Guidance Document

for the

Class II Air Quality Operating Permit Application

Nevada Division of Environmental Protection
Bureau of Air Pollution Control, Permitting Branch
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701-5249
Phone (775) 687-9349

August 2018
(Ver. 3)

THE GOAL OF THE BUREAU OF AIR POLLUTION CONTROL IS TO ACHIEVE AND MAINTAIN LEVELS OF AIR QUALITY THAT WILL PROTECT HUMAN HEALTH, PREVENT INJURY TO PLANT AND ANIMAL LIFE, PREVENT DAMAGE TO PROPERTY, AND PRESERVE THE SCENIC, HISTORICAL, AND AESTHETIC TREASURES OF THE STATE.

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

The acronyms and abbreviations identified below are used throughout this document. This list is intended for reference use.

Administrator	Administrator of EPA as defined in NAC 445B.004
ACFM	Actual Cubic Feet per Minute
AQOP	Air Quality Operating Permit
BAPC	Bureau of Air Pollution Control
BAQP	Bureau of Air Quality Planning
BPM	Best Practical Methods
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO2e	Greenhouse Gases (Carbon Dioxide Equivalent)
Director	Director of Nevada State Department of Conservation and Natural Resources as defined in NAC 445B.053
DSCFM	Dry Standard Cubic Feet per Minute
EF	Emission Factor
EPA	Environmental Protection Agency
FIN	Facility Identification Number
HA	Hydrographic Area (Basin)
HAPs	Hazardous Air Pollutants
hp	Horsepower
hr	Hour
H_2S	Hydrogen Sulfide
H_2SO_4	Sulfuric Acid Mist
IA	Insignificant Activities
ID	Identification Number
kW	Kilowatt
L x W x H	Length x Width x Height
lb	Pound
MMBtu	Million British Thermal Units
N/A	Not Applicable
NAC	Nevada Administrative Code
NAD 83	North American Datum of 1983
NESHAP	National Emission Standards for Hazardous Air Pollutants
NDEP	Nevada Division of Environmental Protection
NO_2	Nitrogen Dioxide
N_2O	Nitrous Oxide
NO_X	Oxides of Nitrogen
NRS	Nevada Revised Statutes
NSPS	New Source Performance Standards
ODS	Official Date of Submittal
O_3	Ozone
OP	Other Pollutant
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 10 Micrometers
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter Less Than or Equal to 2.5 Micrometers
PSI(A)	Pounds per Square Inch (Absolute)
PTE	Potential to Emit
RICE	Reciprocating Internal Combustion Engine
RO	Responsible Official
SCC	Source Classification Code
SCF	Standard Cubic Feet
SIC	Standard Industrial Classification
SF_6	Sulphur Hexafluoride
SO_2	Sulfur Dioxide
TBD	To Be Determined
USC	United States Code
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

The purpose of this document is to provide guidance to permit applicants intending to complete a Class II Air Quality Operating Permit (AQOP) Application (application). The regulations governing a Class II AQOP application and the applicable processing fee(s) may be found under the Nevada Administrative Code (NAC) 445B.3453 and NAC 445B.327, respectively. The Guidance Document and associated application forms are posted on the Nevada Division of Environmental Protection – Bureau of Air Pollution Control (BAPC) website: https://ndep.nv.gov/air/permitting/download-permit-forms.

The information requested in the application is based on the regulatory requirements in accordance with the Nevada Revised Statutes (NRS) 445B.100 through 445B.640, inclusive, and the NAC 445B.001 through 445B.3689, inclusive. It is important to read and understand NAC 445B.22097, which lists Nevada's Standards of Quality for Ambient Air and the allowable emission concentrations for all regulated air pollutants.

Renewal applications are treated as new applications by the BAPC. All pages must be submitted, as well as required attachments.

Applications for **revisions** require all pages of the application and attachments to be submitted, but only emission unit forms for added or revised units need to be included.

When completing the application, complete each item or explain in the space provided why no information is supplied. Specify "N/A" (Not Applicable) if necessary. **Any field left blank may cause the application to be deemed incomplete.** If the application is deemed incomplete, the application and processing fee will be returned to the applicant along with a completeness checklist detailing the items missing from the application.

Regulatory Petition R085-16, effective November 2, 2016, revised the definition of a Class II source under NAC 445B.037. The revised definition established thresholds based on a source's potential to emit (PTE). NAC 445B.138 defines "potential to emit" as the maximum capacity of a stationary source to emit a regulated air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a stationary source to emit a regulated air pollutant, including equipment for the control of air pollution and any restrictions on the hours of operation of the stationary source or on the type or amount of material combusted, stored or processed, may be treated as part of its design for the purposes of determining its potential to emit if the limitation is federally enforceable.

A stationary source is now a Class II source if their PTE is equal to or greater than the following thresholds for any listed pollutant pursuant to the table below.

Pollutant		Class II Threshold PTE (tons per year)
Particulate Matter	$PM_{2.5}$	5
Particulate Matter	PM_{10}	5
Carbon Monoxide	CO	50
Volatile Organic Compounds	VOC	20
Nitrogen Oxides	NO_x	5
Sulfur Dioxide	SO_2	5
Lead	Pb	0.3
Hydrogen Sulfide	H_2S	1

If a facility believes their emissions are below these thresholds, they may submit a Class II Air Quality Operating Permit Applicability Determination Form, which can be found here: https://ndep.nv.gov/air/permitting/download-permit-forms, to determine if an air quality operating permit is required. Please note that while emissions for permitted facilities may include reductions from control equipment and limitations on hours and throughput, emissions from facilities that intend to demonstrate they are under the thresholds must be calculated at maximum throughput, 8,760 hours of operation per year, and without the benefit of control reductions. That is, unless those conditions are federally enforceable through federal requirements such as Standards of Performance for New Stationary Sources (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP), (e.g. emergency engines may be calculated at 100 hours of non-emergency operation under 40 CFR Part 63 Subpart ZZZZ).

1.1 Application Submittal and Processing Timeline

The application and fee(s) may be mailed or hand delivered to the BAPC. The BAPC prefers that physical copies of the application be bound in a three ring binder. In addition, fees can be submitted either by check or online using ePayment, https://epayments.ndep.nv.gov/. In order for the BAPC to start processing an application, both the application packet and fee must be received in accordance with NAC 445B.327.

Make sure the application contains the original signature of the Responsible Official (RO) on the Certification Document page in the application packet. When submitting an electronic payment, include facility name and if applicable, existing permit number and/or Facility Identification Number. If you have any questions, you may contact the BAPC at (775) 687-9349.

The BAPC mailing address is:

Nevada Division of Environmental Protection
Bureau of Air Pollution Control, Class II Permitting Branch
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701-5249

The application and fee are date stamped when they are received by the BAPC. In accordance with NAC 445B.3457, the BAPC has 10 working days to determine if the application is complete or incomplete. The day the application is deemed complete is the Official Date of Submittal (ODS).

After the ODS, the regulatory timeline for BAPC to issue a Class II AQOP is 60 calendar days in accordance with NAC 445B.3457.3. However, if a public notice is required for the Class II AQOP, the BAPC has 90 calendar days after the ODS to issue the Class II AQOP.

Under NAC 445B.3457.5 a 30 day public notice is required if the source has not previously held a Class I or Class II operating permit, if the source is located within 1,000 feet of a school, hospital, or residential area, or if the revision to the Class II AQOP exceeds the thresholds in the table below.

Pollutant		Class II Threshold PTE (tons per year)
Particulate Matter	$PM_{2.5}$	10
Particulate Matter	PM_{10}	15
Carbon Monoxide	CO	40
Volatile Organic Compounds	VOC	40
Nitrogen Oxides	NO_x	40
Sulfur Dioxide	SO_2	40
Lead	Pb	0.6

2.0 COVER PAGE

The Cover Page is the first page of the application where basic information is identified as to if the facility is new or existing and what type of application is being submitted.

Facility Name
Many companies have several facilities; include the facility name that houses the equipment. If you do not have a facility name, include the company name here. The company name will also be requested on page 3 of the application.

Existing Facility ID
Existing Facility ID is the Facility Identification Number (FIN) for facilities that currently have a permit. On existing operating permits the FIN is located in the header section as Facility ID No. AXXXX (for example: A1234). If you do not currently have a permit, specify "N/A".

Existing Class II AQOP
Existing Class II AQOP refers to the existing permit number located in the header section (for example Permit No. AP1499-3576). If you do not currently have a permit, specify "N/A".

Application Type
An application can be submitted for a new AQOP, a revision to an existing AQOP, or for the renewal of an existing AQOP. Check the box(s) for all that apply for this permitting action.

3.0 IMPORTANT INFORMATION

The application contains a section entitled Important Information. The applicant should be familiar with this information provided in this section prior to completing the application. The Important Information section contains the list of application forms, submittal due dates, regulations, and fee(s) for a permit.

4.0 GENERAL COMPANY INFORMATION FORM

The General Company Information Form requests a brief description of the facility's specific work, the contact and mailing information of the company, RO, plant manager or other appropriate contact, as well as the location of and driving directions to the facility.

Section 1: Facility's Process

In Section 1, provide an overview of the facility's operations, such as, "The facility mines and processes iron ore." A more detailed description of the facility should be included in the Process Narrative which is discussed further in Chapter 10.2 of this document. A list of Standard Industrial Classification (SIC) numbers can be found here: https://www.osha.gov/pls/imis/sic_manual.html. A list of North American Industry Classification (NAICS) numbers can be found here: https://www.naics.com/naics-drilldown-table/.

Section 2: Company Name and Address

Provide the company name and address as it will appear on the permit.

Section 3: Owner's Name and Address

Provide the name and address of the owner of the company. Owner means any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.

Section 4: Facility Name and Address

Provide the facility name and address if it is different than the company name and address in Section 2 or write in "same as above".

Section 5: Records Location

Provide the location where all records required by the permit will be stored. If they will be on site, insert the information from Section 4. If they will be stored at another location, insert the information for the location.

Section 6: Responsible Official

Provide the name, title, and mailing address for the RO. If the facility already has an AQOP, this person should be the same as what the BAPC already has on file. If a change needs to be made, please attach a letter stating who the new RO will be, signed by the appropriate individual. In accordance with NAC 445B.156 the RO can be:

1. For a corporation:
   (a) A president;
   (b) A vice president in charge of a principal business function;
   (c) A secretary;
   (d) A treasurer; or
   (e) An authorized representative of such a person who is responsible for the overall operation of the facility and who is designated in writing by an officer of the corporation and approved in advance by the Director.
2. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

3. For a municipality or a state, federal or other public agency, a ranking elected official or a principal executive officer, including, for a federal agency, a chief executive officer who has responsibility for the overall operations of a principal geographic unit of the agency.
4. For an affected source, the designated representative or his or her alternate, as defined in 42 U.S.C. § 7651a(26).

Section 7: Plant Manager or Other Appropriate Contact

Provide the name, title, and contact information for a plant manager or other appropriate contact from the facility if it will not be the RO. This is the person the BAPC will communicate with when on site, if the RO is not available. For example, if the company president is the RO but is not physically at the facility, provide an appropriate contact that is physically located at the facility.

Section 8: Location and Driving Directions to the Facility

Provide the Hydrographic Area (HA) number and name, Township(s), Range(s) and Section(s) of the facility, as well as the Universal Transverse Mercator (UTM) coordinates of the front gate of the facility. The UTM coordinates must be in metric units using North American Datum of 1983 (NAD 83), Zone 11. Describe the location of the facility with respect to the nearest road and city (such as 8th Street, Wells, Nevada), the County the facility is located in, and driving directions from Carson City, Nevada to the facility.

