and modeled the

3 DEQ Data Base – TRIM record number – 2011AAG352

corresponding emission rates for those TAPs listed in Table 5 to determine compliance with the acceptable ambient concentrations listed in IDAPA 58.01.01.585 & 586. Results of the modeling analysis are included in the Modeling Memorandum included in Appendix A.

Table 5 TAP EMISSIONS SUMMARY
POTENTIAL TO EMIT

Toxic Air Pollutants	Emissions Rates for New or Modified Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Arsenic	6.80E-05	1.5E-06	Yes
Beryllium	5.04E-05	2.8E-05	Yes
Cadmium	5.47E-05	3.7E-06	Yes
Formaldehyde	4.25E-03	5.1E-04	Yes
Nickel	5.86E-05	2.7E-05	Yes

Post Project HAP Emissions

The maximum individual HAP emission and the aggregate of all HAPs emissions are both less than 0.1 tons per year. See the October 20, 2010 application for the emission inventory associated with this proposed project.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memorandum in Appendix A the applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAPs is provided in Appendix A.

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

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

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

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed new and modified emissions sources. The current permit limits fuel to the existing 4.2 MMBtu/hr boilers as either propane or natural gas. The facility wants the ability to combust #2 fuel oil. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of less than ten (10) million BTU per hour are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Combusting natural gas causes emissions that comply with this standard without a need for permit restrictions.

The fuel burning equipment located at this facility, with a maximum rated input of less than ten (10) million BTU per hour are subject to a particulate matter limitation of 0.05 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting liquid fuels. Combusting #2 fuel oil causes emissions that comply with this standard without a need for permit restrictions.

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

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for (PM_{10}, SO_2, NO_X, CO, VOC) or 10 tons per year for any one HAP or 25 tons per year for all HAPs combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006.113 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

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

NSPS Applicability (40 CFR 60)

This permit action does not involve new or modified emissions units that are affected by any NSPS Subpart.

The two new natural gas fired boilers are less than 10 MMBtu/hr and are therefore not affected emissions unit in accordance with 40 CFR 60 Subpart Dc §60.40c (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).

NESHAP Applicability (40 CFR 61)

The proposed source is not an affected source subject to NESHAP in 40 CFR 61, and this permitting action does not alter the applicability status of existing affected sources at the facility.

MACT Applicability (40 CFR 63)

The facility has proposed to operate as a minor source of hazardous air pollutant (HAP) emissions, and is subject to the requirements of 40 CFR 63, Subpart ZZZZ–National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines.

40 CFR 63, Subpart ZZZZ — **National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**

§ 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.

(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.

Saint Luke's Hospital is a minor, or area source of HAP emissions, and operates RICE and is therefore subject to this subpart.

§ 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.

Each of the five RICE at the facility are less than 500 brake HP, were constructed on or after June 12, 2006, and are located at minor, or area source of, HAP emissions. Each RICE is therefore a new stationary source for purposes of this subpart.

(b) *Stationary RICE subject to limited requirements.*

The RICE at this facility do not meet the requirements of §63.6590(b)(1-3) and therefore are not subject to the limited requirements.

(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;

(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.

The five emergency generators are defined as new stationary RICE located at an area source of HAP. Therefore, they must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII. No further requirements apply for such engines under this part. The requirements of 40 CFR part 60 subpart IIII were included in the permit during the previous permit action and do not need to be added to the permit.

Permit Conditions Review

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

Emergency Generators

The emergency generators section of the permit remains unchanged except that they have been renumbered.

Boilers

New Permit Condition 14 - The process description has been updated to include the two new 2 MMBtu/hr natural and propane fired boilers and updated to include a description that the four existing 4.2 MMBtu/hr boilers are allowed to combust low sulfur diesel fuel as backup fuel.

New Permit Conditions 15 & 16 - The emission control description and visible emission limit remains unchanged.

Existing Permit Condition 3.4 -This permit condition cited the fuel burning equipment particulate matter emission standard of 0.015 gr/dscf @ 3% Oxygen for combustion of gaseous fuel. This permit condition has not been included in the renewed permit. Boilers that combust natural gas or propane are in compliance with the particulate matter standard without a need to include the standard in the permit.

