TINTINA RESOURCES, INC. MONTANA AIR QUALITY PERMIT APPLICATION FOR EXPORATION AT THE BLACK BUTTE COPPER PROJECT

Submitted to:

MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau

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1.0 INTRODUCTION

Tintina Resources, Inc. (Tintina) is submitting this application for a Montana Air Quality Permit (MAQP) to the Montana Department of Environmental Quality, Air Resources Management Bureau (MDEQ). Tintina is currently pursuing environmental permitting for the exploration phase of a potential copper deposit known as the Black Butte Copper Project to be located approximately 15 miles north of White Sulphur Springs, Montana. This report, the accompanying forms, and supporting data comprise an application for an MAQP as required by the Administrative Rules of Montana (ARM) 17.8.743.

Tintina is a Vancouver-based resource company focused on the development and mining of its 100% owned flagship property, the Black Butte Copper Project in central Montana. The Black Butte Copper property consists of approximately 12,000 acres of both long-term mining leases on private ranch lands and 100%-owned federal mining claims. The property has maintained gravel road access and is within two miles of an all-weather highway. The property is also near a high-voltage power line and is 50 miles from rail service.

The copper-cobalt-silver deposits at the Black Butte Copper Project area occur in extensive shale-hosted bedded sulphide zones. These sulphide zones contain copper, cobalt, silver and barite, and occur at multiple levels throughout at least 750 meters of stratigraphy. Some zones show great lateral extent and some reach over 100 meters thick.

Tintina is submitting an application for an MAQP for a minor source of criteria pollutant emissions, as well as greenhouse gas (GHG) emissions, per the requirements of the Administrative Rules of Montana (ARM) Title 17 Chapter 8 Subchapter 7. This minor source permit application is intended to satisfy the requirements at ARM 17.8.748 for such an application by providing the following information:

- A description of the proposed facility, its planned operations and major equipment (Section 2 of the report).
- Analyses of potential pollutant emission rates from fugitive and point sources (Section 3) with detailed emissions calculations provided in Appendix B.
- Analyses of state and federal air quality regulations that will potentially apply to the facility and its operations (Section 4).
- Evaluation and identification of best available control technologies (BACT) for applicable emissions sources and pollutants (Section 5) with detailed cost information contained in Appendix C.
- An analysis of potential impacts of the proposed facility and operations on local ambient air quality (Section 6).
- Completed MAQP application forms (Appendix A) including:
    - A certification of truth, accuracy, and completeness signed by a responsible official of the applicant company.

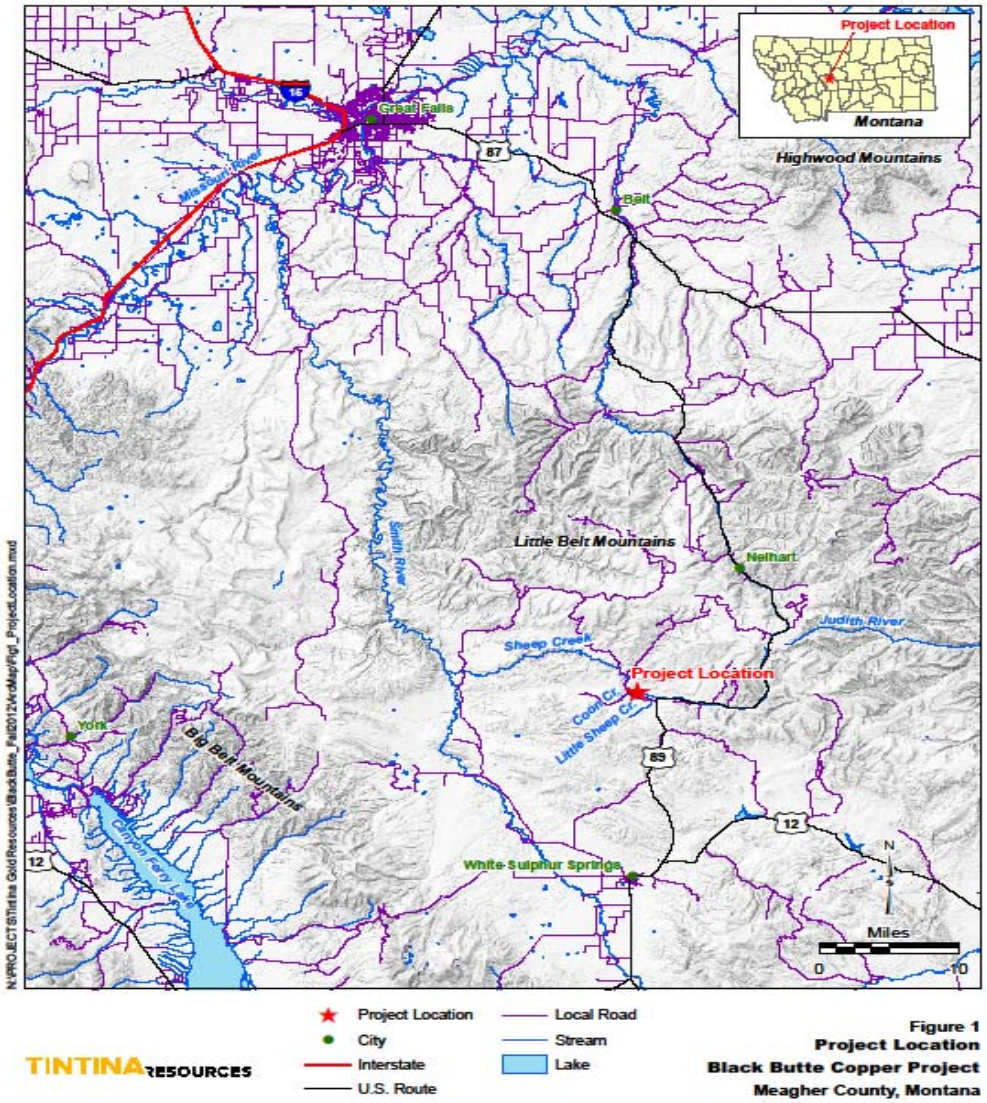
- An air quality permit application fee in the amount prescribed by ARM 17.8.504.

2.0 PROJECT SUMMARY

2.1 Site Description

The Black Butte Copper Project area is located about 15 miles north of White Sulphur Springs in Meagher County, Montana (see Figure 1). The property is accessed from White Sulphur Springs via U.S. Highway 89 and then by a two-mile long, gravel county road that, with winter snow plowing, is passable year-around. White Sulphur Springs is the county seat of Meagher County, Montana, and is home to about 985 people. Other nearby communities include Belt, Montana (population 597) located 50 miles to the north and Great Falls, Montana, (population 56,690) about 80 miles to the northwest.

Figure 1: Black Butte Copper Project Location Map



Tintina's lease includes land located in Sections 23, 24, 25, 26, 28, 32, 33, 34, 35, and 36, Township 12 North, Range 6 East; Sections 19, 29, 30, and 32, Township 12 North, Range 7 East; Sections 1, 2, 6, and 7, Township 11 North, Range 6 East; and Sections 1 and 12 in Township 11 North, Range 5 East.

The Western Regional Climate Center maintained two weather stations in the vicinity of the project area beginning in the late 1940s and mid-1960s until the early to mid-1980s (WRCC, 2011). More recent data are available from a station located in White Sulphur Springs (1978 through 2005). Average annual temperatures for these datasets are similar and range from about 25 degrees Fahrenheit (°F) to 55°F. Recent monthly data from the station located in White Sulphur Springs ranges from an average low of 12°F in

January to an average monthly high of 81°F in July. Temperatures could be expected to be somewhat lower at the project area due to its greater elevation compared to the weather stations. Tintina has also operated a meteorological monitor on-site since April 2012. Quarterly reports presenting this data have been submitted to the MDEQ since September 2012. Data collection is ongoing.

The air quality classification for the area is "Better than National Standards" or unclassifiable/attainment for the National Ambient Air Quality Standards for criteria pollutants (40 CFR 81.315). There are no non-attainment areas near the site.

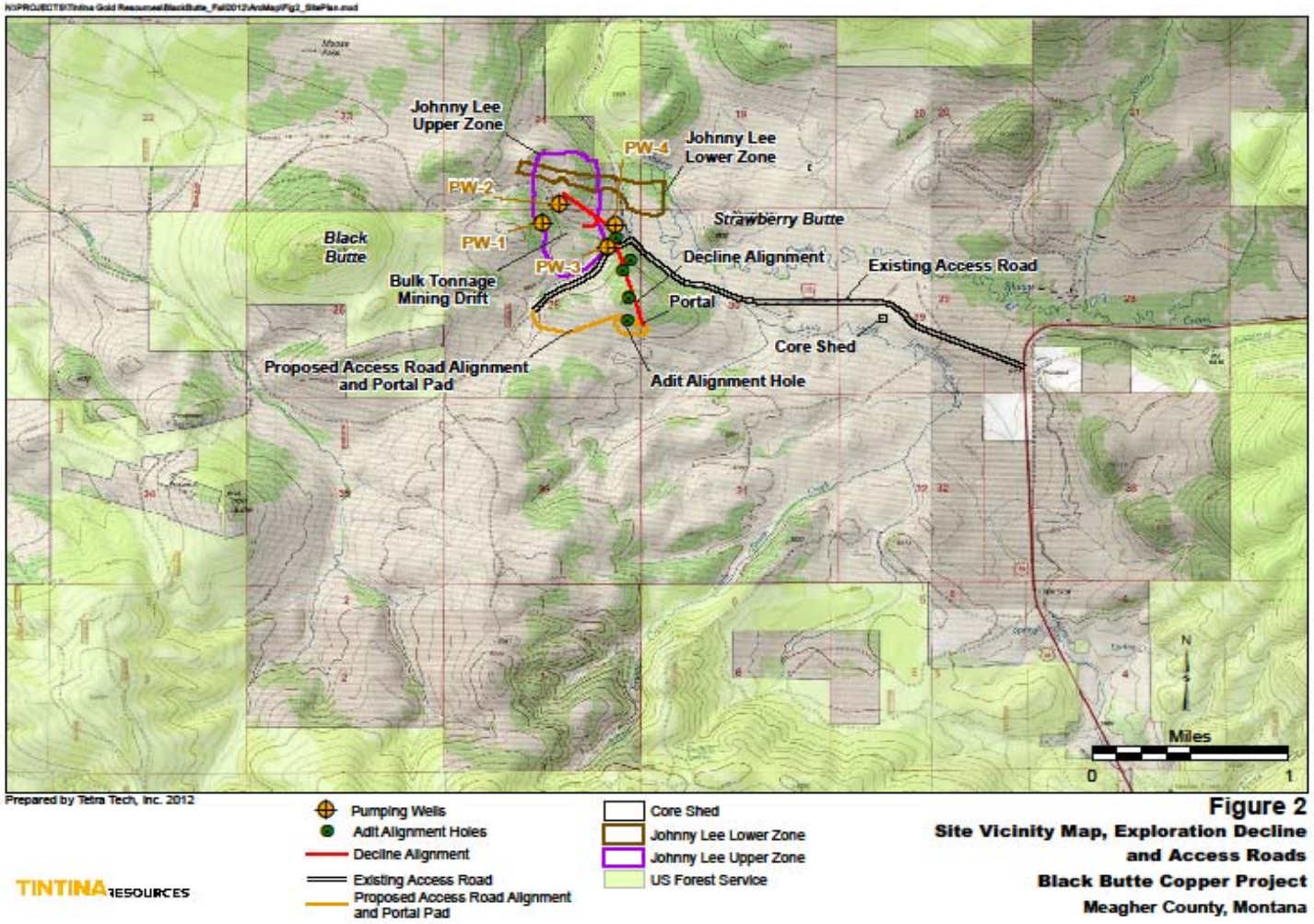
2.2 Process Description

Tintina is applying for an MAQP to conduct mineral exploration in the state of Montana. Tintina is in an exploration phase of the project and is currently approved only for surface disturbances related to exploration and hydrologic test drilling. As part of project development, Tintina has determined that underground exploration drilling and metallurgical sampling is necessary to advance the project to the next stage of resource development, which requires an amendment to its Exploration License. In order to accomplish this drilling, Tintina is proposing to use two Tier 4 475-horsepower (hp) diesel generator engines and one Tier 4 275-hp diesel air compressor to construct and support underground exploration drilling. The facility is assigned Standard Industrial Classification (SIC) Code 1021.[1]

Tintina proposes to construct an exploration decline into the Johnny Lee copper-cobalt-silver deposit (see Figure 2). The decline would be used as access from which to conduct an underground development drilling program that would provide a more thorough understanding of the geometry and grade of the mineable resource. The decline would also provide access for collection of a 10,000 ton bulk sample for metallurgical testing. The decline would allow for other technical investigative studies such as hydrologic/aquifer testing, water quality sampling, geochemical mine waste characterization, and geotechnical evaluations to be conducted in support of future mine planning. Tintina proposes to drive an 18-foot wide by 18-foot high 5,000-foot long exploration decline to a location near the bottom of the Upper Johnny Lee mineralized deposit. Underground drill stations would be cut, and infill development drilling of both the Upper and the Lower Johnny Lee deposit zones would be conducted from these locations. It is anticipated that surface and underground site preparation will take from 8 to 16 months to complete.

[1] See the SIC/NAICS manual, available at the DOL, OSHA web site http://www.osha.gov/oshstats/naics-manual.html

Figure 2: Johnny Lee Mineral Deposit



Surface disturbances associated with the proposed exploration decline include: an access road, a portal patio containing various support facilities, waste rock storage pads and seepage collection ponds, a water storage tank, and topsoil/subsoil stockpiles. Support facilities on the portal patio include: an office, dry/change house, warehouse, shop/maintenance facility, construction laydown area, employee parking, fuel and lubricant storage, and power supply.

Tintina will begin construction and remove topsoil and subsoil from the area prior to beginning construction of the decline. Two topsoil stockpiles of 0.63 acres and 0.65 acres, and a subsoil stockpile of 1.45 acres will be created. Once the decline is constructed and underground operations begin, Tintina will operate three 40-ton haul trucks on an ongoing basis that will deliver rock from underground to one of two waste rock storage piles above ground. Any ore not taken offsite for testing will also be stored in one of these two piles.

Emission-generating activities include wet drilling and blasting using ANFO as a blasting agent to excavate the decline and produce rock to be bulk sampled. Materials will be loaded underground and transported to the surface. Emissions associated with the underground activities (wet drilling, blasting, loading and hauling) will be vented through the portal. On the surface, rock will be distributed between two rock storage piles. The two rock storage piles are proposed, one for potentially acid-generating waste (PAG) and another for non-acid-generating waste (NAG). The combined facilities are designed to hold approximately 115,400 cubic yards (CY) (179,677 tons) of waste rock (see Figure 3). The analysis of metallurgical test bulk samples will be conducted off-site. Power for the site and operations will provided by generators located inside the shop building on the portal pad, near the portal above ground. This building will house the two Tier 4 475-hp diesel generator engines and one Tier 4 275-hp diesel air compressor (see Figure 4.)