NDEP has online maps that can help you determine HA basin number and names; Township, Section, and Range; and UTM coordinates. These online maps can be found at: http://www.ndep.nv.gov/land/land-gis-map-resources/online-maps

Section 9: Emissions Cap

"Federally enforceable emissions cap" means a condition of an operating permit containing an emission limitation that the holder of the operating permit requested and the Director approved and which is independent of any applicable requirement or requirements (NAC 445B.070). It is recommended to contact the BAPC before requesting an emissions cap. Check the appropriate box if you are requesting an emissions cap. If you are requesting an emissions cap, at a minimum, detail within the process narrative each of the following in accordance with NAC 445B.296(2):

1. State each applicable requirement which the applicant seeks to avoid;
2. Demonstrate that any applicable requirements not avoided by the cap will be met;
3. Proposed conditions, including monitoring and recordkeeping conditions for each proposed federally enforceable emissions cap, of the operating permit which will ensure compliance with any applicable requirement;
4. Any additional information that the director may determine necessary to process the application.

In addition, explain any emission caps in the Process Narrative described in Chapter 10.2 of this guidance document.

Section 10: Important Note

Important note for completing the Industrial Process, Combustion Equipment, Storage Silo, and Liquid Storage Tank Application forms: forms need to be included for all permitted emission units and insignificant activities. Provide additional forms as needed. All items in the application must be

addressed. If an item does not apply, then "N/A" or similar notation must be entered in the appropriate blank (TBD, unknown, etc.).

Section 11: Location

If the facility is located within 1,000 feet of a school, hospital or residential area, check the appropriate box. The 1,000 feet will begin at the fence line of the facility.

Section 12: Controls and Limit Restrictions

Check the appropriate box if the facility/source requires controls or emission limit restrictions (for example limits on hours of operation) to be considered a Class II facility in accordance with NAC 445B.037.

The EPA describes a "synthetic minor" source as a source that otherwise has the potential to emit regulated NSR pollutants in amounts that are at or above those for major sources in 40 CFR 49.167, 40 CFR 52.21 or 40 CFR 71.2, as applicable, but has taken a restriction so that its potential to emit is less than such amounts for major sources. Such restrictions must be enforceable as a practical matter (as defined in 40 CFR 49.152).

5.0 EMISSION UNIT APPLICATION FORMS

An emission unit is part of a stationary source which emits or has the potential to emit any regulated air pollutant, as defined in NAC 445B.059. There are four emission unit forms: Industrial Process Application Form, Combustion Equipment Application Form, Storage Silo Application Form, and Liquid Storage Tank Application Form. When each of these forms should be utilized is described below:

- **Industrial Process Application Form:** The Industrial Process Application Form is used for equipment emitting PM/PM_{10}/$PM_{2.5}$, such as hoppers, crushers, screens, and conveyor drop points. The equipment may be controlled by baghouses, water sprays, enclosures or other methods. An example of a completed Industrial Process Application Form can be found in Appendix 1.
- **Combustion Equipment Application Form:** The Combustion Equipment Application Form is for heaters, engines, generators, emergency generators, and different control equipment such as thermal oxidizers. The equipment can be fueled with diesel oil, natural gas, propane, etc. An example of a Combustion Equipment Application Form can be found in Appendix 2.
- **Storage Silo Application Form**: The Storage Silo Application Form is used for storage silo loading and unloading. The emissions commonly exit through a silo stack, chimney, or vent during these processes.
- **Liquid Storage Tank Application Form:** The Liquid Storage Tank Application Form is for tanks storing different liquid materials such as fuel, asphalt, waste oil, etc. If the tank is attached to a unit, such as a belly tank, you do not need to provide a liquid storage tank application form for that tank.

Each emission unit and transfer point needs to have a completed form. If you have more than one emission unit of a given type, include as many additional forms as needed. For units considered

insignificant activities, fill out appropriate forms for each of the units. Print out and attach additional forms as necessary. Any field left blank may cause the application do be deemed incomplete.

For a revision, the emission unit forms should only be provided for the revised emission unit(s). The revisions should be detailed in the Process Narrative.

In the Detailed Emission Calculations, include the emission calculations for all emission units, the Detailed Emission Calculations are discussed further in Chapter 10.1 of this document.

5.1 General Emission Unit Application Form Information

This chapter details the information that is identical on all four of the application forms.

Form Header

Each of the four emission unit application forms requires the same information on the top of the page. That information is described in the sections below.

Equipment Unit Description

Provide a name for each emission unit and a system number for units in the same system such as System 1 – Conveyor 1; System 1 – Screen 1; etc. Emission units can be grouped in systems. A system contains emission units that are part of the same process (for example: a screening process and associated conveyors), or are controlled by the same air pollution control equipment (for example: all stacks lead to one baghouse). If a system has multiple units, please provide Emission Unit Application Forms for each unit.

Alternative Operating Scenario

If the emission unit is part of an alternative process, or can operate in multiple variations, check "Yes". Checking Yes signifies that you have an alternative operating scenario, and the forms are filled out the same as for any other permitted unit. An example of an alternative operating scenario is a heater that can operate on natural gas or propane.

Insignificant Activity

Check the appropriate box whether the emission unit application form is considered an insignificant activity (IA). Provide the appropriate emission unit form for all presumptive IA emission units pursuant to NAC 445B.288(1) and NAC 445B.288(2). The BAPC needs these application forms for air dispersion modeling.

Proposed insignificant activities not listed under NAC 445B.288(1) and NAC 445B.288(2) must be submitted, under separate cover, to the Director for approval. The submittal must include a sufficient description of the emission unit(s), all emissions calculations (based on unlimited annual hours of operation), and emission factor references pursuant to NAC 445B.288(4). If the IA has been previously approved by the director, provide the BAPC a copy of the original approval letter. Engines and generators subject to Federal Regulations cannot be considered IAs.

Emission limits should be calculated for all IAs and included in the Detailed Emission Calculations. In addition, the total IA emission limits need to be included in the Facility-Wide Potential to Emit Table.

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63)

Check the appropriate box indicating an emission unit is or is not subject to regulation under any of these Federal Regulations.

- 40 CFR Part 60 is the Standards for Performance for New Stationary Sources
- 40 CFR Part 61 is the National Emission Standards for Hazardous Air Pollutants
- 40 CFR Part 63 is the National Emission Standards for Hazardous Air Pollutants for Source Categories

5.1.1 Equipment Description

Each of the four Emission Unit Application Forms have an equipment description section. Much of this information is the same for each of the process forms, but there is some unique information. If the information is unique to a certain form this has been indicated underneath each parameter description. All parameters included in the Equipment Description section of the forms are discussed below.

BAPC Emission Unit ID and System Number

Emission unit IDs are assigned based on release type (for example: if the release type is a stack, the emission unit ID will be formatted as S2.XXX. Process fugitive release will be formatted as PF1.XXX IA will be formatted as IA1.XXX).

If the facility has an existing permit, use the pre-existing emission unit IDs and system numbers. The facility may choose to change emission unit ID and system numbering, but still must reference pre-existing emission unit ID and system number. If the emission unit currently is not in the permit or this is an application for a new permit, write "N/A".

Source Classification Code (SCC)

EPA uses Source Classification Codes (SCCs) to categorize sources of air pollution. There are four levels of source description, associated with the first 1, 3, 6, and 8 digits of the codes. The first level (and digit) describes the most general information on the category of the emissions. The second level (and first 3 digits) subdivides the five major categories into major industry groups, for example: 1-02 indicates External Combustion in Industrial Boilers. The third level (and first 6 digits) specifies the industry or emission source category; for example: 1-02-010-02 indicates it is for Electric Generation and uses Liquefied Petroleum Gas (LPG). The fourth level (all 8 digits) specifies the particular emitting process within the third-level source category; for example: 1-02-010-02 specifies it is propane.

The SCCs can be found here: https://ofmpub.epa.gov/sccsearch/

Manufacturer

Provide the name of the manufacturer of the equipment. If you do not know the manufacturer of the equipment, please write "unknown".

Date Manufactured

Provide the year and, if possible, the month when the equipment was manufactured. If you do not know the date the equipment was manufactured, write "unknown".

Model Number

(For Industrial Process, Storage Silo, and Liquid Storage Tank Application Forms Only)
Provide the model number of the equipment. If you do not know the model number of the equipment was manufactured, write "unknown".

Model and Serial Number

(For Combustion Equipment Application Forms Only)
Provide the model and the serial number of the equipment. If you do not know the model or serial number of the equipment was manufactured, write "unknown".

Equipment Dimensions

(For Industrial Process, Storage Silo, and Liquid Storage Tank Application Forms Only)
Provide the length (L), width (W), and height (H) of the equipment in feet.

Drop Dimensions

(For Industrial Process Application and Storage Silo Forms Only)
The drop length is the distance the material falls at a transfer point. The drop height indicates the distance relative to the ground. The drop height can be measured from the top of the drop length, the middle of the drop length, or the bottom of the drop length. The horizontal dimensions refers to the width of the transfer point. Refer to Figures 1 and 2.

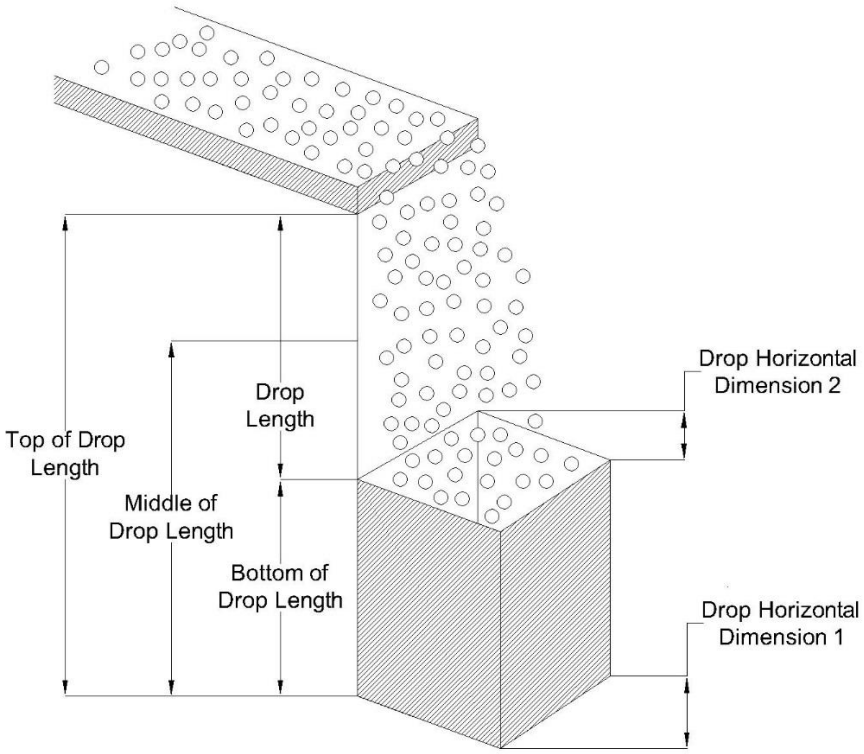

Figure 1: Drop Dimensions Diagram - Pile

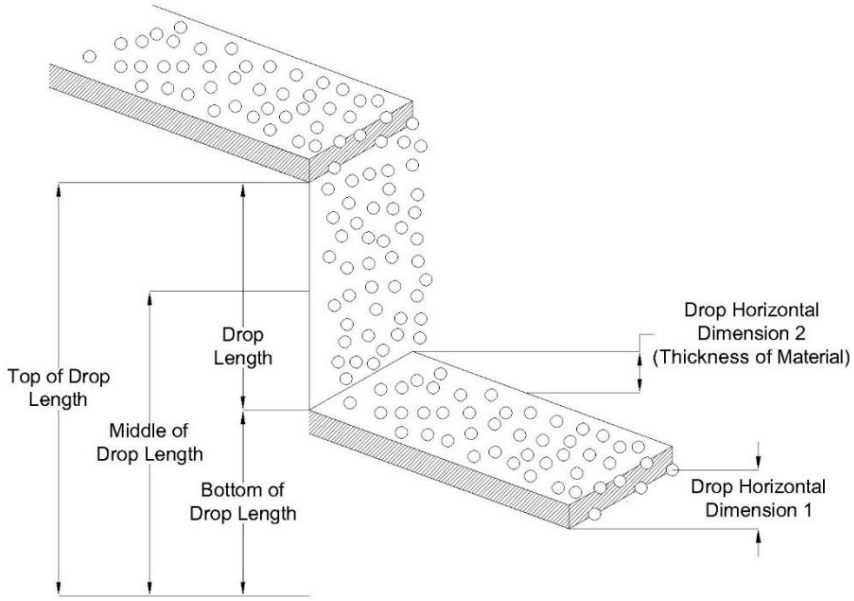

Figure 2: Drop Dimensions Diagram - Conveyor

Max. Design Heat Input
(For Combustion Equipment Application Forms Only)
For heaters, boilers, kilns, etc., provide the designed heat input in million British thermal units per hour (MMBtu/hr). The maximum heat input of the equipment, not the heat input value the equipment runs on, is required in accordance with NAC 445B.3135.