New Permit Condition 17 – The allowable fuel type restrictions have been updated to include that the 4.2 MMBtu/hr boilers are allowed to combust low sulfur diesel fuel as backup fuel for a duration of 48 hours per year. The 48 hours per year operational limitation restricts emissions to levels to levels used in the toxic air pollutant analysis to show preconstruction compliance. The diesel fuel is limited to a sulfur content of 15 ppm by weight consistent with the emission inventory that was used to demonstrate compliance with ambient standards.

New Permit Condition 18 – The hours of operation limitations have been updated to include that the existing 4.2 MMBtu/hr boilers are allowed to combust low sulfur diesel fuel as backup fuel for 1 hour during any calendar day. Also, each of the four 4.2 MMBtu/hr boilers are allowed to operate for 48 hours per any consecutive 12-month period. The hours of operation limit while burning propane in the 2 MMBtu/hr boilers remains at 96 hours for each of the 18 boilers. These hours of operation are included in the permit to assure that emissions remain consistent with the emission inventory used to show compliance with ambient air quality standards and to demonstrate preconstruction compliance for toxic air pollutants. These hours of operation limits do not apply during periods of upset, breakdown, or during implementation of safety measures.

New Permit Condition 19 - This permit condition requires monitoring the hours of operation of each of the boilers in order to determine compliance with the hours of operation limits of Permit Condition 18.

New Permit Condition 20 – This permit condition requires maintaining records of the sulfur content in the fuel oil delivered to the site in order to show compliance with the diesel fuel sulfur content limit of 15 ppm as required by Permit Condition 17.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, two comments were provided on the application but there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

One comment was that condensing boilers are more efficient and should be considered. DEQ responded to this comment via email informing the commenter that DEQ does not dictate the type of equipment that must be installed. The commenter was also informed that if the proposed equipment meets the Rules then DEQ is legally obligated to issue a permit.

The second comment was a statement in opposition to the proposed plan without looking into the possible consequences of the proposal. DEQ responded to the comment via email and informed the commenter that the purpose of the permitting process is to evaluate emissions from the proposed boiler changes to determine if they meet the Rules for the Control of Air Pollution in Idaho. The Rules establish standards that protect the public's health and welfare. If the proposal meets the Rules then a permit will be issued, if the proposal does not meet the Rules then a permit will not be issued.

APPENDIX A – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: January 19, 2011

TO: Dan Pitman, P.E., Engineer Tech 1, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-2010.0079 Project 60608

SUBJECT: Modeling Demonstration for a PTC Application for the Proposed Installation of Two Boilers rated at 2 MMBtu/hr Heat Input and Back-Up Fuel Switch to Low Sulfur Diesel for Four Boilers Rated at 4.2 MMBtu/hr at the St. Luke's Magic Valley Regional Medical Center Located in Twin Falls, Idaho

1.0 Summary

St. Luke's Magic Valley Regional Medical Center (St Lukes MVRMC) submitted an application to modify the facility's Permit to Construct (PTC) to install two new natural gas-fired boilers with a 96 hour per year propane backup fuel option. These new boilers are rated at 2.0 million British thermal unit per hour (MMBtu/hr). This project also requested the back-up fuel switch from propane to low sulfur diesel for each of four existing Hurst boilers for a period of up to 48 hours per year. The Hurst boilers are each rated at 4.2 MMBtu/hr.

The modeling demonstration is based on the following submittals:

- October 7, 2010 (Project 60598)
- November 10, 2010 (Project 60608), and
- December 14, 2010

Please refer to the permit statement of basis to review a complete history for this project.

The facility is not a *designated facility*, as defined in IDAPA 58.01.01.006, Rules for the Control of Air Pollution in Idaho (Rules). The facility's potential to emit (PTE) of particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), and nitrogen oxides (NO_x) each is less than 100 tons per year (T/yr). The facility is not a major facility under the New Source Review (NSR) PSD program.

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

The modeling analyses: 1) utilized appropriate methods and models; 2) were conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility were below national ambient air quality standards and other applicable increments at all ambient air locations.

