

**CITY OF ALBUQUERQUE
ENVIRONMENTAL HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

**MODIFICATION APPLICATION
Lovelace Biomedical Research Institute
South Facility**



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1. GENERAL INFORMATION

1.0 Executive Summary

This modification application is being submitted for Lovelace Biomedical Research Institute - South Facility, currently permitted under Construction Permit No. 0917-M6-1TR and located at a unique parcel of private land positioned deep inside Kirtland Air Force Base. The KAFB location address for the South facility is Bldg 9217, Area Y Kirtland AFB – East, Albuquerque, NM 87108. Proposed changes include replacing the existing steam boiler (BS-004) with a 6 MMBtu/hr unit and adding diesel fuel usage to boilers BS-003 and BS-005. The project will result in an increase in emissions of Volatile Organic Compounds (VOC), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO₂), Carbon Monoxide (CO), and Particulate Matter (PM) from the replacement of the existing boiler (BS-004) and the addition of diesel fuel to existing boilers (BS-003 and BS-005).

Since this is an application for a permit modification, updated air dispersion modeling has been completed, and is included in this submittal. The included modeling report (Section 4) details AERMOD inputs and modeled concentrations associated with the proposed modifications. The report also demonstrates compliance with all applicable National and New Mexico Ambient Air Quality Standards (NAAQS and NMAAQS).

The uncontrolled and controlled emissions associated with the proposed modifications are included in the department's application forms.

2. FACILITY AND EMISSIONS INFORMATION

The following section summarizes the sources of emissions, process description, methodology, and emission factors used to estimate air pollutant emissions from the facility. The facility is a minor source of HAPs and criteria pollutants.

2.1 Description of the Facility

Lovelace Biomedical Research Institute - South Facility is a research organization that conducts preclinical research in biotechnology and pharmaceuticals. The facility consists of the following process equipment: process steam boilers (units BS-004, BS-009, and BS-010), boilers used exclusively for comfort heat (units BH-003, BH-005, and BH-009), a thermal oxidizer (unit Thermal Oxidizer) and three emergency generators (GS-004, GS-005, and GS-006). A plot plan and facility site map are included in Appendix C.

2.2 Air Pollutant Emissions and Calculation Methodology

2.2.1 Description of Calculations and Emission Factors

2.2.1.1 Emergency Generators (GS-004 through GS-006)

The emergency generators at this facility are diesel-fired. NO_x, CO, SO_x, PM, and VOC emissions for the generators are calculated using the emission factors provided in AP-42 Chapter 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines (1996), Table 3.4-1 and HAP emissions are calculated using the emission factors from AP-42 Chapter 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines (1996), Table 3.4-3. There are no changes to the currently permitted emission rates for GS-004, GS-005, GS-006 requested with this modification.

2.2.1.2 Boilers (BH-003 and BH-005)

The boilers are currently permitted to be fired by natural gas only. With this modification, the use of diesel as an alternative fuel will be added for a limited number of hours per year. BH-003 will be limited to 131 hours of operation of diesel fuel usage and 72 hours for BH-005.

NO_x, CO, VOC, SO_x, and PM emissions from natural gas combustion are calculated using emission factors from AP-42 Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-1 and 1.4-2 and HAP emission factors from AP-42 Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-3. The emission factors referenced from AP-42 for natural gas combustion are adjusted to the site-specific fuel heat value.

Emissions resulting from the combustion of diesel fuel are determined using emission factors from AP-42 Chapter 1.3, Fuel Oil Combustion (2010), Tables 1.3-1, 1.3-3, and 1.3-9.

Since the units cannot combust both natural gas and diesel fuel simultaneously, the maximum hourly emissions are used to determine the facility-wide hourly emissions. Annual emissions include both combustion of natural gas and diesel fuel.

2.2.1.3 Steam Boilers (BS-004, BS-009, BS-010)

With this modification, unit BS-004 will be replaced by a larger 6 MMBtu/hr unit. Emission factors for NO_x, CO, VOC, SO_x, and PM for unit BS-004 are referenced from AP-42 Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-1 and 1.4-2. HAP emission rates are emission factors that are referenced from AP-42

Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-3. The emission factors referenced from AP-42 for natural gas combustion are adjusted to the site-specific fuel heat value.

Units BS-009 and BS-010 are able to fire both natural gas and diesel as fuel. Emission factors for NO_x, CO, VOC, SO_x, and PM for unit BS-004 are referenced from the Oilon Specification Sheet for natural gas combustion. Natural gas combustion HAP emission rates are emission factors that are referenced from AP-42 Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-3. Emissions resulting from the combustion of diesel fuel are determined using emission factors from AP-42 Chapter 1.3, Fuel Oil Combustion (2010), Tables 1.3-1, 1.3-3, and 1.3-9.

2.2.1.4 Thermal Oxidizer (TO)

NO_x, CO, VOC, SO_x, and PM emission are based on the emission factors referenced from AP-42 Chapter 1.4, Natural Gas Combustion (1998), Table 1.4-1 and 1.4-2. HAP emission factors are calculated using GRI-HAPCalc. Greenhouse gas emissions are calculated using the equations and constants pulled from 40 CFR part 98 Tables A-1, C-1, and C-2. There is no change requested to the permitted emission rate for unit TO.

2.3 Supporting Information

The following supporting information is included in Appendix E to support the emission calculations provided.

- AP-42 Chapter 1.3 Fuel Oil Combustion, Tables 1.3-1, 1.3-3, and 1.3-9
- AP-42 Chapter 1.4 Natural Gas Combustion, Tables 1.4-1, 1.4-2, and 1.4-3
- AP-42 Chapter 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, Tables 3.4-1, and 3.4-3
- AP-42 Chapter 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines
- Oilon Specification Sheet
- BS-004 Manufacturer Specification Sheet

3. OPERATIONAL PLAN –

The facility is owned and operated by Lovelace Biomedical Research Institute. This Startup, Shutdown, Maintenance, and Malfunction (SSM/M) plan provides an operational and maintenance strategy for the permitted sources of emissions at the Lovelace Biomedical Research Institute (LBRI) South Facility.

This plan addresses the operational strategy if a malfunction occurs that may cause an exceedance of the permitted emission unit of a regulated air contaminant, as well as the anticipated nature of emissions during routine startup or shutdown of each source and the steps LBRI will take to minimize emissions during routine startup or shutdown.

The following definitions from 20.11.41.7 NMAC apply to this SSM/M plan:

- **“Malfunction”** means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment or process equipment, or the failure of a process to operate in a normal or expected manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.
- **“Shutdown”** means the cessation of operation of any air pollution control equipment, process equipment or process for any purpose, except routine phasing out of batch process units.
- **“Startup”** means to put a stationary source that has been constructed or modified as authorized by a permit issued pursuant to 20.11.41 NMAC into operation complete with functional air pollution controls, so the process equipment or the process performs for the purpose intended. The operation may be cyclic in response to on-off controls. Repetition of cycles is not startup for purposes of 20.11.41 NMAC.

Note that all the procedures contained herein may be superseded (and thereby fulfilled by) by other NSR and NSPS requirements.

3.1 Malfunction Procedure

The following procedures will be taken in the event of a malfunction event that may cause an exceedance of the permitted emission limit of a regulated air contaminant:

- LBRI will note an emissions issue by observing the soot coming out of the stacks.
- The unit will be taken offline for repairs upon the observation of abnormal soot coming out of the stacks.
- The maintenance technician will perform the repairs or adjustments and bring the unit back online. If the work is beyond LBRI’s capability, then the work will be contracted to an outside contractor.
- All work completed will be documented in the LBRI Service Request System.
- LBRI will calculate the emissions of regulated air contaminants from the malfunction event to determine if there has been an exceedance of a permitted emission limit.
- LBRI will report excess emissions to the City of Albuquerque Environmental Health Department as necessary.

3.2 Emergency Generator Startup, Shutdown, and Maintenance

3.2.1 Emergency Generator Startup Procedure

A startup event for a Reciprocating Internal Combustion Engine (RICE) occurs when the unit is initially operated after being off.

LBRI carefully monitors the entire startup process to ensure safety and minimize airborne emissions. The following actions included in the startup SOP are critical for minimizing emissions during startup:

- Minimizing cold engine startups. LBRI ensures warm engine startup by ensuring engine block heaters are online. These units are checked on a weekly basis.
- Ensuring the engine is achieving good combustion.
- Monitoring the opacity and color of the exhaust gases and taking the unit offline for repairs upon the observation of abnormal soot coming out of the stacks.

3.2.2 Emergency Generator Shutdown Procedure

A shutdown event for a RICE occurs when the unit is shut down after a period of operation.

LBRI carefully monitors the entire shutdown process to ensure safety and minimize airborne emissions. The following actions included in the shutdown SOP are critical for minimizing emissions during engine shutdown:

- Removing the full electrical load from the system and initiating a cool down cycle before the engine is stopped.
- Monitoring the opacity and color of the exhaust gases and taking the unit offline for repairs upon the observation of abnormal soot coming out of the stacks.

3.2.3 Emergency Generator Maintenance

LBRI ensures the emergency generator RICE engines are appropriately maintained according to the manufacturer's recommendations. LBRI carefully monitors the engines to ensure safety and minimize airborne emissions during regularly scheduled maintenance events. The following actions included in the maintenance SOP are critical for minimizing emissions during the event:

- Ensure the engine is achieving good combustion during the maintenance activity.
- Monitoring the opacity and color of the exhaust gases and taking the unit offline for repairs upon the observance of abnormal soot coming out of the stacks.

3.3 Boiler Startup, Shutdown, and Maintenance

3.3.1 Boiler Startup Procedure

LBRI does not have a formalized startup procedure, as it is not anticipated that the boiler units will have increased emissions during routine startup.

3.3.2 Boiler Shutdown Procedure

LBRI does not have a formalized shutdown procedure, as it is not anticipated that the boiler units will have increased emissions during routine shutdown.

3.3.3 Boiler Maintenance Procedure

LBRI operates and maintains the boiler units per the manufacturer's recommended guidance. LBRI ensures that preventative maintenance is completed on each boiler once per year. The burner nose cone insulation is checked. If any flaking or cracking has caused loose spots, the insulation will be serviced by an outside boiler contractor and documented. If there is soot build up in the boiler tubes an adjustment for air/fuel mixture adjustment will be performed by a contractor.

3.4 Thermal Oxidizer Startup, Shutdown, and Maintenance

3.4.1 Thermal Oxidizer Startup Procedure

LBRI does not have a formalized startup procedure, as it is not anticipated that the thermal oxidizer will produce increased emissions during routine startup.

3.4.2 Thermal Oxidizer Shutdown Procedure

LBRI does not have a formalized shutdown procedure, as it is not anticipated that the thermal oxidizer will produce increased emissions during routine shutdown.

3.4.3 Thermal Oxidizer Maintenance Procedure

LBRI operates and maintains the thermal oxidizer per the manufacturer's recommended guidance. Maintenance of the oxidizer is initiated when the operating temperature is above or below 920 °F by +/- 50 °F. The burners are checked for soot build up and are cleaned if necessary. Additionally, the fuel pressure is checked to ensure proper pressure flow.

4. AIR DISPERSION MODELING ANALYSIS

The modeling report included in this section details the air dispersion modeling completed and submitted with this application to demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the proposed permit modification.

AIR DISPERSION MODELING REPORT

Permit Modification Application

Authority to Construct 0917-M6-1TR

Lovelace Biomedical Research Institute South Facility

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1. APPLICANT AND CONSULTANT INFORMATION

This modeling report is being submitted as part of a permit modification application submitted pursuant to 20.2.11.41.29 NMAC for the Lovelace Biomedical Research Institute (LBRI) South Facility. This report and accompanying model files are being submitted to the City of Albuquerque (CABQ) Environmental Health Department, Air Quality Program (AQP) to satisfy the requirements of 20.11.41.13.E NMAC. This report includes all required components requested in the "Completeness Requirements" section of the CABQ's Air Dispersion Modeling Guidelines (published October 2019).

a) Name of Facility and Company

Facility Name: Lovelace Biomedical Research Institute, South Facility

Company: Lovelace Biomedical Research Institute (LBRI)

b) Permit Numbers

The facility operates under **ATC #0917-M6-1TR**.

c) Contact Information for Modeling Questions

Contact Name: Jaimy Karacaoglu

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2. FACILITY AND OPERATIONS DESCRIPTION

a) Narrative Summary of Modification

The proposed modification includes the replacement of a boiler, unit BS-004, with a 6 MMBTU/hr unit. Additionally, unit BH-003 and BH-005 will be updated to allow for use of diesel fuel.

All permitted sources at this facility were included in the modeling except for the emergency generators (units GS-004 through GS-006), which will operate less than 500 hours per year, and the boilers used exclusively for comfort heat (units BH-003, BH-005, and BH-009), which have been approved as exempt from modeling via email from CABQ on June 6, 2020. The facility receives power from PNM; therefore, the emergency generators are exempt per the CABQ's Air Dispersion Modeling Guidance (page 6). There are no haul roads located at the South Facility.

b) Physical Description

The LBRI South Facility currently is located at Bldg. 9217, Area Y Kirtland AFB – East, Albuquerque, NM 87185 (13S UTM 363,058 m E, 3,868,527 m N).

c) Duration of Time to be Located on Site

The facility will be at this location for greater than one (1) year.

d) Facility Maps

The following maps are included: map showing location of facility; on-site buildings; emission points; fence line; and property boundary.

Figure 1 displays an aerial image of the facility. The figure includes labels of all source emission points at the facility and displays the entire layout of buildings at the facility.

Figure 1. An aerial image of the South Facility and labels specifying modeled source locations.



Figure 2 displays a map obtained from the CABQ's Advanced Map Viewer. The facility is located in an unincorporated area and there are no nearby residential dwellings. Background imagery was displayed for 2018. Figure 3 displays an image obtained from Google Earth Pro (imagery date: 10/4/2020).

Figure 2. An aerial image obtained from the City of Albuquerque's Advanced Map Viewer.

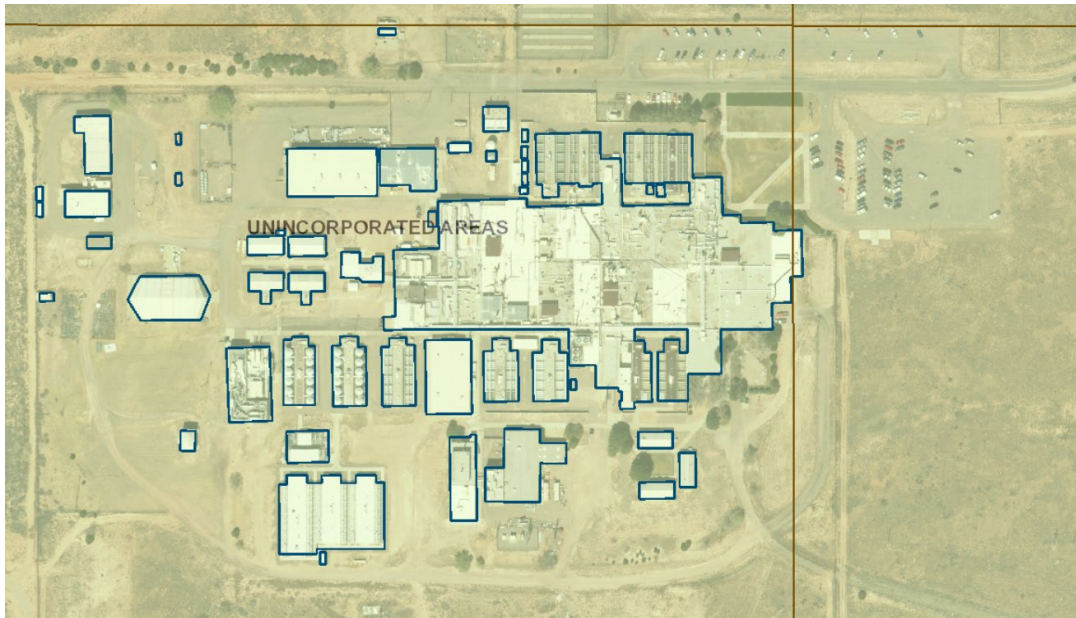


Figure 3. An aerial image of the facility obtained from Google Earth®.



The facility is located on Kirtland Air Force Base (KAFB). The facility is located in a secluded area with no nearby facilities or dwellings. Figure 4 displays a to-scale facility drawing with the security fence line outlined in blue. This fence line consists of physical buildings or fences around the full perimeter to the facility or leading to secure buildings. Figure 5 shows all buildings included in the air dispersion modeling analyses.

Figure 4. A facility drawing including the fence line that will be used for air dispersion modeling.

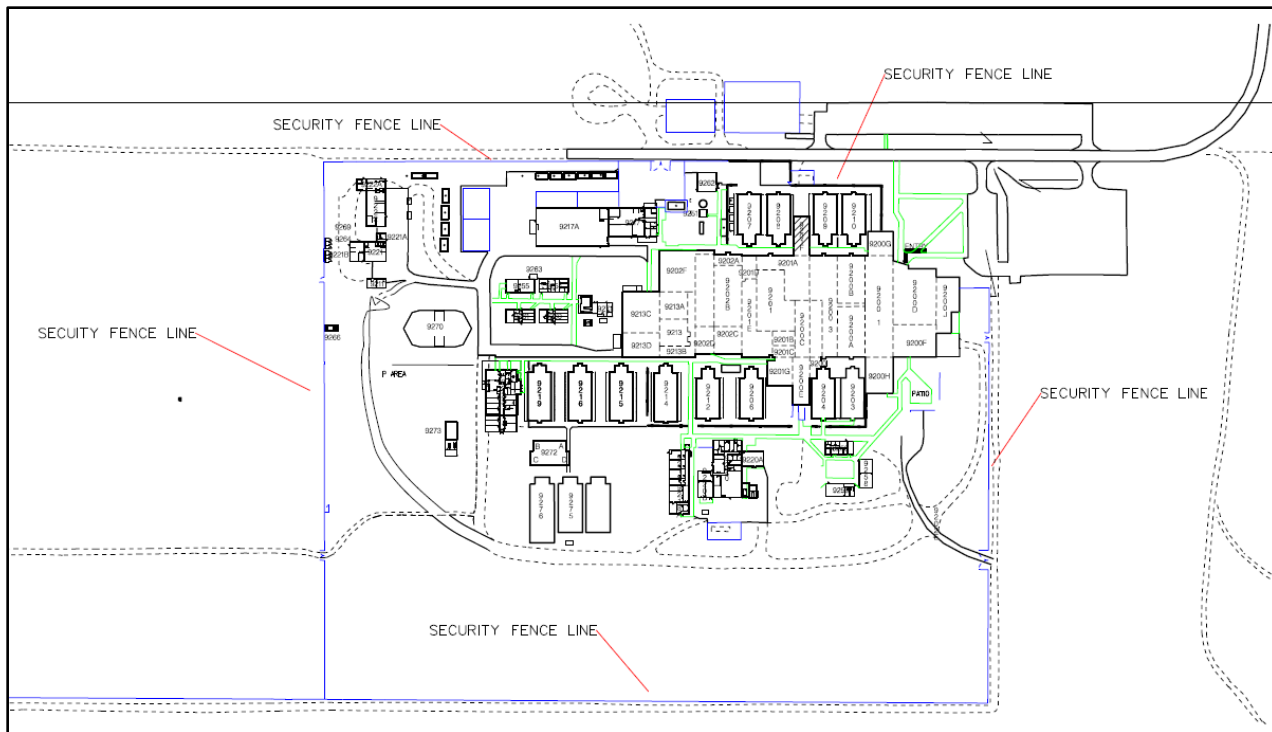
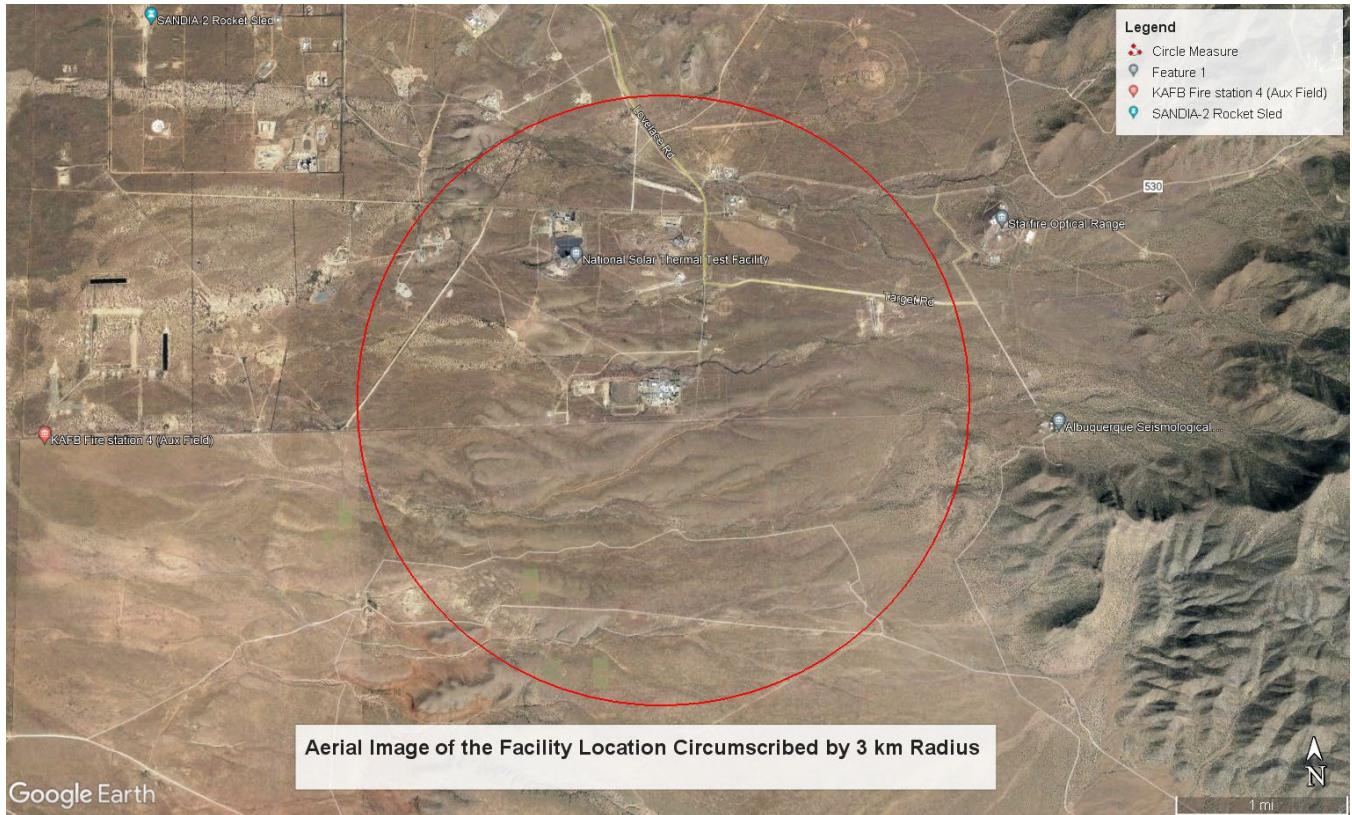


Figure 5. Buildings included in air dispersion modeling.



Figure 6 displays an aerial image obtained from Google Earth® with the facility location circumscribed by a 3km radius. The imagery in this figure is dated October 2020.

Figure 6. Aerial Image of the Facility Location Circumscribed by 3 km Radius.



3. MODELING REQUIREMENTS DESCRIPTION

a) List of Pollutants Requiring Modeling

This modeling is for a permit modification will authorize the replacement of a boiler, unit BS-004, with a 6 MMBTU/hr. Additionally, unit BH-003 and BH-005 will be updated to allow for use of diesel fuel. No other modifications to the sources are requested at this time. As such, averaging periods will be evaluated for CO, NO₂, PM₁₀, PM_{2.5}, and SO₂. This facility is not a source of lead (Pb) or hydrogen sulfide (H₂S); therefore, no modeling is required for these pollutants.