Emissions Released Inside Building?
(For Industrial Process, Combustion Equipment, and Storage Silo Application Forms Only)
Specify "Yes" if emissions are released inside a building. If not, specify "No".

Heated or Non-Heated Tank
(For Liquid Storage Tank Application Forms Only)
Specify if the emission unit is a heated or non-heated storage tank.

Shell Height
(For Liquid Storage Tank Application Forms Only)
Provide the shell height of the storage tank in feet.

Shell Diameter
(For Liquid Storage Tank Application Forms Only)
Provide the shell diameter of the storage tank in feet.

Maximum Liquid Height
(For Liquid Storage Tank Application Forms Only)

Provide the maximum liquid height of the stored material in feet.

Average Liquid Height
(For Liquid Storage Tank Application Forms Only)
Provide the average liquid height of the stored material in feet.

Capacity of Tank
(For Liquid Storage Tank Application Forms Only)
Provide the capacity of the storage tank in gallons.

Shell Color
(For Liquid Storage Tank Application Forms Only)
Provide the color of the shell (white, gray, aluminum, red primer, etc.).

Roof Condition
(For Liquid Storage Tank Application Forms Only)
Provide a description of the condition of the roof (bad, good, excellent, etc.).

Roof Type (Cone, Dome, External, or Internal Floating Roof)
(For Liquid Storage Tank Application Forms Only)
Indicate what type of roof is on the tank. Roof types include cone, dome, external, or internal floating.

Roof Height
(For Liquid Storage Tank Application Forms Only)
For a cone or dome roof, specify the roof height in feet.

Cone Roof Slope
(For Liquid Storage Tank Application Forms Only)
For a cone roof, specify the roof slope in feet per feet (ft/ft).

Dome Roof Radius
(For Liquid Storage Tank Application Forms Only)
For a dome roof, specify the radius of the roof in feet.

True Vapor Pressure of Liquid
(For Liquid Storage Tank Application Forms Only)
Provide the true vapor pressure of the liquid stored in pounds per square inch absolute (psia). The true vapor pressure is a measure of the volatility of petroleum distillate fuels.

Reid Vapor Pressure Liquid
(For Liquid Storage Tank Application Forms Only)
Provide the Reid vapor pressure of the liquid stored in pounds per square inch (psi). The Reid vapor pressure is a measure of the volatility of gasoline. It is defined as the absolute vapor pressure exerted by a liquid at 100 °F.

Orientation of Tank (Horizontal or Vertical)
(For Liquid Storage Tank Application Forms Only)
Specify the orientation of the tank, i.e. horizontal or vertical.

Submerged Fill
(For Liquid Storage Tank Application Forms Only)
Provide the information on the method of filling the storage tank in accordance with NAC 445B.22093.3.

5.1.2 For Reciprocating Internal Combustion Engines (RICE) Only

This section is only relevant to Internal Combustion Engines and only appears on the Combustion Equipment Application Form. Most of this information may be found within the engine specification sheets provided by the manufacturer or on the engine nameplate.

Max Design Horsepower Output
For generators, provide the design output in horsepower (hp) and also in kilowatts (kW).

Type of Engine Code
Provide the Type of Engine Code (from the table below) corresponding to the emission unit. For example, if you have an emergency spark ignition 4-stroke rich burn engine the code would be E-SI4SRB.

Code	Description	Code	Description
LU	Limited Use	E-SI	Emergency Spark Ignition
LDG	Landfill/Digester Gas	SI4SRB	Spark Ignition 4-Stroke Rich Burn
NECI	Non-Emergency Compression Ignition	SI4SLB	Spark Ignition 4-Stroke Lean Burn
ECI	Emergency Compression Ignition	SI2SLB	Spark Ignition 2-Stroke Lean Burn

Date Constructed
The Date Constructed is the date the unit was originally manufactured.

Cylinder Displacement
Provide the cylinder displacement of the RICE in liters per cylinder.

EPA Tier #
The EPA Tier Number refers to applicable 40 CFR Subpart regulations. For example, Table 1 of 40 CFR Part 89.112 has standards for oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust. Typical subparts for RICEs include 40 CFR Part 60 Subparts IIII and JJJJ and 40 CFR Part 63 Subpart ZZZZ.

5.1.3 Location of Emission Source

Each of the four Application Forms (Industrial Process, Combustion Equipment, Storage Silo, and Liquid Storage Tank) require the exact UTM coordinates for the emission unit. The Northing and Easting UTM coordinates must be in metric units NAD 83 / UTM Zone 11N. The BAPC needs each emission unit's unique UTM coordinates for air dispersion modeling (even when modeling is not required by the applicant).

5.1.4 Operating Parameters or Operating Parameters/Fuel Usage

Each of the four Application Forms has an Operating Parameters section or an Operating Parameters/Fuel Usage section. Much of this information is the same for each of the process forms, but there is some unique information. If the information is unique to a certain form, this has been indicated underneath each parameter description. All parameters included in the Operating Parameters section of the forms are discussed below.

Material Type Processed

(For Industrial Process and Storage Silo Application Forms Only)

Provide the type of material processed such as aggregate, gold ore, gypsum, limestone, lime, prill, etc.

Material Type

(For Liquid Storage Tanks Application Forms Only)

Provide the material type processed or stored in the storage tank, for example: asphalt, recycled fuel oil, water, etc. If the stored material is a combination of multiple materials, list each material and the percentage of total material it represents.

Fuel Type

(For Combustion Equipment Application Forms Only)

Provide the fuel type the combustion unit will operate on. If more than one type of fuel is combusted under the same operating scenario, specify the primary fuel and the percentage. If the primary fuel used is a blend of multiple fuels (fuel blending), then identify the percentage of each fuel in the blend.

Hourly Usage Rate

(For Combustion Equipment Application Forms Only)

Provide the amount of fuel used per hour. Fuel usage may be measured in gallons, written in gallons per hour (gal/hr); standard cubic feet, written in standard cubic feet per hour (scf/hr); or pounds, written in pounds per hour (lb/hr). This should be the maximum usage rate. The maximum usage rate can be provided from the Equipment Specification Sheet. Please attach the Equipment Specification Sheet detailing the maximum usage rate for the emission unit or another approved method (eg. picture of a nameplate of the engine and conversions used in AP42).

If the applicant chooses not to use the maximum, a method to track the fuel will be required, such as a fuel flow meter.

Annual Usage Rate

(For Combustion Equipment Application Forms Only)

Provide the annual amount of fuel used. Fuel usage is measured in gallons, written in gallons per year (gal/year); standard cubic feet, written in standard cubic feet per year (scf/year); or pounds, written in pounds per year (lb/year).

Sulfur Content

(For Combustion Equipment Application Forms Only)

Sulfur content refers to the nominal percent, by weight, of sulfur contained in the fuel supply. Provide the sulfur content, which can be obtained from the fuel supplier.

Heat Content

(For Combustion Equipment Application Forms Only)

Provide the heat content of the fuel being used. This value should be listed in the amount of heat (BTU) per unit of fuel combusted (pound, gallon, scf). The default heat content values from AP-42 are listed below. If a heat content value other than the default value is listed, provide documentation from the fuel supplier showing the nominal heat content of the fuel. Supporting documentation must be provided if the facility would like to use a coal heat content specific to coal they combust.

Coal (BTU/lb)	Diesel #2 (BTU/gal)	Gasoline (BTU/gal)	Natural Gas (BTU/scf)	Propane (BTU/gallon)
13,000	140,000	125,251	1,020	91,500

Operating Time Per Day

(For Industrial Process, Combustion Equipment, and Storage Silo Application Forms Only)

Provide how many hours a day the equipment will be operating.

Operating Time Per Year

If the unit will operate 24 hours per day, 365 days per year, the Operating Time per Year is 8,760 hours/year. If the unit will operate less, multiply the hours per day and the days per year of operation to obtain the Operating Time per Year.

For Liquid Storage Tanks provide the annual hours when material is stored in the tank. If the tank(s) store material all year long it will be 8,760 hours. If at any point during the year the tank(s) are empty, you may subtract these hours from 8,760 hours.

Hourly Throughput Rate

(For Industrial Process and Storage Silo Application Forms Only)

The Hourly Throughput Rate is the weight of material, in pounds, processed in one hour by the listed equipment.

Annual Throughput Rate

(For Industrial Process and Storage Silo Application Forms Only)

For the Annual Throughput Rate, multiply the Hourly Throughput Rate by the Operating Time per Year and convert to tons per year.

Maximum Throughput

(For Liquid Storage Tanks Application Forms Only)

Provide the maximum throughput of the stored material in gallons per hour and gallons per year.

Batch Process

(For Industrial Process and Storage Silo Application Forms Only)

Batch processes measure material in batches instead of a continual hourly basis. Provide the amount of material used for each batch and the unit.

Start Time

(For Industrial Process, Combustion Equipment, and Storage Silo Application Forms Only)
If you do not request a piece of equipment to operate 24 hours per day, you must list the exact hours of operation that the equipment will operate, such as 6:00 AM – 10:00 PM or 0600 – 2200. If the applicant would prefer to have the flexibility to operate the equipment at any time of day and not have the start and end times listed in the permit, specify N/A. Provide your start time in this section.

End Time

(For Industrial Process, Combustion Equipment, and Storage Silo Application Forms Only)
If you do not request a piece of equipment to operate 24 hours per day, you must list the exact hours of operation that the equipment will operate, such as 6:00 AM – 10:00 PM or 0600 – 2200. If the applicant would prefer to have the flexibility to operate the equipment at any time of day and not have the start and end times listed in the permit, specify N/A. Provide your end time in this section.

5.1.5 Control Equipment

Each of the four Emission Unit Application Forms has a section for control equipment. Many emission units can be equipped with control equipment to help minimize emissions from the emission unit. The information requested in this section is described in the sections below.

Type of Control

Provide the type of control equipment used (baghouse, bin vent, enclosure, water spray, wet scrubber, thermal oxidizer, carbon vessel etc.) and add a label and number (Baghouse BH-1). If an emission unit is not equipped with control equipment, write "no control" in this section.

Control Efficiency

Control efficiencies may be utilized for various types of controls including water sprays, enclosures, bin vents, etc. For baghouses, a manufacturer's guarantee or source test is required if using an efficiency better than the default control efficiency. The BAPC will accept the following default control efficiencies:

Emission Control Technology	Control Efficiency Rating
Water Sprays	75%
Enclosure	50%
Baghouse	0.02 grains/dscf

If you have any questions concerning what control efficiency you should be using for a control, please contact the BAPC.

Pollutant(s) Controlled

List the regulated air pollutants controlled by the control equipment. For example: PM, PM_{10} and $PM_{2.5}$.

Manufacturer

Provide the name of the manufacturer of the control equipment. If you do not know the manufacturer write "unknown".

Manufacturer's Guarantee Included?
If you are using a control efficiency from a manufacturer's guarantee, provide a copy of the guarantee. The BAPC will not accept a control efficiency from a manufacturer's guarantee without a copy of this information. Indicate Yes, or N/A.

5.1.6 Stack Parameters
This section appears on the Industrial Process, Combustion Equipment, and Storage Silo Process Application Forms only. Information required in this section is described below.

Stack Height
Provide the height of the stack in feet.

Stack Inside Diameter
Provide the inside diameter of the stack in feet. If the diameter is non-cylindrical, provide the actual dimensions (LxW).

Stack Temperature
Provide the temperature of the pollutant exiting the stack in degrees Fahrenheit. Write "ambient" if the stack temperature is the same as the ambient air temperature.