This modeling analysis was conducted by CH2M HILL, on behalf of St. Luke's. Key assumptions and results that should be considered in the development of the permit are shown in Table 1.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
PM_{10}, 24-hour average ambient impacts for the proposed project emissions increase exceeded the significant contribution level (SCL) listed in Section 006.105 of the Idaho Air Rules. The increase in PM_{10} emissions for this project was expected to be very small. The consideration of ambient air existing immediately exterior to the facility's buildings provided a reasonable justification for performing modeling to compare maximum impacts against the significant contribution levels.	A full ambient impact analysis was performed for the 24-hour and annual averaging periods for the PM_{10} NAAQS. The applicant demonstrated compliance for both NAAQS. The maximum facility-wide PM_{10}, annual average impact, added to the DEQ-provided ambient background concentration, resulted in an ambient impact of 49.7 $\mu g/m^3$, annual average. This impact is 99.4% of the NAAQS. Compliance with this NAAQS was adequately demonstrated.
The modeling demonstration accounted for the following changes to the existing permitted emissions and emissions units: • Two new 2.0 MMBtu/hr Fulton boilers with primary fuel as natural gas and backup fuel as propane. Propane usage is limited to 96 hours per year with up to 24 hours per day of propane use. • The four existing 4.2 MMBtu/hr Hurst boilers will be altered to use diesel fuel (low sulfur diesel) as a backup fuel for up to 48 hours per year with operation on diesel of up to 24 hours per day. Natural gas will remain the primary fuel for the Hurst boilers and the propane backup fuel capability will be removed.	TAPs and PM_{10} were modeled for 24 hours per day for standards with short-term averaging periods, and 8,760 hours per year for standards with annual averaging periods at the emissions rates listed in Tables 4, 5, 6, 7, and 8.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

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

2.1.1 Area Classification

The St. Luke's MVMRC facility is located in Twin Falls County, which is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

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

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the project exceed the significant contribution levels (SCLs) of Section 006 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules), then a cumulative—or full— impact analysis is needed to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02 for Permits to Construct and Section 403.02 for Tier II Operating Permits. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from

facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The cumulative pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. The SCLs and the modeled value that must be used for comparison to the NAAQS are also listed in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Contribution Levels[c] ($\mu g/m^3$)[d]**	**Regulatory Limit[e] ($\mu g/m^3$)**	**Modeled Value Used[h, i]**
PM_{10}[a]	Annual	1.0[j]	50[f, j]	Maximum 1st highest
	24-hour	5.0	150[g]	Maximum 6th highest[k]
$PM_{2.5}$[b]	Annual	0.3	15[f]	Use PM_{10} as a surrogate OR $PM_{2.5}$ –Maximum 1st high[l]
	24-hour	1.2	35	Use PM_{10} as a surrogate OR $PM_{2.5}$ –Maximum 1st high[l]
Carbon monoxide (CO)	8-hour	500	10,000[g]	Maximum 2nd highest
	1-hour	2,000	40,000[g]	Maximum 2nd highest
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest
	24-hour	5	365[g]	Maximum 2nd highest
	3-hour	25	1,300[g]	Maximum 2nd highest
	1-hour[o]	Not established	196[o]	Maximum 6th highest[o]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest
	1-hour[n]	4 ppb[n] (7.5 $\mu g/m^3$)	188[n]	Maximum 8th highest[n]
Lead (Pb)	Quarterly	NA	1.5[f]	Maximum 1st highest
	Rolling 3-month average	NA	0.15[f, m]	Maximum 1st highest

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers.

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

[c] SCLs are defined in Idaho Air Rules Section 006.

[d] Micrograms per cubic meter.

[e] Federal NAAQS (see 40 CFR 50) in effect as of July 1 of each year are incorporated by reference during the legislative session the following spring. See Idaho Air Rules Section 107.

[f] Never expected to be exceeded in any calendar year.

[g] Never expected to be exceeded more than once in any calendar year.
The 3-hr and 24-hr SO_2 standards were revoked (see 75 FR 35520, June 22, 2010) but will be in effect in Idaho until the legislature adjourns *sine die* in Spring 2011.

[h] Concentration at any modeled receptor.

[i] The maximum 1st highest modeled value is always used for significant impact analyses.

[j] The annual PM_{10} standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a PM_{10} analysis that demonstrates compliance with the revoked PM_{10} standard.

[k] PM_{10} concentration at any modeled receptor when using five years of meteorological data. Use the maximum 2nd highest value for analyses with less than five years of meteorological data or one year of site-specific met data.

[l] $PM_{2.5}$ concentration at any modeled receptor when using a single year of site-specific meteorological data or a concatenated file with five years of meteorological data. EPA recommends using the high 8th high 3-year average monitored value for background, and using the highest 24-hr average and highest annual averages across five years of met data for the modeled result (Steven Page memo, Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010).

[m] Pb: The EPA's October 15, 2008 standard became effective in Idaho's NSR program when it was incorporated by reference into the Idaho Air Rules, i.e., when the Idaho Legislature adjourned *sine die* on March 29, 2010.