Table 1. Pollutants Standards that are Modeled to Demonstrate Compliance with the NAAQS/NMAAQs

Pollutant	Standard	Not Emitted	Surrogate Modeled	Modeled
CO	8-hr			<input checked="" type="checkbox"/>
	1-hr			<input checked="" type="checkbox"/>
H ₂ S	1-hr	<input checked="" type="checkbox"/>		
Pb	Quarterly	<input checked="" type="checkbox"/>		
NO ₂	Annual			<input checked="" type="checkbox"/>
	24-hr		<input checked="" type="checkbox"/>	
	1-hr			<input checked="" type="checkbox"/>
PM _{2.5}	Annual			<input checked="" type="checkbox"/>
	24-hr			<input checked="" type="checkbox"/>
PM ₁₀	Annual			<input checked="" type="checkbox"/>
	24-hr			<input checked="" type="checkbox"/>
SO ₂	Annual		<input checked="" type="checkbox"/>	
	24-hr		<input checked="" type="checkbox"/>	
	3-hr		<input checked="" type="checkbox"/>	
	1-hr			<input checked="" type="checkbox"/>
TAP	N/A	<input checked="" type="checkbox"/>		

*Note: Demonstration of compliance with a certain standard can be a surrogate that demonstrates compliance with other standards/averaging periods (e.g., 1-hr NO₂ for 24-hr NO₂; 1-hr SO₂ for 3-hr and 24-hr SO₂). The high first high value is always compared to the significant impact level for each averaging period.

b) Additional Modeling Required

No additional NSPS, NESHAP or PSD modeling is required as part of this modification application. LBRI's South Facility is located in an area that is classified by the EPA as in attainment or maintenance with the NAAQS for all regulated pollutants.

4. MODELING INPUTS

a) General Modeling Approach

i. Models Used and Justification

The most recent executable of AERMOD (v22112) was used to perform all air dispersion modeling. All models were run in regulatory default mode and Building Profile Input Program (BPIP) Prime was run to address building downwash associated with the structures located at this facility as well as the surrounding area. Based on satellite imagery and the COA Advanced Map Viewer, the land use in a 3 km radius around the facility is less than 50% industrial, commercial, or compact residential, as defined in the COA modeling guidance (Attachment A); therefore, rural dispersion coefficients were used.

The Tier 2, Ambient Ratio Method 2 (ARM2) was used to model the ambient impact of NO₂. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 were used.¹

ii. Operational Flexibility

No operational flexibility was modeled for this permit modification. The worst-case emissions are modeled.

iii. Source Groups

All units were modeled simultaneously. The FAC source group includes all LBRI sources while the ALL source group includes the addition of the surrounding sources.

iv. Hourly Emission Factors

No hourly emission factors were used as part of the air dispersion modeling. Table 2 below presents the hourly emission rates for the modeled units.

Table 2. The hourly emission rates for the modeled units

Unit No.	NO _x	CO	SO ₂	PM
	lbs/hr	lbs/hr	lbs/hr	lbs/hr
BS-004	0.59	0.49	0.086	0.045
BS-009	0.72	0.19*	0.26	0.072
BS-010	0.72	0.19*	0.26	0.072
Thermal Oxidizer	0.20	0.16	0.029	0.015

*Updated to 0.19 lbs/hr from 0.18 lbs/hr in the CO SIL model following Kyle Tumpane's email on June 26, 2023.

v. Gravitational Settling/Plume Depletion

Wet and dry depletion were not used to model ambient impacts of PM_{2.5}

¹ New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised October 26, 2020, Section 2.6.4.3.

vi. Reduction of NO_x to NO₂

The Tier 2, Ambient Ratio Method 2 (ARM2) was used to model ambient impacts of NO₂. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 were used.

vii. Background Concentrations

The below background concentrations were added to the calculated facility and neighboring source impacts for each pollutant and averaging period. These background concentrations were provided by the APQ (CABQ-EHD_Current Backgrounds_2022-11-18) and have been preserved as provided.

Table 3. Background Concentrations

Pollutant	Standard	Value (µg/m³)	Location
NO ₂	1-hr	84.6	Del Norte
	Annual	19.0	Del Norte
SO ₂	1-hr	13.1	Del Norte
PM _{2.5}	24-hr	23.0	South Valley
	Annual	9.10	South Valley

viii. Demonstration of Compliance in Nearby Facilities

Discrete receptors were included in all surrounding sources and facilities. Receptors were only deleted inside the LBRI property line.

b) Meteorological and Ozone Data

i. Discussion of Meteorological and Ozone Data

The most recent meteorological data from the Albuquerque Airport from 2014 to 2018 provided by the CABQ was used for the air dispersion modeling. This meteorological data was assumed to be adequately representative of conditions at the LBRI's South Facility, based on the CABQ EHD modeling guidelines.²

No ozone data was used or required for the modeling completed as part of this modification application.

ii. Actual Data

No further justification is required as the data was provided by the CABQ.

c) Receptor and Terrain Discussion

i. Spacing of Receptor Grids

- ▶ Fence line spacing: 25 meters
- ▶ Very fine grid spacing: 100 meters out to 1000 meters from the facility fence line.
- ▶ Fine grid spacing: 250 meters out to 1500 meters from the facility fence line,

² City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, *Air Dispersion Modeling Guidelines for Air Quality Permitting*, Revised October 10, 2019, Page 7.

- ▶ Coarse grid spacing: 500 meters out to 3000 meters from the facility fence line,
- ▶ Very coarse grid spacing: 1000 meters out to the edge of the modeling domain.

ii. Terrain Discussion

Based on the most recent guidance from the COA, USGS National Elevation Dataset (NED) files were used. 1/3 arc-second NED files were downloaded from the USGS National Map website in GeoTIFF format. These files were then imported into AERMAP to determine elevations for sources, receptors, and buildings.

AERMAP, a terrain data preprocessor that incorporates complex terrain using USGS Digital Elevation Data, was used to integrate all elevations and process the complex terrain in the model.

iii. Reduction in Receptor Grid Size

The full receptor grid was utilized for all SIL models. Receptors not exceeding significance thresholds per Table 6-A of the NMED Air Dispersion Modeling Guidelines were removed for all CIA modeling.

iv. Description of Sources at Facility

1. Choice of Source Type

The thermal oxidizer at the facility (unit TO in the modeling files) was modeled as a point source. The boilers (units BS-004, BS-009, and BS-010) were modeled as capped point sources in accordance with the CABQs modeling guidelines. All equipment at the facility is stationary and will not move within the property.

Table 4. Source Stack Parameters

Unit No.	Height Above Ground (ft)	Height Above Roof (ft)	Diameter (ft)	Temperature (°F)	Exit Direction	Rain Cap?	Stack Flow Rate (acfm)
BS-004	19.00	3.00	0.83	450	Vertical	Yes	2235
BS-009	28.00	16.00	1.73	450	Vertical	Yes	2338
BS-010	34.00	22.00	1.73	450	Vertical	Yes	1870
Thermal Oxidizer	35.67	18.00	1.33	920	Vertical	No	1130

2. Summary of Actual and Modeled Dimensions for Volume Sources

There are no volume sources at this facility.

3. Table of Proposed Changes

The CO emission rates for BS-009 and BS-010 were updated to 0.19 lbs/hr from 0.18 lbs/hr in the CO SIL model following Kyle Tumpane's email on June 26, 2023.

Table 5. Modeled Emission Rates

Unit No.	NO _x	CO	SO ₂	PM
	lbs/hr	lbs/hr	lbs/hr	lbs/hr
BS-004	0.59	0.49	0.086	0.045
BS-009	0.72	0.19	0.26	0.072
BS-010	0.72	0.19	0.26	0.072
Thermal Oxidizer	0.20	0.16	0.029	0.015

4. Treatment of Operating Hours

All hours of operation were modeled as part of this permit modification. Maximum hourly emission rates were used to model all standards. No reductions were claimed to represent non-continuous annual operation.

5. Particle Size Characteristics

No particle size distribution characteristics were included in the PM modeling.

6. Discrepancies Between Modeled Parameters and those in the Applications

Modeled parameters represent the requested emissions rates in the application.

7. Flare Calculations

There are no flares at this facility.

8. Cross-Reference of Model Input Numbers/Names

All unit names in the model are identical to unit names reported in this application.

d) Building Downwash

i. Dimensions of Buildings

Table 6. Rectangular Building Dimensions as Taken from AERMOD

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X Length (ft)	Y Length (ft)	Angle (deg)
5LCJA00C	363134.2	3868615.4	1726.16	10.50	122.38	40.03	90
5LCJA00D	363149.9	3868615.4	1726.61	10.50	121.06	42.65	90
5LCJA00F	363083.6	3868617.3	1725.58	10.50	121.06	50.20	90
5LCJA00G	363101.6	3868617.3	1725.58	10.50	121.06	44.95	90
5LCJA00H	363147.2	3868474.0	1726.54	10.50	54.13	123.69	0
5LCJA00I	363144.4	3868474.0	1726.46	10.50	123.69	37.40	-90
5LCJA00J	363083.6	3868512.9	1725.26	10.50	126.31	54.13	90
5LCJA00K	363056.1	3868512.5	1725.40	10.50	126.31	51.51	90
5LCJA00L	363027.1	3868512.9	1725.49	15.00	146.98	68.24	90
5LCJA00O	362975.2	3868511.3	1725.49	10.50	123.69	59.38	90
5LCJA00P	362999.9	3868510.9	1725.73	10.50	123.69	59.38	90
5LCJA00Q	362967.8	3868473.6	1724.94	10.50	123.69	56.76	-90
5LCJA00R	362947.8	3868440.7	1724.03	10.00	161.09	61.68	90

5LCJA00S	362969.3	3868440.7	1724.60	10.00	137.80	47.57	90
5LCJA00T	362988.2	3868440.7	1725.09	10.00	137.80	48.88	90
5LCJA00Y	362895.5	3868459.1	1722.44	16.00	34.78	25.92	90
5LCJA011	362920.7	3868503.9	1723.95	20.00	133.86	72.18	90
5LCJA012	362932.4	3868562.8	1724.81	14.00	33.46	59.38	90
5LCJA013	362952.5	3868562.8	1725.37	14.00	33.46	62.99	90
5LCJA014	362932.8	3868543.1	1724.84	14.00	33.46	59.38	90
5LCJA015	362952.5	3868543.1	1725.38	14.00	32.15	62.99	90
5LCJA016	362954.4	3868607.5	1725.38	19.67	82.35	147.97	90
5LCJA018	363000.0	3868607.5	1726.02	14.00	65.62	101.71	90
5LCJA01A	363057.9	3868611.6	1725.63	8.00	14.11	13.12	90
5LCJA01C	363056.1	3868629.1	1725.48	16.00	39.37	39.37	90
5LCJA01D	363038.3	3868449.0	1725.23	12.67	129.59	51.84	90
5LCJA01F	363138.3	3868458.6	1726.28	10.00	25.59	57.74	90
5LCJA01G	363160.0	3868447.0	1727.21	10.00	58.73	25.59	90
5LCJA01H	363138.5	3868431.2	1726.33	10.00	28.22	57.41	90
5LCJA01K	363163.9	3868513.4	1727.04	17.67	77.76	57.74	90

Table 7. Polygon Building Dimensions as Taken from AERMOD

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X	Y
5LCJA00A	363054.1	3868513.3	1725.43	16.33	363054	3868513
					363009	3868513
					363009	3868555
					363032	3868555
					363032	3868580
					363055	3868580
					363054	3868513

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X	Y
5LCJA006	363131.9	3868512.5	1726.1	16.42	363132	3868513
					363132	3868479
					363117	3868479
					363117	3868604
					363131	3868604
					363132	3868513

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X	Y
5LCJA007	363116.6	3868494.8	1725.7	21.33	363117	3868495
					363103	3868495
					363103	3868513
					363117	3868513
					363117	3868495

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA00W	362870	3868530.2	1722.25	20	362870	3868530
					362876	3868541
					362906	3868541
					362912	3868530
					362905	3868519
					362876	3868519
					362870	3868530

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA01E	363067.8	3868439.2	1725.16	25.33	363068	3868439
					363068	3868458
					363086	3868458
					363085	3868453
					363099	3868453
					363099	3868443
					363085	3868443
					363085	3868423
					363056	3868423
					363056	3868439
					363068	3868439

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA017	362981.5	3868552.9	1725.87	14.83	362982	3868553
					362990	3868553
					362990	3868549
					363003	3868549
					363003	3868539
					362990	3868539
					362989	3868541
					362982	3868541
					362982	3868553

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA008	363054.1	3868580.4	1725.55	12	363054	3868580
					363054	3868513
					363117	3868513
					363117	3868580
					363054	3868580

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA01L	363132.2	3868513.4	1726.11	17.67	363132	3868513
					363209	3868513
					363209	3868568
					363192	3868568
					363182	3868578
					363182	3868592
					363166	3868592
					363166	3868578
					363132	3868578
					363132	3868513

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA00U	362840.6	3868624.8	1719.99	18	362841	3868625
					362859	3868625
					362859	3868595
					362847	3868595
					362846	3868617
					362841	3868616
					362841	3868625

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA00V	362835.1	3868585.5	1719.83	20	362835	3868586
					362852	3868586
					362853	3868591
					362859	3868592
					362859	3868572
					362835	3868572
					362835	3868586

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA00Z	362954	3868458.7	1724.49	10	362954	3868459
					362971	3868459
					362971	3868451
					362976	3868451
					362976	3868443
					362948	3868443
					362948	3868451
					362954	3868451
					362954	3868459

ID	X	Y	Elevation	Height	Vertices	
					X	Y
5LCJA01J	363208.6	3868564.6	1728.39	16.42	363209	3868565
					363222	3868565
					363222	3868543
					363219	3868543
					363219	3868529
					363209	3868529
					363209	3868565

ii. Discussion of Included Buildings

All buildings were included in the air dispersion modeling as shown in Figure 5.

5. MODELING FILES DESCRIPTION

a) List of Files

Table 8. Modeling Files and Description

Name	Description
LBRI_NOx_SIL	NO _x Significance Analysis
LBRI_NOx_CIA_1-HR	NO _x Cumulative Impact Analysis for the 1-HR Standard
LBRI_NOx_CIA_ANNUAL	NO _x Cumulative Impact Analysis for the Annual Standard
LBRI_PM25_SIL	PM _{2.5} Significance Analysis
LBRI_PM25_CIA_24-HR	PM _{2.5} Cumulative Impact Analysis for the 24-HR Standard
LBRI_PM25_CIA_ANNUAL	PM _{2.5} Cumulative Impact Analysis for the Annual Standard
LBRI_SO2_SIL	SO ₂ Significance Analysis
LBRI_SO2_CIA	SO ₂ Cumulative Impact Analysis for the 1-HR Standard
LBRI_CO_SIL	CO Significance Analysis
LBRI_PM10_SIL	PM ₁₀ Significance Analysis

b) Description of Scenarios

All files labeled "SIL" represent the Significance Analysis. Modeled concentrations were above the SIL for NO_x, PM_{2.5}, SO₂ and not above the SIL for CO and PM₁₀. As such, cumulative modeling was completed for NO_x, PM_{2.5}, SO₂. Files labeled "CIA" represent the Cumulative Impact Analysis. Both background concentrations and surrounding sources were added into the cumulative modeling as required by the EHD.

6. MODELING RESULTS

a) Summary of Modeling Results

Table 9. Model Results; Maximum Concentrations; SIL Comparison

Pollutant	Averaging Period	Significance Level	Modeled	Percent of Significance	Location of Maximum Concentration		Elevation (m)
		µg/m ³	µg/m ³		X	Y	
CO	8-hr	500	21.91	4.4%	362818.30	3868467.20	1719.71
CO	1-hr	2000	29.17	1.5%	362818.30	3868467.20	1719.71
NO ₂	Annual	1	3.36	Significant	363153.00	3868619.40	1726.62
NO ₂	24-hr	5	18.19	Significant	363222.50	3868565.40	1728.82
NO ₂	1-hr	7.52	62.72	Significant	363242.30	3868527.40	1729.42
PM _{2.5}	Annual	0.2	0.35	Significant	363153.00	3868619.40	1726.62
PM _{2.5}	24-hr	1.2	1.96	Significant	363222.50	3868565.40	1728.82
PM ₁₀	Annual	1	0.35	35.0%	363153.00	3868619.40	1726.62
PM ₁₀	24-hr	5	1.96	39.3%	363222.50	3868565.40	1728.82
SO ₂	Annual	1	1.15	Significant	363153.00	3868619.40	1726.62
SO ₂	24-hr	5	6.78	Significant	363222.50	3868565.40	1728.82
SO ₂	3-hr	25	18.24	73.0%	363242.30	3868527.40	1729.42
SO ₂	1-hr	7.8	23.09	Significant	363241.70	3868502.40	1729.40

b) Table of Cumulative Concentrations

Table 10. Cumulative vs. Ambient Air Quality Standards

Pollutant	Averaging Period	Standard, µg/m ³		Modeled, µg/m ³		Background	Calculated	Percent of the Standard	
		NAAQS	NMAAQS	Facility	Facility & Neighbors*	µg/m ³	µg/m ³	NAAQS	NMAAQS
NO ₂	Annual	99.66	94.02	3.325	3.352	19	22.35	22%	24%
	1-hr	188.03	-	56.357	56.362	84.60	140.96	75%	-
PM _{2.5}	Annual	12	-	0.347	0.349	9.10	9.45	79%	-
	24-hr	35	-	1.042	1.045	23.00	24.05	69%	-
SO ₂	1-hr	196.4	-	21.171	21.171	13.10	34.27	17%	-

7. SUMMARY AND CONCLUSIONS

a) Modeling Statement

The submitted air dispersion modeling and report demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the permit modification.

AIR DISPERSION MODELING PROTOCOL

ATC Significant Revision Modeling Protocol

**Lovelace Biomedical Research Institute
South Facility**

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Project 233201.0036



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1. FACILITY INFORMATION

The Lovelace Biomedical Research Institute (LBRI) will be submitting an application for a permit modification for their South Facility to the City of Albuquerque (CABQ) Environmental Health Department, Air Quality Program (AQP). This document includes all required components requested for Modeling Protocols pursuant to Attachment B of the CABQ's Air Dispersion Modeling Guidelines (published October 2019).

1.1 Facility Description and Requested Modification

The LBRI South Facility currently is located at Bldg. 9217, Area Y Kirtland AFB – East, Albuquerque, NM 87185 (13S UTM 363,058 m E, 3,868,527 m N) and is currently permitted under ATC #0917-M6-1TR. The proposed modification includes the replacement of a boiler, unit BS-004, with a 6 MMBTU/hr. Additionally, unit BH-003 and BH-005 will be updated to allow for use of diesel fuel. All permitted sources at this facility will be modeling except for the emergency generators (Units GS-004 through GS-006), which will operate less than 500 hours per year, and the boilers used exclusively for comfort heat (Units BH-003, BH-005, and BH-009), which have been approved as exempt via email from CABQ on June 6, 2020.

1.2 Facility Maps

The maps requested by Attachment B of CABQ's Modeling Guidelines are reported in Figure 1 to 3 of this section.

Figure 1 displays an aerial image of the facility. The figure includes labels of all source emission points at the facility and displays the entire layout of buildings at the facility.

Figure 1. An aerial image of the South Facility and labels specifying modeled source locations.



Figure 2 displays a map obtained from the CABQ's Advanced Map Viewer. All layers are displayed in this figure. Background imagery was displayed for 2018. Figure 3 displays an image obtain from google maps.

Figure 2. An aerial image obtained from the City of Albuquerque’s Advanced Map Viewer.

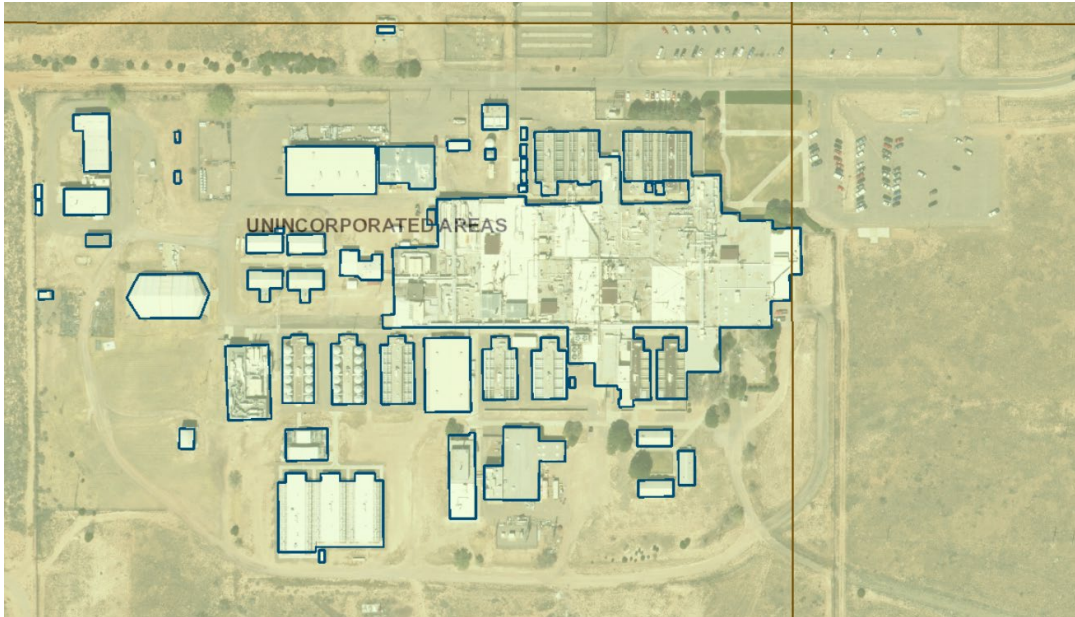


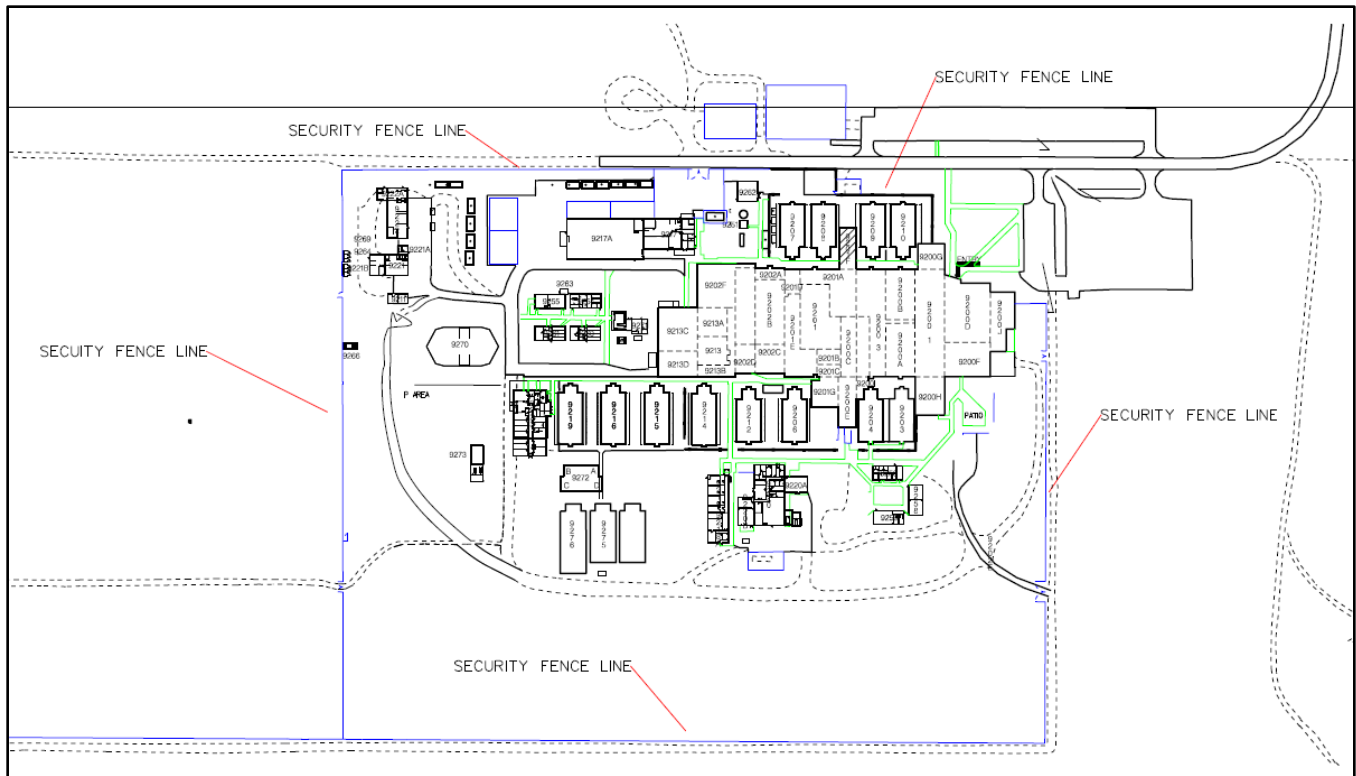
Figure 3. An aerial image of the facility obtained from Google Maps.