Stack Exit Velocity
Provide the exit velocity of the pollutant exiting the stack measured in feet per second (ft/sec).

Gas Volume Flow Rate (acfm and dscfm)
Provide the gas volume flow rate through the stack measured in actual cubic feet per minute (acfm) and in dry standard cubic feet per minute (dscfm).

Stack Release Type
A vertical stack release type is the most common release type and is the default value when BAPC completes modeling. If the stack is capped, indicate if it is fixed or a flapper type. Contact the BAPC with any questions.

5.2 Regulated Air Pollutants, Emission Factors and Limits
The Industrial Process Application Form, the Combustion Equipment Application Form, and the Storage Silo Application Form all require emission factors. These emission factors are used to calculate the requested emission limits, in pounds per hour (lb/hr) and tons per year (tons/year), for all applicable regulated pollutants and other non-regulated pollutants. This includes carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), Volatile Organic Compounds (VOCs), Greenhouse Gases (Carbon Dioxide Equivalent - CO_2e), Lead (Pb), and Hydrogen Sulfide (H_2S). Emission limits of applicable regulated air pollutants are required for each emission unit.

Particulate Matter (PM) is defined as any material except uncombined water that exists in a finely divided form as a liquid or solid (i.e. steam) at reference conditions (NAC 445B.129).

PM_{10} is defined as any particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by an approved reference method or equivalent method based on 40 CFR Part 50, Appendix J and designated in accordance with 40 CFR Part 53 (NAC 445B.135).

$PM_{2.5}$ is defined as any particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by an approved reference method or equivalent method based on 40 CFR Part 50, Appendix L, and designated in accordance with 40 CFR Part 53 (NAC 445B.1348).

Nitrogen oxides are defined as all oxides of nitrogen except nitrous oxide, as measured by test methods approved by the EPA (NAC 445B.109).

VOCs are any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR § 51.100(s)).

A Greenhouse Gas is defined as any of the following gases, either alone or in combination (NRS 445B.137):

1. Carbon dioxide (CO_2);
2. Hydrofluorocarbons;
3. Methane (CH_4);
4. Nitrous oxide (N_2O);
5. Perfluorocarbons; and
6. Sulphur hexafluoride (SF_6).

The throughput rate or fuel usage rate combined with the emission factor typically gives the emission limit of a pollutant. The applicant may apply a safety factor to increase the emission limit if desired, but the emission limit may not exceed any applicable standard. The emission limits must be calculated in pounds per hour (lb/hr) and tons per year (tons/year).

5.2.1 Emission Factor

An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. They are commonly expressed as a weight divided by a unit, volume, distance, or duration such as lb/MMBtu, lb/ton, or lb/1000 gallons. These facilitate estimation of emissions from various sources of air pollution and are assumed to be representative of long-term averages for source categories. Add the unit for the emission factor. There is only one row for the emission factors associated with CO2e and there are multiple CO2e pollutants. Write “see calculations” and list the CO2e and their emission factors on the calculation sheet. Commons sources of emission factors are: AP-42, manufacturer’s specification sheets, and source tests. In addition the BAPC has created Guidance on Emission Factors for the Mining industry which may be found here: https://ndep.nv.gov/air/permitting/download-permit-forms

5.2.2 Emission Factor Reference

A reference must be provided for the emission factor being used to calculate the emission limit. Emission factors should be chosen in accordance with NAC 445B.239. For example: AP-42 Ch. 11.19.2, Table 11.19.2-2.

5.2.3 Emission Limit (lb/hr)

The emission limit should be the calculated pounds per hour (lb/hr) for each air pollutant for the emission unit. **It is important that the values listed on the emission unit forms match what has been provided in the Detailed Emission calculations discussed further in Chapter 10.1 of this document**. Example calculations have been provided in Appendices 4 through 10.

5.2.4 Emission Limit (tons/year)

The emission limit should be the calculated tons per year (tons/year) for each air pollutant for the emission unit. **It is important that the values listed on the emission unit forms match what has been provided in the Detailed Emission calculations discussed further in Chapter 10.1 of this document.** Example calculations have been provided in Appendices 4 through 10.

5.2.5 HAPs and Other Pollutant(s)

The Combustion Equipment Application form also has a section for Hazardous Air Pollutants (HAPs). There will typically be more than one HAP emitted from a combustion source and there is only one row provided on the form. You may write "see detailed calculations" and list each HAP and their emissions on the calculation sheet.

All emission unit application forms have a section for other pollutants. Some equipment may have additional regulated air pollutants than what have been listed on the forms. When an emission unit has the potential to emit an air pollutant not listed on the form, the name of the air pollutant should be listed in this box. This section of the form can be copied if more than one is needed.

6.0 FACILITY-WIDE POTENTIAL TO EMIT TABLE

The Facility-Wide Potential to Emit (PTE) Table summarizes the total emissions per pollutant. In this table, include the sum of the emissions from both the permitted and IA emission units. Detailed calculations must be submitted with the application, but only the totals need to be transferred to the PTE Table provided in the application. If you have air pollutants other than those listed in the PTE Table list, list those pollutants under Other Regulated Pollutants.

In the case of a revision, provide the PTE changes in the second table on the Facility-Wide Potential to Emit Form. The emission limit change is the mathematical difference between the permitted PTE and the proposed PTE. Also note in the table if these changes will increase or decrease the permitted PTE per regulated air pollutant. Add more columns if needed for other regulated air pollutants.

7.0 SURFACE AREA DISTURBANCE FORM

All activities, which have the potential to adversely affect the local air quality, must implement all appropriate measures to limit controllable emissions in accordance with NAC 445B.22037. Appropriate measures for dust control may consist of multiple approaches together or separately. Dust suppression application methods such as water trucks or water sprays systems to control wind-blown dust, the application of soil binding agents or chemical surfactants to roadways and areas of disturbed soil, and wind-breaks or wind-limiting fences that are designed to limit wind erosion of soils are all appropriate applications to help reduce airborne dust. The Surface Area Disturbance Form requests the following information:

Total Acres of the Facility Site
Provide the total size of the site in acres. Specify the undisturbed areas, the facility area, and any asphalted areas in acres.

Total Acres Disturbed
Provide the information of the total acres disturbed. When calculating the total acreage, all ground being disturbed, and all ground previously disturbed but not stabilized, must be measured.

Surface Area Disturbance Location
Provide the surface area disturbance location as Township(s), Range(s), and Section(s). Fill this form out even if the surface area disturbance will be less than 5 acres.

8.0 PLANT BOUNDARY COORDINATES FORM

Areas that are considered "ambient air" as defined in 40 CFR Part 50.1(e) and NAC 445B.018 may not be included within the plant boundary. Provide the UTM coordinates of each corner of the plant boundary. UTM coordinates must be in the NAD 83 Zone 11 datum. Note this is only required if an environmental analysis is not submitted.

9.0 PLANT BUILDING PARAMETERS FORM

Provide UTM coordinates for each building corner. Note this is only required if an environmental analysis is not submitted.

Building Tier
Provide the building height and UTM coordinates for each tier separately.

Building Diameter
Provide the building diameter. Only required for cylindrical buildings (i.e., silos).

Building UTM Coordinates
UTM coordinates must be in the NAD 83 datum. Provide the UTM coordinates of the center of the building for cylindrical buildings/tiers. Provide sufficient UTM coordinates to define the footprint of the building/tier for all other buildings/tiers.

10.0 ADDITIONAL REQUIRED ATTACHMENTS

There are additional required attachments that are important supporting documents to the application. This information is used by the BAPC to process the application and write permit conditions, inform the public if a new facility requires an operating permit, and prepare the technical review supporting the permit. Provide the required attachments in a readable format, with both appropriate font type and size. The application may be rejected if the required attachments are not completed or are illegible.

10.1 Detailed Emission Calculations

Choose the appropriate emission factors for each emission unit and insignificant activity, and provide the calculations for the emission limits in both lb/hr and tons/year. If possible BAPC prefers these calculations in spreadsheet form. Chapter 5.0 contains detailed descriptions of the accepted emission factors and emission limits. Example calculations have been provided in Appendices 4 through 9.

For liquid storage tanks, the emission limit calculations and emission factor back-calculations are based on the EPA TANKs 4.0.9d software. The VOCs from all tanks are estimated through the TANKs 4.0.9d modeling software. The results from TANKs are reported in lb/year. These results are used to calculate the lb/hr and tons/year emission limits for VOC. Include the TANKs report with the application. This software is available from the EPA's website: https://www3.epa.gov/ttnchie1/software/tanks/index.html.

If TANKS is not used to estimate VOC emissions from the storage tank, the methodology outlined in AP-42 Chapter 7 may also be used, but all parameters must have supporting documentation.

Provide the facility-wide PTE totals in the Facility-Wide Potential to Emit Table, as discussed in Chapter 6.0. For any specific emission calculation questions, contact the BAPC.

10.2 Process Narrative

Provide a detailed description of all processes in the application and any renewal or revision specifics. A basic outline of what to include in the Process Narrative is as follows:

- Specify the location of the facility, and if it is part of a company, specify which company. For example: Arturo Mine is located 45 miles Northwest of Elko in Elko County, Nevada, Hydrographic Area 61 – Boulder Flat, and the mine is part of the Barrick Dee Venture Mining Company.
- Describe what the facility does, such as mining gold ore, crushing and screening aggregates, etc.
- Describe the emission units (equipment) used at the facility. Describe both the permitted units and the IA units. Describe how the emission units work together in the process flow, and provide any information to describe or that helps describe what the facility does and how it functions.
- The narrative must include descriptions of all emissions of regulated air pollutants from all emission units.
- Include Emissions Cap discussion, if applicable.
- If a revision is being requested, describe the revision's scope and state the requested changes and modifications.
- How and where the facility will be monitoring throughputs to demonstrate compliance.

- The narrative should match the Process Flow Diagram.

10.3 Process Flow Diagram(s)

The Process Flow Diagram is the drawing showing how all processes are interconnected. A process flow diagram should include each emission unit and drop point as well as the following:

- Indicate emission control application points;
- Throughput rates/design;
- Heat input rate values; and
- Emission unit identification numbers and system notations for clarification purposes (for example: In System 2, the Conveyor C-5 (PF1.006) transfers aggregate to Crusher CR-2 (PF1.007)).

Only information relevant to air pollution control permitting is necessary (e.g. locations of valves, electrical and water plans do not need to be included).

10.4 Site Plans

Provide the site plan of the entire source, drawn to scale, and include the scale and North arrow. The site plan should include the UTM coordinates (NAD 83 / UTM Zone 11N) as well as the dimensions and heights of buildings. The applicant can also provide an excel table for UTM coordinates (NAD 83 / UTM Zone 11) as well as the dimensions and heights of buildings. Site plans should include locations of systems, which should be labeled.

10.5 Maps: Facility Location and Area Map of the Facility

Provide all required maps as visible and readable printouts. The maps may be in color. Submit the following maps:

1. A vicinity map that shows the facility location with respect to the nearest known city, town, and major road, all labeled. Outline the facility.
2. An area map of the facility that shows a closer aerial view of the entire area of the facility that includes all emission unit locations (clearly labeled), location of front gate, buildings, and fence line.

10.6 Environmental Evaluation (AERMOD Air Dispersion Modeling Report and Electronic Input Files)

The BAPC uses the USEPA's AERMOD modeling system to perform air dispersion modeling for the regulated air pollutants. Other modeling platforms may be used with approval from the EPA modeling clearing house. The air dispersion modeling is part of the environmental evaluation to ensure the facility meets the NAC 445B.22097 Standards of Quality for Ambient Air. The environmental evaluation is defined in NAC 445B.310 and NAC 445B.311. Under NAC 445B.310 a facility must submit an environmental evaluation if it is a new or a renewal of a stationary source which emits, or has the potential to emit, greater than 25 tons of a regulated air pollutant per year, or if a modification to an existing stationary source where the existing stationary source has the potential to emit greater than 25 tons of a regulated air pollutant per year, or the proposed modification has the

potential to emit greater than 10 tons of a regulated air pollutant per year. For questions regarding environmental evaluations and modeling, please contact the Bureau of Air Quality Planning (BAQP) Modeling Branch at (775) 687-9349 and ask for the modeling supervisor.