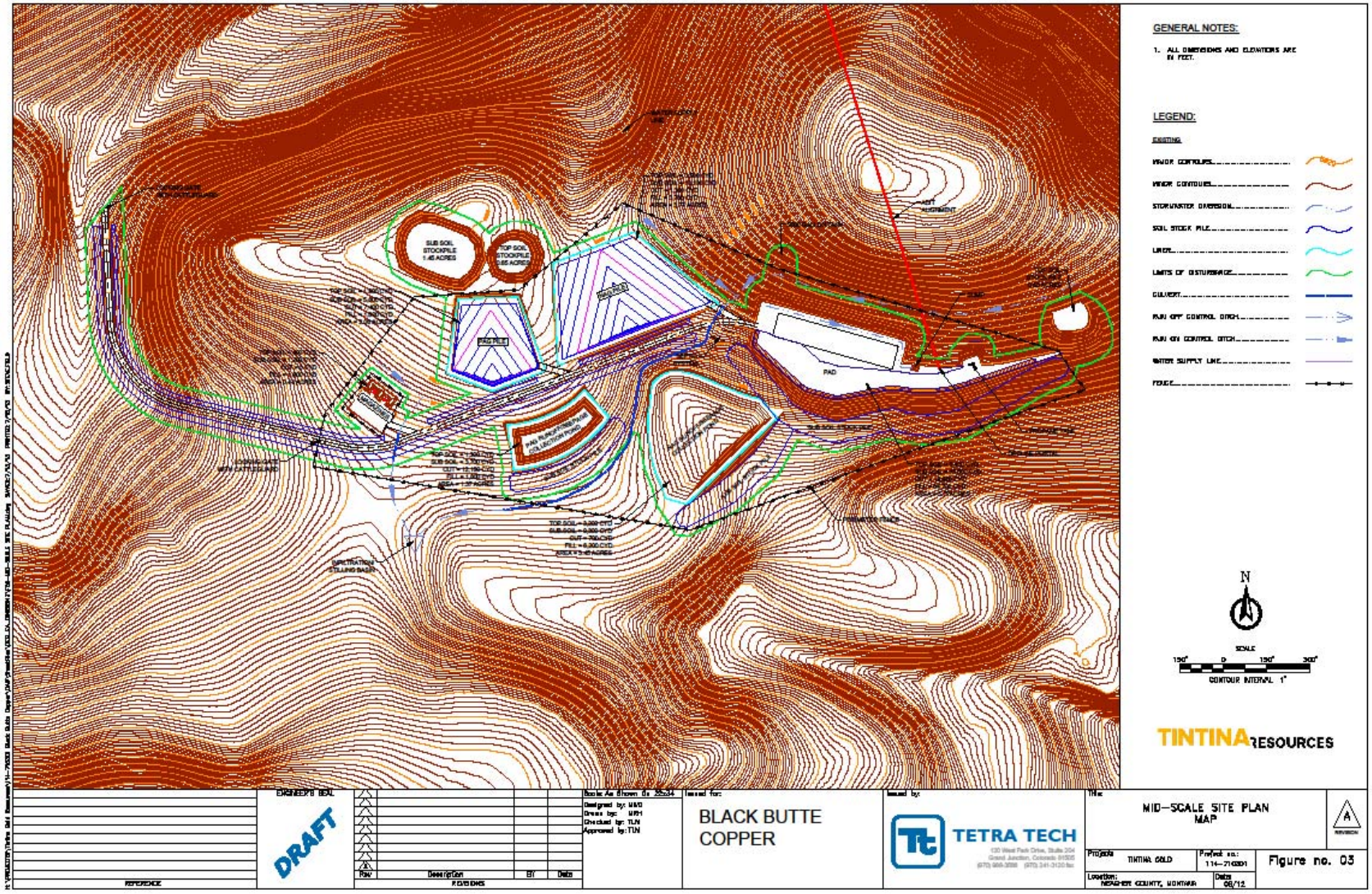


Figure 3: Site Plan Map

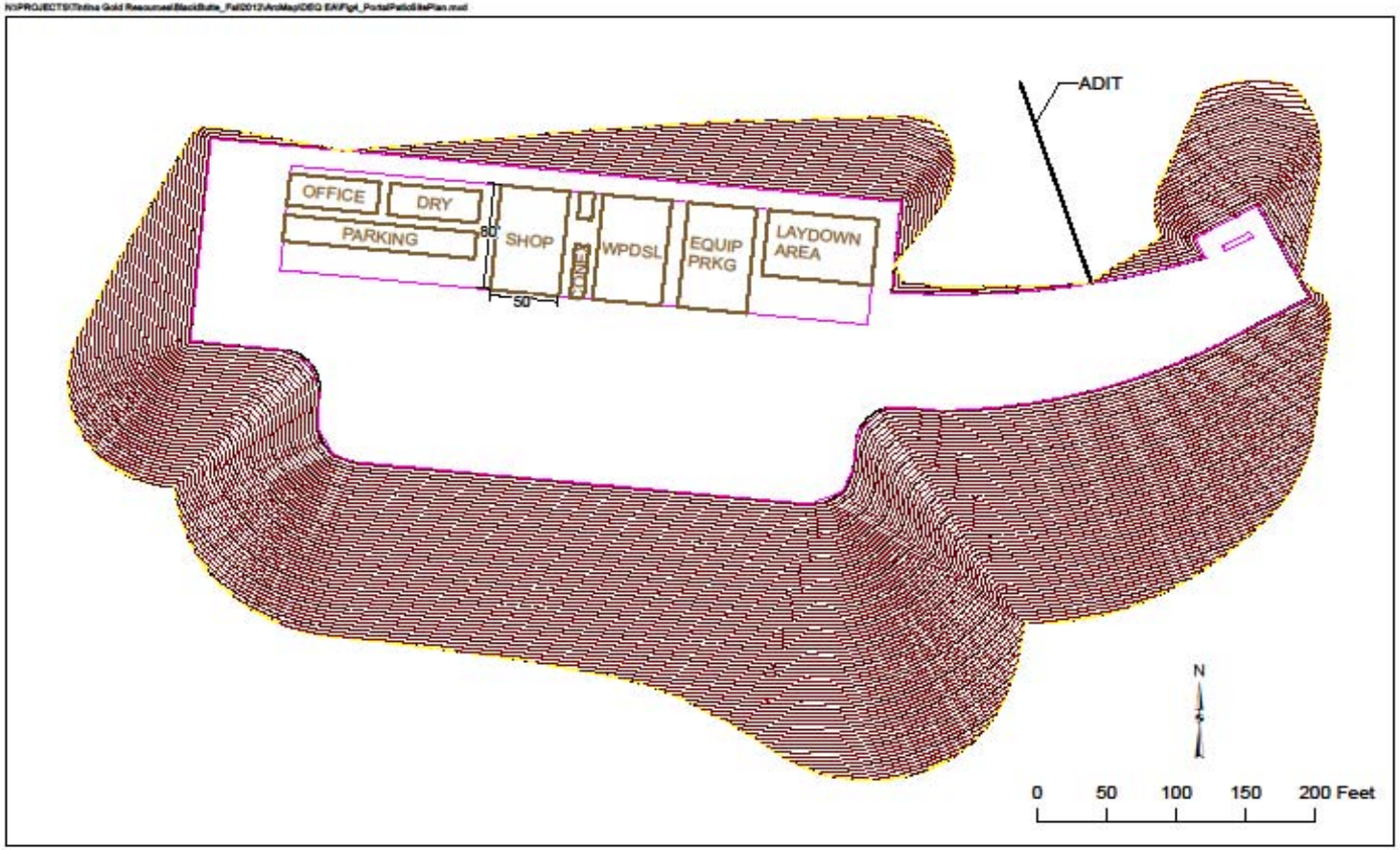


Figure 4: Portal Patio Site Plan

Tintina would implement dust control measures by watering or the use of chemicals on high traffic areas along access roads that can create dust and can be further exacerbated by blowing wind. Waste stockpiles and topsoil/subsoil piles would also be watered when necessary to minimize dust while loading or unloading material. Monitoring by site personnel during each shift will ensure watering is done to the level required to minimize the effects of dust at the site. The overall project will include, but is not limited to, potential emissions of nitrogen oxide (NOx), particulate matter (PM) and carbon monoxide (CO) at the facility. Please see the emissions inventory discussion in Section 3.0 of this report and Appendix B for detailed emission calculations.

The ambient air monitoring station (see Figure 5) just west of the core shed would remain operational during the period of exploration decline construction and evaluation. The station was established to accurately characterize the local meteorology and collect baseline data in support of a possible future mine operating permit application, and various ongoing environmental studies.

2.3 Public Notice

MDEQ requires the applicant to notify the public of an application for an air quality permit by means of a newspaper of general circulation in the vicinity of the proposed facility. Such public notification will be served by advertisement in the daily *Great Falls Tribune* on or around October 8, 2013, which is within ten days of filing the permit application.

3.0 EMISSIONS INVENTORY

3.1 Emissions Summary

Emissions associated with a proposed facility must be characterized and quantified to perform the various analyses and demonstrations required for an air quality permit application. Specifically, estimated potential project emission rates are used to determine applicability of air quality-related state and federal Clean Air Act regulations (see Section 4.0), identify Best Available Control Technology (BACT) (see Section 5.0), and demonstrate impacts to ground-level concentrations of pollutants in ambient air (see Section 6.0).

This application seeks to obtain an MAQP for the exploration phase of a copper project. The proposed installation and operations will include the following equipment:

Above-Ground Point and Fugitive Emissions

Quantity	Equipment	Emissions Source
2	475 hp Tier 4 diesel generator engines	Yes
1	275 hp Tier 4 diesel air compressor	Yes
2	PAG rock pile and NAG rock pile	Yes
1	Haul truck rock removal	Yes
1	Haul truck dumping	Yes
1	Topsoil/subsoil removal	Yes
1	Topsoil/subsoil dumping	Yes
1	Topsoil/subsoil piles	Yes
1 or More	Propane Combustion Heaters	Yes

Underground Fugitive and Point Emissions

Quantity	Equipment	Emissions Source
1	Underground loading	Yes
1	Wet drilling	Yes
1	Blasting ANFO (2-3 blasts per day)	Yes

Processes associated with these types of equipment have the potential to emit (PTE) PM, total particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), total particulate matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$), NO_x, CO, volatile organic compounds (VOCs), sulfur dioxide (SO_2), and carbon dioxide equivalent (CO_2e). The following subsections describe methods used to calculate potential emissions from each emitting source within the facility. Appendix B presents detailed emissions calculations and identifies sources of emission factors and other input data. The PTE calculations for each of the facility's sources depend on several design and operational factors including: maximum operating capacity, potential permit-limited production capacity and best available emissions control technologies. All

calculations were based on the assumption that the facility will be capable of continuous, full-time operation.

Table 3-1 summarizes the project's estimated maximum annual potential emission rates of PM, PM_{10}, $PM_{2.5,}$ NO_x, CO, VOC, SO_2 and CO_2e.

Table 3-1: Criteria Pollutant Emissions Summary

Source Group	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NOx	CO	SO2	VOC	CO_2e
Above-Ground Point Sources								
475 hp Tier 4 Diesel Engine	0.068	0.068	0.068	1.37	11.98	4.27	5.14	864
475 hp Tier 4 Diesel Engine	0.004	0.004	0.004	0.078	0.684	0.243	0.293	49
275 hp Tier 4 Air Compressor	0.040	0.040	0.040	0.793	6.9	2.47	2.98	500
Above Ground Fugitive Sources								
PAG Pile	0.014	0.007	0.001					
NAG Pile	0.014	0.007	0.001					
Haul Truck Unloading	0.028	0.013	0.002					
Haul Truck Travel	16.52	4.60	0.46					
Topsoil/Subsoil Removal	5.63	2.81	0.56					
Topsoil/Subsoil Dumping	0.022	0.011	0.002					
Topsoil/Subsoil Piles	0.52	0.26	0.05					
Propane Combustion	0.34	0.34	0.34	6.22	3.59	0.72	0.38	6119
Underground Fugitive Source								
Wet Drilling	0.0049	0.0049	0.0049					
Blasting	0.078	0.041	0.002	6.21	24.46			
Underground Loading	0.014	0.007	0.001					
TOTAL	23.3	8.21	1.54	14.67	47.6	7.70	8.79	7532

3.1.1 Criteria Pollutants

Above-Ground Point Sources

The above-ground point sources include two Tier 4 475-hp diesel engines. Both engines will be onsite, but only one engine will operate at any given time, while the other will be used in case of emergency back-up as needed. Potential emissions have been calculated in a conservative manner; calculating as if one engine is operating on a continuous basis and the other engine as an emergency back-up engine at 500 hours per year. The above-ground sources also include potential emissions from the Tier 4 275-hp air compressor diesel engine. The point sources have potential emissions of all criteria pollutants, with the most substantial emissions of NO_x and CO. CO_2e potential emissions have also been calculated for comparison purposes to review the applicability of greenhouse gas permitting requirements discussed in Section 4.0 of this report. The emission factors used to calculate potential emissions of these engines are factors established in the *Federal Register* for NO_x and CO for these engines, and AP-42 emission factors for the remaining criteria pollutants. Detailed references for the emission factors can be found in Appendix B of this report.

Above-Ground Fugitive Sources

Fugitive emissions of particulate originate from two types of sources: material handling and wind erosion of piles. The above-ground fugitive emission sources include propane combustion from heaters, the two waste rock piles, the haul truck travel and unloading of the rock, as well as the emissions generated from topsoil/subsoil removal, dumping, and piles. These emission calculations are essentially based on wind-blown dust. On-site meteorological data were incorporated into the emission formulas from AP-42 to determine an appropriate emission factor. An example particulate matter calculation is shown below.

PM calculation:

Emission factor k = $(0.0032)*(U/5)^{1.3}/(M/2)^{1.4}$ = 0.000462 lbs/ton
Where: k = particle size multiplier = 0.74 (PM, 30 microns, AP-42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 3.0mph (met data collected on site avg April 2012-March 2013)
M = material moisture content = 4% (provided by the company)
Control Efficiency = 50% (water spray or chemical dust suppressant)
(14.0 tons/hr)*(8760 hr/yr)*(0.000462 lbs/ton)*(ton/2000lbs)*(1pile)*(100-50/100) = 0.0142 tpy

Underground Sources

All of the underground emissions are considered fugitive and will be vented through the portal. All haul truck emissions have been calculated as above-ground emissions, which is a conservative estimate as a portion of them will occur during underground hauling of material. The calculated fugitive underground emissions include wet drilling, blasting, and loading of material; material handling has been considered negligible due to the high moisture content of the material. Tintina intends to use ANFO as the blasting agent and to conduct two-three blasts per day with emissions being calculated on three blasts per day. The wet drilling emission factors are actually based on wet drilling conducted at a coal mine from AP-42, but will appropriately and conservatively estimate potential emissions from a similar mining operation, as no further data is available directly related to wet drilling for metal mines. Emission factors for blasting were also taken from AP-42.

3.1.2 Hazardous Air Pollutants and Other Pollutants of Concern

The proposed facility combusts limited fuel quantities, and does not process material that are expected to release significant hazardous air pollutants (HAPs). HAP emissions associated with this project will be negligible and the potential emissions have been calculated and are included in Appendix B of this report.