The facility is located on Kirtland Air Force Base (KAFB). The facility is located in a secluded area with no nearby facilities or dwellings. Figure 4 displays a to scale facility drawing with the security fence line outlined in blue. This fence line consists of physical buildings or fences around the full perimeter to the facility or

leading to secure buildings. The two fenced areas to the north of the main security fence line will also be incorporated into the modeling.

Figure 4. A facility drawing including the fence line that will be used for air dispersion modeling.



1.3 Operating Hours

The South Facility is authorized to operate continuously; all hours will be modeled.

2. EMISSIONS AND STANDARDS MODELED

2.1 Facility Emissions

Emission rates for all pollutants will increase with this modification. The current permitted and requested facility-wide emissions are reported in Table 1.

Table 1. Permitted emissions, requested emissions, and the net change in emissions associated with this permitting action.

	NO _x lb/hr	CO lb/hr	SO ₂ lb/hr	PM ₁₀ lb/hr	PM _{2.5} lb/hr
Permitted Total	119.0	29.5	1.46	3.78	3.78
Requested Total	120.4	29.7	2.35	3.98	3.98
Net Change	+1.4	+0.2	+0.89	+0.2	+0.2

2.2 Standards Modeled

The pollutants and standards to be modeled are shown in Table 3. Note that some standards are surrogates that demonstrate compliance for other averaging periods (e.g., SO₂ 1-hr NAAQS is a surrogate that demonstrates compliance for SO₂ 3-hr, 24-hr and annual) per the NMED Air Dispersion Modeling Guidance.¹

Table 3. Proposed pollutants and averaging periods to be modeled.

Pollutant	Standard	Not Emitted	Surrogate Modeled	Modeled
CO	8-hr			☑
	1-hr			☑
H ₂ S	1-hr	☑		
Pb	Quarterly	☑		
NO ₂	Annual		☑	☑
	24-hr 1-hr			☑
PM _{2.5}	Annual			☑
	24-hr			☑
PM ₁₀	24-hr		☑	
SO ₂	Annual		☑	
	24-hr		☑	
	3-hr		☑	
	1-hr			☑
TAP	N/A	☑		

¹ New Mexico Environment Department Air Quality Bureau, *New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines*. Revised October 26, 2020, Table 6B.

2.3 Impacts and Results

2.3.1 Significant Impact Level (SIL) Analysis

LBRI will conduct a screening analysis to determine if the High 1st High modeled impacts of each standard exceed the significance thresholds listed in Table 6A of the NMED Air Dispersion Modeling Guidelines.² The significance levels for the modeled pollutants are reported in Table 2. All pollutants and standards shown in Table 2 will be modeled to assess significance.

Table 2. Significant Impact Levels of pollutants that will be modeled.

Pollutant	Standard	Significance Level ($\mu\text{g}/\text{m}^3$)
CO	8-hr	500
	1-hr	2,000
NO ₂	Annual	1.0
	24-hr	5.0
	1-hr	7.52
PM _{2.5}	Annual	0.2
	24-hr	1.2
PM ₁₀	Annual	1.0
	24-hr	5.0
SO ₂	Annual	1.0
	24-hr	5.0
	3-hr	25.0
	1-hr	7.8

2.3.2 Cumulative Impact Analysis

If the SIL analysis demonstrates that pollutants exceed significance levels, a cumulative impact analysis will be conducted. LBRI proposes to use the prescribed design value of each modeled standard:

- 1-hr average NO₂ modeling: The five-year average of the high 8th high of the annual distribution of the daily maximum 1-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- 1-hr average SO₂ modeling: The five-year average of the high 4th high of the annual distribution of the daily maximum 1-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- 24-hr average PM_{2.5} modeling: The five-year average of the 24-hr high 8th high will be used plus the background concentration and surrounding sources.
- 1-hr and 8-hr average CO modeling: The five-year high 1st high 1-hour and 8-hour concentrations plus the background concentration and surrounding sources will be compared to the standard.
- Maximum or average annual impact: The average of the three highest annual impacts from the five year met data set will be compared against the standard.

Modeling will only be performed for receptors where the SIL is exceeded based on the Significant Impacts modeling results.

² Ibid, Table 6A.

The total NO₂ and SO₂ emission rates of modeled units (all units except for emergency generators GS-004 through GS-006, and comfort heat boiler units BH-003, BH-005 and BH-009) are 4.46 tpy and 0.48 tpy, respectively. As the modeled emission rates for these pollutants do not exceed 40 tpy, secondary particle formation will not be evaluated as part of this modeling.

3. MODELING SET-UP

3.1 Source Modification Summary

As described in section 2.a.i, this modification will authorize the replacement of a boiler, unit BS-004, with a 6 MMBTU/hr. Additionally, unit BH-003 and BH-005 will be updated to allow for use of diesel fuel. Units BH-003 and BH-005 will not be modeled as these boilers are used exclusively for comfort heat and have been approved as exempt via email from CABQ on June 6, 2020. No other modifications to sources will be requested under this modification.

3.2 Sources and Emission Rates Modeled

All permitted sources at this facility will be modeling except for the emergency generators (Units GS-004 through GS-006), which will operate less than 500 hours per year, and the boilers used exclusively for comfort heat (Units BH-003, BH-005, and BH-009), which have been approved as exempt via email from CABQ on June 6, 2020. The facility receives their power from PNM; therefore, the emergency generators are exempt per the CABQs Air Dispersion Modeling Guidance (page 6). There are no haul roads located at the South Facility. No setback conditions are expected at the South facility.

Table 3 reports the hourly emissions rates that will be modeled for each unit. There are units at this facility that run on either diesel or natural gas fuel. The worst-case emissions will be modeled for these units.

Table 3. Modeled emission rates.

Unit No.	NO _x	CO	SO ₂	PM
	lbs/hr	lbs/hr	lbs/hr	lbs/hr
BS-004	0.59	0.49	0.086	0.045
BS-009	0.72	0.18	0.26	0.072
BS-010	0.72	0.18	0.26	0.072
Thermal Oxidizer	0.20	0.16	0.029	0.015

As this facility will continue to be authorized to operate continuously emissions will not be averaged over non-operational hours and emission factors will not be modified using the protocols defined in 40 CFR 51 Appendix W Table 8-1.

3.3 Source Types and Stack Parameters

All sources will be modeled as point sources using the stack parameters described in Table 4.

Table 4. Source stack parameters

Unit No.	Height Above Ground (ft)	Height Above Roof (ft)	Diameter (ft)	Temperature (°F)	Exit Direction	Rain Cap?	Stack Flow Rate (scfm)
BS-004	19.00	3.00	0.83	450	Vertical	Yes	1061
BS-009	28.00	16.00	1.73	450	Vertical	Yes	888
BS-010	34.00	22.00	1.73	450	Vertical	Yes	888
Thermal Oxidizer	35.67	18.00	1.33	920	Vertical	No	354

All equipment at the facility is stationary and will not move within the property. This facility will run continuously and will not request any operational flexibility.

No volume sources or horizontal stacks will be present at this facility.

3.4 Buildings and Downwash

There are several buildings and structures located at the South Facility. Figure 5 shows the buildings that will be considered in the air dispersion modeling to evaluate building downwash. There are no nearby offsite buildings that have the potential to generate building downwash effects. The dimensions and coordinates of buildings to be included in the model are detailed in Table 5, 6, and 7.

Figure 5. Buildings to be included in air dispersion modeling.



Table 5. Rectangular Building Dimensions

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X Length (ft)	Y Length (ft)	Angle (deg)
5LCJA00C	363132.3	3868615.7	1725.00	10.50	104.08	48.58	90
5LCJA00D	363149.8	3868615.7	1725.00	10.50	104.08	48.58	90
5LCJA00F	363083.6	3868615.3	1724.05	10.50	104.08	48.58	90
5LCJA00G	363101.6	3868615.3	1724.08	10.50	104.08	48.58	90
5LCJA00H	363149.2	3868474.0	1725.00	10.50	48.67	104.00	0
5LCJA00I	363145.4	3868473.5	1725.00	10.50	104.00	32.67	-90
5LCJA00J	363085.3	3868506.3	1724.19	10.50	104.00	48.67	90
5LCJA00K	363057.8	3868505.9	1722.97	10.50	104.00	48.67	90
5LCJA00L	363030.0	3868506.5	1722.27	15.00	127.00	66.00	90
5LCJA00O	362979.0	3868507.1	1725.13	10.50	115.92	48.67	90
5LCJA00P	363004.9	3868507.1	1722.11	10.50	115.92	48.67	90
5LCJA00Q	362967.8	3868472.4	1724.78	10.50	115.92	48.67	-90
5LCJA00R	362951.1	3868434.4	1723.65	10.00	136.08	50.92	90
5LCJA00S	362969.3	3868434.4	1723.65	10.00	115.83	50.92	90
5LCJA00T	362987.8	3868434.5	1723.98	10.00	115.83	50.92	90
5LCJA00Y	362897.7	3868459.6	1722.10	16.00	36.50	23.50	90
5LCJA011	362922.6	3868502.5	1723.69	20.00	128.00	65.92	90
5LCJA012	362933.3	3868560.7	1724.03	14.00	27.58	58.67	90
5LCJA013	362954.7	3868560.6	1724.68	14.00	27.58	58.67	90
5LCJA014	362933.4	3868541.0	1724.03	14.00	27.58	58.67	90
5LCJA015	362954.2	3868541.0	1724.65	14.00	27.58	58.67	90
5LCJA016	362954.4	3868606.4	1724.67	19.67	79.83	150.33	90
5LCJA018	363001.4	3868606.6	1721.69	14.00	60.00	100.67	90
5LCJA01A	363058.6	3868606.1	1723.76	8.00	16.00	16.00	90
5LCJA01C	363056.1	3868629.1	1723.78	16.00	40.00	40.00	90
5LCJA01D	363038.3	3868449.0	1723.50	12.67	134.00	42.00	90
5LCJA01F	363138.7	3868458.2	1725.19	10.00	28.00	60.00	90
5LCJA01G	363160.4	3868446.5	1725.58	10.00	60.00	28.00	90
5LCJA01H	363139.5	3868431.2	1726.03	10.00	28.00	60.00	90
5LCJA01K	363164.6	3868511.2	1726.15	17.67	75.42	57.33	90
5LCJA007	363101.4	3868510.5	1725.02	21.33	52.00	54.00	90
5LCJA006	363118.2	3868601.6	1725.17	16.42	395.00	35.00	90
OQ4KL05U	362848.0	3868560.6	1721.43	20.00	20.00	40.00	90

Table 6. Circular Building Dimensions

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Radius (m)	Corners
OQ4KL05X	363061.1	3868609	1723.8	8	2.5	24

Table 7. Polygon Building Dimensions

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X	Y
5LCJA00A	363055.8	3868512	1723.12	16.33	363055.8	3868512
					363010.7	3868512
					363010.7	3868554
					363033.9	3868554
					363033.9	3868579
					363056.2	3868579
					363055.8	3868512

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X (m)	Y (m)
5LCJA00W	362870.2	3868529	1721.93	20	362870.2	3868529
					362875.7	3868539
					362906.3	3868540
					362912.6	3868528
					362905.6	3868517
					362874.9	3868518
					362870.2	3868529

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X (m)	Y (m)
5LCJA01E	363068.6	3868439	1724.62	25.33	363068.6	3868439
					363068.6	3868458
					363086.6	3868458
					363086.2	3868452
					363099.9	3868452
					363099.9	3868443
					363086.1	3868443
					363086.1	3868423
					363056.9	3868423
					363056.9	3868439
					363068.6	3868439

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X (m)	Y (m)
5LCJA017	362982.5	3868552	1722	14.83	362982.5	3868552
					362991.4	3868552
					362991.4	3868547
					362999.3	3868547
					362999.3	3868550
					363004.1	3868550
					363004.2	3868538
					362991.7	3868538
					362991.7	3868539
					362982.5	3868539
					362982.5	3868552

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X (m)	Y (m)
5LCJA008	363056.2	3868580	1724.04	12	363056.2	3868580
					363078.8	3868580

					363079	3868577
					363118.2	3868577
					363117.9	3868512
					363055.9	3868513
					363055.9	3868513
					363056.2	3868580
					Vertices	
ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X (m)	Y (m)
5LCJA01L	363129.5	3868577	1726	17.67	363129.5	3868577
					363166	3868576
					363166	3868591
					363182.3	3868592
					363182.6	3868573
					363192.1	3868571
					363192.1	3868568
					363209.4	3868568
					363209.9	3868511
					363128.9	3868511
					363129.5	3868577

					Vertices	
ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X (m)	Y (m)
5LCJA00U	362841	3868624	1721.18	18	362841	3868624
					362859.8	3868624
					362860.1	3868593
					362847.5	3868593
					362847.3	3868616
					362841	3868616
					362841	3868624

					Vertices	
ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X (m)	Y (m)
5LCJA00V	362835.9	3868585	1721.06	20	362835.9	3868585
					362853.7	3868585
					362853.7	3868591
					362860.3	3868591
					362860.3	3868571
					362835.9	3868571
					362835.9	3868585

					Vertices	
ID	X (m)	Y (m)	Elevation (m)	Height (ft)	X (m)	Y (m)
5LCJA00Z	362953.5	3868458	1724.13	10	362953.5	3868458
					362973.2	3868458
					362973.2	3868450
					362976	3868450
					362976	3868442
					362950.2	3868442
					362950.2	3868450
					362953.6	3868450
					362953.5	3868458

ID	X (m)	Y (m)	Elevation (m)	Height (ft)	Vertices	
					X (m)	Y (m)
5LCJA01J	363209.3	3868563	1727	16.42	363209.3	3868563
					363224.3	3868563
					363224.3	3868541
					363219.2	3868541
					363219.4	3868527
					363209.8	3868527
					363209.3	3868563

3.5 Model and Options Used

The most recent executable of AERMOD (v22112) will be used to perform air dispersion modeling. All regulatory default options will be used for air dispersion modeling at this facility. Rural dispersion coefficients will be used. The Tier 2, Ambient Ratio Method 2 (ARM2) will be used to model ambient impact of NO₂. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 will be used. Tier III methods (OLM or PVMRM) may be used if required using the same range of in-stack ratios.

3.6 Meteorological Data

The most recent meteorological data for the Albuquerque Airport from 2014 to 2018 provided by the CABQ will be used for this air dispersion modeling. The airport is located nearby and has nearly identical surrounding land use and topographic features; therefore, this meteorological data is assumed to be highly representative of conditions at the LBRI South Facility.

3.7 Background Concentrations

Background concentrations were provided by the EHD in November of 2022 and will be used as applicable. The table below shows the background concentrations proposed to be used from the South Valley monitor as available, and the Del Norte monitor for others. The Del Norte monitor will only be used for pollutants for which the Del Norte monitor is the only data available (NO₂ and SO₂).

The following background concentrations will be used:

Pollutant	Standard	Background Concentration (µg/m ³)
CO	8-hr	1,259
	1-hr	2,290
NO ₂	Annual	19.0
	1-hr	84.6
PM _{2.5}	Annual	9.1
	24-hr	23.0
PM ₁₀	24-hr	45.0
SO ₂	1-hr	13.1

3.8 Receptor Grid and Elevation Data

Spacing will follow CABQ and NMED modeling guidelines:

- ▶ Fence line spacing: 50 meters
- ▶ Fine grid spacing: 100 meters out to 500 meters from the facility fence line.
- ▶ Coarse grid spacing: 250 meters out to 1500 meters from the facility fence line, then 500 meters out to 3000 meters from the facility fence line, and finally 1000 meters out to the edge of the modeling domain.

The USGS 1/3 arc-second national elevation data (NED) map for the site will be accessed from the USGS National Map website and used to model this facility.

3.9 Nearby Permits and Surrounding Sources

Surrounding Source data is being requested at this time from CABQ and will be included in the models as provided, unless specific approval to adjust the surrounding sources is given. There are no other permits for the South Facility. LBRI will incorporate other emission sources as the CABQ deems necessary.

APPENDIX A. COMFORT HEAT BOILERS EXEMPTION

Rachel Reese

From: Tumpane, Kyle <ktumpane@cabq.gov>
Sent: Tuesday, June 02, 2020 8:44 AM
To: Rachel Reese; ckelley@Irri.org; MacKenzie Russell
Cc: Stonesifer, Jeff W.; Munoz-Dyer, Carina G.; Eyerman, Regan V.; Tavarez, Isreal L.
Subject: RE: Lovelace - Modeling Waiver Request - Permit 0917-M4

Hello Rachel,

We do not have any recent modeling files for the facility that we are able to find. We searched everywhere we are able to electronically. It is possible there are modeling files in our paper records but we cannot currently access those, which is the same issue with your IPRA request, and we are not sure when we will be able to access them. It is also possible that they are not there. You could either choose to wait until we are able to access our paper records again to see if there are modeling files present or you could create the modeling files from scratch.

The three boilers that are used exclusively for comfort heat (BH-003, BH-005 and BH-009) can be excluded from modeling.

Thank you,
Kyle

From: Rachel Reese <RReese@trinityconsultants.com>
Sent: Monday, June 1, 2020 10:54 AM
To: Tumpane, Kyle <ktumpane@cabq.gov>; ckelley@Irri.org; MacKenzie Russell <MRussell@trinityconsultants.com>
Cc: Stonesifer, Jeff W. <JStonesifer@cabq.gov>; Munoz-Dyer, Carina G. <cmunoz-dyer@cabq.gov>; Eyerman, Regan V. <reyerman@cabq.gov>; Tavarez, Isreal L. <ITavarez@cabq.gov>
Subject: RE: Lovelace - Modeling Waiver Request - Permit 0917-M4

Good morning Kyle,

Thank you, I appreciate the quick determination. Would it be possible for you to provide the most recent modeling files for the facility? We have submitted an IPRA request, just thought it might be a bit easier if you have them available.

When you can, please provide additional determination on exclusion of the boiler emission units used exclusively for comfort heat onsite, existing units BH-003, BH-005, and BH-009, per the most recent modeling guidance:

Other sources can request a waiver and the AQP will determine on a case-by-case basis whether modeling is required. The following are examples of such cases:

- > Boilers intended for comfort heat
- > Certain Soil Vapor Extraction Systems

Unit	Boiler Function
BH-003	Comfort heat
BH-005	Comfort heat
BS-004	Effluent decontamination process
BS-007	Comfort heat, humidification and sterilization
BS-009	Comfort heat, humidification and sterilization
BH-009	Comfort heat

Thanks,

APPENDIX A. APPLICATION FORMS

Application for Air Pollutant Sources in Bernalillo County Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Permit Application Checklist

Permit Application Review Fee Checklist



**City of Albuquerque – Environmental Health Department
Air Quality Program**

Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**
or hand deliver between 8:00 am – 5:00 pm Monday – Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov



**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Submittal Date: June 12, 2023

Owner/Corporate Information Check here and leave this section blank if information is exactly the same as Facility Information below.

Company Name: Lovelace Biomedical Research Institute			
Mailing Address: 2425 Ridgecrest Drive SE	City: Albuquerque	State: NM	Zip: 87108
Company Phone: (505) 348 -9400	Company Contact: Carin Kelley		
Company Contact Title: EHS Manager	Phone: (505) 348-9166	E-mail: ckelley@lovelacebiomedical.org	

Stationary Source (Facility) Information: Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.

Facility Name: Lovelace Biomedical Research Institute, South Facility			
Facility Physical Address: Bldg 9217, Area Y Kirtland AFB-East	City: Albuquerque	State: NM	Zip: 87108
Facility Mailing Address (if different): 2425 Ridgecrest Drive SE	City: Albuquerque	State: NM	Zip: 87108
Facility Contact: Carin Kelley	Title: EHS Manager		
Phone: (505) 348-9166	E-mail: ckelley@lovelacebiomedical.org		
Authorized Representative Name ¹ : Robert Rubin	Authorized Representative Title: CEO / President		

Billing Information Check here if same contact and mailing address as corporate Check here if same as facility

Billing Company Name: N/A			
Mailing Address: N/A	City: N/A	State: N/A	Zip: N/A
Billing Contact: N/A	Title: N/A		
Phone: N/A	E-mail: N/A		

Preparer/Consultant(s) Information Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.

Name: Jaimy Karacaoglu	Title: Consultant		
Mailing Address: 9400 Holly Ave, NE, Bldg 3, Suite B	City: Albuquerque	State: NM	Zip: 87122
Phone: (505) 266-6611	Email: jaimy.karacaoglu@trinityconsultants.com		

1. See 20.11.41.13(E)(13) NMAC.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):				
<input type="checkbox"/> New Permit	<input checked="" type="checkbox"/> Permit Modification Current Permit #: 0917-M6-1TR		<input type="checkbox"/> Technical Permit Revision Current Permit #:	<input type="checkbox"/> Administrative Permit Revision Current Permit #:
<input type="checkbox"/> New Registration Certificate	<input type="checkbox"/> Modification Current Reg. #:	<input type="checkbox"/> Technical Revision Current Reg. #:	<input type="checkbox"/> Administrative Revision Current Reg. #:	
UTM coordinates of facility (Zone 13, NAD 83): UTM Zone 13 N, 363,101.91 m E, 3,868,505.50 m N				
Facility type (<i>i.e.</i> , a description of your facility operations): Research				
Standard Industrial Classification (SIC Code #): 8733		North American Industry Classification System (NAICS Code #): 541710		
Is this facility currently operating in Bernalillo County? Yes		If YES , list date of original construction: 1964 If NO , list date of planned startup: N/A		
Is the facility permanent? Yes		If NO , list dates for requested temporary operation: From N/A Through N/A		
Is the facility a portable stationary source? No		If YES , is the facility address listed above the main permitted location for this source? N/A		
Is the application for a physical or operational change, expansion, or reconstruction (<i>e.g.</i> , altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? Yes				
Provide a description of the requested changes: Replaced existing boiler (BS-004) with a larger 6 MMBtu/hr unit. Diesel fuel usage will be added to BS-003 and BS-005				
What is the facility's operation? <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> Batch				
Estimated percent of production/operation:	Jan-Mar: 25%	Apr-Jun: 25%	Jul-Sep: 25%	Oct-Dec: 25%
Requested operating times of facility:	24 hours/day	7 days/week	4+ weeks/month	12 months/year
Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. No				
If YES , please explain: N/A				
List raw materials processed: N/A				
List saleable item(s) produced: N/A				

USE INSTRUCTIONS: For the forms on the following pages, please do not alter or delete the existing footnotes or page breaks. If additional footnotes are needed then add them to the end of the existing footnote list for a given table. Only update the rows and cells within tables as necessary for your project. Unused rows can be deleted from tables. If multiple scenarios will be represented then the Uncontrolled and Controlled Emission Tables, and other tables as needed, can be duplicated and adjusted to indicate the different scenarios.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Regulated Emission Sources Table

(E.g., Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.) Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description ¹		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ²	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ³	Fuel Type
GS-004	Emergency Generator	Cummins	KTA-2300-GS	33101785	1/1979	4/4/1980	N/A	1,211 hp	Diesel
GS-005	Emergency Generator	Cummins	KTA-2300-GS	33100903	6/1977	4/4/1980	N/A	1,211 hp	Diesel
GS-006	Emergency Generator	Caterpillar	3516-STD	25Z01465	12/16/1988	~1989	N/A	2,307 hp	Diesel
BH-003	Boiler	Continental	13799	F9C150LW B-6024-3436	1968	1968	N/A	8.0 MMBtu/hr	Natural Gas Diesel
BH-005	Boiler	Kewanee	L3W-350-G02-LE	KW16.1GO - 150/AJ570 86-2	1997	1997	N/A	14.645 MMBtu/hr	Natural Gas Diesel
BH-009	Boiler	Hurst	1200511	S1250-125W-8	2012	2012	N/A	10 MMBtu/hr	Natural Gas Diesel
BS-004	Steam Boiler	Hurst	VIX	TBD	TBD	TBD	N/A	6.0 MMBtu/hr	Natural Gas
BS-009	Steam Boiler	Hurst	Scotch 1900401 SA-GP2- 150-150	5750-150-317	2/2020	3/10/2020	N/A	5.021 MMBtu/hr	Natural Gas Diesel
BS-010	Steam Boiler	Hurst	Scotch 1900401 SA-GP2- 150-150	5750-150-326	2/2021	5/19/2021	N/A	5.021 MMBtu/hr	Natural Gas Diesel
TO	Thermal Oxidizer	Moco	N/A	6571-T000	1990	1990	N/A	2.0 MMBtu/hr	Natural Gas

- Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
- To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. If not, put N/A.
- Basis for Equipment Process Rate or Capacity (e.g., Manufacturer's Data, Field Observation/Test, etc.)