[n] NO_2 concentration at any modeled receptor when using complete year(s) of site-specific met data or five consecutive years of meteorological data. Compliance is based on the 3-year average of the 98th percentile of the annual distribution of 1-hour average daily maximum concentrations. The EPA's February 10, 2010 standard will not be effective in Idaho's NSR program until the Idaho Legislature adjourns *sine die* in Spring 2011. EPA Interim SIL, Page memo, dated June 29, 2010.

[o] SO_2 concentration at any modeled receptor when using five consecutive years of meteorological data. Compliance is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The EPA's 1-hour standard (75 FR 35520, June 22, 2010) of 0.075 ppm (196 $\mu g/m^3$) will not be effective in Idaho's NSR program until the Idaho Legislature adjourns *sine die* in Spring 2011.

Idaho operates the NSR program in accordance with an EPA-approved state implementation plan (SIP). EPA has asserted through a 1997 policy (Seitz) memorandum that compliance with $PM_{2.5}$ standards will be assured through air quality analyses for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard. DEQ NSR program management has determined that the additional recommendations described in a March 23, 2010 EPA memorandum (Page) regarding $PM_{2.5}$ implementation do not apply to Idaho's SIP-approved NSR program. $PM_{2.5}$ standards will not be effective in Idaho until Idaho's $PM_{2.5}$ NSR SIP is approved by the EPA.

2.1.3 TAPs Analyses

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

This project involves the proposed installation of two 2.0 MMBtu/hr natural gas-fired boilers which will use propane as a back-up fuel for up to 96 hours per year and the addition of low sulfur distillate fuel oil in place of the currently-permitted propane as a backup fuel for the four existing Hurst steam boilers for up to 48 hours per year. The Hurst boilers use natural gas as their primary fuel and each boiler is rated at a heat input capacity of 4.2 MMBtu/hr. The new boilers and the change in backup fuel type for the Hurst boiler are predicted to increase emissions of several TAPs.

2.2 Background Concentrations

Background concentration values were provided by DEQ for this project. A site-specific PM_{10} ambient background concentration for Twin Falls was provided for the full ambient impact analysis. These background values were also used in the 2007 modeling demonstration for the facility's initial PTC. The following background concentrations were provided by DEQ for this project:

- PM_{10}, 24-hour average: 55 $\mu g/m^3$,
  PM_{10}, annual average: 26 $\mu g/m^3$.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 3 provides a summary of the modeling parameters used in the submitted modeling analyses.

Table 3. MODELING PARAMETERS		
Parameter	**Description/ Values**	**Documentation/Additional Description**
Model	AERMOD	AERMOD, Version 09292
Meteorological data	2000-2004	DEQ provided a pre-processed data set of individual year files of Twin Falls airport surface data and Boise upper air data covering the years 2000-2004.
Land Use (urban or rural)	Rural	Urban heat rise coefficients were not used. DEQ agrees with the applicant's assessment that a rural land use designation is appropriate.
Terrain	Considered	3-dimensional receptor coordinates were obtained from National Elevation Database (NED) files for the surrounding area.
Building downwash	Downwash algorithm	AERMOD, Version 09292 uses BPIP-Prime and the PRIME algorithms to evaluate structure-induced downwash effects.
Receptor grid	Grid 1	25-meter spacing for all areas external to buildings and within the facility property boundary. This is a grid of 525 meters (X) by 375 meters (Y) disregarding areas covered by buildings.
	Grid 2	2,400 meters (X) by 2,200 meters (Y) centered on Grid 1
	Grid 3	11,000 meters (X) by 11,000 meters (Y) centered on Grid 2

3.1.1 Modeling protocol

A modeling protocol was submitted to DEQ by CH2M HILL, on behalf of St. Luke's MVMRC on September 17, 2010. The modeling protocol was approved, with comments, by DEQ, on September 20, 2010.

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

3.1.2 Model Selection

AERMOD, Version 09292, was used to conduct the ambient air analyses for NAAQS and TAPs compliance demonstrations.

3.1.3 Meteorological Data

DEQ supplied a preprocessed meteorological dataset that was developed by LPG Associates, Inc., on behalf of Lamb-Weston spanning the years 2000 through 2004.