4.0 REGULATORY ANALYSIS

This section evaluates potentially applicable regulatory requirements under the Montana and federal air quality regulations. Table 4-1 lists requirements that may apply to the proposed project. Analyses of each of the listed regulations follow.

Table 4-1: Potentially Applicable Rules

Rule Citation	Description	Report Section
ARM 17.8 Subchapter 1	General Provisions	4.1
ARM 17.8 Subchapter 2	Ambient Air Quality Standards	4.2
ARM 17.8 Subchapter 3	Emission Standards	4.3
ARM 17.8.340	New Source Performance Standards (40 CFR 60, Stationary Sources)	4.4
ARM 17.8.342	Emission Standards for Hazardous Air Pollutants for Source Categories (MACT – 40 CFR 63)	4.5
ARM 17.8 Subchapter 5	Air Quality Permit Application, Operation, and Open Burning Fees	4.6
ARM 17.8 Subchapter 6	Outdoor Burning	4.7
ARM 17.8 Subchapter 7	Permit, Construction and Operation of Air Contaminant Sources	4.8
ARM 17.8.752	Best Available Control Technology (BACT)	4.9
ARM 17.8 Subchapter 8	Prevention of Significant Deterioration-New Source Review	4.10
ARM 17.8 Subchapter 12	Operating Permit Program	4.11
40 CFR Parts 51, 52, 70, *et al*.	Greenhouse Gas Tailoring Rule	4.12
40 CFR 98, Subpart C	Greenhouse Gas Mandatory Reporting Rule	4.13

4.1 General Provisions

ARM 17.8 Subchapter 1 contains general rules that apply to the air quality program including definitions, testing requirements, malfunction notification requirements, and prohibitions against dilution or the creation of a public nuisance. Tintina will comply with all of the requirements and general provisions in ARM 17.8 Subchapter 1. Tintina will not circumvent any air quality regulation.

4.2 Ambient Air Quality Standards

The air quality of the area is classified as "Better than National Standards" or unclassifiable/attainment of the National Ambient Air Quality Standards (NAAQS) for criteria pollutants (40 CFR 81.327). ARM Chapter 17.8, Subchapter 2, establishes Montana Ambient Air Quality Standards (MAAQS) which are at least as stringent as the NAAQS. The Black Butte Copper project will not cause or contribute to an exceedance of any ambient air quality standard. Tintina has included, with this application, an ambient air quality analysis showing compliance with MAAQS and NAAQS through a qualitative analysis (see Section 6.0 of this report).

4.3 Emission Standards

ARM 17.8 Subchapter 3 sets forth emissions standards for various pollutants and emitting activities. Select sections of Subchapter 3 that will potentially apply to the project are evaluated in the following paragraphs.

4.3.1 Opacity

ARM 17.8 Sections 304 and 308 limit the opacity of source emissions to no more than 20% averaged over a six-minute period. Emission sources associated with this project would be subject to the 20% opacity limitation in these ARM sections. Tintina will comply with the requirements of ARM 17.8.304 and ARM 17.8.308 by using appropriate control technologies.

4.3.2 Particulate Matter, Industrial Processes

ARM 17.8.310 limits particulate matter emissions from industrial processes to the value calculated using the following formula.

$E = 4.10 * P^{0.67}$ (process rates up to and including 30 ton/hr)

$E = 55 * P^{0.11} - 40$ (process rates greater than 30 ton/hr)

where:

P = Process rate (ton/hr)
E = Particulate matter emissions rate (pounds per hour)

Tintina will ensure that all affected material handling equipment complies with this limit and BACT will be applied to the appropriate emission sources through the permitting action.

4.4 New Source Performance Standards (40 CFR 60, Stationary Sources)

ARM 17.8.340 incorporates by reference the New Source Performance Standards (NSPS) of 40 CFR 60. Tintina has identified two of these standards as potentially applying to its operations. Applicability analysis for this NSPS follows.

Title 40 CFR 60, Subpart IIII –Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable because Tintina will install three stationary diesel engines as part of this project and 40 CFR 63, Subpart ZZZZ applies this subpart to the facility.

Title 40 CFR 60, Subpart LL – Standards of Performance for Metallic Mineral Processing Plants is not applicable because Tintina has no affected facilities as defined by §60.380 and §60.381.

4.5 Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP – 40 CFR 63)

ARM 17.8.342 incorporates by reference the National Emission Standards for Hazardous Air Pollutants (NESHAP) listed in 40 CFR Part 63 that apply to stationary sources. Tintina has identified three standards as potentially applying to its operations. Applicability analyses for these NESHAP are as follows.

4.5.1 NESHAP – Subpart A General Provisions

This subpart applies to all equipment or facilities subject to a specific Part 63 subpart. Tintina will operate reciprocating internal combustion engines which are Subpart ZZZZ applicable engines.

4.5.2 NESHAP – Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Title 40 CFR 63, Subpart ZZZZ applies to the three diesel engines at the facility as they are defined as area sources of emissions under Subpart ZZZZ. Subpart ZZZZ for these three engines requires Tintina to comply with 40 CFR Part 60 Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Tintina will meet the requirements of §60.4208 to comply with the applicable requirements of Subpart IIII.

4.5.3 NESHAP – Subpart EEEEEEE National Emission Standards for Hazardous Air Pollutants for Gold Mine Ore Processing and Production Area Source Category

This subpart does not apply to Tintina because they do not meet the definition of a gold mine ore processing and production facility for the operations that will take place at the site.

4.6 Air Quality Permit Application, Operation, and Open Burning Fees

Tintina will submit the required permit application and operation fees per ARM 17.8 Subchapter 5. No outdoor burning is expected at the site, so open burning fees will not apply.

4.7 Outdoor Burning

No outdoor burning is expected at the site. If Tintina plans any outdoor burning, all conditions in ARM 17.8, Subchapter 6 will be followed.

4.8 Permit, Construction and Operation of Air Contaminant Sources

According to ARM 17.8.743 and 744, the proposed project qualifies as construction of a new stationary source for which an application for an air quality permit is required. This report, including completed permit application forms and other supporting information, constitutes Tintina's application for an MAQP.

One of the permit application requirements is that the applicant notify the public of its application by means of a newspaper of general circulation in the area affected by the facility modification (ARM 17.8.748). Such public notification will be served by advertisement in the *Great Falls Tribune* within ten days of filing the complete permit application. An affidavit of publication will be provided when available.

4.9 Best Available Control Technology (BACT)

ARM 17.8.752 requires that any new or altered source requiring an air quality permit install the maximum air pollution control capability that is technically practical and economically feasible and that BACT must be utilized. Section 5.0 of this report analyzes available alternative control technologies and identifies BACT for each applicable emissions source and pollutant combination. To comply with this rule, Tintina proposes to utilize the control technologies determined through those analyses to qualify as BACT.

4.10 New Source Review (NSR)-Prevention of Significant Deterioration (PSD)

NSR-PSD regulations apply to new and certain modified major stationary sources per ARM 17.8, Subchapter 8. A major stationary source is one that:

- Is listed in ARM 17.8.801(22)(a)(i) and has the potential to emit more than 100 tpy of any pollutant subject to regulation under the Federal Clean Air Act for PSD review; or
- Is not listed but has the potential to emit more than 250 tons per year of any regulated pollutant.

Tintina is not a listed source and does not have the potential to emit more than 250 tpy of a pollutant subject to regulation under the Federal Clean Air Act (FCAA). Therefore, Tintina is not considered a major stationary source.

4.11 Operating Permit Program (Title V)

Tintina will comply with all regulations in ARM 17.8 Subchapter 12 as appropriate. A Title V Permit is not currently required. Title V of the Federal Clean Air Act amendments of 1990 sets forth operating permit requirements that apply to major sources as defined within the statute. Montana administers the statute in accordance with rules codified at ARM 17.8 Subchapter 12. Several criteria establish major source status, but the primary criteria are:

- The facility's potential to emit any pollutant from a point source is less than 100 tons per year.

- The facility's potential to emit any single listed HAP is less than 10 tons per year, and its potential to emit all HAPs combined is less than 25 tons per year.

Tintina will not be a Title V major source according to these or any other criteria. Consequently, Title V operating permit program rules will not apply to the proposed project.

4.12 Greenhouse Gas Tailoring Rule

In general, the GHG Tailoring Rule applies to PSD-NSR major stationary sources that emit greater than 100,000 tons CO_2e or that modify their facility with a resulting emissions increase greater than 75,000 tons CO_2e per year. The Tintina mine will not be a major PSD-NSR stationary source for GHG; nor will its GHG emissions exceed the applicable threshold. Therefore, the GHG Tailoring Rule will not apply to the facility.

4.13 Greenhouse Gas Mandatory Reporting Rule

Title 40 CFR Part 98, Subpart C requires reporting of greenhouse gas emissions from listed facilities and facilities with stationary sources that emit over 25,000 metric tons CO_2e in a calendar year. If the proposed facility's actual annual GHG emissions surpass the applicability threshold, it will be subject to this rule. This is unlikely given that, with the possible exception of some insignificant stationary sources, the facility has a limited number of combustion sources.

5.0 BACT ANALYSES

ARM 17.8.752 requires the owner or operator of a new or altered source to implement the maximum degree of air pollution reduction that is available and technically and economically feasible. This level of emissions reduction is referred to as “best available control technology” (BACT).

Air quality regulations require that BACT be identified and implemented for equipment that is new or is being modified. The following sections identify BACT for the project’s primary activities and associated pollutants.

5.1 BACT Analysis Methodology

This BACT analysis is not being conducted for purposes of PSD and a top-down BACT is not required. However, in an effort to provide the department with a thorough document, the procedures outlined in the document New Source Review Workshop Manual, Office of Air Quality Planning and Standards, U.S. EPA, Draft - October 1990, were generally followed in this analysis. The methodology consists of the following five basic steps:

Step 1 - Identify all control options;
Step 2 - Eliminate technically infeasible options;
Step 3 - Rank remaining options by control effectiveness;
Step 4 - Evaluate most effective controls and document results; and
Step 5 - Select BACT.

Although the New Source Review Workshop Manual does not represent the law and is only a draft document that was never finalized, the method has been used extensively and provides a uniform approach to BACT decision-making. Each step in the BACT analysis process is outlined below.

Step 1 - Identify All Control Options

In a "top-down" BACT analysis, the first step is to identify all "available" control options for the emissions unit in question. "Available" control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and regulated pollutant being evaluated.

Step 2 - Eliminate Technically Infeasible Options

In the second step, the technical feasibility of the control options identified in the first step is evaluated with respect to the source-specific factors. A demonstration of technical infeasibility should be clearly documented and shown, based on physical, chemical, and/or engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. Technically infeasible control options are eliminated from further consideration.

Step 3 - Rank Remaining Options by Control Effectiveness

Available control technology options deemed technically feasible from Step 2 are ranked in order of pollutant removal effectiveness. The control option that results in the highest pollutant removal value is considered the "top" control alternative.

Step 4 - Evaluate Most Effective Controls and Document Results

The fourth step considers direct energy, environmental, and economic impacts associated with the most effective control option defined in Step 3. Both beneficial and adverse impacts are discussed and, where possible, quantified.

Energy impact analyses estimate direct energy impacts of the control alternatives in units of energy consumption. Environmental impact analyses consider effects of unregulated air pollutants or non-air impacts such as liquid, solid, or hazardous waste disposal and whether they would justify selection of an alternative control option. Economic impact analyses assess costs associated with installation and operation of the various control options.

If energy, environmental, or economic impacts disqualify the top candidate as inappropriate, then the next most effective alternative becomes the best control candidate, which is then similarly evaluated. This process continues until the top technology under consideration cannot be eliminated due to any source-specific energy, environmental, or economic impact(s).

Step 5 - Select BACT

The last step in evaluating BACT is to propose the most effective control option that remains after eliminating all non-viable options in Step 4. This step includes the proposal of a BACT-level emissions limit or limits if a limit is appropriate.

5.2 Sources Undergoing BACT Analysis

The following sources proposed by this permit application have been evaluated for application of BACT:

- Above-Ground Point Sources
    - Two, up to, 475-hp diesel-engines. The proposed engines would meet EPA Tier 4 Interim Standards for generation sets 130≤hp≤560 manufactured between 2011 and 2014. One of these engines will be operated continuously and the other will be permitted as emergency back-up but could replace operations of the first engine.

    - One, up to, 275-hp air compressor diesel engine. The proposed engine would meet EPA Tier 4 Interim Standards for generation sets 130≤hp≤560 manufactured between 2011 and 2014.

- Fugitive Above-Ground Sources
    - PAG/NAG Piles
    - Haul Truck Unloading
    - Haul Truck Travel
    - Topsoil/SubsoilRremoval
    - Topsoil/Subsoil Dumping
    - Topsoil/Subsoil Piles
    - Propane Combustion
- Underground Sources
    - Wet Drilling
    - Blasting
    - Underground Loading

5.2.1 Above-Ground Point Sources – Diesel Engines

5.2.1.1 CO and VOC BACT

A top-down CO and VOC BACT analysis for the proposed three Tier 4 diesel engines has been performed to determine appropriate control devices.

Step 1 - Identify All Control Technologies

Commercially available CO controls for compression ignition internal combustion engines (CICE) include:

- Catalytic Oxidization
- Engine Design and Good Combustion Practices

Catalytic Oxidation

Catalytic oxidation is a post-combustion technology that has been employed to oxidize CO and VOC emissions from CICEs. In a catalytic oxidation system, CO and VOCs from the exhaust stream pass over a catalyst, usually a noble metal, which oxidizes these pollutants into CO_2 and water. CO and VOC reduction efficiencies from catalytic oxidation vary, but can typically achieve 90 to 95% reduction.

Engine Design and Good Combustion Practices

Engine design and good combustion practices are commonly practiced to control CO and VOC emissions. This typically includes an air-to-fuel ratio controller. This device maintains the proper air-to-fuel ratio that will optimize the performance of the lean-burn engine. Other design and combustion practices include ignition retard, turbocharging and intercoolers.

Step 2 - Eliminate Technically Infeasible Control Options

Both of these control technologies are considered technically feasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Table 5-1 lists the CO and VOC control technologies and expected emission reductions. These control options were analyzed together in recognition of current practice in applying emission controls to CICEs.

Table 5-1: Ranked CO Control Technology Effectiveness

Control Technology	Estimated CO Reduction (% control)	Estimated VOC Reduction (% control)	Ranking
Catalytic Oxidation	90%	90%	1
Engine Design and Good Combustion Practices	Baseline – Engineered Into Engine	Baseline – Engineered Into Engine	2

Step 4 - Evaluate Control Technologies

Catalytic Oxidation

Tintina and Bison Engineering, Inc. (Bison) estimated the cost-effectiveness of installing catalytic oxidation systems on the proposed diesel engines. Table 5-2 summarizes the results of the evaluation. More detailed calculations are provided in Appendix C.