10.6.1 Air Dispersion Modeling

Air dispersion modeling is a tool used to assess the air quality impacts from operations at a stationary source. The model shows if a facility complies with applicable ambient air quality standards as defined in NAC 445B.22097. The air dispersion modeling analysis is an integral part of the environmental evaluation requirement in NAC 445B.308. The modeling impact assessment provides the technical basis for BAPC issuance of a Class II AQOP. The air dispersion model is based on the requirements specified in NAC 445B.311.4.

A summary of NAC 445B.22097, as shown below, lists the minimum standards of quality for ambient air:

		NEVADA STANDARDS[A]		NATIONAL STANDARDS[B]		
POLLUTANT	AVERAGING TIME	CONCENTRATION[C]	METHOD[D]	PRIMARY[C, E]	SECONDARY[C, F]	METHOD[D]
Ozone	8 hours	0.075 ppm	Chemiluminescence	0.070 ppm	Same as primary	Chemiluminescence
Ozone-Lake Tahoe Basin, #90	1 hour	0.10 ppm (195 µg/m^3)	Ultraviolet absorption	--	--	--
Carbon monoxide less than 5,000′ above mean sea level	8 hours	9 ppm (10,500 µg/m^3)	Nondispersive infrared photometry	9 ppm (10 mg/m^3)	None	Nondispersive infrared photometry
At or greater than 5,000′ above mean sea level		6 ppm (7,000 µg/m^3)				
Carbon monoxide at any elevation	1 hour	35 ppm (40,500 µg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen dioxide	Annual arithmetic mean	0.053 ppm (100 µg/m^3)	Gas phase chemiluminescence	53 ppb[G]	Same as primary	Gas phase chemiluminescence
	1 hour	100 ppb	--	100 ppb	None	
Sulfur dioxide	Annual arithmetic mean	0.030 ppm (80 µg/m^3)	Ultraviolet fluorescence	0.03 ppm[H] (1971 standard)	None	Spectrophotometry (Pararosaniline method)
	24 hours	0.14 ppm (365 µg/m^3)		0.14 ppm[H] (1971 standard)		
	3 hours	0.5 ppm (1,300 µg/m^3)		None	0.5 ppm	
	1 hour	75 ppb	--	75 ppb	None	
Particulate matter as PM_{10}	Annual arithmetic mean	None	High volume PM_{10}sampling	None	None	--
	24 hours	150 µg/m^3		150 µg/m^3	Same as primary	High or low volume PM_{10} sampling
Particulate matter as $PM_{2.5}$	Annual arithmetic mean	12.0 µg/m^3	--	12.0 µg/m^3	Same as primary	Low volume $PM_{2.5}$sampling
	24 hours	35 µg/m^3	--	35 µg/m^3	Same as primary	
Lead (Pb)	Rolling 3 mo. average	0.15 µg/m^3	High volume sampling, acid extraction and atomic absorption spectrometry	0.15 µg/m^3	Same as primary	High volume sampling, acid extraction and atomic absorption spectrometry

		NEVADA STANDARDS[A]		NATIONAL STANDARDS[B]		
POLLUTANT	AVERAGING TIME	CONCENTRATION[C]	METHOD[D]	PRIMARY[C, E]	SECONDARY[C, F]	METHOD[D]
Hydrogen sulfide	1 hour	0.08 ppm (112 µg/m^3)[I]	Ultraviolet fluorescence	--	--	--

10.6.2 Information Required by the BAPC for Modeling Purposes

Provide the following information as an attachment for both permitted and IA emission units (unless the requested information is already given in another section of the application):

- Emission limit calculations, in spreadsheet form, of all regulated air pollutants (in pounds per hour (lb/hr)) for all the permitted and IA emission units.
- UTM coordinates (in meters, NAD 83 / UTM Zone 11N) of the locations of all the permitted and IA emission units.
- Stack parameters (height, diameter (or stack dimensions if non-circular), flow rate, temperature, location, etc.)
- Release dimensions for process fugitive emissions (transfer release height, drop distance, width of transfer)
- Tank dimensions and their UTM coordinates
- Building height in feet and the NAD 83 UTM coordinates of each corner of each building.
- For tanks with a capacity greater than 10,000 gallons: tank height in feet and the NAD 83 UTM coordinates of each corner of the tank if the tank is rectangular or the tank height and radius along with the UTM coordinates of the center if the tank is cylindrical.
- Facility plot plan with fence line boundary and UTM coordinates as requested in Chapter 8 Plant Boundary Coordinates Form and Chapter 9 Plant Building Parameters Form.
- Topographic Map (with scale and North arrow) as requested in Chapter 10.5 Maps.

10.6.3 Air Dispersion Modeling Submitted by Applicant

Provide all model input files required to perform the air dispersion modeling performed with the latest version of AERMOD. Provide a digital copy and a written report containing all the information above in Information Required by BAPC for Modeling Purposes, as well as the meteorological data, terrain, receptors and grid spacing, the pollutants the model was run for, and the results table showing either passing or failing the Standards of Quality for Ambient Air in accordance with NAC 445B.22097.

10.7 Manufacturer's Guarantee Certifications and Equipment Specification Sheets

The BAPC requires manufacture's guarantees for emission limits for all engines required to meet emission limits from a federal subpart. In addition, a manufacture's guarantee, providing the maximum fuel usage, must be included if the engine does not have a fuel flow meter or procedure to determine the fuel usage. This must be specified in Question 4 of the Combustion Equipment Application Form. For all other emission units, if the control efficiency or emissions calculations are based on a manufacturer's guarantee, the BAPC requires that guarantee be provided. If there is no manufacturer's guarantee attached, the BAPC may be required to apply the uncontrolled emission factor to calculate the emission limit(s).

10.8 Source (Stack) Testing Data

Attach any source testing data that emission estimates are based on.

10.9 TANKs Emissions Estimates

Perform TANKs modeling in order to estimate emission limits from liquid storage tanks storing petroleum or VOCs. TANKs 4.0.9d modeling software can be found on EPA's website. The TANKs report will show the VOC emission limit in pounds. Use this value to calculate the VOC emission limit in pounds per hour (lb/hr) and tons per year (ton/year), and also to back-calculate the emission factor for the storage tank. Include the TANKs report for all permitted and IA storage tanks within the application. If you do not want to use TANKS to estimate annual VOC emissions from your storage tank you may also use the methodology outlined in AP-42 chapter 7.

11.0 APPLICATION CERTIFICATION DOCUMENT

The last page of the Class II AQOP application packet is the Application Certification Document, which is a summary of the required documents in the application. It must be signed with an original "wet" signature by the RO of the company or facility.

Check the boxes next to the submitted documents, and make sure the Application Certification Document is signed by the RO. Create a digital copy of the application, including all requested documents, and submit a digital and hard copy of the application with the application processing fee. The complete application package can be mailed or hand delivered to the BAPC office.

12.0 MAINTENANCE/ANNUAL FEES

Class II Permit Fees				
New	**Renewal**	**Revision**	**Administrative Amendment**	**Maintenance / Annual Fee Schedule**
$3,000	$2,000	$2,000	$200	Potential to emit ≥ 80 TPY but < 100 TPY of any 1 regulated air pollutant except CO. $5,000 Potential to emit ≥ 8 TPY but < 10 TPY of any 1 hazardous air pollutant. $5,000 Potential to emit ≥ 20 TPY but < 25 TPY of any combination of hazardous air pollutants. $5,000 Potential to emit ≥ 50 TPY but < 80 TPY of any 1 regulated air pollutant except CO. $3,000

				Potential to emit ≥ 25 TPY, but < 50 TPY of any 1 regulated air pollutant except CO. $1,000 Potential to emit < 25 TPY of any 1 regulated air pollutant except CO. $500

APPENDIX 1
INDUSTRIAL PROCESS APPLICATION FORM EXAMPLE

INDUSTRIAL PROCESS APPLICATION FORM
CLASS II OPERATING PERMIT

System Number and Name: System 1 – North Creek Crusher Circuit

Emission Unit Description: Conveyor C-3 to Conveyor C-4

Alternative Operating Scenario: ☐ **Yes** ☒ **No**

Insignificant Activity: ☐ **Yes** ☒ **No** If yes, identify exemption regulation:

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☐ **Yes** ☒ **No** If yes, identify in attached Process Narrative.

Description			Data
Equipment Description	BAPC Emission Unit ID *Applicable for Renewal or Revision*	eg. Unit ID: S2.001, PF1.001	S2.001
	Source Classification Code (SCC)	e.g. *3-03-024-04 for Conveyors*	3-05-002-17
	Manufacturer		Industrial Products Inc.
	Date Manufactured		2006
	Model Number		HF938271-d
	Equipment Dimensions (LxWxH)	feet	2’ x 2’ x 9’
	Drop Length *if applicable*	feet	N/A – Stack emission unit
	Drop Height *if applicable*	feet	N/A – Stack emission unit
	The Drop Height is measured from the ☐ top of the drop length ☐ middle of the drop length ☐ bottom of the Drop Length, in reference to the ground. *Choose one, if applicable*		
	Drop Horizontal Dimension 1 *if applicable*	feet	N/A – Stack emission unit
	Drop Horizontal Dimension 2 *if applicable*	feet	N/A – Stack emission unit
	Emissions Released Inside building?	yes/no	N/A – Stack emission unit
Location of Emission Source	UTM Northing (NAD 83, Zone 11)	m	4,410,203
	UTM Easting (NAD 83, Zone 11)	m	331,732
Operating Parameters	Material Type Processed		Aggregate
	Operating Time per Day	hour/day	24
	Operating Time per Year	hour/year	8,400
	Hourly Throughput Rate	*ton*/hour	40
	Annual Throughput Rate	*ton*/year	336,000
	Batch Process *if applicable*	*unit*/batch	N/A
	Start Time *if operating less than 24 hours/day*	hour:minute	N/A
	End Time *if operating less than 24 hours/day*	hour:minute	N/A
Control Equipment	Type of Control		Water Spray
	Control Efficiency	%	75
	Pollutant(s) Controlled		PM, PM_{10}, $PM_{2.5}$
	Manufacturer		Water Co.
	Manufacturer’s Guarantee included?	yes/N/A	N/A
Stack Parameters	Stack Height	feet	N/A
	Stack Inside Diameter	feet	N/A
	Stack Temperature	°F	N/A
	Stack Exit Velocity	feet/second	N/A
	Actual Gas Volume Flow Rate	acfm	N/A
	Dry Gas Volume Flow Rate	dscfm	N/A
	Stack Release Type		☒ vertical ☐capped ☐ horizontal

INDUSTRIAL PROCESS APPLICATION FORM
CLASS II OPERATING PERMIT (continued)

Emission Unit Description: **System 1 – Conveyor C-3 to Conveyor C-4**

Description			Data
Particulate Matter (PM) Emissions	Emission Factor	*(lb/ton)*	0.003
	Emission Factor Reference		AP42 Table 11.19.2-2 Conveyor Transfer
	Emission Limit	pound/hour	0.12
	Emission Limit	ton/year	0.50
Particulate Matter as PM_{10} Emissions	Emission Factor	*(lb/ton)*	0.0011
	Emission Factor Reference		AP42 Table 11.19.2-2 Conveyor Transfer
	Emission Limit		0.04
	Emission Limit	ton/year	0.18
Particulate Matter as $PM_{2.5}$ Emissions	Emission Factor	*(lb/ton)*	0.00017
	Emission Factor Reference		BAPC Emission Factor Guidance
	Emission Limit	pound/hour	0.01
	Emission Limit	ton/year	0.03
Other Pollutants	Pollutant Name		N/A
	Emission Factor (with units)	*(insert units)*	N/A
	Emission Factor Reference		N/A
	Emission Limit	pound/hour	N/A
	Emission Limit	ton/year	N/A

1. How will throughput be monitored for this emission unit? Identify if monitoring will be at this emission unit or other emission unit and the method of verification (e.g. weigh belt).
   A weigh belt will be installed at this emission point.