The dataset used surface data from the Twin Falls airport (Joslin Field) and upper air data for Boise. AERSURFACE Version 08009 was used to process surface characteristic values applicable for the area with a 1 kilometer radius surrounding the Twin Falls airport. AERMET Version 06341 was used by LPG Associates to process the Twin Falls surface data, Boise upper air data, and the AERSURFACE values.

3.1.4 Terrain Effects

The modeling analyses considered elevated terrain. The elevation of each receptor was obtained from National Elevation Dataset (NED) files for the area surrounding the facility. Bee-Line software was used to identify the extent of the domain for the modeling demonstration. A NED file was used as input to AERMAP to establish the elevations of receptors. NED data is based on the NAD83 coordinate system. Base elevations for the emission sources and buildings were accepted as submitted.

3.1.5 Facility Layout

DEQ checked the site plan submitted with the permit application to verify the facility's proposed layout. The site plan was created independently of the modeling demonstration's input files generally matched the modeling files. The facility layout and location of emission sources were accepted as submitted.

3.1.6 Building Downwash

Plume downwash effects caused by structures at the facility were accounted for in the modeling analyses. The Building Profile Input Program-Plume Rise and Building Downwash Model (BPIP-PRIME) was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters. The output from BPIP-PRIME was used as input to AERMOD, Version 09292, to account for building-induced downwash effects.

3.1.7 Ambient Air Boundary

Ambient air was determined to exist for all areas immediately exterior to the buildings on-site. This is the most conservative approach for establishing an ambient air boundary because members of the general public are allowed access to areas within the facility in normal operation. This approach follows the methods of determining the ambient air boundary as specified in the *State of Idaho Air Quality Modeling Guideline*.

3.1.8 Receptor Network

The receptor grid used by St. Luke's MVRMC met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined the receptor grid was adequate to reasonably resolve the maximum modeled ambient impacts.

3.2 Emission Rates

3.2.1 Modeled Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for St. Lukes MVRMC's modeling demonstration:

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

Table 4 lists the hourly emission rates that were modeled to demonstrate compliance with the significant contribution levels (SCLs) for pollutants with short term averaging periods of 24 hours or less. The emission rates listed in Table 4 were modeled continuously for 24 hours per day. Emissions of NO_x, CO, and SO_2 were estimated to be below the presumptive minimum modeling thresholds.

Table 4. MODELED SHORT-TERM EMISSIONS RATES FOR SIGNIFICANT CONTRIBUTION LEVEL TEST		
Source ID	**Description**	**PM_{10}[b], 24-hour avg (lb/hr)[a]**
SBOIL	Shared stack for 4 individual Hurst steam boilers	0.0134
HBOIL1	Shared stack for 10 individual Fulton hot water boilers (Boilers 1 – 10)	0.068
HBOIL2	Shared stack for 8 individual Fulton hot water boilers (Boilers 11 – 18)	0.068

[a] Pounds per hour
[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

Table 5 lists the hourly emission rates that were modeled to demonstrate compliance with the significant contribution levels (SCLs) for PM_{10} with an annual averaging period. The emission rates listed in Table 5 were modeled continuously for 8,760 hours per year.

Table 5. MODELED ANNUAL AVERAGE EMISSIONS RATES FOR SIGNIFICANT CONTRIBUTION TEST		
Source ID	**Description**	**PM_{10}[b], Annual Average (lb/hr)[a]**
SBOIL	Shared stack for 4 individual Hurst steam boilers	0.0014
HBOIL1	Shared stack for 10 individual Fulton hot water boilers (Boilers 1 – 10)	0.015
HBOIL2	Shared stack for 8 individual Fulton hot water boilers (Boilers 11 – 18)	0.015

[a] Pounds per hour
[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

Table 6 lists the hourly emission rates that were modeled to demonstrate compliance with the NAAQS based on a facility-wide modeling demonstration for pollutants with short term averaging periods of 24 hours or less. The emission rates listed in Table 6 were modeled continuously for 24 hours per day.