Emergency Generators (Unit GS-004 to GS-006)

- Manufacturer data (capacity)
- AP-42 Section 3.4

Boilers and Steam Boilers (Units BH-003, BH-005, BH-009, BS-004, BS-009, and BS-010)

- Manufacturer data (capacity)
- AP-42 Section 1.3 (diesel emissions)
- AP-42 Section 1.4 (natural gas emissions)
- Stack Test Emissions (Units BS-009 and BS-010 natural gas emissions only)

Thermal Oxidizer

- Manufacturer data (capacity)
- AP-42 Section 1.4
- GRI HAP calc (HAP emissions)

Updated page received June 29, 2023 

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description	Controlling Emissions for Unit Number(s)	Manufacturer	Model # Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency ¹	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
N/A – No control equipment at this facility.								

1. Basis for Control Equipment % Efficiency (e.g., Manufacturer’s Data, Field Observation/Test, AP-42, etc.). **N/A**
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Exempted Sources and Exempted Activities Table

See 20.11.41 NMAC for exemptions.

Unit Number and Description	Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ¹	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ²	Fuel Type
N/A – No exempt equipment at this facility.								

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. Also, consider if any changes that were made alter the status from exempt to non-exempt. If not, put N/A.
2. Basis for Equipment Process Rate or Capacity (e.g., Manufacturer’s Data, Field Observation/Test, etc.) **N/A**
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCS)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	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	
GS-004	29.1	127.3	6.7	29.2	0.85	3.7	0.015	0.064	0.85	3.71	0.85	3.71	0.012	0.051	AP-42 Table 3.4-1 & 3
GS-005	29.1	127.3	6.7	29.2	0.85	3.7	0.015	0.064	0.85	3.71	0.85	3.71	0.012	0.051	AP-42 Table 3.4.1 & 3
GS-006	55.4	242.5	12.7	55.6	1.6	7.1	0.028	0.12	1.6	7.1	1.6	7.1	0.022	0.096	AP-42 Table 3.4.1 & 3
BH-003-NG	0.78	3.4	0.66	2.9	0.043	0.19	0.11	0.50	0.060	0.26	0.060	0.26	0.00064	0.0028	AP-42 Table 1.4-1, 2 & 3
BH-003-D	1.15	0.076	0.29	0.02	0.020	0.0013	0.41	0.027	0.12	0.0076	0.12	0.0076	0.0023	0.15	AP-42 Table 1.3-1, 3, 9
BS-004	0.59	2.58	0.49	2.16	0.032	0.14	0.086	0.38	0.045	0.20	0.045	0.20	0.00047	0.0021	AP-42 Table 1.4-1 & 2
BH-005-NG	1.4	6.3	1.2	5.3	0.079	0.35	0.21	0.92	0.11	0.48	0.11	0.48	0.0012	0.0051	AP-42 Table 1.4-1, 2 & 3
BH-005-D	2.1	0.076	0.5	0.019	0.036	0.0013	0.75	0.027	0.21	0.0076	0.21	0.0076	0.0043	0.15	AP-42 Table 1.3-1, 3, 9
BS-009-NG	0.18	0.77	0.19	0.82	0.018	0.079	0.0030	0.013	0.038	0.16	0.038	0.16	0.048	0.21	Olion Stack Test Date; AP-42 Table 1.4-3
BS-009 D	0.72	0.076	0.18	0.019	0.012	0.0013	0.26	0.027	0.072	0.0076	0.072	0.0076	0.0015	0.15	AP-42 Table 1.3-1 & 3
BS-010-NG	0.18	0.77	0.19	0.82	0.018	0.079	0.0030	0.013	0.038	0.16	0.038	0.16	0.048	0.021	Olion Stack Test Data; AP-42 Table 1.4-3
BS-010-D	0.72	0.076	0.18	0.019	0.012	0.0013	0.26	0.027	0.072	0.0076	0.072	0.0076	0.0015	0.15	Ap-42 Table 1.3-1 & 3
BH-009-NG	0.98	4.3	0.82	3.6	0.054	0.24	0.14	0.63	0.075	0.33	0.075	0.33	0.00080	0.0035	AP-42 Table 1.4-1, 2 & 3
BH-009-D	1.4	0.076	0.36	0.019	0.024	0.0013	0.51	0.027	0.14	0.0076	0.14	0.0076	0.0029	0.15	AP-42 Table 1.3-1 & 3

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Unit Number*	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	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	
TO	0.20	0.86	0.16	0.72	0.011	0.047	0.029	0.13	0.015	0.065	0.015	0.065	0.0012	0.023	AP-42 Table 1.4.1 & 2; GRI HAP Calc
Totals of Uncontrolled Emissions	120.4	516.5	29.7	130.3	3.6	15.7	2.4	3.0	4.0	16.2	4.0	16.2	0.15	1.4	

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

- (1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (≥) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hours of operation; or
- (2) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 2 tons/yr for any single HAP or ≥ 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or
- (3) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 5 tons/yr for lead (Pb) or any combination of lead and its compounds based on 8,760 hours of operation; or
- (4) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than (<) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hours of operation), but > 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter \leq 10 Microns (PM ₁₀)		Particulate Matter \leq 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency ¹
	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		
GS-004	29.1	7.3	6.7	1.7	0.85	0.21	0.015	0.0037	0.85	0.21	0.85	0.21	0.012	0.0029	Operation Hours	N/A
GS-005	29.1	7.3	6.7	1.7	0.85	0.21	0.015	0.0037	0.85	0.21	0.85	0.21	0.012	0.0029	Operation Hours	N/A
GS-006	55.4	13.8	12.7	3.2	1.63	0.41	0.028	0.0070	1.61	0.40	1.61	0.40	0.022	0.0055	Operation Hours	N/A
BH-003-NG	0.78	3.4	0.66	2.9	0.043	0.19	0.11	0.50	0.060	0.26	0.060	0.26	0.00064	0.0028	N/A	N/A
BH-003-D	1.15	0.076	0.29	0.019	0.020	0.0013	0.41	0.027	0.12	0.0076	0.12	0.0076	0.0023	0.15	N/A	N/A
BS-004	0.59	2.58	0.49	2.16	0.032	0.14	0.086	0.38	0.045	0.20	0.045	0.20	0.00048	0.0021	N/A	N/A
BH-005-NG	1.4	6.3	1.2	5.3	0.079	0.35	0.21	0.92	0.11	0.48	0.11	0.48	0.0012	0.0051	N/A	N/A
BH-005-D	2.1	0.076	0.5	0.019	0.036	0.0013	0.75	0.027	0.21	0.0076	0.21	0.0076	0.0043	0.15	N/A	N/A
BS-009-NG	0.18	0.77	0.19	0.82	0.018	0.079	0.0030	0.013	0.038	0.16	0.038	0.16	0.048	0.21	N/A	N/A
BS-009-D	0.72	0.076	0.18	0.019	0.012	0.0013	0.26	0.027	0.072	0.0076	0.072	0.0076	0.0015	0.15	N/A	N/A
BS-010-NG	0.18	0.77	0.19	0.82	0.018	0.079	0.0030	0.013	0.038	0.16	0.038	0.16	0.048	0.21	N/A	N/A
BS-010-D	0.72	0.076	0.18	0.019	0.012	0.0013	0.26	0.027	0.072	0.0076	0.072	0.0076	0.0015	0.15	N/A	N/A
BH-009-NG	0.98	4.3	0.82	3.6	0.054	0.24	0.14	0.63	0.075	0.33	0.075	0.33	0.00080	0.0035	N/A	N/A
BH-009-D	1.4	0.076	0.36	0.019	0.024	0.0013	0.51	0.027	0.14	0.0076	0.14	0.0076	0.0029	0.15	N/A	N/A

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Unit Number	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency ¹
	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		
TO	0.20	0.20	0.16	0.16	0.011	0.011	0.029	0.029	0.015	0.015	0.015	0.015	0.0012	0.0052	Operation Hours	N/A
Totals of Controlled Emissions	120.4	47.1	29.7	22.4	3.6	1.9	2.4	2.6	4.0	2.5	4.0	2.5	0.15	1.22		

1. Basis for Control Method % Efficiency (e.g., Manufacturer's Data, Field Observation/Test, AP-42, etc.). **N/A**
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number	Total HAPs															
	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	lb/hr	ton/yr
GS-004	0.012	0.0029														
GS-005	0.012	0.0029														
GS-006	0.012	0.0029														
BH-003-NG	0.00064	0.0028														
BH-003-D	0.0023	0.15														
BS-004	0.00048	0.0021														
BH-005-NG	0.0012	0.0051														
BH-005-D	0.0043	0.15														
BS-009-NG	0.048	0.21														
BS-009-D	0.0015	0.15														
BS-010-NG	0.048	0.21														
BS-010-D	0.0015	0.15														
BH-009-NG	0.00080	0.0035														
BH-009-D	0.0029	0.15														
TO	0.0012	0.0052														
Totals of HAPs for all units:	0.15	1.22														

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Purchased Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Purchased Product	Chemical Abstract Service (CAS) Number of HAP or VHAP from Representative As Purchased Product	HAP or VHAP Concentration of Representative As Purchased Product (pounds/gallon, or %)	Concentration Determination (CPDS, SDS, etc.) ¹	Total Product Purchases For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
N/A – No Hazardous materials are stored at this facility.									

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Material and Fuel Storage Table

(E.g., Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment	Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate ¹	Offloading Rate ¹	True Vapor Pressure	Control Method	Seal Type	% Eff. ²
N/A – There are no storage tanks at this facility.											

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NO _x , PM ₁₀ , etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate (acfm)	Stack Inside Diameter (ft)	Stack Type
GS-004	Emergency Generator	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,066	3,868,629	~25	~950	308.2	~6,520	~0.67	Vertical
GS-005	Emergency Generator	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,063	3,868,629	~25	~950	308.2	~6,520	~0.67	Vertical
GS-006	Emergency Generator	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,060	3,868,629	~25	~950	426.3	~13,840	~0.83	Vertical
BH-003	Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,111	3,868,531	~25	~450	35.7	~2,980	~1.33	Vertical
BH-005	Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,106	3,868,516	~25	~450	41.5	~5,455	~1.67	Vertical
BS-004	Steam Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	362,899	3,868,454	~19	~450	19.2 ^{68.8}	~2,235	~0.83	Raincap Vertical
BS-009	Steam Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,106	3,868,514	~28	~450	16.6	~2,338	~1.73	Raincap Vertical
BS-010	Steam Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,107	3,868,538	~34	~450	13.3	~1,870	~1.73	Raincap Vertical
BH-009	Steam Boiler	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,111	3,868,525	~25	~450	35.1	~3,725	~1.5	Vertical
TO	Thermal Oxidizer	CO, NO _x , SO ₂ , PM ₁₀ , PM _{2.5}	363,136	3,868,524	~35.7	~920	13.6	~1,130	~1.33	Vertical

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Updated page received June 29, 2023
Errors corrected

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Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Certification

NOTICE REGARDING SCOPE OF A PERMIT: The Environmental Health Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City of Albuquerque Planning Department or Bernalillo County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City of Albuquerque Planning Department website at <https://www.cabq.gov/planning> and the Bernalillo County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

NOTICE REGARDING ACCURACY OF INFORMATION AND DATA SUBMITTED: Any misrepresentation of a material fact in this application and its attachments is cause for denial of a permit or revocation of part or all of the resulting registration or permit, and revocation of a permit for cause may limit the permittee's ability to obtain any subsequent air quality permit for ten (10) years. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under the Air Quality Control Act, NMSA 1978 §§ 74-2-1 to 74-2-17, is guilty of a misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars (\$10,000) per day per violation or by imprisonment for not more than twelve months, or by both.

I, the undersigned, hereby certify that I have knowledge of the information and data represented and submitted in this application and that the same is true and accurate, including the information and data in any and all attachments, including without limitation associated forms, materials, drawings, specifications, and other data. I also certify that the information represented gives a true and complete portrayal of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I understand that there may be significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. I also understand that the person who has applied for or has been issued an air quality permit by the Department is an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC. Further, I certify that I am qualified and authorized to file this application, to certify the truth and accuracy of the information herein, and bind the source. Moreover, I covenant and agree to comply with any requests by the Department for additional information necessary for the Department to evaluate or make a final decision regarding the application.

Signed this 5 day of June, 2023

Robert W. Rubin
Print Name

Chief Executive Officer
Print Title

Robert W. Rubin
Signature

Role: Owner Operator
 Other Authorized Representative



City of Albuquerque Environmental Health Department Air Quality Program



Construction Permit (20.11.41 NMAC) Application Checklist

This checklist must be returned with the application

Any person seeking a new air quality permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque (“City”) and Bernalillo County (“County”), on behalf of the City Environmental Health Department (“Department”).

The Department will rule an application administratively incomplete if it is missing or has incorrect information. The Department may require additional information that is necessary to make a thorough review of an application, including but not limited to technical clarifications, emission calculations, emission factor usage, additional application review fees if any are required by 20.11.2 NMAC, and new or additional air dispersion modeling.

If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The following are the minimum elements that shall be included in the permit application before the Department can determine whether an application is administratively complete and ready for technical review. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant’s duty to supplement and correct the application includes but is not limited to relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department’s review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING PERMIT APPEALS: A person who has applied for or has been issued an air quality permit by the Department shall be an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC.

NOTICE REGARDING SCOPE OF A PERMIT: The Department’s issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant’s/permittee’s responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at <https://www.cabq.gov/planning> and the County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

The Applicant shall:

20.11.41.13(A) NMAC – Pre-Application Requirements:

Item	Completed	NA ¹	Waived ²
(1) Request a pre-application meeting with the Department using the pre-application meeting request form.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) Attend the pre-application meeting. Date of Pre-application meeting: 2/28/23	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Not Applicable
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

20.11.41.13(B) NMAC – Applicant’s Public Notice Requirements:

Item	Included in Application	NA ¹	Waived ²
(1) Provide public notice in accordance with the regulation, including by certified mail or electronic copy to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Contact list of representative(s) of neighborhood associations and recognized coalitions cannot be more than three months old from the application submittal date.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Provide notice using the Notice of Intent to Construct form.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) In accordance with the regulation, post and maintain in a visible location a weather proof sign provided by the Department.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Not Applicable; For emergency permits, the public notice requirements in 20.11.41.24 NMAC shall apply instead.
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

The Permit Application shall include:

20.11.41.13(E) NMAC – Application Contents

Item	Included In Application	NA ¹	Waived ²
(1) A complete permit application on the most recent form provided by the Department.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) The application form includes:			
a. The owner’s name, street and post office address, and contact information;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The facility/ operator’s name, street address and mailing address, if different from the owner;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The consultant’s name, and contact information, if applicable;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. All information requested on the application form is included (i.e., the form is complete).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) Date application is submitted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) Sufficient attachments for the following:			
a. Ambient impact analysis using an atmospheric dispersion model approved by the U.S. Environmental Protection Agency, and the Department to demonstrate compliance with the applicable ambient air quality standards. See 20.11.01 NMAC. If you are modifying an existing source, the modeling must include the	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Included In Application	NA ¹	Waived ²
emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.			
b. The air dispersion model has been executed pursuant to a protocol that was approved in advance by the Department.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Air dispersion modeling approved protocol date: 04/17/2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Basis or source for each emission rate (including manufacturer's specification sheet, AP-42 section sheets, test data, or corresponding supporting documentation for any other source used).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. All calculations used to estimate potential emission rates and controlled/proposed emissions.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design, drawing, test report and factors which affect the normal operation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Fuel data for each existing and/or proposed piece of fuel burning equipment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Stack and exhaust gas parameters for all existing and proposed emission stacks.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(5) An operational and maintenance strategy detailing:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. steps the applicant will take if a malfunction occurs that may cause emission of a regulated air contaminant to exceed a limit that is included in the permit;	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. the nature of emission during routine startup or shutdown of the source and the source's air pollution control equipment; and	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. the steps the application will take to minimize emissions during routine startup or shutdown.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(6) A map, such as a 7.5'-topographic quadrangle map published by the U.S. Geological Survey or a map of equivalent or greater scale, detail, and precision, including a City or County zone atlas map that shows the proposed location of each process equipment unit involved in the proposed construction, modification, or operation of the source, as applicable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(7) An aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed by the Department in writing.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(8) A complete description of all sources of regulated air contaminants and a process flow diagram depicting the process equipment unit or units at the facility, both existing and proposed, that are proposed to be involved in routine operations and from which regulated air contaminant emissions are expected to be emitted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9) A full description of air pollution control equipment, including all calculations and the basis for all control efficiencies presented, manufacturer's specifications sheets, and site layout and assembly drawings; UTM (universal transverse mercator) coordinates shall be used to identify the location of each emission unit.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10) A description of the equipment or methods proposed by the applicant to be used for emission measurement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(11) The maximum and normal operating time schedules of the source after completion of construction or modification, as applicable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(12) Any other relevant information as the Department may reasonably require, including without limitation:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Applicants shall provide documentary proof that the proposed air quality permitted use of the facility's subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation includes: (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the property is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Included In Application	NA ¹	Waived ²
departments if the property is not subject to City or County zoning jurisdiction. ³ A zone atlas map shall not be sufficient.			
(13) The signature of the applicant, operator, owner or an authorized representative, certifying to the accuracy of all information as represented in the application and attachments, if any.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(14) A check or money order for the appropriate application fee or fees required by 20.11.2 NMAC (Fees).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. *Not Applicable*
2. *It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.*
3. *For emergency permit applications, applicants are not required to submit documentation for the subject property's zoning designation.*



City of Albuquerque

Environmental Health Department

Air Quality Program



Permit Application Review Fee Instructions

All source registration, authority-to-construct, and operating permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modifications applications. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist and submit with a check or money order payable to the “City of Albuquerque Fund 242” and either:

1. be delivered in person to the Albuquerque Environmental Health Department, 3rd floor, Suite 3023 or Suite 3027, Albuquerque-Bernalillo County Government Center, south building, One Civic Plaza NW, Albuquerque, NM or,
2. mailed to Attn: Air Quality Program, Albuquerque Environmental Health Department, P.O. Box 1293, Albuquerque, NM 87103.

The department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment. Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the “Fees” regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.



City of Albuquerque

Environmental Health Department Air Quality Program



Permit Application Review Fee Checklist Effective January 1, 2023 – December 31, 2023

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you should have any questions concerning this checklist, please call 768-1972.

I. COMPANY INFORMATION:

Company Name	Loelace Biomedical Research Institute		
Company Address	2425 Ridgecrest Drive SE, Albuquerque, NM 87108		
Facility Name	Lovelace Biomedical Research Institute, South Facility		
Facility Address	Bldg 9217, Area Y Kirtland AFB-East, Albuquerque, NM 87108		
Contact Person	Carin Kelley		
Contact Person Phone Number	(505) 348-9166		
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
If yes, what is the permit number associated with this modification?	Permit # 0917-M6-1TR		
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III.

Check All That Apply	Stationary Sources	Review Fee	Program Element
Air Quality Notifications			
<input type="checkbox"/>	AQN New Application	\$645.00	2801
<input type="checkbox"/>	AQN Technical Amendment	\$352.00	2802
<input type="checkbox"/>	AQN Transfer of a Prior Authorization	\$352.00	2803
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>See Sections Below</i>	
Stationary Source Review Fees (Not Based on Proposed Allowable Emission Rate)			
<input type="checkbox"/>	Source Registration required by 20.11.40 NMAC	\$ 657.00	2401
<input type="checkbox"/>	A Stationary Source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	\$1,314.00	2301
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>See Sections Below</i>	
Stationary Source Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	\$986.00	2302
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	\$1,971.00	2303
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	\$3,942.00	2304
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	\$5,913.00	2305
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	\$7,884.00	2306
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	\$9,855.00	2307
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>See Section Above</i>	

Federal Program Review Fees for each subpart (In addition to the Stationary Source Application Review Fees above)			
<input type="checkbox"/>	40 CFR 60 - "New Source Performance Standards" (NSPS)	\$1,314.00	2308
<input type="checkbox"/>	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	\$1,314.00	2309
<input type="checkbox"/>	40 CFR 63 - (NESHAPs) Promulgated Standards	\$1,314.00	2310
<input type="checkbox"/>	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	\$13,140.00	2311
<input type="checkbox"/>	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	\$6,570.00	2312
<input type="checkbox"/>	20.11.60 NMAC, Non-Attainment Area Permit	\$6,570.00	2313
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>Not Applicable</i>	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the permit application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II.

Check All That Apply	Modifications	Review Fee	Program Element
Modification Application Review Fees (Not Based on Proposed Allowable Emission Rate)			
<input type="checkbox"/>	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	\$1,314	2321
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>See Sections Below</i>	
Modification Application Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	\$986.00	2322
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	\$1,971.00	2323
<input checked="" type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	\$3,942.00	2324
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	\$5,913.00	2325
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	\$7,884.00	2326
<input type="checkbox"/>	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	\$9,855.00	2327
<input type="checkbox"/>	<i>Not Applicable</i>	<i>See Section Above</i>	
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)			
<input type="checkbox"/>	20.11.60 NMAC, Permitting in Non-Attainment Areas	\$6,570	2333
<input type="checkbox"/>	20.11.61 NMAC, Prevention of Significant Deterioration	\$6,570	2334
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>Not Applicable</i>	
Federal Program Review Fees for each subpart (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)			
<input type="checkbox"/>	40 CFR 60 - "New Source Performance Standards" (NSPS)	\$1,314.00	2328
<input type="checkbox"/>	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	\$1,314.00	2329
<input type="checkbox"/>	40 CFR 63 - (NESHAPs) Promulgated Standards	\$1,314.00	2330
<input type="checkbox"/>	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	\$13,140.00	2331
<input type="checkbox"/>	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	\$6,570.00	2332
<input type="checkbox"/>	20.11.60 NMAC, Non-Attainment Area Permit	\$6,570.00	2333
<input checked="" type="checkbox"/>	<i>Not Applicable</i>	<i>Not Applicable</i>	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the permit application is for an administrative or technical revision of an existing permit issued pursuant to 20.11.41 NMAC, please check one that applies.