APPENDIX 2
COMBUSTION EQUIPMENT APPLICATION FORM EXAMPLE

COMBUSTION EQUIPMENT APPLICATION FORM
CLASS II OPERATING PERMIT

System Number and Name: System 2 – Emergency Diesel Generator

Emission Unit Description: Emergency Diesel Generator

Alternative Operating Scenario: ☐ **Yes** ☒ **No**

Insignificant Activity: ☐ **Yes** ☒ **No** If yes, identify exemption regulation:

Subject to a Federal Regulation (40 CFR Part 60, 61, or 63): ☒ **Yes** ☐ **No** If yes, identify in process narrative.

Description			Data
Equipment Description	BAPC Emission Unit ID *Applicable for Renewal or Revision*	eg. Unit ID: S2.001	S2.002
	Source Classification Code (SCC)	e.g. *3-03-024-04 for Conveyors*	2-01-001-02
	Manufacturer		Cummins
	Date Manufactured		2007
	Model and Serial Number		Model SD048, Serial 159df6
	Max Design Heat Input [NAC 445B.313]	MMBtu/hour	21.14
	Emissions Released Inside building?	yes/no	No
For Reciprocating Internal Combustion Engines (RICE) Only	Max Design Horsepower Output	hp (kW)	2,292 (2,179)
	Type of Engine Code (See Notes*)		ECI
	Date Constructed	month/day/yr	8/26/2007
	Cylinder Displacement	liter/cylinder	< 10
	EPA Tier #		2
Location of Emission Source	UTM Northing (NAD 83, Zone 11)	m	4,493,382
	UTM Easting (NAD 83, Zone 11)	m	588,574
Operating Parameters /Fuel Usage	Fuel Type		Fuel Oil #2 (Diesel)
	Operating Time per Day	hour/day	24
	Operating Time per Year	hour/year	100
	Hourly Usage Rate *Maximum* Provide Equipment Specifications	*gallons*/hour	151.0
	Annual Usage Rate *Maximum*	*gallons*/year	151,100.0
	Sulfur Content	%	0.0015
	Heat Content	Btu/*gallons*	140,000
	Start Time *if operating less than 24 hours/day*	hour:minute	N/A
	End Time *if operating less than 24 hours/day*	hour:minute	N/A

***Notes:**

Code	Description	Code	Description
LU	Limited Use	E-SI	Emergency Spark Ignition
LDG	Landfill/Digester Gas	SI4SRB	Spark Ignition 4-Stroke Rich Burn
NECI	Non-Emergency Combustion Ignition	SI4SLB	Spark Ignition 4-Stroke Lean Burn
ECI	Emergency Combustion Ignition	S12SLB	Spark Ignition 2-Stroke Lean Burn

COMBUSTION EQUIPMENT APPLICATION FORM
CLASS II OPERATING PERMIT (continued)

Emission Unit Description: System 2 - Emergency Diesel Generator

Description			Data
Control Equipment	Type of Control		N/A
	Control Efficiency	%	N/A
	Pollutant(s) Controlled		N/A
	Manufacturer		Cummins
	Manufacturer's Guarantee Included?	yes/N/A	N/A
Stack Parameters	Stack Height	feet	7.1
	Stack Inside Diameter	feet	0.83
	Stack Temperature	ºF	893
	Stack Exit Velocity	feet/second	74
	Actual Gas Volume Flow Rate	acfm	14,920
	Dry Gas Volume Flow Rate	dscfm	4,770
	Stack Release Type		☒ vertical ☐capped ☐ horizontal
Particulate Matter (PM) Emissions	Emission Factor	*(lb/hp-hr)*	0.00033
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	0.966
	Emission Limit	ton/year	0.048
Particulate Matter as PM_{10} Emissions	Emission Factor	*(lb/hp-hr)*	0.00033
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	0.966
	Emission Limit	ton/year	0.048
Particulate Matter as $PM_{2.5}$ Emissions	Emission Factor	*(lb/hp-hr)*	0.00033
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	0.966
	Emission Limit	ton/year	0.048
Sulfur Dioxide (SO_2) Emissions	Emission Factor	*(lb/MMBtu)*	0.001515
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	0.032
	Emission Limit	ton/year	0.0016
Oxides of Nitrogen (NO_X) Emissions	Emission Factor	*(lb/hp-hr)*	0.00992 lb/hp-hr
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	28.99
	Emission Limit	ton/year	0.0016
Carbon Monoxide (CO) Emissions	Emission Factor	*(lb/hp-hr)*	0.005732 lb/hr-hr
	Emission Factor Reference		EPA Tier 2 Standards
	Emission Limit	pound/hour	16.75
	Emission Limit	ton/year	0.84

COMBUSTION EQUIPMENT APPLICATION FORM
CLASS II OPERATING PERMIT (continued)

Emission Unit Description: **System 2 - Emergency Diesel Generator**

Description			Data		
Volatile Organic Compounds (VOC) Emissions	Emission Factor	*(lb/hp-hr)*	0.00066 lb/hp-hr		
	Emission Factor Reference		EPA Tier 2 Standards		
	Emission Limit	pound/hour	1.93		
	Emission Limit	ton/year	0.10		
Hazardous Air Pollutants (HAPs) Emissions *Specify Each*	Emission Factor Reference		AP-42 Section 3.4 (Uncontrolled) (See Spreadsheet; Multiple HAPs)		
	Emission Limit	pound/hour	0.0783 lbs/hour		
	Emission Limit	ton/year	0.0039 ton/year		
Greenhouse Gases (CO_{2e}) Emissions	Component		Carbon Dioxide (CO_2)	Nitrous Oxide (N_2O)	Methane (CH_4)
	Emission Factor	*(lb/MMBtu)*	165	0.00132	0.09
	Emission Factor Reference		AP-42, Table 3.4-1 – Diesel Fuel	40 CFR 98, Table C-2 – Petroleum	AP-42, Table 3.4-1 – Diesel Fuel
	Emission Limit	pound/hour	3488.1	0.028	1.9
	Emission Limit	ton/year	174.4	0.0014	0.95
Other Pollutants	Pollutant Name		N/A		
	Emission Factor (with units)	*(insert units)*	N/A		
	Emission Factor Reference		N/A		
	Emission Limit	pound/hour	N/A		
	Emission Limit	ton/year	N/A		

1. How will fuel consumption be monitored for this emission unit (e.g. max fuel consumption rate supplied by manufacturer, fuel flow meter)?
   A fuel flow meter will track the consumption rate.

APPENDIX 3
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR CONVEYOR TRANSFER POINTS

Unit Description		Location UTM (Zone 11, NAD 83)		Operating Hours		Throughput			Uncontrolled Emission Factors			Controls		Permit Emission Limit		References	Notes
		North (m)	East (m)	Daily	Annual	Hour	Annual	Units	Pollutant	Factor	Unit	Type	Efficiency	Hourly (lb/hr)	Yearly (ton/yr)		
System 01 - Conveyor Transfer and Loading																	
PF1.001	Loader Transfer to Feed Hopper	4,361,351	361,118	10	2,600	350	100,000	Tons of Rocks	PM	0.0030	lb/ton	Water Sprays	75.0%	0.27	0.038	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing	For each source
PF1.002	Feed Hopper and Transfer to Feed Hopper Conveyor	4,361,351	361,118						PM_{10}	0.0011	lb/ton	Water Sprays	75.0%	0.096	0.014	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing	For each source
PF1.003	Feed Hopper Conveyor and Transfer to Main Conveyor	4,361,351	361,119						$PM_{2.5}$	0.00017	lb/ton	Water Sprays	75.0%	0.015	0.002	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing $PM_{2.5}=(PM_{10})/6.6$	For each source

Formulas Used for Calculating Emission Limits

$$EL_{\frac{lb}{hr}} = (Th_{hour} * EF) * (1 - C_{eff})$$

$$EL_{\frac{ton}{year}} = \frac{(Th_{year} * EF) * (1 - C_{eff})}{2{,}000\ \frac{lb}{ton}}$$

Where:

C_{eff} = *The listed Control Efficiency for a given control and pollutant.*

EF = *The listed Uncontrolled Emission Factor for a given pollutant.*

$EL_{\frac{lb}{hr}}$ = *The requested Permit Emission Limit for a given pollutant in pounds per hour.*

$EL_{\frac{ton}{year}}$ = *The requested Permit Emission Limit for a given pollutant in tons per year.*

Th_{hour} = *The Throughput of Material through the system in tons per hour.*

Th_{year} = *The Throughput of Material through the system in tons per year.*

Example Calculation:

$$EL_{\frac{lb}{hr}} of\ PM = \left(350\ \frac{tons}{hour} * 0.0030\ \frac{lb}{ton}\right) * (1 - 0.750) = 0.263\ \frac{lb}{hour}$$

$$EL_{\frac{ton}{year}} of\ PM = \frac{100{,}000\ \frac{tons}{year} * 0.0030\ \frac{lb}{ton} * (1 - 0.750)}{2{,}000\ \frac{lb}{ton}} = 0.0375\ \frac{ton}{year}$$

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example $C_{eff} = 75.0\% = 0.750$.

APPENDIX 4
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR NON-METALLIC CRUSHING

Unit Description		Location UTM (Zone 11, NAD 83)		Operating Hours		Throughput			Uncontrolled Emission Factors			Controls		Permit Emission Limit		References
		North (m)	East (m)	Daily	Annual	Hour	Annual	Units	Pollutant	Factor	Unit	Type	Efficiency	Hourly (lb/hr)	Yearly (ton/yr)	
System 02 - Cone Crusher																
PF1.004	Cone Crusher Including Associated Transfers (in from Main Conveyor and Discharge to Conveyor C-1)	4,361,342	361,127	10	2,600	350	100,000	Tons of Aggregate	PM	0.0054	lb/ton	Water Sprays	75.0%	0.48	0.068	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing
									PM_{10}	0.0024	lb/ton	Water Sprays	75.0%	0.21	0.030	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing
									$PM_{2.5}$	0.00036	lb/ton	Water Sprays	75.0%	0.032	0.005	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing $PM_{2.5}=(PM_{10})/6.6$

Formulas for calculating Emission Limits

$$\boldsymbol{EL_{\frac{lb}{hr}} = (Th_{hour} * EF) * (1 - C_{eff})} \qquad \boldsymbol{EL_{\frac{ton}{year}} = \frac{(Th_{year} * EF) * (1 - C_{eff})}{2{,}000\,\frac{lb}{ton}}}$$

Where:

$\boldsymbol{C_{eff}} = \textit{The listed Control Efficiency for a given control and pollutant.}$

$\boldsymbol{EF} = \textit{The listed Uncontrolled Emission Factor for a given pollutant.}$

$\boldsymbol{EL_{\frac{lb}{hr}}} = \textit{The requested Permit Emission Limit for a given pollutant in pounds per hour.}$

$\boldsymbol{EL_{\frac{ton}{year}}} = \textit{The requested Permit Emission Limit for a given pollutant in tons per year.}$

$\boldsymbol{Th_{hour}} = \textit{The Throughput of Material through the crusher in tons per hour.}$

$\boldsymbol{Th_{year}} = \textit{The Throughput of Material through the crusher in tons per year.}$

Example Calculation:

$$\boldsymbol{EL_{\frac{lb}{hr}} of\ PM = \left(350\ \frac{tons}{hour} * 0.0054\ \frac{lb}{ton}\right) * (1 - 0.750) = 0.473\,\frac{lb}{hour}}$$

$$\boldsymbol{EL_{\frac{ton}{year}} of\ PM = \frac{100{,}000\,\frac{tons}{year} * 0.0054\,\frac{lb}{ton} * (1 - 0.750)}{2{,}000\,\frac{lb}{ton}} = 0.068\ \frac{ton}{year}}$$

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example $C_{eff} = 75.0\% = 0.750$

APPENDIX 5
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR NON-METALLIC SCREENING