Table 5-2: Oxidation Catalyst Cost-Effectiveness

Source	Controlled CO Emissions Assuming 90% Control (tpy)	Controlled VOC Emissions Assuming 90% Control (tpy)	Estimated Annualized Costs[2]	CO Cost-Effectiveness	VOC Cost-Effectiveness
475 hp diesel engine	13.90	5.14	$129,293	$10,336	$27,956
475 hp back-up diesel engine	0.79	0.29	$129,293	$181,102	$489,782
275 hp diesel air compressor engine	8.05	2.98	$129,293	$17,854	$48,287

[2] Annualized costs estimated using an exhaust flow rate for a similarly sized single generator and the median catalyst cost presented in EPA-452/F-03-018 are calculated in 2012 dollars. See Appendix D for supporting documentation.

Assuming 90% control for both CO and VOCs, the calculated cost-effectiveness of an oxidation catalyst is determined to be prohibitively high for the proposed engines.

Engine Design and Good Combustion Practices

Modern engine design and good combustion practices is common for diesel engines used in this application and would not present any additional annualized costs above normal operation.

Step 5 - Identify BACT

Tintina proposes the diesel engines, which will meet EPA Tier 4 Standards, will employ good engine design and combustion practices as BACT for CO and VOC. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

5.2.1.2 NO_x BACT

ARM 17.7.752 requires a BACT analysis for NOx emissions. Annual NOx emissions are predicted to be very low because the proposed engines would meet the EPA Tier 4 Standards. To meet these standards, engine manufacturers have developed post-combustion controls, such as selective catalytic reduction (SCR) and non-selective catalytic reduction (NSCR), specifically engineered for the engine model. Due to the low emissions resulting from meeting the EPA Tier 4 standard and the engine manufacturer's engineered controls to meet this standard, a top-down BACT analysis for NOx emissions is not presented.

Tintina proposes NOx BACT as installing diesel engines which meet the Tier 4 standards. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

5.2.1.3 SO_2 BACT

ARM 17.7.752 requires a BACT analysis for SO_2 emissions. Since annual uncontrolled SO_2 emissions are low and any add-on control would be cost-prohibitive and unreasonable on a cost per ton of SO_2 removed basis, a top-down BACT is not presented. Tintina proposes SO_2 BACT as ultra-low sulfur diesel with no add-on controls. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

5.2.1.4 $PM/PM_{10}/PM_{2.5}$ BACT

ARM 17.7.752 requires a BACT analysis for $PM/PM_{10}/PM_{2.5}$ emissions. Annual $PM/PM_{10}/PM_{2.5}$ emissions are predicted to be very low because the proposed generators would meet the EPA Tier 4 Standards. Due to the low emissions resulting from meeting the EPA Tier 4 standard, a top-down BACT analysis for $PM/PM_{10}/PM_{2.5}$ emissions is not presented. Tintina proposes BACT as installing diesel generators

which meet the Tier 4 Standards. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

5.2.2 Above-Ground Non-Combustion Fugitive Sources $PM/PM_{10}/PM_{2.5}$ BACT

Because these source emissions are only fugitive in nature the following BACT analysis only covers particulate emissions. Also, because these emissions are fugitive in nature and the State of Montana has issued multiple BACT determinations on similar sources a top-down BACT analysis was not conducted.

5.2.2.1 PAG/NAG Piles and Topsoil/Subsoil Piles, Haul Truck Unloading and Travel, and Topsoil/Subsoil Removal and Dumping

Primary sources of fugitive dust from the project will be wind-blown dust from the PAG/NAG piles, the topsoil/subsoil piles, removal and dumping of the topsoil/subsoil piles, and road traffic emissions from the haul truck unloading and travel. It should be noted that the topsoil/subsoil removal and dumping will not be an ongoing activity. Once the topsoil/subsoil materials are removed and brought to the piles they will remain there until used for reclamation purposes. Two types of emissions controls are readily available and used for dust suppression of these fugitive emissions; water and chemical dust suppressant. Chemical dust suppressant could be used to control the fugitive emissions. Water is more readily available, is less expensive, is equally effective as chemical dust suppressant, and is more environmentally friendly than chemical dust suppressant. Therefore, water suppression and chemical dust suppressant have been identified as the measures of control for particulate emissions from the fugitive emission points. Tintina recommends BACT for the above-ground fugitive emission points will be water suppression and/or chemical dust suppressant as needed to comply with the requirement for reasonable precautions contained in ARM 17.8.308. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

5.2.3 Above-Ground Propane Combustion Sources BACT

Tintina plans to install propane combustion sources with a total facility-wide capacity of 10 MMBtu/hr. The propane combustion sources will include portal heaters and space heaters.

The annual uncontrolled $PM/PM_{10}/PM_{2.5}$ emissions will be less than 1 ton per year from propane combustion. The annual gaseous emissions (NOx, CO, SO_2, and VOCs) will also be low, with all pollutants being less than 7 tons/year.

Because the propane combustion annual emissions are low, any add-on control would prove to be cost-prohibitive and unreasonable on a cost per ton of pollutant removed. Bison is unaware of any add-on controls being applied to propane combustion heating sources. For these reasons, a top-down BACT for emissions from propane combustion is not presented. The proposed BACT for particulate and gaseous emissions from propane combustion is proper design and operation of the propane heaters with no add-on controls.

5.2.4 Underground Fugitive Sources BACT

5.2.4.1 Wet Drilling/Blasting $PM/PM_{10}/PM_{2.5}$ NOx and CO BACT

Underground mining will be performed using Ammonium Nitrate/Fuel Oil (ANFO) as the primary blasting agent to liberate and fracture the ore. The blasting will generate fugitive gaseous and particulate emissions. The use of common Best Operating Practices (BOPs) is the industry standard method for minimizing blasting emissions. Also, because these emissions are fugitive in nature and the State of Montana has issued BACT determinations on similar sources a top-down BACT analysis was not conducted. Tintina will use the following blasting BOPs:

- Optimize drill hole sizes. Optimizing drill hole size will result in effective blasting and thus reduce the number of blasts needed to achieve the desired effect. Water added to the blasted material at this time will continue to reduce particulate emissions throughout downstream handling and processing operations.

- Spray the area with water after each blast. This is standard operating procedure done primarily to reduce airborne dust below thresholds established for worker safety.

Section 3.0 of this report estimates potential pollutant emission rates that will result from blasting and describes the basis for those estimations. It would not be appropriate, however, to assign these values as a permit limit due to uncontrollable variables inherent in the process and the technical infeasibility of measuring the emission rates for compliance demonstration. Also, emissions are minimal and not all emissions will be emitted through the portal, as has been assumed for this analysis. Because the application of an emission standard is infeasible in this instance, Tintina proposes that BACT for reducing blasting emissions is a work practice condition to use BOPs and to comply with the requirement for reasonable precautions contained in ARM 17.8.308.

5.2.4.2 Underground Loading $PM/PM_{10}/PM_{2.5}$ BACT

Primary sources of fugitive dust from the project underground will be emissions from the haul truck loading. Haul truck travel has been assumed to occur above ground for analysis purposes. Two types of emissions controls are readily available and used for dust suppression of these fugitive emissions; water and chemical dust suppressant. Chemical dust suppressant could be used to control the fugitive emissions. Water is more readily available, is less expensive, is equally effective as chemical dust suppressant, and is more environmentally friendly than chemical dust suppressant. Underground mining is typically wet, with naturally-occurring water providing good dust suppression without any additional control needed. Therefore, water suppression has been identified as the measure of control for particulate emissions from the loading of material underground. Tintina recommends BACT for underground loading will be water

suppression as needed to comply with the requirement for reasonable precautions contained in ARM 17.8.308. This BACT is consistent with recent State of Montana BACT determinations on similar sources.

6.0 AIR QUALITY IMPACT ANALYSIS

Montana's air quality rules require an applicant for a stationary source air quality permit to demonstrate compliance with ambient air quality standards designed to limit environmental impacts from air pollution emissions. This demonstration may be accomplished using professional judgment based on factors such as potential emission levels, emission source characteristics, existing air quality, regional meteorological conditions, surrounding terrain, and the proximity and scale of other nearby stationary emissions sources. The MDEQ and EPA facilitate this type of analysis by providing guideline *de minimis* emission rates that in some cases may be used to indicate acceptable ambient impacts. In special cases where *de minimis* emission levels are deemed non-applicable or where they would be exceeded, ambient standards compliance is almost always demonstrated using approved air dispersion modeling techniques.

This proposed project's potential rates of criteria air pollutant emissions, as reported in Section 3.0 of this report, are low and are below *de minimis* levels that would normally preclude dispersion modeling. Based on the low potential for particulates and the standard of engine type for NOx emissions, Tintina will comply with the National Ambient Air Quality Standards (NAAQS – 40 CFR 50) and Montana Ambient Air Quality Standards (MAAQS – ARM 17.8.201 *et seq*). In addition to the potential emissions Tintina is also expected to meet the NAAQS and MAAQS for other pollutants based on the emission source characteristics, existing good air quality, regional meteorological conditions, surrounding terrain, and relatively little in the way of nearby stationary emissions sources.

Tintina has conducted over a year's worth of ambient meteorological monitoring at the site. Tintina established an ambient air monitoring site to measure wind speed, wind direction, standard deviation of wind direction, temperature at 9 meters and 2 meters, delta temperature, solar radiation, barometric pressure, and precipitation. The station was established to accurately characterize the local meteorology and collect baseline data in support of a mine operating permit application and various environmental studies.

The site of the meteorological monitoring system was installed in April 2012. All meteorological parameters were in full operation and producing valid data by April 30, 2012. The site is operated by Bison Engineering, Inc., of Helena and Billings. Figure 5 shows the location of the monitoring site.

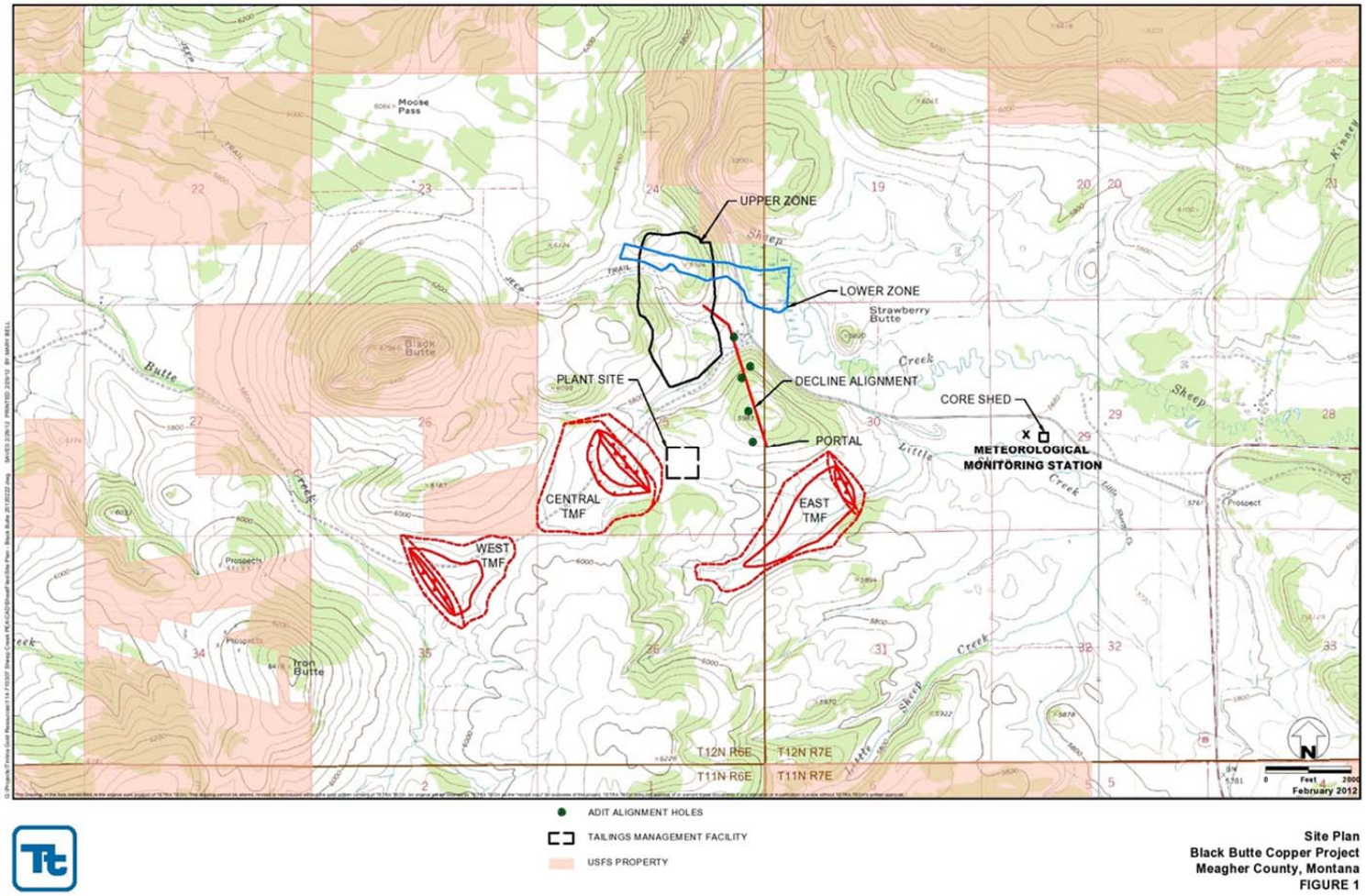


Figure 5: Ambient Air Monitoring Station Location

APPENDIX A: MDEQ AIR QUALITY PERMIT APPLICATION FORMS

AIR QUALITY PERMIT APPLICATION FOR STATIONARY SOURCES

Montana Department of Environmental Quality
Air Resources Management Bureau
Permitting Section Supervisor
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901
Phone: (406) 444-3490 FAX (406) 444-1499
Email: DEQ-ARMB-Admin@mt.gov

For State of Montana Use Only
Permit Application #: _____ AFS #: _____ Application Fee Paid with Application? ☐ Yes ☐ No Amount Paid: _____ Check #: _____

Three complete copies of this application, any associated fees, and the affidavit of publication of the attached public notice must be delivered to the address above. The application may be submitted electronically to the email address provided above; however, the application will not be considered complete until the appropriate permit application fee, affidavit of publication, and certification of truth, accuracy, and completeness are submitted to the Department. Any checks, affidavits, and certifications submitted separately from the application should be clearly identified. The applicant is encouraged to contact the Department with any questions related to this application form.

*Note: This application form should **not** be used for portable sources or oil and gas registrations. Permit application forms for portable sources and oil and gas registrations are available on the Department's website. Applications for Acid Rain permits must be made on nationally standardized forms available from the U.S. Environmental Protection Agency as well as through the Department's application for a Title V Operating Permit.*

§1.0 General Facility Information and Site Description

§1.1 FACILITY NAME AND ADDRESS (As registered with the Montana Secretary of State)

Company Name Tintina Resources, Inc.