Check One	Revision Type	Review Fee	Program Element
<input type="checkbox"/>	Administrative Revisions	\$ 250.00	2340
<input type="checkbox"/>	Technical Revisions	\$ 500.00	2341
<input checked="" type="checkbox"/>	Not Applicable	See Sections II, III or V	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the permit application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
<input type="checkbox"/>	No New Air Dispersion Modeling Required	\$ 500.00	2501
<input type="checkbox"/>	New Air Dispersion Modeling Required	\$ 750.00	2502
<input checked="" type="checkbox"/>	Not Applicable	See Sections II, III or V	

VI. Please submit a check or money order in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	\$0.00
Section III Total	\$3,942.00
Section IV Total	\$0.00
Section V Total	\$0.00
Total Application Review Fee	\$3,942.00

I, the undersigned, a responsible official of the applicant company, certify that to the best of my knowledge, the information stated on this checklist, give a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 5 day of June 2023

Robert W. Rubin
Print Name

Chief Executive Officer
Print Title

Robert W. Rubin
Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:

"Qualified small business" means a business that meets all of the following requirements:

- (1) a business that has 100 or fewer employees;
- (2) a small business concern as defined by the federal Small Business Act;
- (3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
- (4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents (\$0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents (\$0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.

APPENDIX B. PRE-PERMIT APPLICATION MEETING DOCUMENTATION

Pre-Permit Application Meeting Request Form

Pre-Permit Application Meeting Checklist



Pre-Permit Application Meeting Request Form

Air Quality Program- Environmental Health Department

Please complete appropriate boxes and email to aqd@cabq.gov or mail to:

Environmental Health Department
 Air Quality Program
 P.O. Box 1293
 Room 3047
 Albuquerque, NM 87103

Name:	Lovelace Biomedical Research Institute South Facility
Company/Organization:	Lovelace Biomedical Research Institute
Point of Contact: (phone number and email): Preferred form of contact (circle one): Phone <u>E-mail</u> <input checked="" type="checkbox"/>	Jaimy Karacaoglu Phone: (505) 266-6611 Email: jaimy.karacaoglu@trinityconsultants.com Carin Kelley Phone: (505) 348-9166 Email: ckelley@lovelacebiomedical.org
Preferred meeting date/times:	Week of February 27, 2023 or March 6, 2023
Description of Project:	Lovelace Biomedical Research a pre-application meeting for a modification permit application for the South Facility, which is located at Bldg 9217, Area Y Kirtland AFB-East Albuquerque, NM 87115 and is currently permitted under Permit #0917-M6-1TR. Modifications with this permit action include the replacement of a boiler, unit BS-004, with a 6 MMBTU/hr unit. Additionally, units BH-003 and BH-005 will be updated to allow for limited use of diesel fuel. The facility will be a source of NO _x , CO, VOC, PM ₁₀ , PM _{2.5} , SO ₂ , and HAPs. Compliance with the applicable NAAQS and NMAAQs will be demonstrated via air dispersion modeling analysis. A modeling protocol will be submitted to the EHD for approval. Emission estimates will be provided for all applicable equipment at the facility.

City of Albuquerque- Environmental Health Department
 Air Quality Program- Permitting Section
 Phone: (505) 768-1972 Email: aqd@cabq.gov



City of Albuquerque

Environmental Health Department

Air Quality Program



Pre-Permit Application Meeting Checklist

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. Prior to submitting an application, the applicant shall contact the department in writing and request a pre-application meeting for information regarding the contents of the application and the application process. This checklist is provided to aid the applicant and **a copy must be submitted with the application.**

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Name: Lovelace Biomedical Research Institute, South Facility
 Contact: Carin Kelley, (505) 348-9166
 Company/Business: Lovelace Biomedical Research Institute

- Fill out and submit a Pre-Permit Application Meeting Request form
 ⇒ Available online at <http://www.cabq.gov/airquality>
- Emission Factors and Control Efficiencies
 Notes: N/A
- Air Dispersion modeling guidelines and protocol
 Notes: N/A
- Department Policies
 Notes: N/A
- Air quality permit fees
 Notes: N/A
- Public notice requirements
 - Replacement Part 41 Implementation
 - 20.11.41.13 B. Applicant's public notice requirements
 - Providing public notice to neighborhood association/coalitions
 - Neighborhood association: Mesa Del Sol Neighborhood Association
 - Coalition: District 6 Coalition

- Posting and maintaining a weather-proof sign
Notes: N/A

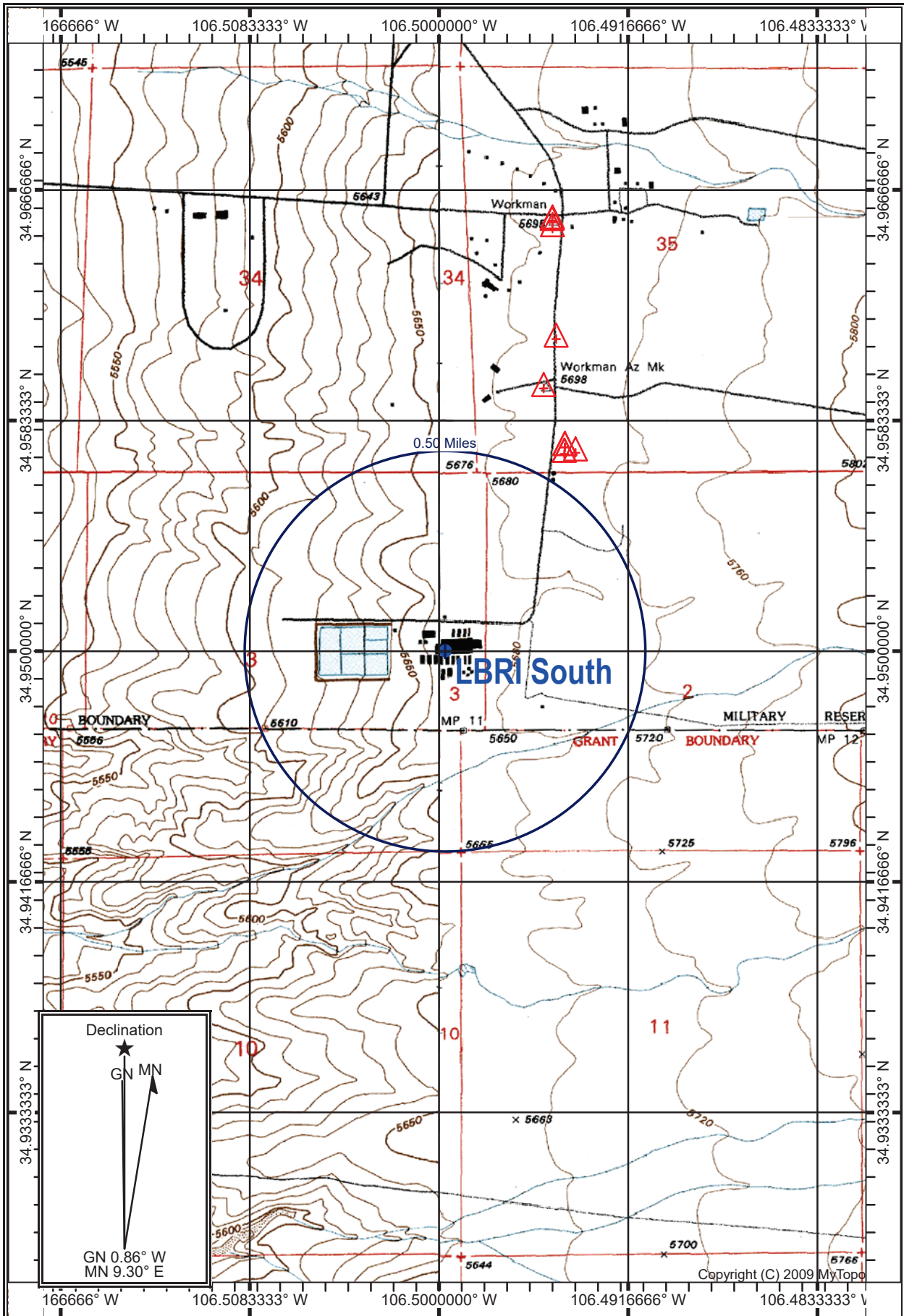
- Regulatory timelines
 - 30 days to rule application complete
 - 90 days to issue completed permit
 - Additional time allotted if there is significant public interest and/or a significant air quality issue
 - Public Information Hearing
 - Complex permitting action

Notes:

APPENDIX C. FACILITY PFD, LOCATION, AND AERIAL PHOTOGRAPH

Facility Location Map

Aerial Photograph of Facility Process Locations



Map Name: MT WASHINGTON (NM) Scale: 1 inch = 1,833 ft. Horizontal Datum: WGS84
 Print Date: 07/23/20 Map Center: 034.9495890° N 106.4993



APPENDIX D. PUBLIC NOTICE

Notice of Intent Cover Letter

Notice of Intent to Construct (NOI) Form

Email Documentation of NOI sent to Neighborhood Associations and Coalitions

Public Notice Sign Guidelines Checklist

Pictures of Posted Notice

SUBJECT: Public Notice of Proposed Air Quality Construction Permit Application

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

What is the Air Quality Permit application review process?

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Lovelace Biomedical Research Institute
Site or Facility Name	Lovelace Biomedical Research Institute, South Facility
Site or Facility Address	Bldg 9217, Area Y Kirtland AFB-East, Albuquerque, NM 87108
New or Existing Source	EXISTING
Anticipated Date of Application Submittal	June 2, 2023
Summary of Proposed Source to Be Permitted	The application is to modify the existing construction permit #0917-M6-1TR. The modification consists of replacing the existing boiler BS-004 with a larger 6 MMBtu/hr unit. Additionally, diesel fuel usage will be added to BS-003 and BS-005.

What emission limits and operating schedule are being requested?

See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Carin Kelley
- ckelley@lovelacebiomedical.org
- (505) 348-9166

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

NOTICE FROM THE APPLICANT

Notice of Intent to Apply for Air Quality Construction Permit

You are receiving this notice because the New Mexico Air Quality Control Act (20.11.41.13B NMAC) requires any owner/operator proposing to construct or modify a facility subject to air quality regulations to provide public notice by certified mail or electronic mail to designated representatives of recognized neighborhood associations and coalitions within 0.5-mile of the property on which the source is or is proposed to be located.

This notice indicates that the owner/operator intends to apply for an Air Quality Construction Permit from the Albuquerque – Bernalillo County Joint Air Quality Program. Currently, no application for this proposed project has been submitted to the Air Quality Program. Applicants are required to include a copy of this form and documentation of mailed notices with their Air Quality Construction Permit Application.

Proposed Project Information

**Applicant's name
and address:**

*Nombre y domicilio del
solicitante:*

Lovelace Biomedical Research Institute, South Facility

**Owner / operator's
name and address:**

*Nombre y domicilio del
propietario u operador:*

Lovelace Biomedical Research Institute

Contact for comments and inquires:

Datos actuales para comentarios y preguntas:

Name (*Nombre*): Carin Kelley

Address (*Domicilio*): 2425 Ridgecrest Drive SE, Albuquerque, NM 87108

Phone Number (*Número Telefónico*): (505) 348-9166

E-mail Address (*Correo Electrónico*): ckelley@lovelacebiomedical.org

Actual or estimated date the application will be submitted to the department:

Fecha actual o estimada en que se entregará la solicitud al departamento: June 12, 2023

Description of the source:

Descripción de la fuente: Research Facility

**Exact location of the source
or proposed source:**

*Ubicación exacta de la fuente o
fuente propuesta:*

Bldg 9217, Area Y Kirtland AFB-East, Albuquerque, NM 87108

Nature of business:

Tipo de negocio: Research Facility

**Process or change for which the
permit is requested:**

*Proceso o cambio para el cuál de solicita el
permiso:*

Replace existing boiler (BS-004) with a larger 6 MMBtu/hr unit. Diesel fuel usage will be added to BS-003 and BS-005

Maximum operating schedule:

Horario máximo de operaciones: 24 hours per day, 7 days per week, 52 weeks per year.

Normal operating schedule:

Horario normal de operaciones: 24 hours per day, 7 days per week, 52 weeks per year.

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant <i>Contaminante de aire</i>	Proposed Construction Permit <i>Permiso de Construcción Propuesto</i>		Net Changes (for permit modification or technical revision) <i>Cambio Neto de Emisiones</i> <i>(para modificación de permiso o revisión técnica)</i>	
	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>
NO_x	120.4	47.1	+1.4	+2.0
CO	29.7	22.4	+0.2	+1.5
VOC	3.6	1.9	+0.07	+0.06
SO₂	2.4	2.6	+0.9	+0.3
PM₁₀	4.0	2.5	+0.2	+0.2
PM_{2.5}	4.0	2.5	+0.2	+0.2
HAP	0.15	1.22	-0.08	-0.08

NOTE: To add extra rows for H₂S or Pb in Word, click in a box in the last row. Click the plus (+) sign that appears on the right of the row to add a row.

Questions or comments regarding this Notice of Intent should be directed to the Applicant. Contact information is provided with the Proposed Project Information on the first page of this notice. To check the status of an Air Quality Construction Permit application, call 311 and provide the Applicant’s information, or visit www.cabq.gov/airquality/air-quality-permits.

The Air Quality Program will issue a Public Notice announcing a 30-day public comment period on the permit application for the proposed project when the application is deemed complete. The Air Quality Program does not process or issue notices on applications that are deemed incomplete. More information about the air quality permitting process is attached to this notice.

Air Quality Construction Permitting Overview

This is the typical process to obtain an Air Quality Construction Permit for Synthetic Minor and Minor sources of air pollution from the Albuquerque – Bernalillo County Joint Air Quality Program.

Step 1: Pre-application Meeting: The Applicant and their consultant must request a meeting with the Air Quality Program to discuss the proposed action. If air dispersion modeling is required, Air Quality Program staff discuss the modeling protocol with the Applicant to ensure that all proposed emissions are considered.

Notice of Intent from the Applicant: Before submitting their application, the Applicant is required to notify all nearby neighborhood associations and interested parties that they intend to apply for an air quality permit or modify an existing permit. The Applicant is also required to post a notice sign at the facility location.

Step 2: Administrative Completeness Review and Preliminary Technical Review: The Air Quality Program has 30 days from the day the permit is received to review the permit application to be sure that it is administratively complete. This means that all application forms must be signed and filled out properly, and that all relevant technical information needed to evaluate any proposed impacts is included. If the application is not complete, the permit reviewer will return the application and request more information from the Applicant. Applicants have three opportunities to submit an administratively complete application with all relevant technical information.

Public Notice from the Department: When the application is deemed complete, the Department will issue a Public Notice announcing a 30-day public comment period on the permit application. This notice is distributed to the same nearby neighborhood associations and interested parties that the Applicant sent notices to, and published on the Air Quality Program's website.

During this 30-day comment period, individuals have the opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing. If approved by the Environmental Health Department Director, Public Information Hearings are held after the technical analysis is complete and the permit has been drafted.

Step 3: Technical Analysis and Draft Permit: Air Quality Program staff review all elements of the proposed operation related to air quality, and review outputs from advanced air dispersion modeling software that considers existing emission levels in the area surrounding the proposed project, emission levels from the proposed project, and meteorological data. The total calculated level of emissions is compared to state and federal air quality standards and informs the decision on whether to approve or deny the Applicant's permit.

Draft Permit: The permit will establish emission limits, standards, monitoring, recordkeeping, and reporting requirements. The draft permit undergoes an internal peer review process to determine if the emissions were properly evaluated, permit limits are appropriate and enforceable, and the permit is clear, concise, and consistent.

Public Notice from the Department: When the technical analysis is complete and the permit has been drafted, the Department will issue a second Public Notice announcing a 30-day public comment period on the technical analysis and draft permit. This second Public Notice, along with the technical analysis documentation and draft permit, will be published on the Air Quality Program's website, and the public notice for availability of the technical analysis and draft permit will only be directly sent to those who requested further information during the first comment period.

Air Quality Construction Permitting Overview

During this second 30-day comment period, residents have another opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing.

Possible Public Information Hearing: The Environmental Health Department Director may decide to hold a Public Information Hearing for a permit application if there is significant public interest and a significant air quality issue. If a Public Information Hearing is held, it will occur after the technical analysis is complete and the permit has been drafted.

Step 4: Public Comment Evaluation and Response: The Air Quality Program evaluates all public comments received during the two 30-day public comment periods and Public Information Hearing, if held, and updates the technical analysis and draft permit as appropriate. The Air Quality Program prepares a response document to address the public comments received, and when a final decision is made on the permit application, the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process. If no comments are received, a response document is not prepared.

Step 5: Final Decision on the Application: After public comments are addressed and the final technical review is completed, the Environmental Health Department makes a final decision on the application. If the permit application meets all applicable requirements set forth by the New Mexico Air Quality Control Act and the federal Clean Air Act, the permit is approved. If the permit application does not meet all applicable requirements, it is denied.

Notifications of the final decision on the permit application and the availability of the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permit process.

The Department must approve a permit application if the proposed action will meet all applicable requirements and if it demonstrates that it will not result in an exceedance of ambient air quality standards. Permit writers are very careful to ensure that estimated emissions have been appropriately identified or quantified and that the emission data used are acceptable.

The Department must deny a permit application if it is deemed incomplete three times, if the proposed action will not meet applicable requirements, if estimated emissions have not been appropriately identified or quantified, or if the emission data are not acceptable for technical reasons.

For more information about air quality permitting, visit www.cabq.gov/airquality/air-quality-permits

Anyssa Choy

From: Anyssa Choy
Sent: Wednesday, May 31, 2023 3:57 PM
To: info@willsonstudio.com; mandy@theremedaydayspa.com; catburns87106@gmail.com; dmills544@gmail.com
Cc: Jaimy Karacaoglu; ckelley@lovelacebiomedical.org; Lopez, Angela; EHD, AQD
Subject: Public Notice of Proposed Air Quality Construction Permit Application
Attachments: Lovelace South Facility NOI_v1.0_2023_0526.pdf

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13.B(1) which requires any applicant seeking an Air Quality Construction Permit pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located.

What is the Air Quality Permit application review process?

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Lovelace Biomedical Research Institute
Site of Facility Name	Lovelace Biomedical Research Institute, South Facility
Site of Facility Address	Bldg 9217, Area Y Kirtland AFB-East, Albuquerque, NM 87108
New or Existing Source	EXISTING
Anticipated Date of Application Submittal	June 2, 2023
Summary of Proposed Source to Be Permitted	The application is to modify the existing construction permit #0917-M6-1TR. The modification consists of replacing the existing boiler BS-004 with a larger 6 MMBtu/hr unit. Additionally, diesel fuel usage will be added to BS-003 and BS-005.

What emission limits and operating schedule are being requested?

See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Carin Kelley
- ckelley@lovelacebiomedical.org
- (505) 348-9166

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972

Anyssa Choy

Associate Consultant

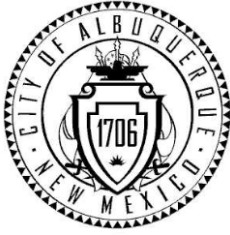
Email: anysachoy@trinityconsultants.com

9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122



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City of Albuquerque

Environmental Health Department

Air Quality Program



Public Notice Sign Guidelines

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. *Prior to submitting an application, the applicant shall post and maintain a weather-proof sign provided by the department. The applicant shall keep the sign posted until the department takes final action on the permit application; if an applicant can establish to the department's satisfaction that the applicant is prohibited by law from posting, at either location required, the department may waive the posting requirement and may impose different notification requirements. A copy of this form must be submitted with your application.*

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Name: Lovelace Biomedical Research Institute, South Facility
Contact: Carin Kelley
Company/Business: Lovelace Biomedical Research Institute

The sign must be posted at the more visible of either the proposed or existing facility entrance (or, if approved in advance and in writing by the department, at another location on the property that is accessible to the public)

The sign shall be installed and maintained in a condition such that members of the public can easily view, access, and read the sign at all times.

The lower edge of the sign board should be mounted a minimum of 2' above the existing ground surface to facilitate ease of viewing

Attach a picture of the completed, properly posted sign to this document

Check here if the department has waived the sign posting requirement.

Alternative public notice details:



Proposed Air Quality Construction Permit Permiso de Construcción de Calidad del Aire Propuesto



1. Applicant's Name:
Nombre del solicitante: **Lovelace Biomedical Research Institute, South Facility**
Owner or Operator's Name:
Nombre del Proprietario o Operador: **Lovelace Biomedical Research Institute**
2. Actual or Estimated Date the Application will be Submitted to the Department:
Fecha Actual o Estimada en que se Entregará la Solicitud al Departamento: **June 2023**
3. Exact Location of the Source or Proposed Source:
Ubicación Exacta de la Fuente o Fuente Propuesta: **Bldg 9217, Area Y Kirland AFB-East, ABQ, NM 87108**
4. Description of the Source:
Descripción de la Fuente: **Research Facility**
Nature of Business:
Tipo de Negocio: **Research Facility**
Process or change for which a permit is requested:
Proceso o cambio para el cual se solicita el permiso: **Replace existing boiler with larger 6 MHPa & units. Add Diesel fuel usage added to 03-003 and 05-005.**

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant Contaminante de Aire	Proposed Construction Permit Permiso de Construcción Propuesta		Net Change Emissions (Por permit modification or technical revision) Cambio Neto de Emisiones (Cambio modificación de permiso o revisión técnica)	
	Pounds per hour libras por hora	Tons per year toneladas por año	Pounds per hour libras por hora	Tons per year toneladas por año
NO _x	120.4	47.1	+1.4	+2.0
CO	29.7	27.4	+0.2	+1.5
VOC	3.6	1.9	+0.09	+0.06
SO _x	2.4	2.6	+0.2	+0.3
PM ₁₀	4.0	3.5	+0.2	+0.2
PM _{2.5}	4.0	3.5	+0.2	+0.2
HAP	0.15	1.22	-0.08	-0.08

5. Maximum Operating Schedule:
Horario Máximo de Operaciones: **24 hours per day, 7 days per week, 52 weeks per year.**
- Normal Operation Schedule:
Horario Normal de Operaciones: **24 hours per day, 7 days per week, 52 weeks per year.**

6. Current Contact Information for Comments and Inquiries

Datos actuales para Comentarios e Inquiries

Name (Nombre): **Carin Kelley**
Address (Dirección): **2425 Ridgewood Drive SE, Albuquerque, NM 87108**
Phone Number (Número Telefónico): **(505) 348-9166**
Email Address (Correo Electrónico): **ckelley@lovelacebiomedical.org**

Call 311 for additional information concerning this project, the Air Quality Program, or to file a complaint.
Lláme al 311 para obtener información adicional sobre este proyecto, del Programa de Calidad del Aire, o para presentar una queja.
Dal 311 de bali them thong tin hoi de khau, noi va de noi, Chong Thoi Chai Lung Khing Kh.

City of Albuquerque, Environmental Health Department, Air Quality Program - Stationary Source Permitting
Ciudad de Albuquerque, Departamento de Salud Ambiental, Programa de Calidad del Aire - Permisos para Fuentes Fijas
(505) 786-1872, ee@ciabq.gov

THIS SIGN SHALL REMAIN POSTED UNTIL THE DEPARTMENT TAKES FINAL ACTION ON THE PERMIT APPLICATION.
ESTE AVISO DEBERÁ DE MANTENERSE PUESTO HASTA QUE EL DEPARTAMENTO TOMA UNA DECISIÓN SOBRE LA SOLICITUD DE PERMISO.