Unit Description		Location UTM (Zone 11, NAD 83)		Operating Hours		Throughput			Uncontrolled Emission Factors			Controls		Permit Emission Limit		References
		North (m)	East (m)	Daily	Annual	Hour	Annual	Units	Pollutant	Factor	Unit	Type	Efficiency	Hourly (lb/hr)	Yearly (ton/yr)	
System 03 - Screen																
PF1.005	Screen Including Associated Transfers (in from Conveyor C-1 and Discharge to Conveyor C-2 and Crusher Feed Conveyor C-3)	4,361,351	361,128	10	2,600	350	100,000	Tons of Aggregate	PM	0.025	lb/ton	Water Sprays	75.0%	2.19	0.32	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing
									PM_{10}	0.0087	lb/ton	Water Sprays	75.0%	0.76	0.11	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing
									$PM_{2.5}$	0.00132	lb/ton	Water Sprays	75.0%	0.12	0.017	AP-42, Ch. 11.19.2 Crushed Stone and Pulverized Mineral Processing $PM_{2.5}=(PM_{10})/6.6$

Formulas Used for Calculating Emission Limits

$$EL_{\frac{lb}{hr}} = (Th_{hour} * EF) * (1 - C_{eff})$$

$$EL_{\frac{ton}{year}} = \frac{(Th_{year} * EF) * (1 - C_{eff})}{2{,}000\ \frac{lb}{ton}}$$

Where:

C_{eff} = *The listed Control Efficiency for a given control and pollutant .*

EF = *The listed Uncontrolled Emission Factor for a given pollutant.*

$EL_{\frac{lb}{hr}}$ = *The requested Permit Emission Limit for a given pollutant in pounds per hour.*

$EL_{\frac{ton}{year}}$ = *The requested Permit Emission Limit for a given pollutant in tons per year.*

Th_{hour} = *The Throughput of Material through the screen in tons per hour.*

Th_{year} = *The Throughput of Material through the screen in tons per year.*

Example Calculation:

$$EL_{\frac{lb}{hr}} of\ PM = \left(350\ \frac{tons}{hour} * 0.025\ \frac{lb}{ton}\right) * (1 - 0.750) = 2.188\ \frac{lb}{hour}$$

$$EL_{\frac{ton}{year}} of\ PM = \frac{100{,}000\ \frac{tons}{year} * 0.025\ \frac{lb}{ton} * (1 - 0.750)}{2{,}000\ \frac{lb}{ton}} = 0.313\ \frac{ton}{year}$$

Notes: The end result emission limits were intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example $C_{eff} = 75.0\% = 0.750$.

APPENDIX 6
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR BAGHOUSE CONTROLLED SYSTEM

Appendix 6 - Page 1 of 2

Unit Description		Location UTM (Zone 11, NAD 83)		Stack Parameters		Operating Hours		Throughput			Emission Factors			Controls	Permit Emission Limit		References	Notes
		North (m)	East (m)			Daily	Annual	Hour	Annual	Units	Pollutant	Factor	Unit	Type	Hourly (lb/hr)	Yearly (ton/yr)		
System 04 - Three Roll Crusher																		
S2.001	Crusher Feed Conveyor C-3	4,410,203	331,732	Height (ft):	24	24	8,400	40	336,000	Tons of Agg.	PM	0.02	gr/dscf	Baghouse BH-1	0.43	1.80	BAPC Default Value: Baghouse Grain Loading	Emissions are Combined
S2.002	Three Roll Crusher Including Transfer in from Crusher Feed Conveyor C-3 and Discharge to Crusher Discharge Conveyor C-4	4,410,203	331,732	Diameter (ft):	1.03						PM_{10}	0.02	gr/dscf	Baghouse BH-1	0.43	1.80	BAPC Default Value: Baghouse Grain Loading	Emissions are Combined
S2.003	Crusher Discharge Conveyor C-4 and Discharge to Crusher Transfer Conveyor C-5	4,410,203	331,732	Temp (°F):	Ambient						$PM_{2.5}$	0.02	gr/dscf	Baghouse BH-1	0.43	1.80	PM 2.5 is assumed to be equal to PM 10	Emissions are Combined
S2.004	Crusher Transfer Conveyor C-5 and Discharge to Kiln Hopper Feed Conveyor C-6	4,410,203	331,732	Exit Vel (fps):	41.7													
				Vol (ACFM):	2084.7													
				Vol (DSCFM):	2500.0													

Formulas Used for Calculating Emission Limits

$$EL_{\frac{lb}{hr}} = \left(FR\frac{DSCF}{min} * EF\frac{gr}{DSCF}\right) * 60\frac{min}{hour} * \frac{1\ lb}{7{,}000\ gr}$$

$$EL_{\frac{ton}{year}} = \left(FR\frac{DSCF}{min} * EF\frac{gr}{DSCF}\right) * 60\frac{min}{hour} * \frac{1\ lb}{7{,}000\ gr} * t_{year} * \frac{1\ ton}{2{,}000\ lb}$$

Where:

$EF = The\ listed\ Emission\ Factor\ for\ a\ given\ pollutant\ in\ grains\ per\ dry\ standard\ cubic\ feet.$

$EL_{\frac{lb}{hr}} = The\ requested\ Permit\ Emission\ Limit\ for\ a\ given\ pollutant\ in\ pounds\ per\ hour.$

$EL_{\frac{ton}{year}} = The\ requested\ Permit\ \ Emission\ Limit\ for\ a\ given\ pollutant\ in\ tons\ per\ year.$

$FR_{\frac{DSCF}{min}} = The\ requested\ Baghouse\ Stack\ Exit\ Flow\ Rate\ in\ dry\ standard\ cubic\ feet\ per\ minute.$

$t_{year} = The\ requested\ operating\ hours\ per\ year.$

Example Calculation:

$$EL_{\frac{lb}{hr}} = \left(2,500\frac{DSCF}{min} * 0.02\frac{gr}{DSCF}\right) * 60\frac{min}{hour} * \frac{1\ lb}{7,000\ gr} = 0.429\frac{lb}{hr}$$

$$EL_{\frac{ton}{year}} = \left(2,500\frac{DSCF}{min} * 0.02\frac{gr}{DSCF}\right) * 60\frac{min}{hour} * \frac{1\ lb}{7,000\ gr} * 8,400\frac{hr}{year} * \frac{1\ ton}{2,000\ lb} = 1.80\frac{ton}{year}$$

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this calculation, the ratio $\frac{1\ lb}{7,000\ gr}$ is a conversion factor of 7,000 grains in one pound of material.

gr = grain

APPENDIX 7
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR COOLING TOWERS

Appendix 7 - Page 1 of 3

Unit Description		Location UTM (Zone 11, NAD 83)		Operating Hours		Throughput			Uncontrolled Emission Factors			Controls		Permit Emission Limit		References
		North (m)	East (m)	Daily	Annual	Hour	Annual	Units	Pollutant	Factor	Unit	Type	Efficiency	Hourly (lb/hr)	Yearly (ton/yr)	
System 05 - Cooling Tower																
S2.005	Cooling Tower #2	4,380,808	281,830	24	8,760	630,000	5,518,800,000	Gallon of Water	PM	0.00459	lb/1000 gallon	Drift Eliminator	75.0%	0.73	3.17	AP-42 Ch. 13.4 (See attached calculations)
									PM_{10}	0.00459	lb/1000 gallon	Drift Eliminator	75.0%	0.73	3.17	AP-42 Ch. 13.4 (See attached calculations)
				Maximum Throughput Rate (gal/min)	10,500				$PM_{2.5}$	0.00459	lb/1000 gallon	Drift Eliminator	75.0%	0.73	3.17	AP-42 Ch. 13.4 (See attached calculations)
				Drift Loss (%)	0.005%											
				Total Dissolved Solids (ppmw)	2,750											

Data given by Applicant for the Cooling Tower:

Drift Loss $= D_{loss} = 0.005\% = 0.00005$

Maximum Water Throughput Rate (or Maximum Water recirculation Rate) $= WTR = 10{,}500 \frac{gal}{min} = 630{,}000 \frac{gal}{hour} = 5{,}518{,}800{,}000 \frac{gal}{year}$

Total Dissolved Solids $= TDS = 2{,}750$ ppmw

Appendix 7 - Page 2 of 3

Formulas Used for Calculating Emission Limits

$$\boldsymbol{EF_{PM10}} = \frac{\boldsymbol{TLDL}}{\boldsymbol{100\%}} * \frac{\boldsymbol{lb\ TDS}}{\boldsymbol{10^6\ lb\ drift}} * \frac{\boldsymbol{8.34\ lb\ water}}{\boldsymbol{gallon\ water}}$$

$$\boldsymbol{D_{uncontrolled}} = \frac{\boldsymbol{D_{loss}}}{\boldsymbol{TLDL}}$$

$$\boldsymbol{EL_{PM10\,\frac{lb}{hr}}} = \boldsymbol{EF_{PM10}} * \boldsymbol{WTR} * \frac{\boldsymbol{60\ min}}{\boldsymbol{hour}} * \boldsymbol{D_{uncontrolled}}$$

$$\boldsymbol{EL_{PM10\,\frac{ton}{year}}} = \frac{\boldsymbol{EL_{PM10\,\frac{lb}{hr}}} * \boldsymbol{t_{year}}}{\boldsymbol{2,000\,\frac{lb}{ton}}}$$

$$\boldsymbol{EL_{PM10\,\frac{lb}{year}}} = \boldsymbol{EL_{PM10\,\frac{lb}{hr}}} * \boldsymbol{t_{year}}$$

Where:

$\boldsymbol{D_{uncontrolled}} = Tower\ Uncontrolled\ Drift.$
$\boldsymbol{D_{loss}} = Drift\ Loss\ expressed\ as\ a\ percent, is\ provided\ by\ Permittee.$
$\boldsymbol{EF_{PM10}} = The\ Total\ Uncontrolled\ Emission\ Factor\ for\ PM_{10}\ in\ pounds\ per\ 1{,}000\ gallons\ of\ water\ recirculated.$
$\boldsymbol{EL_{PM10\,\frac{lb}{hr}}} = The\ Requested\ Permit\ Emission\ Limit\ for\ PM_{10}\ in\ pounds\ per\ hour.$
$\boldsymbol{EL_{PM10\,\frac{lb}{year}}} = The\ Requested\ Permit\ Emission\ Limit\ for\ PM_{10}\ in\ pounds\ per\ year.$
$\boldsymbol{EL_{PM10\,\frac{ton}{year}}} = The\ Requested\ Permit\ Emission\ Limit\ for\ PM_{10}\ in\ tons\ per\ year.$
$\boldsymbol{t_{year}} = The\ requested\ operating\ hours\ in\ hours\ per\ year.$
$\boldsymbol{TDS} = Total\ Disolved\ Solids\ in\ parts\ per\ million\ by\ weight.$
$\boldsymbol{TLDL} = The\ Total\ Liquid\ Drift\ Loss\ expressed\ as\ a\ percent\ (from\ AP\ 42\ Ch.\ 13.4\ Wet\ Cooling\ Towers, Table\ 13.4-1).$
$\boldsymbol{WTR} = The\ Maximum\ Water\ Throughput\ Rate\ in\ gallon\ per\ minute, gallon\ per\ hour, or\ gallon\ per\ year.$

Example Calculation:

$$EF_{PM10} = 0.00020 * \frac{2{,}750\ lb\ TDS}{10^6\ lb\ drift} * \frac{8.34\ lb\ water}{gal\ water} = 0.00459 \frac{lb\ TDS}{1000\ gal} = 0.00459 \frac{lb\ PM_{10}}{1000\ gal}$$

$$D_{uncontrolled} = \frac{0.005\%}{0.020\%} = 0.25$$

$$EL_{PM10\ \frac{lb}{hr}} = 0.00459 \frac{lb\ PM_{10}}{1000\ gal} * 10{,}500 \frac{gal}{min} * \frac{60\ min}{hour} * 0.25 = 0.723 \frac{lb}{hour}$$

$$EL_{PM10\ \frac{ton}{year}} = \frac{0.723 \frac{lb}{hour} * 8{,}760 \frac{hour}{year}}{2{,}000 \frac{lb}{ton}} = 3.167 \frac{ton}{year}$$

$$EL_{PM10\ \frac{ton}{year}} = 0.724\ \frac{lb}{hour} * 8{,}760 \frac{hours}{year} = 6{,}340\ \frac{lb}{year}$$

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this calculation TLDL = 0.020% = 0.00020.