Facility Name Black Butte Copper Mine

Mailing Address	Physical Address (if different from mailing address)
Suite 2560, 200 Granville St. Address	17 West Main St.; P.O. Box 431 Address
Vancouver, BC, V6C 1S4 City State Zip	White Sulphur Springs MT 59645 City State Zip

§1.2 Contact Information				
	Name	Title	Telephone	Email
Owner	Tintina Alaska Exploration		604-628-1162	
Facility Manager	Bob Jacko	VP of Operations	406-547-3466	bjacko@tintinaresources.com
Responsible Official				
Alternate Responsible Official				
Contact Person	Bob Jacko	VP of Operations	406-547-3466	bjacko@tintinaresources.com
Alternate Contact Person				
[Note: If email address is provided, the Department will send all permit notices (i.e. Preliminary Determination, Department Decision, and Final Permit) electronically.				

§1.3 PERMIT TYPE (Check all that apply)

☒ **Montana Air Quality Permit (MAQP)**

MAQP Permit Action: ☒ New Facility ☐ Modification to Existing Permit # _____ - _____

☐ Synthetic Minor (major source using federally enforceable permit conditions to avoid MACT, NSR, or Title V Operating Permit requirements)

☐ New Source Review

☐ Prevention of Significant Deterioration

☐ Nonattainment Area

☐ **Air Quality Operating Permit (Title V)**

Title V Permit Action: ☐ Initial Air Quality Operating Permit

☐ Renewal of Air Quality Operating Permit #OP_____ - _____

☐ Modification of Air Quality Operating Permit #OP_____ - _____

☐ Minor Modification

☐ Significant Modification

Note: The applicant must also send one copy of the Title V Operating Permit application to the EPA at the following address:

Office of Partnerships and Regulatory Assistance
Air and Radiation Program
US EPA Region VIII 8P-AR
1595 Wynkoop St.
Denver, Colorado 80202-1129

A statement certifying that a copy of the Title V Operating Permit application has been mailed to EPA must accompany the Title V Operating Permit application.

§1.4 Physical Location and Facility Information

Qtr/Qtr Section		Sections	23-26, 28 and 32-36	Township	12 North	Range	6 East
			18, 29, 30 and 32		12 North		7 East
			1, 2, 6 and 7		11 North		6 East
			1 and 12		11 North		5 East

Latitude (in decimal degrees) _____ Longitude (in decimal degrees) _____ County Meagher

Will the facility be operating in (or impacting) a nonattainment area? ☐ Yes ☒ No

(*Note: Maps of the state's nonattainment areas can be found at the following website:* http://deq.mt.gov/AirQuality/Planning/AirNonattainment.asp.)

If yes, which pollutant(s) is the area nonattainment for?

_____

Total Property Area (acres) _____ Year Facility Began Operation at Site: New Facility

General Nature of Business: Mining Exploration

Standard Industrial Classification (SIC) Codes(s): 1021

SIC Description(s): Metal Mining - Copper Ore

(*Note: SIC Codes can be found at the following website:* http://www.osha.gov/pls/imis/sicsearch.html.)

For MAQP only, **a drawing, sketch, or topographic map of appropriate scale must be submitted** (maximum scale 1"=500', measurement to the nearest 20'), showing at least the following:

a. The property boundaries on which the source is located;

b. The outlines and dimensions of all existing and proposed buildings and stacks;

c. The locations of existing and proposed emitting units, including lat/long coordinates (in NAD83) and elevation (in feet above mean sea level) for each emitting unit. The emissions units and points should be identified as existing or proposed;

d. Any nearby streets, highways, and waterbodies;

e. Any nearby sensitive areas, such as schools, hospitals, parks, residential areas, etc.;

f. A true north arrow; and

g. A graphically displayed scale.

§1.5 Project Summary (*Not Required for Title V Operating Permit applications*)

Overview of project, including any new or modified equipment (*attach additional information as necessary*):
Tintina is applying for an MAQP to conduct mineral exploration in the state of Montana. Tintina is currently in the exploration phase of the project. Tintina has determined that underground exploration and drilling is necessary to advance the project.

Include a process flow diagram showing material balances.

Construction/Installation Schedule:

Expected Construction Start Date: Fall 2013 Expected Operation Start Date: Spring 2014

Duration (if a temporary source): _____

Optional Information:

Estimate of Capital Expenditure for Proposed Project: $_____

Estimate of Cost of Air Pollution Control Equipment: $_____

§2.0 Emitting Unit Listing

List all existing and proposed emitting units.
For Title V Operating Permits only, note all insignificant emission units.

Note: An **insignificant emissions unit** includes any activity or emissions unit that has the potential to emit less than 5 tons per year of any regulated pollutant, less than 500 pounds per year of lead, less than 500 pounds per year of a hazardous air pollutant, and is not regulated by an applicable requirement, such as a New Source Performance Standard (NSPS) or Maximum Achievable Control Technology (MACT) standard.

EMITTING UNIT		Pollution Control Device	New Source	Existing Source	Insignificant	
ID	Name				Yes	No
1	475 hp Tier 4 diesel generator engine	Tier 4 inherent control	☒	☐	☐	☐
2	475 hp Tier 4 diesel generator engine	Tier 4 inherent control	☒	☐	☐	☐
3	275 hp Tier 4 air compressor	Tier 4 inherent control	☒	☐	☐	☐
4	PAG Pile	water suppression	☒	☐	☐	☐
5	NAG Pile	water suppression	☒	☐	☐	☐
6	Haul Truck Unloading	water suppression	☒	☐	☐	☐
7	Haul Truck Travel	water suppression	☒	☐	☐	☐
8	Topsoil/Subsoil Removal	water suppression	☒	☐	☐	☐
9	Topsoil/Subsoil Dumping	water suppression	☒	☐	☐	☐
10	Topsoil/Subsoil Piles	water suppression	☒	☐	☐	☐
11	Wet Drilling	water suppression	☒	☐	☐	☐
12	Blasting	water suppression	☒	☐	☐	☐
13	Underground Loading	water suppression	☒	☐	☐	☐
14	Propane Combustion	None	☒	☐	☐	☐
	_____	_____	☐	☐	☐	☐
	_____	_____	☐	☐	☐	☐

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 1 Emitting Unit Name: 475 hp Tier 4 Diesel Generator Engine

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)[1]**		**Actual Emission Rate(s) *(if applicable)*[2]**	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM	0.016	0.068		
PM_{10}	0.016	0.068		
$PM_{2.5}$	0.016	0.068		
SO_2	0.97	4.27		
NO_x	0.313	1.37		
CO	2.74	11.98		
VOC	1.17	5.14		
Pb				
Other (*specify*): CO2e	197	864		
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[1] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[2] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 2 Emitting Unit Name: 475 hp Tier 4 Diesel Generator Engine (Back-up)

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[3]		**Actual Emission Rate(s)** ***(if applicable)***[4]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM	0.016	0.004		
PM_{10}	0.016	0.004		
$PM_{2.5}$	0.016	0.004		
SO_2	0.97	0.24		
NO_x	0.313	0.08		
CO	2.74	0.68		
VOC	1.17	0.29		
Pb				
Other (*specify*): CO2e	197	49		
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[3] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[4] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 3 Emitting Unit Name: 275 hp Tier 4 Air Compressor

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[5]		**Actual Emission Rate(s)** ***(if applicable)***[6]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM	0.009	0.04		
PM_{10}	0.009	0.04		
$PM_{2.5}$	0.009	0.04		
SO_2	0.56	2.47		
NO_x	0.18	0.79		
CO	1.58	6.94		
VOC	0.68	2.98		
Pb				
Other (*specify*): CO2e	114	500		
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[5] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[6] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 4 Emitting Unit Name: PAG Pile

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[7]		**Actual Emission Rate(s)** ***(if applicable)***[8]	
	(Lb/ton)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	0.000462	0.0142		
PM_{10} 50% control efficiency	0.000218	0.0067		
$PM_{2.5}$ 50% control efficiency	0.0000331	0.00101		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[7] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[8] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 5 Emitting Unit Name: NAG Pile

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[9]		**Actual Emission Rate(s)** ***(if applicable)***[10]	
	(Lb/ton)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	0.000462	0.0142		
PM_{10} 50% control efficiency	0.000218	0.0067		
$PM_{2.5}$ 50% control efficiency	0.0000331	0.00101		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[9] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[10] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 6 Emitting Unit Name: Haul Truck Unloading

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[11]		**Actual Emission Rate(s)** ***(if applicable)***[12]	
	(Lb/ton)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	0.000462	0.0283		
PM_{10} 50% control efficiency	0.000218	0.0134		
$PM_{2.5}$ 50% control efficiency	0.0000331	0.00203		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[11] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[12] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 7 Emitting Unit Name: Haul Truck Travel

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[13]		**Actual Emission Rate(s)** ***(if applicable)***[14]	
	(Lb/VMT)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	11.31	16.52		
PM_{10} 50% control efficiency	3.15	4.60		
$PM_{2.5}$ 50% control efficiency	0.315	0.46		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[13] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[14] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 8 Emitting Unit Name: Topsoil/Subsoil Removal

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[15]		**Actual Emission Rate(s)** ***(if applicable)***[16]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM		5.63		
PM_{10}		2.81		
$PM_{2.5}$		0.56		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[15] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[16] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 9 Emitting Unit Name: Topsoil/Subsoil Dumpingl

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[17]		**Actual Emission Rate(s)** ***(if applicable)***[18]	
	(Lb/ton)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	0.000462	0.022		
PM_{10} 50% control efficiency	0.000218	0.0106		
$PM_{2.5}$ 50% control efficiency	0.0000331	0.00161		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[17] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[18] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 10 Emitting Unit Name: Topsoil/Subsoil Piles

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[19]		**Actual Emission Rate(s)** ***(if applicable)***[20]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM		0.52		
PM_{10}		0.26		
$PM_{2.5}$		0.05		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[19] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[20] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 11 Emitting Unit Name: Wet Drilling

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[21]		**Actual Emission Rate(s)** ***(if applicable)***[22]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM		0.0049		
PM_{10}		0.0049		
$PM_{2.5}$		0.0049		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[21] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[22] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 12 Emitting Unit Name: Blasting

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[23]		**Actual Emission Rate(s)** ***(if applicable)***[24]	
	(Lb/blast)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM	0.143	0.078		
PM_{10}	0.143	0.041		
$PM_{2.5}$	0.143	0.002		
SO_2				
NO_x	17 lb/ton	6.21		
CO	67 lb/ton	24.46		
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[23] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[24] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 13 Emitting Unit Name: Underground Loading

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C

Regulated Air Pollutant	**Allowable Emission Rate(s)**[25]		**Actual Emission Rate(s)** ***(if applicable)***[26]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM 50% control efficiency	0.000462	0.0142		
PM_{10} 50% control efficiency	0.000218	0.00670		
$PM_{2.5}$ 50% control efficiency	0.0000331	0.00101		
SO_2				
NO_x				
CO				
VOC				
Pb				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[25] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[26] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§3.0 Emissions Inventory

A separate Section 3.0 must be completed for each emitting unit listed in Section 2.0.

Emitting Unit ID: 14 Emitting Unit Name: Propane Combustion

Attach calculations.
The source(s) of all emissions estimates must be indicated (e.g. manufacturer's data, AP-42, source tests, etc.)
If possible, calculations should be submitted electronically using an Excel spreadsheet.
See Appendix C.

Regulated Air Pollutant	**Allowable Emission Rate(s)**[27]		**Actual Emission Rate(s)** ***(if applicable)***[28]	
	(Lb/Hour)	(Tons/Year)	(Lb/Hour)	(Tons/Year)
PM		0.34		
PM_{10}		0.34		
$PM_{2.5}$		0.34		
SO_2		0.72		
NO_x		6.22		
CO		3.59		
VOC		0.38		
Pb				
Other (*specify*): CO2e		6119		
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				
Other (*specify*):				

[27] Allowable emission rate(s) should equal the potential to emit, unless a federally enforceable permit limit is proposed. Potential emissions are to be calculated based on production at the maximum capacity for 8,760 hours per year. Only control practices or equipment which is proposed to be made federally enforceable may be used to limit the potential to emit of the unit.

[28] Actual emission rate(s) should equal the average rate at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 1 Emitting Unit Name: 475 hp Tier 4 Diesel Generator Engine

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) The generator engine will supply power to the facility during the exploration phase.

Proposed Operational Limitations (*if any*) Tier 4

Source Classification Code (SCC)/ Description: 20200102

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☒ NSPS: 40 CFR 60, Subpart(s): IIII

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☒ MACT: 40 CFR 63, Subpart(s): ZZZZ which applies 40 CFR 60 Subpart IIII

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Diesel fuel

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) _____

§4.3 Process Identification

Make TBD Model Tier 4

Type _____ Size up to 475 hp

Year of Manufacture/Reconstruction 2013 Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) 475

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) diesel

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day24 (permitted) Days/Week_____

Hours/Year8760 (permitted) Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:

_____

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make Tier 4 Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining a MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 2 Emitting Unit Name: 475 hp Tier 4 Diesel Generator Engine (Back-up)

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) The generator engine will supply power to the facility if the other engine is down.

Proposed Operational Limitations (*if any*) Tier 4

Source Classification Code (SCC)/ Description: 20200102

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☒ NSPS: 40 CFR 60, Subpart(s): IIII

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☒ MACT: 40 CFR 63, Subpart(s): ZZZZ which applies 40 CFR 60 Subpart IIII

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Diesel fuel

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) _____

§4.3 Process Identification

Make TBD Model Tier 4

Type _____ Size up to 475 hp

Year of Manufacture/Reconstruction 2013 Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) 475

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) diesel

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 500 (permitted)____ Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:

_____

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make Tier 4 Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 3 Emitting Unit Name: 275 hp Tier 4 Air Compressor

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) The air compressor will be used at the facility as necessary and will operate on diesel fuel.

Proposed Operational Limitations (*if any*) Tier 4

Source Classification Code (SCC)/ Description: 20200102

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☒ NSPS: 40 CFR 60, Subpart(s): IIII

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☒ MACT: 40 CFR 63, Subpart(s): ZZZZ which applies 40 CFR 60 Subpart IIII

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Diesel fuel

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) _____

§4.3 Process Identification

Make TBD Model Tier 4

Type _____ Size up to 275 hp

Year of Manufacture/Reconstruction 2013 Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) Up to 275

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) diesel

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day24 (permitted) Days/Week_____

Hours/Year8760 (permitted) Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:

_____

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make Tier 4 Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining a MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 4 Emitting Unit Name: PAG Pile

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) PAG is the potentially-acid generating pile of development rock that will be hauled from underground.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 14 tons/hr

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year_____ Weeks/Year 8760

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression used as necessary.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 5 Emitting Unit Name: NAG Pile

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) NAG is the non-acid generating pile of development rock that will be hauled from underground.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 14 tons/hr

§4.3 Process Identification

Make _____ Model _____

Type _____ Size _____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year_____ Weeks/Year 8760

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression used as necessary.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 6 Emitting Unit Name: Haul Truck Unloading

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) Trucks that haul material from below ground will generate emissions as they are unloading onto one of the piles.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 14 tons/hr

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year_____ Weeks/Year8760

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 7 Emitting Unit Name: Haul Truck Travel

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) As trucks are hauling material from below ground they will generate emissions as they travel. It has been assumed for estimation purposes that all truck travel will happen above ground - this is a conservative accounting of haul truck travel emissions.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 16 VMT/day

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year_____ Weeks/Year8760

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining a MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 8 Emitting Unit Name: Topsoil/Subsoil Removal

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) When operations begin, topsoil and subsoil will need to be removed and will generate particulate emissions during removal.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 129,400 yd^3 removed

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 9 Emitting Unit Name: Topsoil/Subsoil Dumping

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) As the topsoil/subsoil is dumped into the piles, it will generate emissions.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 129,400 yd^3 dumped

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 10 Emitting Unit Name: Topsoil/Subsoil Piles

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) The topsoil/subsoil piles will generate a small amount of particulate matter from wind-blown dust. These piles will be vegetated after they are formed so the potential for on-going emissions is small.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate matter - wind-blown dust

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 2.73 acres total (all piles)

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 11 Emitting Unit Name: Wet Drilling

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) Drilling is conducted underground and is done through a wet process. Emissions have been calculated but are negligible.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Minimal particulate matter generated underground

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 14 tons/hr

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year_____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
It is a wet process inherently - water is added as necessary.