Name of the Applicant: Lovelace Bioscience

Owner or Operator's Name: Lovelace Bioscience

Nombre del Propietario u Operador: Lovelace Bioscience

2. Actual or Estimated Date the Application will be Submitted:

Fecha Actual o Estimada en que se Entregará la Solicitud de Permiso:

3. Exact Location of the Source or Proposed Source:

Ubicación Excavato de la Fuente o Fuente Propuesta: Bldg 5

4. Description of the Source:

Descripción de la Fuente: Research Facility

Nature of Business:

Tipo de Negocio: Research Facility

Process or change for which a permit is requested:

Proceso o cambio para el cual se solicita el permiso: Replumbing

Preliminary estimate of the maximum quantities of each air contaminant:

Estimación preliminar de las cantidades máximas de cada contaminante:

Air Contaminant Contaminante de Aire	Proposed Construction Permit Permiso de Construcción	
	Pounds per hour libras por hora	Tons toneladas
NO _x	120.4	47
CO	29.7	23.4
VOC	3.6	1.9
SO ₂	2.4	2.6
PM ₁₀	4.0	2.5
PM _{2.5}	4.0	2.5
HAP	0.15	1.22

5. Maximum Operating Schedule:

Horario Máximo de Operaciones: 24 hours per day, 7 days per week

Normal Operation Schedule:

Horario Normal de Operaciones: 24 hours per day, 7 days per week

6. Current Contact Information for Comments and Inquiries:

Datos actuales para Comentarios y Preguntas

Name (Nombre): Carin Kelley

Address (Domicilio): 2425 Ridgecrest Drive SE,

Phone Number (Número Telefónico): (505) 348-XXXX

Email Address (Correo Electrónico): ckkelley@lovelacebioscience.com

Call 311 for additional information concerning this project.

Llame al 311 para obtener información adicional sobre este proyecto.

Go! 311 để biết thêm thông tin hoặc để khiếu nại.

City of Albuquerque, Environmental Health Department

Ciudad de Albuquerque, Departamento de Salud Ambiental,

(505) 768-1977

THIS SIGN SHALL REMAIN POSTED UNTIL THE DEPARTMENT OF ENVIRONMENTAL HEALTH DEPARTMENT
ESTE AVISO DEBERÁ DE MANTENERSE PUESTO HASTA QUE EL DEPARTAMENTO DE SALUD AMBIENTAL

APPENDIX E. AIR EMISSION CALCULATIONS

Lovelace Biomedical Research Institute (LBRI) SOUTH

Uncontrolled Emission Source Summary

Emission Unit	Fuel	CO		NO _x		VOC		SO ₂		PM	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
GS-004	Diesel	6.7	29.2	29.1	127.3	0.85	3.7	0.015	0.064	0.85	3.71
GS-005	Diesel	6.7	29.2	29.1	127.3	0.85	3.7	0.015	0.064	0.85	3.71
GS-006	Diesel	12.7	55.6	55.4	242.5	1.6	7.1	0.028	0.12	1.6	7.1
BH-003	NG	0.66	2.9	0.78	3.4	0.043	0.19	0.11	0.50	0.060	0.26
	Diesel	0.29	0.0	1.15	0.1	0.020	0.00	0.41	0.03	0.115	0.01
BS-004	NG	0.49	2.16	0.59	2.58	0.0324	0.142	0.086	0.38	0.045	0.196
BH-005	NG	1.2	5.3	1.4	6.3	0.079	0.35	0.21	0.92	0.11	0.48
	Diesel	0.5	0.0	2.1	0.1	0.036	0.00	0.75	0.03	0.21	0.01
BS-009	NG	0.19	0.82	0.18	0.77	0.018	0.079	0.0030	0.013	0.038	0.16
	Diesel	0.18	0.019	0.72	0.076	0.012	0.0013	0.26	0.027	0.072	0.0076
BS-010	NG	0.19	0.82	0.18	0.77	0.018	0.079	0.0030	0.013	0.038	0.16
	Diesel	0.18	0.019	0.72	0.076	0.012	0.0013	0.26	0.027	0.072	0.0076
BH-009	NG	0.82	3.6	0.98	4.3	0.054	0.24	0.14	0.63	0.075	0.33
	Diesel	0.36	0.019	1.4	0.076	0.024	0.0013	0.51	0.027	0.14	0.0076
Thermal Oxidizer	NG	0.16	0.72	0.20	0.86	0.011	0.047	0.029	0.13	0.015	0.065
Worst Case Grand Total		29.7	130.3	120.4	516.5	3.6	15.7	2.4	3.0	4.0	16.2

Emission Unit	Fuel	HCOH		Benzene		Toluene		n-Hexane		Total HAPs	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
GS-004	Diesel	6.69E-04	2.93E-03	6.58E-03	2.88E-02	2.38E-03	1.04E-02	-	-	1.15E-02	5.06E-02
GS-005	Diesel	6.69E-04	2.93E-03	6.58E-03	2.88E-02	2.38E-03	1.04E-02	-	-	1.15E-02	5.06E-02
GS-006	Diesel	1.27E-03	5.58E-03	1.25E-02	5.49E-02	4.54E-03	1.99E-02	-	-	2.20E-02	9.63E-02
BH-003	NG	5.88E-04	2.58E-03	1.65E-05	7.21E-05	2.67E-05	1.17E-04	-	-	6.36E-04	2.79E-03
	Diesel	1.90E-03	1.25E-01	1.23E-05	8.09E-04	3.57E-04	2.34E-02	-	-	2.34E-03	1.54E-01
BS-004	NG	4.41E-04	1.93E-03	1.24E-05	5.41E-05	2.00E-05	8.76E-05	-	-	4.77E-04	2.09E-03
BH-005	NG	1.08E-03	4.72E-03	3.02E-05	1.32E-04	4.88E-05	2.14E-04	-	-	1.16E-03	5.10E-03
	Diesel	3.48E-03	1.25E-01	2.25E-05	8.09E-04	6.53E-04	2.34E-02	-	-	4.29E-03	1.54E-01
BS-009	NG	3.69E-04	1.62E-03	1.03E-05	4.53E-05	1.67E-05	7.33E-05	-	-	4.77E-02	2.09E-01
	Diesel	1.19E-03	1.25E-01	7.73E-06	8.09E-04	2.24E-04	2.34E-02	-	-	1.47E-03	1.54E-01
BS-010	NG	3.69E-04	1.62E-03	1.03E-05	4.53E-05	1.67E-05	7.33E-05	-	-	4.77E-02	2.09E-01
	Diesel	1.19E-03	1.25E-01	7.73E-06	8.09E-04	2.24E-04	2.34E-02	-	-	1.47E-03	1.54E-01
BH-009	NG	7.35E-04	3.22E-03	2.06E-05	9.02E-05	3.33E-05	1.46E-04	-	-	7.95E-04	3.48E-03
	Diesel	2.37E-03	1.25E-01	1.54E-05	8.09E-04	4.46E-04	2.34E-02	-	-	2.93E-03	1.54E-01
Thermal Oxidizer	NG	2.28E-05	4.38E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.99E-04	1.53E-02	1.19E-03	2.28E-02
Worst Case Grand Total		0.013	0.65	0.026	0.12	0.011	0.16	0.001	0.02	0.15	1.4

Note: Since both dual fuels in boilers can't be burned simultaneously at full load, the worst case lb/hr emissions are not additive. Except for HAPs, the bolded worst-case lb/hr emissions are typically from burning diesel so those are used in the application. Worst-case tpy emissions from dual fuels could be at least partially additive, so we have added those for use in the application.

Controlled Emission Source Summary

Emission Unit	Fuel	CO		NO _x		VOC		SO ₂		PM	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
GS-004	Diesel	6.7	1.7	29.1	7.3	0.85	0.21	0.015	0.0037	0.85	0.21
GS-005	Diesel	6.7	1.7	29.1	7.3	0.85	0.21	0.015	0.0037	0.85	0.21
GS-006	Diesel	12.7	3.2	55.4	13.8	1.6	0.41	0.028	0.0070	1.6	0.40
BH-003	NG	0.66	2.9	0.78	3.4	0.043	0.19	0.11	0.50	0.060	0.26
	Diesel	0.29	0.0	1.15	0.1	0.020	0.00	0.41	0.03	0.115	0.01
BS-004	NG	0.49	2.16	0.59	2.58	0.0324	0.142	0.086	0.38	0.045	0.196
BH-005	NG	1.2	5.3	1.4	6.3	0.079	0.35	0.21	0.92	0.11	0.48
	Diesel	0.5	0.0	2.1	0.1	0.036	0.00	0.75	0.03	0.21	0.01
BS-009	NG	0.19	0.82	0.18	0.77	0.018	0.079	0.0030	0.013	0.038	0.16
	Diesel	0.18	0.019	0.72	0.076	0.012	0.0013	0.26	0.027	0.072	0.0076
BS-010	NG	0.19	0.82	0.18	0.77	0.018	0.079	0.0030	0.013	0.038	0.16
	Diesel	0.18	0.019	0.72	0.076	0.012	0.0013	0.26	0.027	0.072	0.0076
BH-009	NG	0.82	3.6	0.98	4.3	0.054	0.24	0.14	0.63	0.075	0.33
	Diesel	0.36	0.019	1.4	0.076	0.024	0.0013	0.51	0.027	0.14	0.0076
Thermal Oxidizer	NG	0.16	0.16	0.20	0.20	0.011	0.011	0.029	0.029	0.015	0.015
Worst Case Grand Total		29.7	22.4	120.4	47.1	3.6	1.9	2.4	2.6	4.0	2.5

Emission Unit	Fuel	HCOH		Benzene		Toluene		n-Hexane		Total HAPs	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
GS-004	Diesel	6.7E-04	1.7E-04	6.6E-03	1.6E-03	2.4E-03	6.0E-04	-	-	0.012	0.0029
GS-005	Diesel	6.7E-04	1.7E-04	6.6E-03	1.6E-03	2.4E-03	6.0E-04	-	-	0.012	0.0029
GS-006	Diesel	1.3E-03	3.2E-04	1.3E-02	3.1E-03	4.5E-03	1.1E-03	-	-	0.022	0.0055
BH-003	NG	5.9E-04	2.6E-03	1.6E-05	7.2E-05	2.7E-05	1.2E-04	-	-	6.36E-04	0.0028
	Diesel	1.9E-03	1.2E-01	1.2E-05	8.1E-04	3.6E-04	2.3E-02	-	-	0.002	0.154
BS-004	NG	4.4E-04	1.9E-03	1.2E-05	5.4E-05	2.0E-05	8.8E-05	-	-	0.0005	0.002
BH-005	NG	1.1E-03	4.7E-03	3.0E-05	1.3E-04	4.9E-05	2.1E-04	-	-	0.0012	0.01
	Diesel	3.5E-03	1.2E-01	2.3E-05	8.1E-04	6.5E-04	2.3E-02	-	-	0.0043	0.15
BS-009	NG	3.7E-04	1.6E-03	1.0E-05	4.5E-05	1.7E-05	7.3E-05	-	-	0.048	0.21
	Diesel	1.2E-03	1.2E-01	7.7E-06	8.1E-04	2.2E-04	2.3E-02	-	-	0.0015	0.15
BS-010	NG	3.7E-04	1.6E-03	1.0E-05	4.5E-05	1.7E-05	7.3E-05	-	-	0.048	0.21
	Diesel	1.2E-03	1.2E-01	7.7E-06	8.1E-04	2.2E-04	2.3E-02	-	-	0.0015	0.15
BH-009	NG	7.4E-04	3.2E-03	2.1E-05	9.0E-05	3.3E-05	1.5E-04	-	-	7.95E-04	0.0035
	Diesel	2.4E-03	1.2E-01	1.5E-05	8.1E-04	4.5E-04	2.3E-02	-	-	0.0029	0.15
Thermal Oxidizer	NG	2.3E-05	1.0E-04	0.00	0.00	0.00	0.00	8.0E-04	3.5E-03	0.0012	0.0052
Worst Case Grand Total		0.013	0.64	0.026	0.011	0.011	0.12	0.0008	0.0035	0.15	1.22

Note: Since both dual fuels in boilers can't be burned simultaneously at full load, the worst case lb/hr emissions are not additive. Except for HAPs, the worst-case lb/hr emissions are typically from burning diesel so those are used in the application. Worst-case tpy emissions from dual fuels could be at least partially additive, so we have added those for use in the application.

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: GS-004
 Maker: Cummins
 Model: KTA-2300-GS
 Description: 1979 PRE-NSPS Engine
 Fuel Type: Diesel

Generator

1,211.0 hp engine

Criteria Air Pollutants	EPA AP-42		NSPS Nonroad Limits	Values for Permit Application Forms						Emission Factor Reference
	Emission Factor ¹		Emission Limit	Emission Factor	Hourly Emissions		Annual Emissions ²		Potential	
	(lb/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	g/hr	lb/hr	lb/yr	ton/yr	ton/yr	
Nitrogen Oxides	0.024					29.1	14,532.0	7.3	127.3	AP-42 Table 3.4-1, Diesel Fuel
Carbon Monoxide	5.50E-03					6.7	3,330.3	1.7	29.2	
Sulfur Oxides ³	1.21E-05	0.0055	Pre-NSPS	0.0055	6.7	0.015	7.3	0.0037	0.064	
Particulate Matter ⁴	7.00E-04	0.32	Pre-NSPS	0.32	384.5	0.85	423.9	0.21	3.7	
Volatile Organic Compounds	7.05E-04	0.32	Pre-NSPS	0.32	387.3	0.85	426.9	0.21	3.7	
	lb/MMBtu	lb/hp-hr ⁵	(g/hp-hr)							
Benzene	7.76E-04	5.43E-06	Pre-NSPS			0.0066	3.3	1.6E-03	2.9E-02	AP-42 Table 3.4-3, Diesel Fuel
Toluene	2.81E-04	1.97E-06	Pre-NSPS			0.0024	1.2	6.0E-04	1.0E-02	
Xylenes	1.93E-04	1.35E-06	Pre-NSPS			0.0016	0.8	4.1E-04	7.2E-03	
Formaldehyde	7.89E-05	5.52E-07	Pre-NSPS			0.0007	0.3	1.7E-04	2.9E-03	
Acetaldehyde	2.52E-05	1.76E-07	Pre-NSPS			0.00021	0.1	5.3E-05	9.4E-04	
Acroline	7.88E-06	5.52E-08	Pre-NSPS			0.00007	0.03	1.7E-05	2.9E-04	
						Σ = 0.012		Σ = 0.0029	0.051	

The generator operates a maximum of: **500.0 hours per year** and must be powered by ultra low sulfur (ULS) diesel fuel.

¹ Emission factors from EPA AP-42 Section 3.4 Large Diesel Stationary Diesel..... Engines, Table 3.4-1 (October 1996), for generators greater than 600 hp. AP-42 Volatile Organic Compounds conservatively assumed to be Total Organic Compounds (TOC).

² The following equation was used to calculate annual emissions for each pollutant:
 Annual emissions (lb/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr)
 Annual emissions (ton/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr) / 2000 (lb/ton)

³ SOx emission factor is the maximum value of the manufacturer emission factor and the EPA AP-42 emission factor, as specified by the AEHD NSPS generator application form. Per Regan Eyerman's 5/1/13 email, the AP-42 SOx factor should be 3.67*S where S (% sulfur in fuel) = 0.0015 for 15ppm max sulfur allowed in required ULS diesel fuel in IIII diesel engines.

⁴ Particulate matter emissions are considered to be < 10 µm in size. Therefore PM emissions also reflect particulate matter less than 10 µm (PM₁₀) and particulate matter less than 2.5 µm (PM_{2.5}).

⁵AP-42 (10/96) Table 3.3-1, footnote "a" says 7,000 Btu = 1 hp-hr (.007mmBtu = 1hp-hr)

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: GS-005
 Maker: Cummins
 Model: KTA-2300-GS
 Description: 1977 PRE-NSPS Engine
 Fuel Type: Diesel

Generator

1,211.0 hp engine

Criteria Air Pollutants	EPA AP-42		NSPS Nonroad Limits	Values for Permit Application Forms						Emission Factor Reference
	Emission Factor ¹			Emission Limit	Emission Factor	Hourly Emissions		Annual Emissions ²		
	(lb/hp-hr)	(g/hp-hr)	(g/hp-hr)			(g/hp-hr)	g/hr	lb/hr	lb/yr	
Nitrogen Oxides	0.024					29.1	14,532.0	7.3	127.3	AP-42 Table 3.4-1, Diesel Fuel
Carbon Monoxide	5.50E-03					6.7	3,330.3	1.7	29.2	
Sulfur Oxides ³	1.21E-05	0.0055	Pre-NSPS	0.0055	6.7	0.015	7.3	0.0037	0.064	
Particulate Matter ⁴	7.00E-04	0.32	Pre-NSPS	0.32	384.5	0.85	423.9	0.21	3.7	
Volatile Organic Compounds	7.05E-04	0.32	Pre-NSPS	0.32	387.3	0.85	426.9	0.21	3.7	
	lb/MMBtu	lb/hp-hr ⁵								
Benzene	7.76E-04	5.43E-06	Pre-NSPS			0.0066	3.3	1.6E-03	2.9E-02	AP-42 Table 3.4-3, Diesel Fuel
Toluene	2.81E-04	1.97E-06	Pre-NSPS			0.0024	1.2	6.0E-04	1.0E-02	
Xylenes	1.93E-04	1.35E-06	Pre-NSPS			0.0016	0.8	4.1E-04	7.2E-03	
Formaldehyde	7.89E-05	5.52E-07	Pre-NSPS			0.0007	0.3	1.7E-04	2.9E-03	
Acetaldehyde	2.52E-05	1.76E-07	Pre-NSPS			0.00021	0.1	5.3E-05	9.4E-04	
Acroline	7.88E-06	5.52E-08	Pre-NSPS			0.00007	0.03	1.7E-05	2.9E-04	
						Σ = 0.012		Σ = 0.0029	0.051	

The generator operates a maximum of: **500.0 hours per year** and must be powered by ultra low sulfur (ULS) diesel fuel.

¹ Emission factors from EPA AP-42 Section 3.4 Large Diesel Stationary Diesel..... Engines, Table 3.4-1 (October 1996), for generators greater than 600 hp. AP-42 Volatile Organic Compounds conservatively assumed to be Total Organic Compounds (TOC).

² The following equation was used to calculate annual emissions for each pollutant:
 Annual emissions (lb/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr)
 Annual emissions (ton/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr) / 2000 (lb/ton)

³ SOx emission factor is the maximum value of the manufacturer emission factor and the EPA AP-42 emission factor, as specified by the AEHD NSPS generator application form. Per Regan Eyerman's 5/1/13 email, the AP-42 SOx factor should be 3.67*S where S (% sulfur in fuel) = 0.0015 for 15ppm max sulfur allowed in required ULS diesel fuel in IIII diesel engines.

⁴ Particulate matter emissions are considered to be < 10 µm in size. Therefore PM emissions also reflect particulate matter less than 10 µm (PM₁₀) and particulate matter less than 2.5 µm (PM_{2.5}).

⁵AP-42 (10/96) Table 3.3-1, footnote "a" says 7,000 Btu = 1 hp-hr (.007mmBtu = 1hp-hr)

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: GS-006
 Maker: Caterpillar
 Model: 3516-STD
 Description: 1988 PRE-NSPS Engine
 Fuel Type: Diesel

Generator
2,307.0 hp engine

Criteria Air Pollutants	EPA AP-42		NSPS Nonroad Limits	Values for Permit Application Forms						Emission Factor Reference
	Emission Factor ¹			Emission Limit	Emission Factor	Hourly Emissions		Annual Emissions ²		
	(lb/hp-hr)	(g/hp-hr)	(g/hp-hr)			(g/hp-hr)	g/hr	lb/hr	lb/yr	
Nitrogen Oxides	0.024					55.4	27,684.0	13.8	242.5	AP-42 Table 3.4-1, Diesel Fuel
Carbon Monoxide	5.50E-03					12.7	6,344.3	3.2	55.6	
Sulfur Oxides ³	1.21E-05	0.0055	Pre-NSPS	0.0055	12.7	0.028	14.0	0.0070	0.123	
Particulate Matter ⁴	7.00E-04	0.32	Pre-NSPS	0.32	732.5	1.61	807.5	0.40	7.1	
Volatile Organic Compounds	7.05E-04	0.32	Pre-NSPS	0.32	737.8	1.63	813.2	0.41	7.1	
	lb/MMBtu	lb/hp-hr ⁵								
Benzene	7.76E-04	5.43E-06	Pre-NSPS			0.0125	6.3	3.1E-03	5.5E-02	AP-42 Table 3.4-3, Diesel Fuel
Toluene	2.81E-04	1.97E-06	Pre-NSPS			0.0045	2.3	1.1E-03	2.0E-02	
Xylenes	1.93E-04	1.35E-06	Pre-NSPS			0.0031	1.6	7.8E-04	1.4E-02	
Formaldehyde	7.89E-05	5.52E-07	Pre-NSPS			0.0013	0.64	3.2E-04	5.6E-03	
Acetaldehyde	2.52E-05	1.76E-07	Pre-NSPS			0.00041	0.20	1.0E-04	1.8E-03	
Acroline	7.88E-06	5.52E-08	Pre-NSPS			0.00013	0.064	3.2E-05	5.6E-04	
						Σ = 0.022		Σ = 0.0055	0.096	

The generator operates a maximum of: **500.0 hours per year** and must be powered by ultra low sulfur (ULS) diesel fuel.

¹ Emission factors from EPA AP-42 Section 3.4 Large Diesel Stationary Diesel..... Engines, Table 3.4-1 (October 1996), for generators greater than 600 hp. AP-42 Volatile Organic Compounds conservatively assumed to be Total Organic Compounds (TOC).

² The following equation was used to calculate annual emissions for each pollutant:
 Annual emissions (lb/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr)
 Annual emissions (ton/yr) = Hourly emissions (lb/hr) * 500 (hrs/yr) / 2000 (lb/ton)

³ SOx emission factor is the maximum value of the manufacturer emission factor and the EPA AP-42 emission factor, as specified by the AEHD NSPS generator application form. Per Regan Eyerman's 5/1/13 email, the AP-42 SOx factor should be 3.67*S where S (% sulfur in fuel) = 0.0015 for 15ppm max sulfur allowed in required ULS diesel fuel in IIII diesel engines.

⁴ Particulate matter emissions are considered to be < 10 µm in size. Therefore PM emissions also reflect particulate matter less than 10 µm (PM₁₀) and particulate matter less than 2.5 µm (PM_{2.5}).

⁵AP-42 (10/96) Table 3.3-1, footnote "a" says 7,000 Btu = 1 hp-hr (.007mmBtu = 1hp-hr)

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BH-003
Maker: Continental
Model: 13799
Description: Boiler, natural gas and diesel fired
Serial Number: F9C150LW B-6024-3436

Natural Gas

Fuel Consumption 8.00 MMBtu/hr Input heat rate
 Fuel heat value 1000 Btu/scf Nominal LHV of fuel gas
 Hourly fuel usage 8.0 Mscf/hr Fuel usage
 Annual fuel usage 70.1 MMscf/yr Annual usage
 Operating hours 8760.0 hr/yr

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ¹	PM	
	100	84	5.5		7.6	lb/MMscf
	98.0	82.4	5.4		7.5	lb/MMscf
	0.8	0.7	0.043		0.060	lb/hr
				50		gr Total Sulfur/Mscf
Total	0.78	0.66	0.043	0.11	0.060	lb/hr
	3.4	2.9	0.19	0.50	0.26	tpy

Unit emission rates from AP-42 Table 1.4-1 & 2 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 Pipeline specification

¹SO₂ emissions are calculated based on fuel consumption and fuel Sulfur concentration of 50 gr/Mscf.
 SO₂ calculation assumes 100% conversion of fuel elemental sulfur to SO₂.