Table 6. MODELED SHORT-TERM EMISSIONS RATES FOR NAAQS DEMONSTRATION		
Source ID	**Description**	**PM_{10}[b], 24-hour avg (lb/hr)[a]**
SBOIL	Shared stack for 4 individual Hurst steam boilers	0.136
HBOIL1	Shared stack for 10 individual Fulton hot water boilers (Boilers 1 – 10)	0.15
HBOIL2	Shared stack for 8 individual Fulton hot water boilers (Boilers 11 – 18)	0.12
GEN1	300 kW Generator	0.0082
GEN2	1500 kW Generator 1	0.05
GEN3	1500 kW Generator 2	0.05
GEN4	1500 kW Generator 3	0.05
GEN5	1500 kW Generator 4	0.05
WCT1	Cooling Tower 1	0.58
WCT2	Cooling Tower 2	0.58

[a] Pounds per hour
[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

Table 7 lists the hourly emission rates that were modeled to demonstrate compliance with the significant contribution levels (SCLs) for PM_{10} with an annual averaging period. The emission rates listed in Table 7 were modeled continuously for 8,760 hours per year.

Table 7. MODELED ANNUAL AVERAGE EMISSIONS RATES FOR NAAQS DEMONSTRATION		
Source ID	**Description**	**PM_{10}[b], Annual Average (lb/hr)[a]**
SBOIL	Shared stack for 4 individual Hurst steam boilers	0.13
HBOIL1	Shared stack for 10 individual Fulton hot water boilers (Boilers 1 – 10)	0.15
HBOIL2	Shared stack for 8 individual Fulton hot water boilers (Boilers 11 – 18)	0.12
GEN1	300 kW Generator	0.0019
GEN2	1500 kW Generator 1	0.0046
GEN3	1500 kW Generator 2	0.0046
GEN4	1500 kW Generator 3	0.0046
GEN5	1500 kW Generator 4	0.0046
WCT1	Cooling Tower 1	0.58
WCT2	Cooling Tower 2	0.58

[a] Pounds per hour
[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

The carcinogenic toxic air pollutant (TAP) annual average emission rates listed below in Table 6 were modeled to demonstrate compliance with the applicable acceptable ambient concentration (AACC) increments. The emission rates were modeled continuously for 8,760 hours per year without any additional restrictions on the emission rates or hours of operation. Multiply the carcinogenic TAP hourly emission rates listed in Table 8 by 8,760 hours per year to obtain the annual emissions represented in the modeling demonstration.

Emissions of all other TAPs were estimated to be below emissions screening levels (ELs) listed in Sections 585 and 586 of the Rules, and air impact analyses were not required.

Table 8. MODELED TOXIC AIR POLLUTANT EMISSIONS RATES				
TAP	**Chemical Abstract Service Number**	**SBOIL (lb/hr)**	**HBOIL1 (lb/hr)[a]**	**HBOIL2 (lb/hr)**
Carcinogenic TAPs				
Arsenic	7440-38-2	9.20E-08	3.93E-07	3.93E-07
Beryllium	440-41-7	6.89E-08	2.35E-08	2.35E-08
Cadmium	7440-43-9	6.89E-08	2.16E-06	2.16E-06
Formaldehyde	50-00-0	5.43E-06	1.47E-04	1.47E-04
Nickel	7440-02-0	6.89E-08	4.11E-06	4.11E-06

[a] Pounds per hour

3. 3 Emission Release Parameters

3.3.1 Point Sources

Table 9 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources.

Table 9. POINT SOURCE STACK PARAMETERS					
Release Point	**Description**	**Stack Height (m)[a]**	**Stack Gas Flow Temperature (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**	**Stack Diameter (m)**
SBOIL	Common Stack for Steam Boilers No. 1 through No. 4 (Hurst)	10.06	477.6	6.20	0.71
HBOIL1	Common Stack for Hot Water Boilers No. 1 through No. 10 (Fulton)	10.06	378.2	10.64	0.61
HBOIL2	Common Stack for Hot Water Boilers No. 11 through No. 18 (Fulton)	10.06	378.2	8.51	0.61
GEN1	300 kW Medical Office Building Generator	14.63	711.8	47.10	0.13
GEN2	1500 kW Central Plant Generator	10.06	635.0	85.89	0.20
GEN3	1500 kW Central Plant Generator	10.06	635.0	85.89	0.20
GEN4	1500 kW Central Plant Generator	10.06	635.0	85.89	0.20
GEN5	1500 kW Central Plant Generator	10.06	635.0	85.89	0.20

[a] Meters
[b] Kelvin
[c] Meters per second

Point source exhaust parameters, including the exit temperature, stack diameter, and exhaust flow rate were justified in the modeling report with manufacturer's specification sheets for the 2.0 MM Btu/hr Fulton boilers and the 4.2 MMBtu/hr Hurst boilers. The generator engine exhaust parameters were used in the original 2007 permitting analysis and were unchanged.