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 12 Emitting Unit Name: Blasting

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) Blasting will be conducted underground and ANFO will be the blasting agent.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed ANFO

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 2 tons/day and 3 blasts/day

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year _____

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Best management practices for using this blasting agent are used as defined in Section 5 of the attached report.

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 13 Emitting Unit Name: Underground Loading

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) Trucks will be loaded with material underground and hauled above ground to the appropriate piles. Minimal particulate emissions may be generated during loading, as the material will generally be wet.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed Particulate Matter

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) 14 tons/hr

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) _____

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: _____

Heat Content (Btu rating) _____ Sulfur Content (%)_____ Ash Content (%)_____

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year_____ Weeks/Year8760

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:
Water suppression as necessary.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§4.0 Emitting Unit and Control Equipment Information

A separate Section 4.0 must be completed for each emitting unit listed in Section 2.0. Applications for Title V Operating Permits must address significant emission units individually. Insignificant emission units may be addressed as a group. For information that has been previously submitted, the applicant may instead reference the previously submitted information, including the date the material was submitted and the source (i.e. permit application number, etc.)

Emitting Unit ID: 14 Emitting Unit Name: Propane Combustion

§4.1 Emitting Unit Overview:

Narrative Process Equipment/Process Description (*attach additional sheets as necessary*) Propane-fired portal heaters and space heaters will be used at the site. The total heating capacity of the heaters will be up to 10 MMBtu/hr.

Proposed Operational Limitations (*if any*) _____

_____

Source Classification Code (SCC)/ Description: _____

(*Note: SCC Codes can be found at the following website*:
http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv)

Regulatory Programs: Indicate all air pollution control programs applicable to this emitting unit:

☐ NSPS: 40 CFR 60, Subpart(s): _____

☐ NESHAPS: 40 CFR 61, Subpart(s): _____

☐ MACT: 40 CFR 63, Subpart(s): _____

☐ Title V Operating Permit – Significant Emitting Unit

☐ Acid Rain (Title IV)

☐ Risk Management Plan

☐ CAM Plan

☐ Other: _____

§4.2 Process Information (*include units***)**:

Type of Material Processed _____

Average Process Rate (tons/hr, gal/hr, etc.)_____

Maximum Rated Design Process Rate (tons/hr, gal/hr, etc.) Up to 10 MMBtu/hr Total Capacity for all Heaters

§4.3 Process Identification

Make_____ Model_____

Type_____ Size_____

Year of Manufacture/Reconstruction _____ Year of Installation _____

Power Source _____

If applicable, provide the following generator information:

Rated Output of the generator (kW) _____

Rated Size of Engine powering the generator (hp) _____

§4.4 Fuel/Combustion Information:

(For variable parameters, indicate the maximum value or a range)

Fuel Type(s) Propane

Average Fuel Combustion Rate: _____

Maximum Rated Combustion Rate: Up to 10 MMBtu/hr Total Capacity for all Heaters

Heat Content (Btu rating) 91,500 Btuy/gallon (AP-42) Sulfur Content (%) Negligible Ash Content (%) Negligible

§4.5 Emitting Unit Location

Latitude (in decimal degrees): _____ Longitude (in decimal degrees): _____

Datum (NAD27, NAD83, etc.): _____

§4.6 Stack Information (*if applicable*)**:**

Height (feet) _____ Inside Diameter (feet) _____

Exit Gas Temperature (˚F) _____ Exit Gas Flow Rate (ACFM) _____

Exit Gas Velocity (ft/sec) _____ Exit Gas Moisture Content (%)_____

Stack Type (check one):

☐ Downward Exit	☐ Multiple Actual Stacks	☐ Fugitive Source
☐ Horizontal Exit	☐ Building Roof Vent	☐ Process Vent
☐ Vertical Exit	☐ Vertical Exit with Cap	

§4.7 Approximate Operating Schedule:

Hours/Day_____ Days/Week_____

Hours/Year 8760 Weeks/Year 52

§4.8 Air Pollution Control Equipment and Practices

Primary and Secondary Air Pollution Control Equipment and/or Procedure Description:

None.

_____

_____

_____

Primary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency 50%

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

Secondary Air Pollution Control Equipment Description:

Make_____ Model_____

Type_____ Size_____

Year of Manufacture_____ Year of Installation _____

Fuel Type(s) _____ Estimated Control Efficiency_____

Estimated Capital Equipment Cost (*not required for Title V Operating Permit applications*) _____

§4.9 Shakedown Procedures (*not required for Title V Operating Permit applications*)

Describe any shakedown procedures that are expected to affect emissions, including the duration of the shakedown period:

_____

_____

_____

§4.10 Continuous Emission Monitoring System (CEMS) – *check all that apply:*

☐ Opacity – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ TRS – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ NO_x - Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ O_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ CO_2 – Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

☐ Other (*specify*): _____

Make _____ Model _____ Year _____

Automatic Calibration Valve: Zero _____ Span _____

§4.11 Emissions Control Analysis (*not required for Title V Operating permit applications*)

Best Available Control Technology (BACT) is required for all sources obtaining an MAQP. The BACT analysis should be conducted separately for each pollutant emitted from each emitting unit. Control costs (cost per ton of air pollutant controlled) should be calculated for each option. Options may then be eliminated for economic, energy or environmental reasons. The control option that is selected should have controls or control costs similar to other recently permitted similar sources and should be capable of achieving appropriate emission standards. If necessary, a separate start-up/shut-down BACT analyses should be conducted.

Lowest Achievable Emission Rate (LAER) is required for major stationary sources and major modifications located in a nonattainment area. LAER is also required for major stationary sources or major modifications located in an area designated as attainment or unclassified under 40 CFR 81.327, but would cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) in a nearby nonattainment area. The LAER analysis shall demonstrate that the emission rate proposed is equivalent to the most stringent emission rate achievable or contained in any state implementation plan for a similar source.

Attach BACT/LAER Analysis Results, as applicable.

Applicable Requirement (*check all that apply*): ☒ BACT ☐ LAER

§4.12 Stack Height and Dispersion Technique Analysis (*not required for Title V Operating Permit applications*)

If applicable, supply a stack height and dispersion technique analysis demonstrating compliance with the requirements of the Stack Heights and Dispersion Technique Rule (ARM 17.8, Subchapter 4)

§ 5.0 Project and Site Information

Note: This section is not required to be completed for Title V Operating Permit applications.

Identify the landowner of the proposed project site and the current land use (industrial, agricultural, residential, etc.):
Please see Section 1.0 of the Draft Environmental Assessment (EA) for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Indicate the approximate distance to the nearest home and/or structure not associated with the proposed project site:
This site has already undergone surface exploration activity and is now proposing to extend and continue exploration activities underground via an exploration decline and underground drilling. The changes proposed in the operation will require a Montana Air Quality Permit. Please see Section 2.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Summarize the aesthetic character of the proposed project site and the surrounding community or neighborhood. Include a description of recreational opportunities and any unique cultures in the area that may be affected by the proposed project:
Please see Sections 3.0 and 4.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Describe the noise levels created by the proposed project:
Please see Sections 3.0 and 4.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Summarize other industrial activities at or near the site:
The existing Holcim Black Butte iron ore mine is about a mile from the proposed decline. That mine produces hematite ore for use at the Holcim Trident cement plant. The ore from that mine is not acid-producing and is not known to produce any geochemical environmental impacts.

List other permits and/or approvals which have been obtained or will be obtained for this project (including MPDES permits, open cut permit, hazardous waste permit, etc.):
Tintina has an active Exploration License with the Department and is currently going through the process to amend this license to allow for underground exploration. The Montana Department of Environmental Quality Environmental Management Bureau issued a Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 in July 2013. The project will also require: a Construction Storm Water Pollution Prevention Plan Permit (SWPPP, DEQ) and eventually an Industrial Storm Water Pollution Prevention Plan (SWPPP, DEQ), a Spill Prevention, Control and Countermeasures Plan (SPCC, DEQ), an Underground Injection Control Permit (UIC, EPA Permit), a Montana Streambed Preservation Act - 310 Permit for culvert replacement (County and FWP), a Weed Control Plan (Meagher County and DEQ), approval of clearance for Cultural Resources sites (State Preservation Officer), and a Reclamation Bond (DEQ).

Indicate the number of employees currently employed and the increase or decrease in the number of people employed at this site as a result of the proposed project:
Tintina currently has only about four employees on-site. These numbers change by the addition of subcontractor employees during active exploration drilling phases. Range of number of employees for exploration decline will vary over the 16-month period from a low of about 17 to a high of about 45.

During the high periods of construction, 6 will be Tintina employees and 39 will be subcontractor employees.

Describe any upgrades of utilities that may be necessary to meet the power demands for this proposed project:
During this phase of the project and the request for current permitting, Tintina will supply power for the operation through on-site diesel generation.

Identify the amount of land that will be disturbed, in acres, as a result of this proposed project: Please see Sections 2.0 and 3.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013 (36 acres).

Identify any fish or wildlife habitat, animal or bird species, or any known migration or movement of animals at the project site: Identify any plant species (including types of trees, shrubs, grasses, crops, and aquatic plants) at the proposed project site:
Please see Sections 3.0 and 4.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Describe any proposed discharges into surface water or onto the proposed project site:
There will be no discharges to surface water including wetlands.

Identify any potential impacts to wetlands and/or changes in the drainage patterns at the proposed project site:
As designed, the proposed exploration phase of the Black Butte Copper Project will not disturb or impact any potential wetland areas identified in a September 2011 wetland survey. In addition, the Black Butte Copper Project is not proposing to dredge or place any fill in waterways, wetlands or other Waters of the U.S.

Summarize the soils and geology of the project site. Include a description of any disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil that would reduce the productivity or fertility of the soil at the site:
All of the proposed surface disturbances associated with the exploration amendment will occur within the Copenhaver soil type. This is a shallow soil with a clay-loam surface horizon to a depth of about 7 inches below ground surface. Subsoil textures range from clay-loam to sandy clay-loam with about 16% coarse fragments to depths of around 20 inches. Precambrian age Newland Formation shale bedrock is encountered below this depth. Soils within the area are rated as being either poor or fair for use as a topsoil source or as reclamation material according to the NRCS soil survey due to shallow depths to bedrock, or a high percentage of rock fragments within the soil. Fine textured surface horizons may require amelioration with mulch or other organic amendments and fertilizer to promote successful revegetation. First subsoil lift and second topsoil lift would be stored in four separate stockpiles, two above the decline and two above the waste rock storage facilities sites (Figure 3, site plan map). Piles would be marked. Stockpiles would be constructed with 2.5H:1V side slopes and 3H:1V ramps. Soil stockpiles would be incrementally stabilized to minimize erosion. The stockpile surface would be loosened if necessary to provide a proper seedbed. Broadcast seeding would be conducted during the first appropriate season following stockpiling. Fertilizer and mulch would be applied to the piles as necessary. The stockpiles would be re-vegetated to prevent water and wind erosion until they are scheduled for use in closure. The estimated life of each stockpile is the life of the decline. Stockpiled soil would be tested before re-spreading to identify what, if any, deficiencies or limitations in soil physical and chemical properties exist that may affect plant growth. Appropriate fertilizer, liming, organic matter, and other amendments would be determined.

Summarize any access to recreational activities or wilderness areas near the proposed project site:
Please see Sections 3.0 and 4.0 of the Draft Environmental Assessment for Tintina Alaska Exploration, Inc. Black Butte Copper Project, Meagher County, MT Exploration License #00710 issued by the Montana Department of Environmental Quality Environmental Management Bureau, July 2013.

Describe any state, county, city, United States Forest Service (USFS), Bureau of Land Management (BLM), or tribal zoning or management plans and/or goals that might affect the site:
The Lewis and Clark National Forest has a Forest Plan in place on lands adjacent to the proposed project area, cooperation will be required in providing access on public roads for recreational use, revegetation and weed control plans will be coordinated, and access to seeps and springs on private lands for grazing rights on public land will need to be coordinated with the USFS and private land owners. Meagher County provides county road maintenance services and Weed Control Planning; activities by Tintina concerning these services will need to be coordinated with the county.

§ 6.0 Instructions on Public Notice For Montana Air Quality Permit

Note: This section is not required to be completed for Title V Operating Permit applications.

The applicant shall publish the following notification no earlier than 10 days prior to the date the applicant's MAQP application will be submitted to the Department, and no later than 10 days following the date of submittal. The notice shall be published **once** in the legal notice section of a newspaper of general circulation in the area affected. (*Note: MAQP applications for solid waste incinerators, subject to 75-10-221, Montana Code Annotated (MCA), or hazardous waste incinerators or boilers or industrial furnaces, subject to 75-10-406, MCA, must publish **three** public notices, each on separate days, in the legal notice section of a newspaper in the county in which the source is proposed be located.*) Any fees associated with publication of this notice are the responsibility of the permit applicant. Questions regarding an appropriate newspaper should be addressed to the Department.

An Affidavit of Publication of Public Notice must be submitted with the application or the permit application will be deemed incomplete. This notice is required by the air quality rules. **The notice to be published must contain all text, excluding the text in italics, within the box below.**

Public Notice

Notice of Application for a Montana Air Quality Permit (MAQP), pursuant to Sections 75-2-211 and 75-2-215, MCA, and the Air Quality Rules. Tintina Resources, Inc.,

Name of Applicant(s)

will file on or about October 3, 2013, an application for an MAQP from the Montana Department of

has filed / will file *Date*

Environmental Quality. Applicant(s) seeks approval of its application for:

an underground mineral exploration mine near White Sulphur Springs, MT.

(Brief description of source for which permit is being applied, and a narrative description of the site location such as nearby towns, roads, landmarks, etc.)

The legal description of the site is: Township 11 and 12 North, Range 6 and 7 East, in Meagher, County, Montana.

Within 40 days of the receipt of a completed application, the Department will make a preliminary determination whether the permit should be issued, issued with conditions, or denied. Any member of the public with questions or who wishes to receive notice of the preliminary determination, and the location where a copy of the application and the Department's analysis of it can be reviewed, or to submit comments on the preliminary determination, must contact the Department at Department of Environmental Quality, Air Resources Management Bureau, Air Permitting Section Supervisor at P.O. Box 200901, Helena, MT 59620-0901, telephone (406) 444-3490. Any comments on the preliminary determination must be submitted to the Department within the specified timeframe (within15 or 30 days after the preliminary determination is issued).