HCOH	Benzene	Toluene	Naphthalene	Total HAPs	
7.50E-02	2.10E-03	3.40E-03	6.10E-04		lb/MMSCF
7.35E-02	2.06E-03	3.33E-03	5.98E-04		lb/MMSCF
0.00059	0.00002	0.00003	0.00000	0.0006	lb/hr
0.00258	0.00007	0.00012	0.00002	0.0028	tpy

Emission factors from AP-42 Table 1.4-3
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 lb/hr * (8760hr/yr / 2000lb/ton)

Diesel Fuel

Fuel Consumption 7,560 gal/yr (Worst Case Scenario: the maximum permitted 7,560 gal/yr of diesel is consumed by this boiler, i.e all the other three (3) are offline.)
 Diesel Energy Content 139,000 Btu/gal = 0.139 MMBtu/gal Engineering estimate
 Boiler Heat Input 8.0 MMBtu/hr
 Diesel Consumption Rate 58 gal/hr Boiler Heat Input (MMBtu/hr) / by Diesel Energy Content (Btu/gal)
 Max Hours per year 131 hr Fuel Consumption (gal/yr) / Diesel Consumption Rate (gal/hr)

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ³	PM	
	20	5	0.34	7.1	2	lb/Mgal
Total	1.2	0.29	0.020	0.41	0.12	lb/hr
	151.2	37.8	2.6	53.7	15.1	lb/yr
	0.076	0.019	0.0013	0.027	0.0076	tpy

Unit emission rates from AP-42 Table 1.3-1 & 1.3-3
 lb/Mgal * Diesel Fuel Rate (gal/hr) / 1,000
 lb/Mgal * Fuel Consumption (gal/yr) / 1,000
 Divide (/) by 2,000

³ Assumed the weight % of sulfur in distillate oil is 5% to calculate the SO₂ emission factor.

Based on AP-42 Emission Factors

HCOH	Benzene	Toluene	Naphthalene	Xylene	Ethylbenzene	Total HAPs	
3.30E-02	2.14E-04	6.20E-03	1.13E-03	1.09E-04	6.36E-05	-	lb/Mgal
1.9E-03	1.2E-05	3.6E-04	6.5E-05	6.3E-06	3.7E-06	2.3E-03	lb/hr
1.2E-01	8.1E-04	2.3E-02	4.3E-03	4.1E-04	2.4E-04	1.5E-01	ton/yr

AP-42 Table 1.3-9

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BH-005
 Maker: Kewanee
 Model: L3W-350-G02-LE
 Description: Boiler, natural gas and diesel fired
 Serial Number: KF16.1-GO-150/AJ4708 6-2

Reboiler Fuel Usage

Fuel Consumption 14.65 MMBtu/hr Input heat rate
 Fuel heat value 1000 Btu/scf Nominal LHV of fuel gas
 Hourly fuel usage 14.6 Mscf/hr Fuel usage
 Annual fuel usage 128.3 MMscf/yr Annual usage
 Operating hours 8760.0 hr/yr

Based on AP-42 Emission Factors

	NO_x	CO	VOC	SO₂¹	PM	
	100	84	5.5		7.6	lb/MMscf
	98.0	82.4	5.4		7.5	lb/MMscf
	1.4	1.2	0.079		0.11	lb/hr
				50		gr Total Sulfur/Mscf
Total	1.4	1.2	0.079	0.21	0.11	lb/hr
	6.3	5.3	0.35	0.92	0.48	tpy

Unit emission rates from AP-42 Table 1.4-1 & 2 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 Pipeline specification

¹SO₂ emissions are calculated based on fuel consumption and fuel Sulfur concentration of 50 gr/Mscf.
 SO₂ calculation assumes 100% conversion of fuel elemental sulfur to SO₂.

	HCOH	Benzene	Toluene	Naphthalene	Total HAPs	
	7.50E-02	2.10E-03	3.40E-03	6.10E-04		lb/MMSCF
	7.35E-02	2.06E-03	3.33E-03	5.98E-04		lb/MMSCF
	0.00108	0.00003	0.00005	0.00001	0.0012	lb/hr
	0.00472	0.00013	0.00021	0.00004	0.0051	tpy

Emission factors from AP-42 Table 1.4-3
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 lb/hr * (8760hr/yr / 2000lb/ton)

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BS-010
Maker: Hurst
Model: SA-GP2-150-150
Description: Boiler, natural gas and diesel fuel fired
Serial Number: 5750-150-317

Natural Gas		
Fuel Consumption	5.021 MMBtu/hr	Input heat rate
Fuel heat value	1000 Btu/scf	Nominal LHV of fuel gas
Hourly fuel usage	5.0 Mscf/hr	Fuel usage
Annual fuel usage	44.0 MMscf/yr	Annual usage
Operating hours	8760.0 hr/yr	therefore uncontrolled and controlled emissions are the same

Based on Oilon Specification Sheet

	NO _x	CO	VOC	SO ₂	PM		
	0.035	0.0375	0.0036	0.0006	0.0075	lb/MMBtu	From Oilon specification sheet.
Total	0.18	0.19	0.018	0.0030	0.038	lb/hr	
	0.77	0.82	0.079	0.013	0.16	tpy	

Based on AP-42 Emission Factors

	HCOH	Benzene	Toluene	Hexane	Ethane	Pentane	Butane	Dichlorobenzene	Total HAPs	
	0.075	2.10E-03	3.40E-03	1.80	3.10	2.60	2.10	1.20E-03		lb/MMscf
	0.074	2.06E-03	3.33E-03	1.76	3.04	2.55	2.06	1.18E-03		lb/MMscf
	3.69E-04	1.03E-05	1.67E-05	8.86E-03	0.015	0.013	0.010	5.91E-06		lb/hr
Total	3.69E-04	1.03E-05	1.67E-05	8.86E-03	0.015	0.013	0.010	5.91E-06	0.048	lb/hr
	1.62E-03	4.53E-05	7.33E-05	0.039	0.067	0.056	0.045	2.59E-05	0.21	tpy

Unit emission rates from AP-42 Table 1.4-3 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)

Diesel Fuel		
Fuel Consumption	7,560 gal/yr	(Worst Case Scenario: the maximum permitted 7,560 gal/yr of diesel is consumed by this boiler, i.e all the other four (4) are offline.)
Diesel Energy Content	139,000 Btu/gal	= 0.139 MMBtu/gal Engineering estimate
Boiler Heat Input	5.0 MMBtu/hr	
Diesel Consumption Rate	36 gal/hr	Boiler Heat Input (MMBtu/hr) / by Diesel Energy Content (Btu/gal)
Max Hours per year	209 hr	Fuel Consumption (gal/yr) / Diesel Consumption Rate (gal/hr)

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ²	PM		
	20	5	0.34	7.1	2	lb/Mgal	Unit emission rates from AP-42 Table 1.3-1 & 1.3-3
Total	0.72	0.18	0.012	0.26	0.072	lb/hr	lb/Mgal * Diesel Fuel Rate (gal/hr) / 1,000
	151.200	37.800	2.570	53.676	15.120	lb/yr	lb/Mgal * Fuel Consumption (gal/yr) / 1,000
	0.076	0.019	0.0013	0.027	0.0076	tpy	Divide (/) by 2,000

³ Assumed the weight % of sulfur in distillate oil is 5% to calculate the SO2 emission factor.

Based on AP-42 Emission Factors

	HCOH	Benzene	Toluene	Naphthalene	Xylene	Ethylbenzene	Total HAPs	
	3.30E-02	2.14E-04	6.20E-03	1.13E-03	1.09E-04	6.36E-05	-	lb/Mgal
	1.2E-03	7.7E-06	2.2E-04	4.1E-05	3.9E-06	2.3E-06	1.5E-03	lb/hr
	1.2E-01	8.1E-04	2.3E-02	4.3E-03	4.1E-04	2.4E-04	1.5E-01	ton/yr

AP-42 Table 1.3-9

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BS-004
Maker: Hurst
Model: VIX
Description: Boiler, natural gas fired
Serial Number: TBD

Reboiler Fuel Usage

Fuel Consumption 6.000 MMBtu/hr Input heat rate
 Fuel heat value 1000 Btu/scf Nominal LHV of fuel gas
 Hourly fuel usage 6.0 Mscf/hr Fuel usage
 Annual fuel usage 52.6 MMscf/yr Annual usage
 Operating hours 8760.0 hr/yr

Based on AP-42 Emission Factors

	NO_x	CO	VOC	SO₂¹	PM	
	100	84	5.5		7.6	lb/MMscf
	98.0	82.4	5.4		7.5	lb/MMscf
	0.6	0.5	0.032		0.04	lb/hr
				50		gr Total Sulfur/Mscf
Total	0.59	0.49	0.032	0.086	0.045	lb/hr
	2.58	2.16	0.14	0.38	0.20	tpy

Unit emission rates from AP-42 Table 1.4-1 & 2 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 Pipeline specification

¹SO₂ emissions are calculated based on fuel consumption and fuel H₂S concentration of 50 gr/Mscf.
 SO₂ calculation assumes 100% conversion of fuel elemental sulfur to SO₂.

HCOH	Benzene	Toluene	Naphthalene	Total HAPs	
7.50E-02	2.10E-03	3.40E-03	6.10E-04		lb/MMSCF
7.35E-02	2.06E-03	3.33E-03	5.98E-04		lb/MMSCF
0.00044	0.000012	0.000020	0.0000036	0.00048	lb/hr
0.00193	0.000054	0.000088	0.000016	0.0021	tpy

Emission factors from AP-42 Table 1.4-3
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 lb/hr * (8760hr/yr / 2000lb/ton)

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BH-009
Maker: Hurst
Model: 1200511
Description: Boiler, natural gas and diesel fuel fired
Serial Number: S1250-125W-8

Natural Gas

Fuel Consumption 10.00 MMBtu/hr Input heat rate
 Fuel heat value 1000 Btu/scf Nominal LHV of fuel gas
 Hourly fuel usage 10.0 Mscf/hr Fuel usage
 Annual fuel usage 87.6 MMscf/yr Annual usage
 Operating hours 8760.0 hr/yr therefore uncontrolled and controlled emissions are the same

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ¹	PM	
	100	84	5.5		7.6	lb/MMscf
	98.0	82.4	5.4		7.5	lb/MMscf
	1.0	0.8	0.054		0.07	lb/hr
				50		gr Total Sulfur/Mscf
Total	0.98	0.82	0.054	0.14	0.075	lb/hr
	4.3	3.6	0.24	0.63	0.33	tpy

Unit emission rates from AP-42 Table 1.4-1 & 2 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 Pipeline specification

¹SO₂ emissions are calculated based on fuel consumption and fuel Sulfur concentration of 50 gr/Mscf.
 SO₂ calculation assumes 100% conversion of fuel elemental sulfur to SO₂.

HCOH	Benzene	Toluene	Naphthalene	Total HAPs	
7.50E-02	2.10E-03	3.40E-03	6.10E-04		lb/MMSCF
7.35E-02	2.06E-03	3.33E-03	5.98E-04		lb/MMSCF
7.35E-04	2.06E-05	3.33E-05	5.98E-06	7.95E-04	lb/hr
3.22E-03	9.02E-05	1.46E-04	2.62E-05	3.48E-03	tpy

Emission factors from AP-42 Table 1.4-3
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
 lb/hr * (8760hr/yr / 2000lb/ton)

Diesel Fuel

Fuel Consumption 7,560 gal/yr (Worst Case Scenario: the maximum permitted 7,560 gal/yr of diesel is consumed by this boiler, i.e all the other three (3) are offline.)
 Diesel Energy Content 139,000 Btu/gal = 0.139 MMBtu/gal Engineering estimate
 Boiler Heat Input 10.0 MMBtu/hr
 Diesel Consumption Rate 72 gal/hr Boiler Heat Input (MMBtu/hr) / by Diesel Energy Content (Btu/gal)
 Max Hours per year 105 hr Fuel Consumption (gal/yr) / Diesel Consumption Rate (gal/hr)

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ³	PM	
	20	5	0.34	7.1	2	lb/Mgal
Total	1.4	0.36	0.024	0.51	0.14	lb/hr
	151.2	37.8	2.6	53.7	15.1	lb/yr
	0.076	0.019	0.0013	0.027	0.0076	tpy

Unit emission rates from AP-42 Table 1.3-1 & 1.3-3
 lb/Mgal * Diesel Fuel Rate (gal/hr) / 1,000
 lb/Mgal * Fuel Consumption (gal/yr) / 1,000
 Divide (/) by 2,000

³ Assumed the weight % of sulfur in distillate oil is 5% to calculate the SO₂ emission factor.

Based on AP-42 Emission Factors

HCOH	Benzene	Toluene	Naphthalene	Xylene	Ethylbenzene	Total HAPs	
3.30E-02	2.14E-04	6.20E-03	1.13E-03	1.09E-04	6.36E-05	-	lb/Mgal
2.4E-03	1.5E-05	4.5E-04	8.1E-05	7.8E-06	4.6E-06	2.9E-03	lb/hr
1.2E-01	8.1E-04	2.3E-02	4.3E-03	4.1E-04	2.4E-04	1.5E-01	ton/yr

AP-42 Table 1.3-9

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: BS-009
Maker: Hurst
Model: SA-GP2-150-150
Description: Boiler, natural gas and diesel fuel fired
Serial Number: 5750-150-317

Natural Gas

Fuel Consumption 5.021 MMBtu/hr Input heat rate
 Fuel heat value 1000 Btu/scf Nominal LHV of fuel gas
 Hourly fuel usage 5.0 Mscf/hr Fuel usage
 Annual fuel usage 44.0 MMscf/yr Annual usage
 Operating hours 8760.0 hr/yr

Based on Oilon Specification Sheet

	NO _x	CO	VOC	SO ₂	PM		
	0.035	0.0375	0.0036	0.0006	0.0075	lb/MMBtu	From Oilon specification sheet.
Total	0.18	0.19	0.018	0.0030	0.038	lb/hr	
	0.77	0.82	0.079	0.013	0.16	tpy	

Based on AP-42 Emission Factors

	HCOH	Benzene	Toluene	Hexane	Ethane	Pentane	Butane	Dichlorobenzene	Total HAPs	
	0.075	2.10E-03	3.40E-03	1.80	3.10	2.60	2.10	1.20E-03		lb/MMscf
	0.074	2.06E-03	3.33E-03	1.76	3.04	2.55	2.06	1.18E-03		lb/MMscf
	3.69E-04	1.03E-05	1.67E-05	8.86E-03	0.015	0.013	0.010	5.91E-06		lb/hr
Total	3.69E-04	1.03E-05	1.67E-05	8.86E-03	0.015	0.013	0.010	5.91E-06	0.048	lb/hr
	1.62E-03	4.53E-05	7.33E-05	0.039	0.067	0.056	0.045	2.59E-05	0.21	tpy

Unit emission rates from AP-42 Table 1.4-3 (Assuming average NG heating value of 1,020 Btu/scf)
 Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
 lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)

Diesel Fuel

Fuel Consumption 7,560 gal/yr (Worst Case Scenario: the maximum permitted 7,560 gal/yr of diesel is consumed by this boiler, i.e all the other four (4) are offline.)
 Diesel Energy Content 139,000 Btu/gal = 0.139 MMBtu/gal Engineering estimate
 Boiler Heat Input 5.0 MMBtu/hr
 Diesel Consumption Rate 36 gal/hr Boiler Heat Input (MMBtu/hr) / by Diesel Energy Content (Btu/gal)
 Max Hours per year 209 hr Fuel Consumption (gal/yr) / Diesel Consumption Rate (gal/hr)

Based on AP-42 Emission Factors

	NO _x	CO	VOC	SO ₂ ²	PM		
	20	5	0.34	7.1	2	lb/Mgal	Unit emission rates from AP-42 Table 1.3-1 & 1.3-3
Total	0.72	0.18	0.012	0.26	0.072	lb/hr	lb/Mgal * Diesel Fuel Rate (gal/hr) / 1,000
	151.2	37.8	2.5704	53.676	15.12	lb/yr	lb/Mgal * Fuel Consumption (gal/yr) / 1,000
	0.076	0.019	0.0013	0.027	0.0076	tpy	Divide (/) by 2,000

³ Assumed the weight % of sulfur in distillate oil is 5% to calculate the SO2 emission factor.

Based on AP-42 Emission Factors

	HCOH	Benzene	Toluene	Naphthalene	Xylene	Ethylbenzene	Total HAPs	
	3.30E-02	2.14E-04	6.20E-03	1.13E-03	1.09E-04	6.36E-05	-	lb/Mgal
	1.2E-03	7.7E-06	2.2E-04	4.1E-05	3.9E-06	2.3E-06	1.5E-03	lb/hr
	1.2E-01	8.1E-04	2.3E-02	4.3E-03	4.1E-04	2.4E-04	1.5E-01	ton/yr

AP-42 Table 1.3-9

Lovelace Biomedical Research Institute (LBRI) SOUTH

Unit: Thermal Oxidizer
Maker: Moco
Description: Thermal Oxidizer with maximum yearly rate of 2,000 hrs.
Serial Number: 6571-T100

Reboiler Fuel Usage

Fuel Consumption	2.00	MMBtu/hr	Input heat rate
Fuel heat value	1000	Btu/scf	Nominal LHV of fuel gas
Hourly fuel usage	2.0	Mscf/hr	Fuel usage
Annual fuel usage	4.0	MMscf/yr	Annual usage
Uncontrolled Operating hrs	8760.0	hr/yr	
Controlled Operating hrs	2000.0	hr/yr	LRRI process knowledge

Based on AP-42 Emission Factors

	NO_x	CO	VOC	SO₂¹	PM		
	100	84	5.5		7.6	lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2 (Assuming average NG heating value of 1,020 Btu/scf)
	98.0	82.4	5.4		7.5	lb/MMscf	Adjusted emission factor: EFF X (Fuel Heat Value/1,020 Btu/scf)
	0.20	0.16	0.011		0.01	lb/hr	lb/MMscf * (Mscf/hr / 1000 Mscf/1 MMscf)
				50		gr Total Sulf	Pipeline specification
Total	0.20	0.16	0.011	0.029	0.015	lb/hr	
	0.86	0.72	0.047	0.13	0.065	tpy	Uncontrolled
	0.20	0.16	0.011	0.029	0.015	tpy	Controlled

¹SO₂ emissions are calculated based on fuel consumption and fuel H₂S concentration of 50 gr/Mscf.
 SO₂ calculation assumes 100% conversion of fuel elemental sulfur to SO₂.

	HCOH	Benzene	Toluene	n-Hexane	Total HAPs		
	0.000023	0.00E+00	0.00E+00	0.00080	0.0012	lb/hr	GRI-HAPCalc
	0.00044	0.00E+00	0.00E+00	0.015	0.023	tpy	Uncontrolled
	0.00010	0.00E+00	0.00E+00	0.0035	0.0052	tpy	GRI-HAPCalc Controlled

APPENDIX F. SUPPORTING DOCUMENTATION

AP-42 Chapter 1.3, Fuel Oil Combustion (2010), Table 1.3-1, 1.3-3 and 1.3-9

AP-42 Chapter 1.4 Natural Gas Combustion (1998), Table 1.4-1, 1.4-2, and 1.4-3

AP-42 Chapter 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines (1996), Table 3.4-1, and 3.4-3

Oilon Stack Emissions

BS-004 Manufacturer Specification Sheet

Table 1.3-1. CRITERIA POLLUTANT EMISSION FACTORS FOR FUEL OIL COMBUSTION^a

Firing Configuration (SCC) ^a	SO ₂ ^b		SO ₃ ^c		NO _x ^d		CO ^e		Filterable PM ^f	
	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION N FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING
Boilers > 100 Million Btu/hr										
No. 6 oil fired, normal firing (1-01-004-01), (1-02-004-01), (1-03-004-01)	157S	A	5.7S	C	47	A	5	A	9.19(S)+3.22	A
No. 6 oil fired, normal firing, low NO _x burner (1-01-004-01), (1-02-004-01)	157S	A	5.7S	C	40	B	5	A	9.19(S)+3.22	A
No. 6 oil fired, tangential firing, (1-01-004-04)	157S	A	5.7S	C	32	A	5	A	9.19(S)+3.22	A
No. 6 oil fired, tangential firing, low NO _x burner (1-01-004-04)	157S	A	5.7S	C	26	E	5	A	9.19(S)+3.22	A
No. 5 oil fired, normal firing (1-01-004-05), (1-02-004-04)	157S	A	5.7S	C	47	B	5	A	10	B
No. 5 oil fired, tangential firing (1-01-004-06)	157S	A	5.7S	C	32	B	5	A	10	B
No. 4 oil fired, normal firing (1-01-005-04), (1-02-005-04)	150S	A	5.7S	C	47	B	5	A	7	B
No. 4 oil fired, tangential firing (1-01-005-05)	150S	A	5.7S	C	32	B	5	A	7	B
No. 2 oil fired (1-01-005-01), (1-02-005-01), (1-03-005-01)	142S ^h	A	5.7S	C	24	D	5	A	2	A
No.2 oil fired, LNB/FGR, (1-01-005-01), (1-02-005-01), (1-03-005-01)	142S ^h	A	5.7S	A	10	D	5	A	2	A

Table 1.3-1. (cont.)

Firing Configuration (SCC) ^a	SO ₂ ^b		SO ₃ ^c		NO _x ^d		CO ^e		Filterable PM ^f	
	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING
Boilers < 100 Million Btu/hr										
No. 6 oil fired (1-02-004-02/03) (1-03-004-02/03)	157S	A	2S	A	55	A	5	A	9.19(S)+3.22 ⁱ	B
No. 5 oil fired (1-03-004-04)	157S	A	2S	A	55	A	5	A	10 ⁱ	A
No. 4 oil fired (1-03-005-04)	150S	A	2S	A	20	A	5	A	7	B
Distillate oil fired (1-02-005-02/03) (1-03-005-02/03)	142S	A	2S	A	20	A	5	A	2	A
Residential furnace (A2104004/A2104011)	142S	A	2S	A	18	A	5	A	0.4 ^g	B

- a To convert from lb/103 gal to kg/103 L, multiply by 0.120. SCC = Source Classification Code.
- b References 1-2,6-9,14,56-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.
- c References 1-2,6-8,16,57-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.
- d References 6-7,15,19,22,56-62. Expressed as NO₂. Test results indicate that at least 95% by weight of NO_x is NO for all boiler types except residential furnaces, where about 75% is NO. For utility vertical fired boilers use 105 lb/103 gal at full load and normal (>15%) excess air. Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are related to fuel nitrogen content, estimated by the following empirical relationship: lb NO₂ /103 gal = 20.54 + 104.39(N), where N is the weight % of nitrogen in the oil. For example, if the fuel is 1% nitrogen, then N = 1.
- e References 6-8,14,17-19,56-61. CO emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.
- f References 6-8,10,13-15,56-60,62-63. Filterable PM is that particulate collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. Particulate emission factors for residual oil combustion are, on average, a function of fuel oil sulfur content where S is the weight % of sulfur in oil. For example, if fuel oil is 1% sulfur, then S = 1.
- g Based on data from new burner designs. Pre-1970's burner designs may emit filterable PM as high as 3.0 lb/103 gal.
- h The SO₂ emission factor for both no. 2 oil fired and for no. 2 oil fired with LNB/FGR, is 142S, not 157S. Errata dated April 28, 2000. Section corrected May 2010.
- i The PM factors for No.6 and No. 5 fuel were reversed. Errata dated April 28, 2000. Section corrected May 2010.