With cooling towers, all particulate matter is assumed to be equal to PM_{10}, thus PM = PM_{10} = $PM_{2.5}$.

If the Applicant does not provide the Drift Loss percentage (D_{loss}), then D_{loss} defaults to an assumed value of 0.020% and $D_{uncontrolled} = \frac{0.020\%}{0.020\%} = 1$.

If $EL_{PM10\ \frac{lb}{year}}$ is less than4,000 $\frac{lb}{year}$, then the Applicant may request a determination by the BAPC that the unit be considered an Insignificant Activity.

If $EL_{PM10\ \frac{lb}{year}}$ is greater than4,000 $\frac{lb}{year}$, then the cooling tower may not be considered an Insignificant Activity and must be a permitted system.

APPENDIX 8
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR DRYING OVEN COMBINED EMISSIONS

Appendix 8 - Page 1 of 3

Unit Description		Location UTM (Zone 11, NAD 83) North (m)	Location UTM (Zone 11, NAD 83) East (m)	Stack Parameters		Operating Hours Daily	Operating Hours Annual	Heat Input (MMBtu) Hour	Heat Input (MMBtu) Annual	Fuel Usage/Throughput Hour	Fuel Usage/Throughput Annual	Fuel Usage/Throughput Units	Uncontrolled Emission Factors Pollutant	Uncontrolled Emission Factors Factor	Uncontrolled Emission Factors Unit	Emission Rate Hourly (lb/hr)	Emission Rate Yearly (ton/yr)	References
System 06 A- Industrial Drying Oven (Throughput of Metallic Ore)																		
S2.006a	1.5 MMBtu/hr Drying Oven and Discharge to Supersacks	4,380,808	281,830	Height (ft):	54	24	6,000			5	30,000	Tons of Metallic Ore	PM	0.12	lb/ton	0.600	1.800	AP-42, Ch. 11.24, Table 11.24-2
				Diameter (ft):	2								PM_{10}	0.06	lb/ton	0.300	0.900	AP-42, Ch. 11.24, Table 11.24-2
				Temp (°F):	150								$PM_{2.5}$	0.009	lb/ton	0.045	.135	AP-42, Ch. 11.24, Table 11.24-2
				Vol (DSCFM):	24500													
System 06B - Industrial Drying Oven (Combustion)																		
S2.006b	1.5 MMBtu/hr Drying Oven and Discharge to Supersacks	4,380,808	281,830	Height (ft):	54	24	6,000	1.50	8,996.4	1,470	8,820,000	Cubic Feet of Natural Gas	PM	7.60	lb/10^6 scf	0.011	0.034	AP-42 Ch. 1.4 Table 1.4-2
				Diameter (ft):	2								PM_{10}	7.60	lb/10^6 scf	0.011	0.034	Assume PM=PM_{10}
				Temp (°F):	150								$PM_{2.5}$	7.60	lb/10^6 scf	0.011	0.034	Assume PM=$PM_{2.5}$
				Vol (DSCFM):	24500								SO2	0.60	lb/10^6 scf	0.001	0.003	AP-42 Ch. 1.4 Table 1.4-2
													NOX	100.00	lb/10^6 scf	0.147	0.441	AP-42 Ch. 1.4 Table 1.4-1
													CO	84.00	lb/10^6 scf	0.123	0.370	AP-42 Ch. 1.4 Table 1.4-1
													VOC	5.50	lb/10^6 scf	0.008	0.024	AP-42 Ch. 1.4 Table 1.4-2
													HAPS			0.00000007	0.00000022	AP-42 Ch. 1.4 Table 1.4-3
													CO2e			175.53	526.39	AP-42 Ch. 1.4 Table 1.4-2

Total Permitted Emission Limits for System 06 - Industrial Drying Oven									
Pollutant	PM	PM10	PM2.5	SO2	NOX	CO	VOC	HAPS	CO2e
Hourly (lb/hr)	**0.611**	**0.311**	**0.461**	**0.001**	**0.147**	**0.123**	**0.008**	**0.000**	**175.533**
Yearly (ton/year)	**1.834**	**0.934**	**1.384**	**0.003**	**0.441**	**0.370**	**0.024**	**0.000**	**526.389**

Appendix 8 - Page 2 of 3

Formulas Used for Calculating Emission Limits

$$ER_{Th\frac{lb}{hr}} = (Th_{hour} * EF_{Th}) * (1 - C_{eff}) \qquad ER_{Th\frac{ton}{year}} = \frac{(Th_{year} * EF_{Th}) * (1 - C_{eff})}{2{,}000\frac{lb}{ton}}$$

$$ER_{C\frac{lb}{hr}} = (FC_{Hour} * EF_{C}) * (1 - C_{eff}) \qquad ER_{C\frac{ton}{year}} = \frac{(FC_{year} * EF_{C}) * (1 - C_{eff})}{2{,}000\frac{lb}{ton}}$$

$$EL_{\frac{lb}{hr}} = ER_{Th\frac{lb}{hr}} + ER_{C\frac{lb}{hr}} \qquad EL_{\frac{ton}{year}} = ER_{Th\frac{ton}{year}} + ER_{C\frac{ton}{year}}$$

Where:

C_{eff} = The listed Control Efficiency for a given control and pollutant.

$EL_{\frac{lb}{hr}}$ = The requested Permit Emission Limit for a given pollutant in pounds per hour.

$EL_{\frac{ton}{year}}$ = The requested Permit Emission Limit for a given pollutant in tons per year.

EF_{Th} = The listed Uncontrolled Emission Factor for a given pollutant for the throughput of material through the Drying Oven.

EF_{C} = The listed Uncontrolled Emission Factor for a given pollutant for the combustion within Drying Oven.

$ER_{Th\frac{lb}{hr}}$ = The calculated Emission Rate for a given pollutant from the throughput of material through the Drying Oven, in pounds per hour.

$ER_{Th\frac{ton}{year}}$ = The calculated Permit Emission Rate for a given pollutant from the throughput of material through the Drying Oven, in tons per year.

$ER_{C\frac{lb}{hr}}$ = The calculated Emission Rate for a given pollutant from combustion within Drying Oven, in pounds per hour.

$ER_{C\frac{ton}{year}}$ = The calculated Emission Rate for a given pollutant from combustion within Drying Oven, in tons per year.

FC_{hour} = The Fuel Combustion rate in units of volume per hour. The units for FC will vary depending on the type of fuel being combusted.

FC_{year} = The Fuel Combustion rate in units of volume per year.

Th_{hour} = The throughput of ore through the drying oven in tons per hour.

Th_{year} = The throughput of ore through the drying oven in tons per year.

Note: For default Heat Content Values see Chapter 5.1.3 For Reciprocating Internal Combustion Engines (RICE) Only.

Example Calculation:

$$ER_{Th\frac{lb}{hr}}\ for\ PM = \left(5\frac{ton}{hour} * 0.12\frac{lb}{ton}\right) * (1-0) = 0.600\frac{lb}{hour}$$

$$ER_{Th\frac{ton}{year}}\ for\ PM = \frac{(30,000\frac{ton}{year} * 0.12\frac{lb}{ton}) * (1-0)}{2,000\ \frac{lb}{ton}} = 1.800\frac{ton}{year}$$

$$ER_{C\frac{lb}{hr}}\ for\ PM = (1,470\frac{cubic\ feet}{hour} * \frac{7.6\ lb}{10^6\ cubic\ feet}) * (1-0) = 0.011\frac{lb}{hour}$$

$$ER_{C\frac{ton}{year}}\ for\ PM = \frac{(8,820,000\frac{cubic\ feet}{year} * \frac{7.6\ lb}{10^6\ cubic\ feet}) * (1-0)}{2,000\ \frac{lb}{ton}} = 0.034\frac{ton}{year}$$

$$EL_{\frac{lb}{hr}}\ for\ PM = 0.011\frac{lb}{hour} + 0.60\frac{lb}{hour} = 0.611\frac{lb}{hour}$$

$$EL_{\frac{ton}{year}}\ for\ PM = 1.800\frac{ton}{year} + 0.034\frac{ton}{year} = 1.834\frac{ton}{year}$$

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example the system is uncontrolled so $C_{eff} = 0$.

APPENDIX 9
EXAMPLE OF EMISSION LIMIT CALCULATIONS FOR RECIPROCATING INTERNAL COMBUSTION ENGINES (RICE)

Appendix 9 - Page 1 of 2

Unit Description		Location UTM (Zone 11, NAD 83)		Stack Parameters		Operating Hours		Fuel Usage			Heat Input (MMBtu)		Power Output		Uncontrolled Emission Factors			Permit Emission Limit		References
		North (m)	East (m)			Daily	Annual	Hour	Annual	Units	Hour	Annual	Amount	Units	Pollutant	Factor	Unit	Hourly (lb/hr)	Yearly (ton/yr)	
System 07 - Diesel Generator																				
S2.007	2.944 HP Caterpillar Diesel Generator, Model #3516C, Mfd. in 2014	4,424,999	399,999	Height (ft):	12	24	8,760	139.5	1,222,020	Gallon of Diesel	19.53	171082.8	2,944	HP	PM	0.000027	lb/hp-hr	0.080	0.35	*Manufacturer's Guarantee
				Diameter (ft):	1										PM10	0.000027	lb/hp-hr	0.080	0.35	*Manufacturer's Guarantee
				Temp (°F):	920.6										PM2.5	0.000027	lb/hp-hr	0.080	0.35	Assume PM10 = PM2.5
				Exit Vel (fps):	345.9										SO2	0.000012	lb/hp-hr	0.036	0.16	AP-42 Table 3.4-1. Sulfur content 0.0015%
				Vol (ACFM):	16,301										NOX	0.00086	lb/hp-hr	2.54	11.13	*Manufacturer's Guarantee
															CO	0.000054	lb/hp-hr	0.16	0.70	*Manufacturer's Guarantee
															VOC	0.000017	lb/hp-hr	0.050	0.22	*Manufacturer's Guarantee
															HAPS			0.085	0.373	
															CO2e			3,222.79	14115.83	

*referenced manufacturer's guarantee must be included in application

Formulas Used for Calculating Emission Limits

$$EL_{\frac{lb}{hr}} = (HP * EF) * (1 - C_{eff}) \qquad EL_{\frac{ton}{year}} = \frac{(HP*EF)*(1-C_{eff})*t_{year}}{2{,}000\,\frac{lb}{ton}}$$

Where:

C_{eff} = *The listed Control Efficiency for a given control and pollutant .*

EF = *The listed Uncontrolled Emission Factor for a given pollutant in pounds per horsepower hour.*

$EL_{\frac{lb}{hr}}$ = *The requested Permit Emission Limit for a given pollutant in pounds per hour.*

$EL_{\frac{ton}{year}}$ = *The requested Permit Emission limit for a given pollutant in tons per year.*

HP = *The power output for the system in horsepower.*

t_{year} = *The requested operating hours in hours per year.*

Example Calculation:

$$EL_{\frac{lb}{hr}} = \left(2{,}944\ hp * 0.0000272\,\frac{lb}{hp-hr}\right) * (1-0) = 0.080\ \frac{lb}{hr}$$

$$EL_{\frac{ton}{year}} = \frac{\left(2{,}944\ hp * 0.0000272\,\frac{lb}{hp-hr}\right) * (1-0) * 8{,}760\ \frac{hr}{year}}{2{,}000\ \frac{lb}{ton}} = 0.350\ \frac{ton}{year}$$

Notes: The end result emission limits may be intentionally rounded up in the table so that all emissions were included, even when the answer is held to two significant figures.

In this example the system is uncontrolled so $C_{eff} = 0$.

The SO_2 emission limit of an engine is dependent on the sulfur content of the fuel. The fuel distribute should provide the sulfur content of the fuel.