§ 7.0 Applicable Requirements

§7.1 Applicable Requirements

Attach a complete listing and description of all applicable air pollution control requirements, including rules and regulations which have been promulgated at the time of the submittal of the application, but which will become effective at a later date. Explain any proposed exemptions from otherwise applicable requirements. Describe or reference any applicable test methods for determining compliance with each applicable requirement.

§7.2 Additional Requirements

Additional requirements may apply. A description of the requirements listed below is included in the Section 7.2 Supplement included on page 18 of this application. **Note which of the following requirements apply to this permit application** (*check each that applies*):

☐ Ambient Air Quality Impact Analysis

☐ Alternative Siting Analysis

☐ Alternative Operating Scenario

☐ Compliance Schedule/Plan

☐ Compliance Certification

☐ Additional Requirements for solid or hazardous waste incinerators or BIFS subject to 75-10-406, MCA

☐ Additional Requirements for Commercial Medical and Commercial Hazardous Waste Incinerators, including BIFS Subject to 75-10-406, MCA

Bob Jacko

From: Allan Kirk <akirk@geominresources.com>
Sent: September-25-13 10:35 AM
To: Bob Jacko
Subject: This section of the air quality permit also needs to be completed.

Follow Up Flag: Follow up
Flag Status: Flagged

8.0 Certification of Truth, Accuracy, and Completeness

I hereby certify that, to the best of my knowledge, information and belief, formed after reasonable inquiry, the information provided in this permit application is true, accurate, and complete.

(Name, title and signature of corporate officer, responsible official, authorized representative, or designated representative under Title IV 1990 FCAA.)

Name Bob Jacko
(Print or Type)

Title VP Operations Phone 509-279-9690 Email: bjacko@tintina resources.com

Signature Bob Jacko (Original Signature Required) Date Sept 26/13

Allan Kirk **– Principal Geologist**
Cell: 406.581.7456
akirk@geominresources.com

Geomin Resources, Inc.
PO Box 7005, Bozeman MT 59771

APPLICATION CHECKLIST

The information contained in the checklist below must be submitted in order for the application to be considered complete. Additional information may be required by the Department. Please contact the Department if there are any questions or if the applicant would like a pre-application meeting with Department personnel.

__X__ Completed Application Form
__X__ Application Fee
__X__ Site Map (Not required for Title V Operating Permit applications)
_____ Process Flow Diagrams (Not required for Title V Operating Permit applications)
Maps, not process flow diagrams, are included with this application.
__X__ Emission Inventory Calculations
__X__ BACT/LAER Analysis (Not required for Title V Operating Permit applications)
__NA__ Stack Height and Dispersion Techniques Analysis (if applicable, not required for Title V Operating Permit applications)
__NA__ Modeling/Risk Assessment Analysis (if applicable, not required for Title V Operating Permit applications)
__X__ List of Applicable Requirements
__X__ Affidavit of Public Notice to be submitted when available (Not required for Title V Operating permit applications)
__X__ Certification of Truth, Accuracy, and Completeness – Original Signature (if application form is submitted electronically)

APPENDIX B: EMISSIONS ESTIMATES CALCULATIONS

Tintina
Black Butte Decline Exploration
Criteria and CO2e PTE

Potential Emissions totals

	tons per year							
Above Ground Point Sources	PM	PM10	PM2.5	NOx	CO	SO2	VOC	CO2e
475 hp Tier 4 Diesel Engine	0.068	0.068	0.068	1.37	11.98	4.27	5.14	864
475 hp Tier 4 Diesel Engine	0.004	0.004	0.004	0.078	0.684	0.243	0.293	49
275 hp Tier 4 Air Compressor	0.040	0.040	0.040	0.793	6.9	2.47	2.98	500
Above Ground Fugitive Sources								
PAG Pile	0.014	0.007	0.001					
NAG Pile	0.014	0.007	0.001					
Haul Truck Unloading	0.028	0.013	0.002					
Haul Truck Travel	16.52	4.60	0.46					
Topsoil/Subsoil Removal	5.63	2.81	0.56					
Topsoil/Subsoil Dumping	0.022	0.011	0.002					
Topsoil/Subsoil Piles	0.52	0.26	0.05					
Propane Combustion	0.34	0.34	0.34	6.22	3.59	0.72	0.38	6119.17
Above Ground Emissions Totals	**23.19**	**8.16**	**1.53**	**8.46**	**23.19**	**7.70**	**8.79**	**7532.03**
Underground Fugitive Sources								
Wet Drilling	0.0049	0.0049	0.0049					
Blasting	0.078	0.041	0.002	6.21	24.46			
Underground Loading	0.014	0.007	0.001					
Underground Emissions Totals	**0.10**	**0.05**	**0.01**	**6.205**	**24.46**	**0.000**	**0.000**	**0**
Potential Emission Totals	**23.3**	**8.21**	**1.54**	**14.67**	**47.6**	**7.70**	**8.79**	**7532.03**

Above Ground Point Sources

475 hp Diesel Engines (1st engine shown as continuously operational)

PM/PM10/PM2.5 Evaluation
475hp Main Genset - diesel

475 hp

1 kW/1.34hp = 354 kW

0.02 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.02*354/ 453.6 grams/lb = 0.016 lbs/hr

0.016lbs/hr *(8760hr/yr)*(ton/2000lb)= 0.068 tons/yr

NOx Evaluation
475hp Main Genset - diesel

475 hp

1 kW/1.34hp = 354 kW

0.4 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.40*354/ 453.6 grams/lb = 0.313 lbs/hr

0.313 lbs/hr *(8760hr/yr)*(ton/2000lb)= 1.37 tons/yr

CO Evaluation

475hp Main Genset - diesel

475 hp
1 kW/1.34hp = 354 kW
3.5 grams/KW-hr — Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

3.5*354/ 453.6 grams/lb = 2.74 lbs/hr
2.74 lbs/hr *(8760hr/yr)*(ton/2000lb)= 11.98 tons/yr

SO2 Evaluation

475hp Main Genset - diesel

475 hp
0.00205 lbs/hp-hr — (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00205*475 = 0.97 lbs/hr
0.97 lbs/hr *(8760hr/yr)*(ton/2000lb)= 4.27 tons/yr

VOC Evaluation

475hp Main Genset - diesel

475 hp
0.00247 lbs/hp-hr — (AP-42, Sec. 3.3, Table 3.3-1, assumed as TOC, 10/96)

0.000705*475 = 1.17 lbs/hr
1.17 lbs/hr *(8760hr/yr)*(ton/2000lb)= 5.14 tons/yr

CO2e Evaluation

475hp Main Genset - diesel

475 hp
2542.5 btu/hr / hp = 1207687.5 Btu/hr — Ap-42 Appendix A
1.21 MMBtu/hr
162.712 lb CO2/MMBtu — Table C-1, 40 CFR 98.30 Subpart C General Stationary Fuel Combustion Sources
0.0066 lb CH4/MMBtu — Table C-2, 40 CFR 98.30 Subpart C General Stationary Fuel Combustion Sources
0.00132 lb N2O/MMBtu — Table C-2, 40 CFR 98.30 Subpart C General Stationary Fuel Combustion Sources
163.26 Total CO2e lb/MMBtu — GWP of CO2 =1, CH4 = 21, and N2O = 310.

163.26 lb CO2e/hr * 1.21 MMBtu/hr = 197.17 lb CO2e/hr
197.17 lb CO2e/hr * (8760 hr/yr)*(ton/2000 lb) = 863.59 tons CO2e/yr

475 hp Diesel Engines (2nd engine - shown as emergency back-up)

PM/PM10/PM2.5 Evaluation

475hp Back-up Genset - diesel

475 hp
1 kW/1.34hp = 354 kW
0.02 grams/KW-hr — Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.02*354/ 453.6 grams/lb = 0.016 lbs/hr
0.016lbs/hr *(500hr/yr)*(ton/2000lb)= 0.004 tons/yr

NOx Evaluation

475hp Back-up Genset - diesel

475 hp
1 kW/1.34hp = 354 kW
0.40 grams/KW-hr — Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.40*354/ 453.6 grams/lb = 0.313 lbs/hr
0.313 lbs/hr *(500hr/yr)*(ton/2000lb)= 0.078 tons/yr

CO Evaluation

475hp Back-up Genset - diesel

475 hp
1 kW/1.34hp = 354 kW
3.5 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

3.5*354/ 453.6 grams/lb = 2.74 lbs/hr
2.74 lbs/hr *(500hr/yr)*(ton/2000lb)= 0.68 tons/yr

SO2 Evaluation
475hp Back-up Genset - diesel

475 hp
0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00205*475 = 0.97 lbs/hr
0.97 lbs/hr *(500hr/yr)*(ton/2000lb)= 0.24 tons/yr

VOC Evaluation
475hp Back-up Genset - diesel

475 hp
0.00247 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00247*475 = 1.17 lbs/hr
1.17 lbs/hr *(500hr/yr)*(ton/2000lb)= 0.29 tons/yr

CO2e Evaluation
475hp Back-up Genset - diesel

475 hp
2542.5 btu/hr / hp = 1207687.5 Btu/hr Ap-42 Appendix A
1.21 MMBtu/hr
162.712 lb CO2/MMBtu Table C-1, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources
0.0066 lb CH4/MMBtu Table C-2, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources
0.00132 lb N2O/MMBtu Table C-2, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources
163.26 Total CO2e lb/MMBtu GWP of CO2 =1, CH4 = 21, and N2O = 310.

163.26 lb CO2e/hr * 1.21 MMBtu/hr = 197.17 lb CO2e/hr
197.17 lb CO2e/hr * (500 hr/yr)*(ton/2000 lb) = 49.29 tons CO2e/yr

275 hp Tier 4 Air Compressor Diesel Engines
PM/PM10/PM2.5 Evaluation
275hp Air Compressor Genset - diesel

275 hp
1 kW/1.34hp = 205 kW
0.02 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.02*205/ 453.6 grams/lb = 0.009 lbs/hr
0.009lbs/hr *(8760hr/yr)*(ton/2000lb)= 0.04 tons/yr

NOx Evaluation
275hp Air Compressor Genset - diesel

275 hp
1 kW/1.34hp = 205 kW
0.40 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

0.40*205/ 453.6 grams/lb = 0.18 lbs/hr
0.18 lbs/hr *(8760hr/yr)*(ton/2000lb)= 0.79 tons/yr

CO Evaluation
275hp Air Compressor Genset - diesel

275 hp

1 kW/1.34hp = 205 kW

3.5 grams/KW-hr Emission Factors taken from 40 CFR 1039 for 2011-2014 engines

3.5*205/ 453.6 grams/lb = 1.58 lbs/hr

1.58 lbs/hr *(8760hr/yr)*(ton/2000lb)= 6.94 tons/yr

SO2 Evaluation

275hp Air Compressor Genset - diesel

275 hp

0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00205*275 = 0.56 lbs/hr

0.56 lbs/hr *(8760hr/yr)*(ton/2000lb)= 2.47 tons/yr

VOC Evaluation

275hp Air Compressor Genset - diesel

275 hp

0.00247 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.002470*275 = 0.68 lbs/hr

0.68 lbs/hr *(8760hr/yr)*(ton/2000lb)= 2.98 tons/yr

CO2e Evaluation

275hp Air Compressor Genset - diesel

275 hp

2542.5 btu/hr / hp = 699187.5 Btu/hr Ap-42 Appendix A

0.70 MMBtu/hr

162.712 lb CO2/MMBtu Table C-1, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources

0.0066 lb CH4/MMBtu Table C-2, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources

0.00132 lb N2O/MMBtu Table C-2, 40 CFR 98.3 Subpart C General Stationary Fuel Combustion Sources

163.26 Total CO2e lb/MMBtu GWP of CO2 =1, CH4 = 21, and N2O = 310.

163.26 lb CO2e/hr * 0.70 MMBtu/hr = 114.15 lb CO2e/hr

114.15 lb CO2e/hr * (8760 hr/yr)*(ton/2000 lb) = 499.97 tons CO2e/yr

Above Ground Fugitive Sources

Development Rock (wind-blown dust - 2 piles - PAG and NAG - emissions calculated for 1 pile, each pile is included separately in the table above)

Max Process Rate 14 tons/hr (company information)

Max Hours of Operation 8760 hours/yr

Number of Piles 1 pile

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.

PM Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000462 lbs/ton

Where: k = particle size multiplier = 0.74 (Value for PM < 30 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000462 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.0142 tons/yr

PM10 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000218 lbs/ton

Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000218 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.0067 tons/yr

PM2.5 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.0000331 lbs/ton

Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.0000331 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.00101 tons/yr

Haul Truck Unloading (unloading will occur at each pile (PAG and NAG) - emissions calculated for 2 piles are total unloading emissions)

Max Process Rate	14 tons/hr
Max Hours of Operation	8760 hours/yr
Number of piles	2 pile

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.

PM Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000462 lbs/ton

Where: k = particle size multiplier = 0.74 (Value for PM < 30 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000462 lb/ton) * (ton/2000 lb) * (2 piles)*(100-50/100) = 0.0283 tons/yr

PM10 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000218 lbs/ton

Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000218 lb/ton) * (ton/2000 lb) * (2 piles)*(100-50/100) = 0.0134 tons/yr

PM2.5 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.0000331 lbs/ton

Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)

M = material moisture content = **4%** (Provided by company)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.0000331 lb/ton) * (ton/2000 lb) * (2 piles)*(100-50/100) = 0.00203 tons/yr

Haul Truck Travel

Vehicle Miles Traveled (VMT) per Day =	16 VMT/day (company supplied information)
VMT per hour = (16 VMT/day) * (day/24 hrs) =	0.667 VMT/hr
Hours of Operation =	8760 hours/year

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

PM Evaluation

Emission Factor = k * (s / 12)^a * (W / 3)^b = 11.31 lbs/VMT

Where: k = constant = 4.9 lbs/VMT (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.5 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 40 tons (Company info)

a = constant = 0.7 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (8760 hrs/yr) * (0.667 VMT/hr) * (11.31 lb/VMT) * (ton/2000 lb) * (100-50/100) = 16.52 tons/year

PM10 Evaluation

Emission Factor = k * (s / 12)^a * (W / 3)^b = 3.15 lbs/VMT

Where: k = constant = 1.5 lbs/VMT (Value for PM10, AP 42, Table 13.2.2-2, 11/06)
s = surface silt content = 7.5 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)
W = mean vehicle weight = 40 tons (Company info)
a = constant = 0.9 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)
b = constant = 0.45 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)
Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (8760 hrs/yr) * (0.667 VMT/hr) * (3.15 lb/VMT) * (ton/2000 lb) * (100-50/100) = 4.60 tons/year

PM2.5 Evaluation

Emission Factor = k * (s / 12)^a * (W / 3)^b = 0.315 lbs/VMT

Where: k = constant = 0.15 lbs/VMT (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)
s = surface silt content = 7.5 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)
W = mean vehicle weight = 40 tons (Company info)
a = constant = 0.9 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)
b = constant = 0.45 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)
Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (8760 hrs/yr) * (0.667 VMT/hr) * (0.315 lb/VMT) * (ton/2000 lb) * (100-50/100) = 0.46 tons/year

Topsoil/Subsoil Removal

Topsoil and Subsoil Moved 129400 yd^3
1.5 ton/yd^3 *129,400yd^3 = 194100 tons/yr
Emission Factor = 0.058 lbs/ton topsoil handled AP-42 11.9 Western Surface Coal Mining 7/98, Table 11.9-4 for TSP

PM10/PM Ratio = 0.5 No other specific guidance for topsoil handling in AP-42. Based on historic MDEQ emission inventory practice.
PM2.5/PM10 Ratio = 0.10 http://www.epa.gov/ttn/chief/conference/ei14/session5/pace.pdf

PM Evaluation

Calculation: (194100 ton/yr) * (0.058 lb/ton) * (ton/2000 lb) = 5.63 tons/yr

PM10 Evaluation

Calculation: (194100 ton/yr) * (0.058 lb/ton) * (ton/2000 lb)*(0.50) = 2.81 tons/yr

PM2.5 Evaluation

Calculation: (194100 ton/yr) * (0.058 lb/ton) * (ton/2000 lb)*(0.10) = 0.56 tons/yr

Topsoil/Subsoil Dumping

Topsoil and Subsoil Moved 129400 yd^3
1.5 ton/yd^3 *129,400yd^3 = 194100 tons/yr

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.