3.3.2 Volume Sources

Volume source exhaust parameters are listed below in Table 10, and were accepted as submitted in the application.

Table 10. VOLUME SOURCE RELEASE PARAMETERS				
Release Point	**Description**	**Release Height (m)[a]**	**Initial Horizontal Dispersion Coefficient (m)**	**Initial Vertical Dispersion Coefficient (m)**
WCT1	Cooling Tower No. 1	7.89	0.79	3.67
WCT2	Cooling Tower No. 2	7.89	0.79	3.67

[a] Meters

The cooling tower dispersion release parameters were used in the original 2007 permitting analyses and were unchanged. These parameters were accepted for this project.

3.4 Results for Ambient Impact Analyses

3.4.1 Significant Impact Analyses

A significant impact analysis was performed for this project. Emissions of PM_{10} from the proposed modification to the boilers were modeled and the impacts were compared to the significant contribution concentrations listed in Section 006.105 of the Idaho Air Rules. The results are listed in Table 11. Lead emissions were not modeled and were expected to be below modeling thresholds. Emissions of CO, NO_x,

and SO_2 were below modeling thresholds and modeling was not required for these pollutants.

Modeled impacts were above the SCLs for PM_{10} 24-hour averaging period but below the SCL for the PM_{10} annual averaging period. A full impact analysis was required for the 24-hour PM_{10} NAAQS, and the application also presented a full impact analysis for the annual PM_{10} NAAQS.

Table 11. RESULTS OF SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	Significant Contribution Level ($\mu g/m^3$)	Facility-Wide Modeling Required	Percentage of Significant Contribution Level Of Impact
PM_{10}[b]	24-hour	9.27	5.0	Yes	185%
	Annual	0.68	1.0	No	68%

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

3.4.2 Full Impact Analyses

A full impact analysis was performed by St. Luke's MVRMC for this project by adding the facility's ambient impacts that were predicted to occur due to the facility's potential emissions to the ambient background concentrations provided by DEQ for PM_{10}. The results of the full impact analysis are listed in Table 12.

Table 12. RESULTS OF FULL IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[c]	24-hour	81.27[d]	55	136.3	150	91%
	Annual	23.71	26	49.7	50	99%

[a] Micrograms per cubic meter
[b] National ambient air quality standards
[c] Particulate matter with a mean aerodynamic diameter of ten microns or less
[d] Highest 2nd high impact from five individual year runs

3.4.3 Toxic Air Pollutant Impact Analyses

Dispersion modeling for TAPs was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 586. This project's caused emission increases that exceeded the screening emission rate limits. The requested emission increases were modeled to demonstrate compliance with the allowable TAP increments. The results of the TAPs analyses are listed in Table 13. The predicted ambient TAPs impacts were below allowable increments.

Table 13. RESULTS OF TAPs ANALYSES				
Toxic Air Pollutant	Chemical Abstract Service Number	Maximum Modeled Concentration ($\mu g/m^3$)[b]	AACC[c] ($\mu g/m^3$)	Percent of AACC
Carcinogenic TAPs				
Arsenic	7440-38-2	1.92E-05	2.30E-04	8%
Beryllium	440-41-7	2.50E-06	4.20E-03	0.06%
Cadmium	7440-43-9	9.62E-05	5.60E-04	17%
Formaldehyde	50-00-0	6.57E-03	7.70E-02	9%
Nickel	7440-02-0	1.82E-04	4.20E-03	4%

[a] Chemical Abstract Service Number
[b] Micrograms per cubic meter
[b] Acceptable ambient concentration for carcinogens

4.0 Conclusions

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

APPENDIX B – PROCESSING FEE

PTC Fee Calculation

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

Company: **Saint Luke's**
Address: **650 Addison West**
City: **Twin Falls**
State: **Idaho**
Zip Code: **83303**
Facility Contact: **Todd Rothfuss**
Title: **Plant Manager**
AIRS No.: **083-00098**

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

Y Did this permit require engineering analysis? Y/N

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

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.1	0	0.1
SO_2	0.0	0	0.0
CO	1.4	0	1.4
PM10	0.2	0	0.2
VOC	0.1	0	0.1
TAPS/HAPS	0.1	0	0.1
Total:	0.0	0	**1.9**
Fee Due	**$ 2,500.00**		

Comments: TAP/HAP emission increase is less than 0.1 tons per year. Resolving the exact emission increase will not alter the fee amount.