Table 1.3-3. EMISSION FACTORS FOR TOTAL ORGANIC COMPOUNDS (TOC), METHANE, AND NONMETHANE TOC (NMTOC) FROM UNCONTROLLED FUEL OIL COMBUSTION^a

EMISSION FACTOR RATING: A

Firing Configuration (SCC)	TOC ^b Emission Factor (lb/10 ³ gal)	Methane ^b Emission Factor (lb/10 ³ gal)	NMTOC ^b Emission Factor (lb/10 ³ gal)
Utility boilers			
No. 6 oil fired, normal firing (1-01-004-01)	1.04	0.28	0.76
No. 6 oil fired, tangential firing (1-01-004-04)	1.04	0.28	0.76
No. 5 oil fired, normal firing (1-01-004-05)	1.04	0.28	0.76
No. 5 oil fired, tangential firing (1-01-004-06)	1.04	0.28	0.76
No. 4 oil fired, normal firing (1-01-005-04)	1.04	0.28	0.76
No. 4 oil fired, tangential firing (1-01-005-05)	1.04	0.28	0.76
Industrial boilers			
No. 6 oil fired (1-02-004-01/02/03)	1.28	1.00	0.28
No. 5 oil fired (1-02-004-04)	1.28	1.00	0.28
Distillate oil fired (1-02-005-01/02/03)	0.252	0.052	0.2
No. 4 oil fired (1-02-005-04)	0.252	0.052	0.2
Commercial/institutional/residential combustors			
No. 6 oil fired (1-03-004-01/02/03)	1.605	0.475	1.13
No. 5 oil fired (1-03-004-04)	1.605	0.475	1.13
Distillate oil fired (1-03-005-01/02/03)	0.556	0.216	0.34
No. 4 oil fired (1-03-005-04)	0.556	0.216	0.34
Residential furnace (A2104004/A2104011)	2.493	1.78	0.713

a To convert from lb/103 gal to kg/103 L, multiply by 0.12. SCC = Source Classification Code.

b References 29-32. Volatile organic compound emissions can increase by several orders of magnitude if the boiler is improperly operated or is not well maintained.

Table 1.3-9. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS
FROM FUEL OIL COMBUSTION^a

Organic Compound	Average Emission Factor ^b (lb/10 ³ Gal)	EMISSION FACTOR RATING
Benzene	2.14E-04	C
Ethylbenzene	6.36E-05 ^c	E
Formaldehyde ^d	3.30E-02	C
Naphthalene	1.13E-03	C
1,1,1-Trichloroethane	2.36E-04 ^c	E
Toluene	6.20E-03	D
o-Xylene	1.09E-04 ^c	E
Acenaphthene	2.11E-05	C
Acenaphthylene	2.53E-07	D
Anthracene	1.22E-06	C
Benz(a)anthracene	4.01E-06	C
Benzo(b,k)fluoranthene	1.48E-06	C
Benzo(g,h,i)perylene	2.26E-06	C
Chrysene	2.38E-06	C
Dibenzo(a,h) anthracene	1.67E-06	D
Fluoranthene	4.84E-06	C
Fluorene	4.47E-06	C
Indo(1,2,3-cd)pyrene	2.14E-06	C
Phenanthrene	1.05E-05	C
Pyrene	4.25E-06	C
OCDD	3.10E-09 ^c	E

^a Data are for residual oil fired boilers, Source Classification Codes (SCCs) 1-01-004-01/04.

^b References 64-72. To convert from lb/10³ gal to kg/10³ L, multiply by 0.12.

^c Based on data from one source test (Reference 67).

^d The formaldehyde number presented here is based only on data from utilities using No. 6 oil. The number presented in Table 1.3-7 is based on utility, commercial, and industrial boilers.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)
FROM NATURAL GAS COMBUSTION^a

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO _x ^b		CO	
	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS) ^c	280	A	84	B
Uncontrolled (Post-NSPS) ^c	190	A	84	B
Controlled - Low NO _x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO _x burners	50	D	84	B
Controlled - Low NO _x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

^b Expressed as NO₂. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

^c NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION^a

Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
CO ₂ ^b	120,000	A
Lead	0.0005	D
N ₂ O (Uncontrolled)	2.2	E
N ₂ O (Controlled-low-NO _x burner)	0.64	E
PM (Total) ^c	7.6	D
PM (Condensable) ^c	5.7	D
PM (Filterable) ^c	1.9	B
SO ₂ ^d	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds.

VOC = Volatile Organic Compounds.

^b Based on approximately 100% conversion of fuel carbon to CO₂. CO₂[lb/10⁶ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO₂, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2x10⁴ lb/10⁶ scf.

^c All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM₁₀, PM_{2.5} or PM₁ emissions. Total PM is the sum of the filterable PM and condensable PM. Condensable PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

^d Based on 100% conversion of fuel sulfur to SO₂.

Assumes sulfur content is natural gas of 2,000 grains/10⁶ scf. The SO₂ emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO₂ emission factor by the ratio of the site-specific sulfur content (grains/10⁶ scf) to 2,000 grains/10⁶ scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION^a

CAS No.	Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene ^{b, c}	2.4E-05	D
56-49-5	3-Methylcholanthrene ^{b, c}	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene ^{b, c}	<1.6E-05	E
83-32-9	Acenaphthene ^{b, c}	<1.8E-06	E
203-96-8	Acenaphthylene ^{b, c}	<1.8E-06	E
120-12-7	Anthracene ^{b, c}	<2.4E-06	E
56-55-3	Benz(a)anthracene ^{b, c}	<1.8E-06	E
71-43-2	Benzene ^b	2.1E-03	B
50-32-8	Benzo(a)pyrene ^{b, c}	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene ^{b, c}	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene ^{b, c}	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene ^{b, c}	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene ^{b, c}	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene ^{b, c}	<1.2E-06	E
25321-22-6	Dichlorobenzene ^b	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene ^{b, c}	3.0E-06	E
86-73-7	Fluorene ^{b, c}	2.8E-06	E
50-00-0	Formaldehyde ^b	7.5E-02	B
110-54-3	Hexane ^b	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene ^{b, c}	<1.8E-06	E
91-20-3	Naphthalene ^b	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene ^{b, c}	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
129-00-0	Pyrene ^{b, c}	5.0E-06	E
108-88-3	Toluene ^b	3.4E-03	C

- ^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. Emission Factors preceded with a less-than symbol are based on method detection limits.
- ^b Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.
- ^c HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.
- ^d The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

Table 3.4-1. GASEOUS EMISSION FACTORS FOR LARGE STATIONARY DIESEL AND ALL STATIONARY DUAL-FUEL ENGINES^a

Pollutant	Diesel Fuel (SCC 2-02-004-01)			Dual Fuel ^b (SCC 2-02-004-02)		
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING
NO _x						
Uncontrolled	0.024	3.2	B	0.018	2.7	D
Controlled	0.013 ^c	1.9 ^c	B	ND	ND	NA
CO	5.5 E-03	0.85	C	7.5 E-03	1.16	D
SO _x ^d	8.09 E-03S ₁	1.01S ₁	B	4.06 E-04S ₁ + 9.57 E-03S ₂	0.05S ₁ + 0.895S ₂	B
CO ₂ ^e	1.16	165	B	0.772	110	B
PM	0.0007 ^c	0.1 ^c	B	ND	ND	NA
TOC (as CH ₄)	7.05 E-04	0.09	C	5.29 E-03	0.8	D
Methane	f	f	E	3.97 E-03	0.6	E
Nonmethane	f	f	E	1.32 E-03	0.2 ^g	E

^a Based on uncontrolled levels for each fuel, from References 2,6-7. When necessary, the average heating value of diesel was assumed to be 19,300 Btu/lb with a density of 7.1 lb/gallon. The power output and fuel input values were averaged independently from each other, because of the use of actual brake-specific fuel consumption (BSFC) values for each data point and of the use of data possibly sufficient to calculate only 1 of the 2 emission factors (e. g., enough information to calculate lb/MMBtu, but not lb/hp-hr). Factors are based on averages across all manufacturers and duty cycles. The actual emissions from a particular engine or manufacturer could vary considerably from these levels. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code.

^b Dual fuel assumes 95% natural gas and 5% diesel fuel.

^c References 8-26. Controlled NO_x is by ignition timing retard.

^d Assumes that all sulfur in the fuel is converted to SO₂. S₁ = % sulfur in fuel oil; S₂ = % sulfur in natural gas. For example, if sulfur content is 1.5%, then S = 1.5.

^e Assumes 100% conversion of carbon in fuel to CO₂ with 87 weight % carbon in diesel, 70 weight % carbon in natural gas, dual-fuel mixture of 5% diesel with 95% natural gas, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and natural gas heating value of 1050 Btu/scf.

^f Based on data from 1 engine, TOC is by weight 9% methane and 91% nonmethane.

^g Assumes that nonmethane organic compounds are 25% of TOC emissions from dual-fuel engines. Molecular weight of nonmethane gas stream is assumed to be that of methane.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES^a

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene ^b	7.76 E-04
Toluene ^b	2.81 E-04
Xylenes ^b	1.93 E-04
Propylene	2.79 E-03
Formaldehyde ^b	7.89 E-05
Acetaldehyde ^b	2.52 E-05
Acrolein ^b	7.88 E-06

^aBased on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.

^bHazardous air pollutant listed in the *Clean Air Act*.

Oilon

Stack Emissions

Corrected to 3% O₂

Natural Gas (Subject to Fuel Analysis)

Component	PPM	LB/MMBTU
CO	< 50	0.0375
NO _x	< 30	0.0350
SO _x	< 0.34	0.0006
VOC (as Non CH ₄)	< 8	0.0036
Particulates (PM10)	-	0.0075

Emission guarantees are valid under the following conditions:

A) Technical specifications

- A.1) Oilon Energy Oy specifies burner positioning in boiler.
- A.2) Combustion air duct design is approved by Oilon Energy Oy.
- A.3) Boiler heat release rate is 971 kW/m³ or lower.
- A.4) Combustion air temperature is 30°C or lower.
- A.5) Air leakage into the boiler and flue gas duct must be minimized.
- A.6) The boiler contains no brickwork.
- A.7) Emission values are valid only for stable running.
- A.8) Burners are adjusted and process automation and instrumentation are operating correctly.

B) Fuel specifications

- B.1) CH₄ content is 80 vol-% or higher.
- B.2) C_xH_y content (molar mass higher than 40 g/mol) is 7 vol-% or lower.

C) Measurement and emission calculation specifications

- C.1) Combustion product concentrations are given in dry flue gas.
- C.2) m³n refers to standard conditions as defined in EN676.
- C.3) Measurement uncertainty margins are considered in favour of the burner manufacturer.
- C.4) Emission measurements are conducted according to EN 13284-1 standard and corrected to standard conditions (t_{air} = 20 °C and humidity 10 gH₂O/kgair) according to standard EN676 (Annex G).



HURST

BOILER & WELDING CO., INC.

AVAILABLE WITH LOW NOX

HURST SERIES MIX

VERTICAL FIRETUBE BOILERS

High Pressure Design
Capacities From 30 to 150 BHP.
1004 to 5021 MBTU/HR.



Available in Steam & Hot Water Models



Skid Mounted Package



Rifled Pattern



Superior Heat Transfer Surface

Enhanced Fire Tubes

HURST PERFORMANCE SERIES BOILERS

HURST

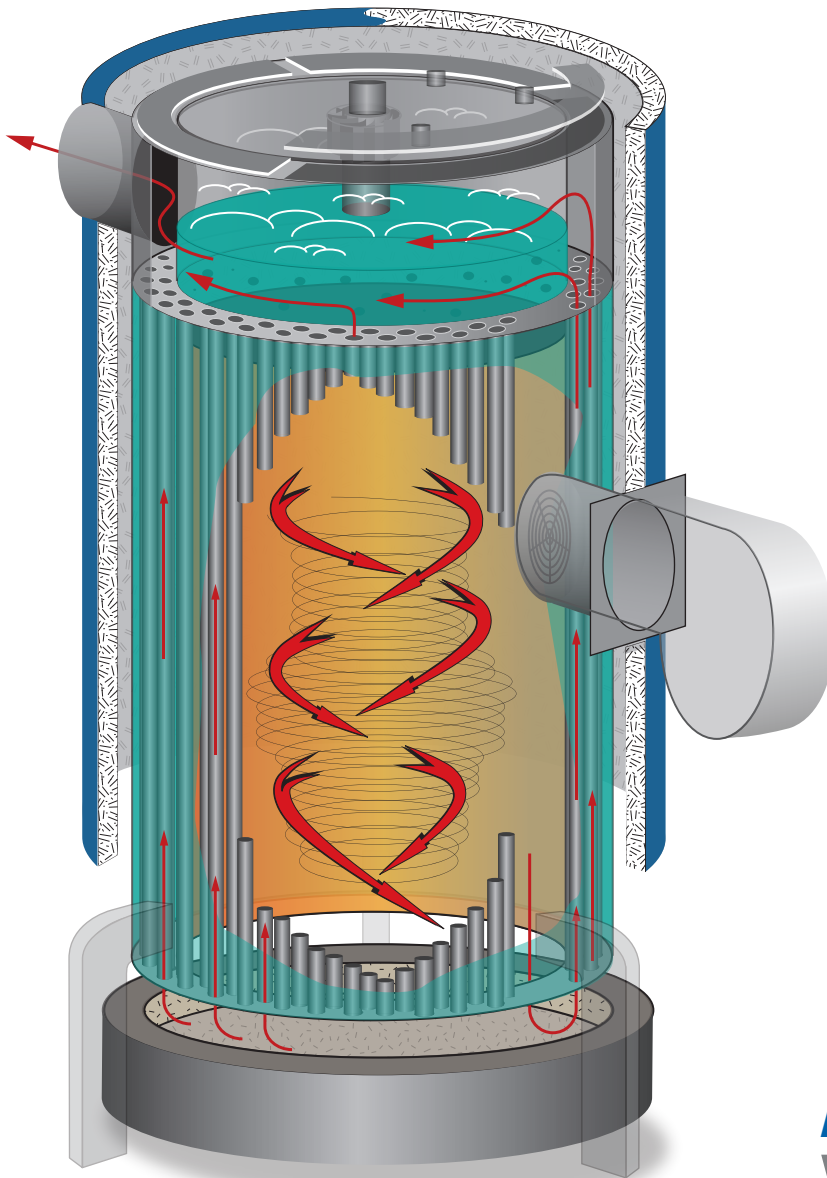
100% ALL STEEL CONSTRUCTION



Rifled Pattern

Superior Heat Transfer Surface

Enhanced Fire Tubes



Full Water Backed Furnace

*Built To Deliver Years
of Reliable Service.*

- **Totally new design** industrial grade construction, 2 pass fire tube design with enhanced heat transfer features. The VIX Series can offer higher efficiencies than standard vertical boilers. It is 100% water-backed and built for years of reliable service.

- **Smaller foot print**
More than 50% of standard vertical boilers.

- **Easy access to burner** and eye-high control panel. All valves and control located within reach.

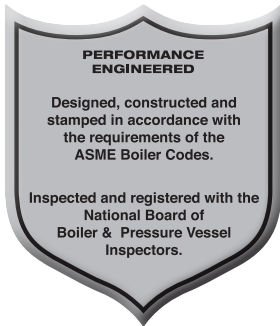
- **Removable Turn-a-round box**
Simply loosen the lug nuts and lower the section to inspect the system.


- **Innovative vessel design**
Constant calm water levels with water-to-steam stabilization features.

- **Large steam chamber** with internal water separator insures "dry" high quality steam.

ALL COMBUSTION WITHIN THE WATER WALL

HURSTBOILER



 We specialize in customizing your boiler. The VIX Series can be equipped to suit a wide variety of installations and specifications. We will help direct you to the most cost effective models and features.

VIX SERIES

SECTION I

to 350 PSI. STEAM

SECTION IV

30 /160 PSI. HOT WATER

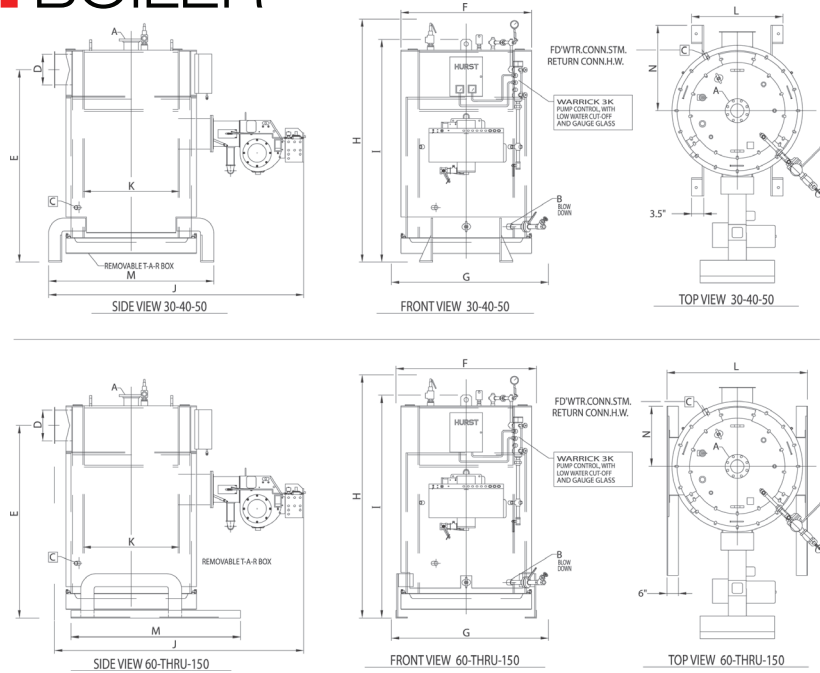
Boiler Design:
2-Pass "Vertical"
Enhanced Firetube Design

Pressure Designs Steam:

30-150 HP. - 150 PSI
Higher pressures upon request.

Pressure Designs Hot Water:

30-160 max psi.
High pressure, High Temperature
Section I hot water boilers available.



BOILER SPECIFICATIONS										
BOILER HORSEPOWER		30	40	50	60	70	80	100	125	150
STEAM OUTPUT F&A 212°F	LBS/HR	1035	1380	1725	2070	2415	2760	3450	4313	5175
GROSS OUTPUT	BTU/HR	1004	1339	1674	2009	2343	2678	3348	4184	5021
INPUT BTU REQ'D	BTU X 1000	1255	1674	2092	2511	2929	3348	4184	5230	6000
FIRING RATE NAT. GAS	1000BTU/FT FT/HR	1255	1674	2092	2511	2929	3348	4184	5230	6300
FIRING RATE LP GAS	91,500 BTU/GAL GPH	13.7	18.3	22.9	27.4	32	36.6	45.7	57.2	69
FIRING RATE NO.2 OIL	140,000BTU/GAL GPH	9	12	14.9	17.9	20.9	23.9	29.9	37.4	45
A	STEAM OUTLET HIGH PRESS. 150#	1.5	2.5	2.5	2.5	2.5	2.5	3	4	4
A	HOT WATER SUPPLY OUTLET	3	4	4	6	6	6	6	6	6
B	BLOWDOWN CONN. HIGH PRESS. 150#	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
B	BLOWDOWN CONN. LOW PRESS.	1.25	1.25	1.25	1.5	1.5	1.5	1.5	1.5	1.5
C	FEEDWATER CONN.	1	1	1	1	1	1	1.25	1.25	1.25
C	HOT WATER RETURN	3	3	4	4	4	4	4	6	6
D	STACK O. DIA.	10	10	10	14	14	14	14	16	16
E	STACK HEIGHT	80.6875	88.3125	88.3125	87.0625	87.0625	87.0625	87.313	87.313	87.313
F	WIDTH WITHOUT TRIM	36.75	42.875	42.875	54.25	54.25	54.25	63.63	72	72
G	WIDTH WITH TRIM SEE NOTE 1	53	58.5	58.5	60	60	60	70	78	78
H	OVERALL HEIGHT	104.375	115	115	115	115	115	117	119	119
I	HEIGHT WITHOUT TRIM	92.375	97.50	97.50	99.625	99.625	99.625	99.625	101.88	101.88
J	LENGTH SEE NOTE 1	76	83	83	97	97	98	112	120	120
K	FURNACE O. DIA.	24	30	30	36	36	36	44	50	50
L	SUPPORT WIDTH	26	30	30	54.25	54.25	54.25	63.63	72.68	72.68
M	SUPPORT LENGTH	50	56	56	63	63	63	72	81	81
N	SUPPORT TO CENTER LINE	24.88	28	28	26.38	26.38	26.38	27.313	29	29
	FIRESIDE HEATING SURFACE	94	138	138	151	151	151	217	322	322
	FURNACE VOLUME	14	24	24	33	33	33	54	62	62
	WATER CAP. @ NWL GALS.	78	141	141	167	167	167	221	276	276
	WATER CAP. FLOODED GALS.	93	168	168	232	232	232	320	406	406
	SHIPPING WEIGHT LBS.	2700	3706	3706	5074	5094	5094	7010	7050	7050
BOILER HORSEPOWER		30	40	50	60	70	80	100	125	150

NOTE 1: LENGTHS, WIDTHS & WEIGHTS BASED ON HURST BOILER STANDARD BURNERS

NOTE 2: 30, 40, & 50 HP HAVE LEGS IN LIEU OF SKIDS

DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE

CERTIFIED DRAWINGS AVAILABLE ON REQUEST

HURST PERFORMANCE SERIES BOILERS

INSPECTION ACCESS

- The waterside openings are located in the most effective positions. The lower hand holes offer far better access for both clean out and inspection.
- These more functional locations avoid the obstructing hand hole "tunnels" used by our competitors.
- The top opening offers a strategic view of the furnace crown sheet.

SAFETY

- Electrical components are located away from the floor, helping to eliminate the possibility of water coming in contact with electricity.
- Trimmed with pressure vessel relief valves, pressure limit and burner safe guard controls.

MORE STEAM STORAGE

- Capacity to handle swing and spike loads: quick recovery-quick response.
- The larger steam-release surface is calmer, reducing carry over of unevaporated water.
- The resulting drier steam also reduces system scaling.
- In addition, dry steam helps to eliminate unnecessary extra condensate. Energy and fuel are saved, resulting in longer boiler life.

DURABILITY

- Fire does not pass under the bottom mud ring, eliminating the blistering that occurs with other designs.
- Cooler furnace gases are located at the bottom of the vessel where scale is most likely to occur. Baking of scale is alleviated in Hurst's design.

EASIER SERVICE

- Thoughtfully engineered with the owner in mind.
- Access opening above feed water inlet for easy cleaning.
- Fireside tube access from top and bottom.
- No heavy doors or covers to complicate service procedures.

RELIABILITY

- The furnace crown is water-cooled, eliminating refractory breakdown inherent in units of inferior design.
- No water coils or "in the fire" mud rings to burnout.

"EYE HIGH" BURNER

- No step ladder is needed to service.
- No bending over or sitting on the floor.
- The air intake is located in the center of the unit so dust is not pulled from the floor.



Superior Heat Transfer

**ALL COMBUSTION
WITHIN THE
WATER WALL**

HBC-09530
09/2017

Ask about the...

HURST SERIES FEEDMISER

BOILER FEEDWATER SYSTEMS
Feedwater Pump Station / Condensate Return

OPEN VENT DESIGN

30 to 1000 gallon Tank Capacity.
Optional Steam Pre-Heater.

"Expect decades of service with this all steel construction featuring a 3/16" thick rolled tank supported by a robust structural pump station."



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more solutions



County of Bernalillo
State of New Mexico
Planning & Development Services Department

415 Silver Ave. SW, 2nd Floor
Albuquerque, New Mexico 87102
Office: (505) 314-0350 Fax: (505) 314-0480
www.bernco.gov

March 23, 2023

Lovelace Bio Medical Research
2425 Ridgecrest Dr SE
Albuquerque NM, 87106

Re: Bernalillo County zoning regulations and federally owned parcels

To Whom It May Concern:

This letter shall certify that Bernalillo County zoning regulations are not applicable to U.S. Federal Government nor U.S. Federal Government entity owned properties. This includes properties located within the boundary of Kirtland Air Force Base. Bernalillo County is willing to assist federal entities with necessary permits, building permits for example, if approached by a federal entity.

This certification statement only references the applicability of the Zoning Ordinance as it applies to the aforementioned properties.

Do not hesitate to contact me if you have questions concerning this matter at 314-0499 or at mgould@bernco.gov.

Sincerely,

Maggie Gould
Acting Zoning Administrator

Cc: ckelley@lovelacebiomedical.org; jaimy.karacaoglu@trinityconsultants.com

COMMISSIONERS

Adriann Barboa, Chair, District 3 *Walt Benson, Vice-Chair, District 4*
Debbie O'Malley, District 1 *Steven Michael Quezada, District 2* *Charlene E. Pyskoty, District 5*

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COUNTY MANAGER

Julie Morgas Baca