PM Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000462 lbs/ton

Where: k = particle size multiplier = 0.74 (Value for PM < 30 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)

Calculation: (194100 ton/yr) * (0.000462 lb/ton) * (ton/2000 lb)*(100-50/100) = 0.022 tons/yr

PM10 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000218 lbs/ton

Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)
Calculation: (194100 ton/yr) * (0.000218 lb/ton) * (ton/2000 lb)*(100-50/100) = 0.0106 tons/yr

PM2.5 Evaluation
Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.0000331 lbs/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)
Calculation: (194100 ton/yr) * (0.0000331 lb/ton) * (ton/2000 lb)*(100-50/100) = 0.00161 tons/yr

Topsoil/Subsoil Piles (three piles but all emissions are calculated as one point here)
Topsoil and Subsoil Piles 2.73 acres
Emission Factor 0.38 tons/(acre*yr) (AP-42, Table 11.9-4)
PM10/PM Ratio = 0.5 No other specific guidance for topsoil handling in AP-42. Based on historic MDEQ emission inventory practice.
PM2.5/PM10 Ratio = 0.10 http://www.epa.gov/ttn/chief/conference/ei14/session5/pace.pdf
Control Efficiency = 50% (Water spray or chemical dust suppressant)

PM Evaluation
Calculation: (2.73 acres) * (0.38 tons/(acres*yr)*(100-50/100) = 0.52 tons/yr

PM10 Evaluation
Calculation: (2.73 acres) * (0.38 tons/(acres*yr))*(0.50)*(100-50/100) = 0.26 tons/yr

PM2.5 Evaluation
Calculation: (2.73 acres) * (0.38 tons/(acres*yr))*(0.10)*(100-50/100) = 0.05 tons/yr

Propane Combustion

Total Firing Capacity:	10	MMBTUH
Propane Heating Value:	0.0915	MMBTU/gallon, Source: AP-42 Section 1.5, Liquified Petroleum Gas Combustion
Calculated Max Fuel Consumption:	109	gallons/hour
Operating Hours:	8760	hours/year
Maximum Annual Fuel Consumption:	957,377	gallons/year
Maximum Annual Fuel Consumption:	957	10^3gallons/year

PM Evaluation
Total Annual Fuel Combustion 957 10^3gallons/year
PM Emission Factor 0.7 lb/10^3 gal AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion
Calculation: (957 10^3gallons/year)*(0.7 lb/10^3 gal)/2000 lb/ton = 0.34 tons/year
0.0765 lbs/hr

PM10 Evaluation
Total Annual Fuel Combustion 957 10^3gallons/year
PM Emission Factor 0.7 lb/10^3 gal AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion
Calculation: (957 10^3gallons/year)*(0.7 lb/10^3 gal)/2000 lb/ton = 0.34 tons/year
0.08 lbs/hr

PM2.5Evaluation
Total Annual Fuel Combustion 957 10^3gallons/year

	PM Emission Factor	0.7 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(0.7 lb/10^3 gal)/2000 lb/ton =			0.34 tons/year 0.08 lbs/hr
SO2 Evaluation	Total Annual Fuel Combustion	957 10^3gallons/year		
	SO2 Emission Factor	1.5 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(1.5 lb/10^3 gal)/2000 lb/ton =			0.72 tons/year 0.16 lbs/hr
NOx Evaluation	Total Annual Fuel Combustion	957 10^3gallons/year		
	NOx Emission Factor	13 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(13 lb/10^3 gal)/2000 lb/ton =			6.22 tons/year 1.42 lbs/hr
CO Evaluation	Total Annual Fuel Combustion	957 10^3gallons/year		
	CO Emission Factor	7.5 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(7.5 lb/10^3 gal)/2000 lb/ton =			3.59 tons/year 0.82 lbs/hr
VOC Evaluation	Total Annual Fuel Combustion	957 10^3gallons/year		
	VOC Emission Factor	0.8 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(0.8 lb/10^3 gal)/2000 lb/ton =			0.38 tons/year 0.09 lbs/hr
CO2 Evaluation				
	Total Annual Fuel Combustion	957 10^3gallons/year		
	CO2 Emission Factor	12500 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(12500 lb/10^3 gal)/2000 lb/ton =			5983.61 tons/year 1366.12 lbs/hr
N2O Evaluation				
	Total Annual Fuel Combustion	957 10^3gallons/year		
	N2O Emission Factor	0.9 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(0.9 lb/10^3 gal)/2000 lb/ton =			0.43 tons/year 0.10 lbs/hr
CH4 Evaluation				
	Total Annual Fuel Combustion	957 10^3gallons/year		
	CH4 Emission Factor	0.2 lb/10^3 gal	AP-42 Section 1.5, Table 1.5-1 (07/08) Liquified Petroleum Gas Combustion	
	Calculation: (957 10^3gallons/year)*(0.2 lb/10^3 gal)/2000 lb/ton =			0.10 tons/year 0.022 lbs/hr
Total CO2e Evaluation				
		GWP of CO2 = 1, CH4 = 21, N2O = 310	40 CFR Part 98, Mandatory Reporting of Greenhouse Gases	
	Calculation: (5983.6 tons/year CO2 *1) + (0.43 tons/year N2O * 21) + (0.1 tons/year CH4 * 310) =			6119.17 tons CO2e/year 1397.07 lbs/hr

Underground Mine Fugitive Sources

Wet Drilling

Production Rate =	14 tons/hr (company information)
Maximum Hours of Operation =	8760 hours/yr

Emission Factor = 0.00008 lb/ton (Wet Drilling, AP-42, Table 11.19.2-2, 8/04, no AP-42 PM or PM 2.5 data, assume PM=PM10=PM2.5)

PM/PM10/PM2.5 Evaluation

Calculation: (8760 hrs/yr) * (14 ton/hr) * (0.00008 lb/ton) * (ton/2000 lb) = 0.0049 tons/yr

Blasting

Maximum Process Rate = 3 blasts/day (company information)
Area Blasted = 470 sq. ft. (company information)
Maximum Daily Explosive Usage = 2 tons/day (company information)

PM Evaluation

Emission Factor = 0.000014 (AP-42, Table 11.9-1, 7/98)
Calculation: 0.000014 * A^1.5 = 0.143 lbs/blast
Calculation: (3 blasts/day) * (0.143 lb/blast) * (365 days/year) * (ton/2000 lb) = 0.078 tons/yr

PM10 Evaluation

Emission Factor = 0.000014 (AP-42, Table 11.9-1, 7/98)
Calculation: 0.000014 * A^1.5 = 0.143 lbs/blast
Scaling Factor for PM10 = 0.520 (AP-42, Table 11.9-1, 7/98)

Calculation: (3 blasts/day) * (0.143 lb/blast) *(0.52 scaling factor)* (365 days/year) * (ton/2000 lb) = 0.041 tons/yr

PM2.5 Evaluation

Emission Factor = 0.000014 (AP-42, Table 11.9-1, 7/98)
Calculation: 0.000014 * A^1.5 = 0.143 lbs/blast
Scaling Factor for PM2.5 = 0.030 (AP-42, Table 11.9-1, 7/98)

Calculation: (3 blasts/day) * (0.143 lb/blast) *(0.03 scaling factor)* (365 days/year) * (ton/2000 lb) = 0.002 tons/yr

NOx Emissions:

Emission Factor = 17 lbs/ton (AP-42, Table 13.3-1, 2/80 reformatted 1/95
Calculation: (2 tons/day) * (17 lb/ton) * (365 days/year) * (ton/2000 lb) = 6.21 tons/yr

CO Emissions:

Emission Factor = 67 lbs/ton (AP-42, Table 13.3-1, 2/80 reformatted 1/95
Calculation: (2 tons/day) * (67 lb/ton) * (365 days/year) * (ton/2000 lb) = 24.46 tons/yr

Underground Loading

Max Process Rate 14 tons/hr
Max Hours of Operation 8760 hours/yr
Number of Piles 1 pile
Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.

PM Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000462 lbs/ton
Where: k = particle size multiplier = 0.74 (Value for PM < 30 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)
Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000462 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.0142 tons/yr

PM10 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.000218 lbs/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)

U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)
Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.000218 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.00670 tons/yr

PM2.5 Evaluation

Emission Factor = k (0.0032) * (U/5) ^1.3 * (M / 2) ^-1.4 = 0.0000331 lbs/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = **3.0 mph** (Provided by company from met data collected on site - annual for April 2012 through March 2013)
M = material moisture content = **4%** (Provided by company)
Control Efficiency = 50% (Water spray or chemical dust suppressant)
Calculation: (14 ton/hr) * (8760 hrs/yr) * (0.0000331 lb/ton) * (ton/2000 lb) * (1 piles)*(100-50/100) = 0.00101 tons/yr

Tintina
Black Butte Decline Exploration
HAPS PTE

Total HAPS: **8.81E-02 tons/yr**

475 hp diesel generator engine

Heat Input =	3.325 MMBtu/hr
Maximum Heat Capacity =	0.007 MMBtu/Bhp-hr
Horsepower =	475 hp
Hours of Operation =	8,760.0 hr
Conversions:	2000 lbs/ton

Calculation: 7.76*10^-4 lb/MMBtu * 3.325 MMBtu/hr * 8760 hr/yr * 1ton/ 2000 lb = 1.36E-02

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Benzene	71-43-2	9.33E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	1.36E-02
Toluene	87-86-5	4.09E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	5.96E-03
Xylenes	106-50-3	2.85E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	4.15E-03
1,3-Butadiene	106-99-0	3.91E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	5.69E-04
Formaldehyde	50-00-0	1.18E-03	lb/MMBtu	AP-42 Table 3.3-2 10/96	1.72E-02
Acetaldehyde	75-07-0	7.67E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	1.12E-02
Naphthalene	107-02-8	8.48E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	1.23E-03
				Totals	5.39E-02

475 hp diesel generator engine (back-up) 500 hrs/yr

Conversions: 500 hrs

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Benzene	71-43-2	9.33E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	7.76E-04
Toluene	87-86-5	4.09E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	3.40E-04
Xylenes	106-50-3	2.85E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	2.37E-04
1,3-Butadiene	106-99-0	3.91E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	3.25E-05
Formaldehyde	50-00-0	1.18E-03	lb/MMBtu	AP-42 Table 3.3-2 10/96	9.81E-04
Acetaldehyde	75-07-0	7.67E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	6.38E-04
Acrolein	107-02-8	8.48E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	7.05E-05
				Totals	3.07E-03

275 hp air compressor engine

Heat input =	1.925 MMBtu/hr
Maximum Heat Capacity =	0.007 MMBtu/Bhp-hr
Horsepower =	275 hp
Hours of Operation =	8,760.0 hr
Conversions:	2000 lbs/ton

Hazardous Air Pollutants (HAPs)

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
Benzene	71-43-2	9.33E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	7.87E-03
Toluene	87-86-5	4.09E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	3.45E-03
Xylenes	106-50-3	2.85E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	2.40E-03
1,3-Butadiene	106-99-0	3.91E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	3.30E-04
Formaldehyde	50-00-0	1.18E-03	lb/MMBtu	AP-42 Table 3.3-2 10/96	9.95E-03
Acetaldehyde	75-07-0	7.67E-04	lb/MMBtu	AP-42 Table 3.3-2 10/96	6.47E-03
Acrolein	107-02-8	8.48E-05	lb/MMBtu	AP-42 Table 3.3-2 10/96	7.15E-04
				Totals	3.12E-02

APPENDIX C: BACT DOCUMENTATION

CO and VOC Oxidation Catalyst BACT Analysis for the Two 475-hp Tier 4 Diesel Engines

Source	CO Emiss. (tpy)	VOC Emiss. (tpy)	Q (cfm)[a]
(AP-42, Sec. 3.3, Table 3.3-1, 10/96)	13.90	5.14	3,017

Background Calculations

CO Uncontrolled Evaluation

475hp Main Genset - diesel

475 hp
0.00668 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00668*475 = 3.17 lbs/hr
3.17 lbs/hr *(8760hr/yr)*(ton/2000lb)= 13.90 tons/yr

VOC Uncontrolled Evaluation

475hp Main Genset - diesel

475 hp
0.00247 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, assumed as TOC, 10/96)

0.000247*475 = 1.17 lbs/hr
1.17 lbs/hr *(8760hr/yr)*(ton/2000lb)= 5.14 tons/yr

Q =		3,017 acfm		http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf
Annualized Cost, High Point Cost Per CFM[b]:	$	8	USD/cfm	
Annualized Cost, Low Point Cost Per CFM[b]:	$	50	USD/cfm	
Median Annualized Cost ($/cfm):	$	29	USD/cfm	
Cost Year Basis:		2002		
CEPCI 2002[c]:		395.6		
CEPCI 2012[c]:		584.6	Aug-13	
Median Annualized Cost in 2012 Dollars:	$	42.85	USD/cfm	
Annualized Cost in 2012 Dollars Using Estimated	$	129,293		

	CO	VOC
Control Efficiency:	90%	90%
Tons Controlled:	12.507966	4.62
Cost of Control ($/ton):	$ 10,336.87	$ 27,956

Notes

a Estimate based on similarly sized engine (475 hp Caterpillar 3406E) as seen in the following link: http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf

b From Air Pollution Control Fact Sheet EPA-452/F-03-018 available at: ttp://www.epa.gov/ttncatc1/dir1/fcately.pdf

c Chemical Engineering Plant Cost Index, Chemical Engineering August 2013,Volume 120, Number 8, pg. 56

Source	CO Emiss. (tpy)	VOC Emiss. (tpy)	Q (cfm)[a]
(AP-42, Sec. 3.3, Table 3.3-1, 10/96)	0.79	0.29	3,017

Background Calculations

CO Uncontrolled Evaluation

475hp back-up - diesel

475 hp
0.00668 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00205*475 = 3.17 lbs/hr
0.97 lbs/hr *(500 hr/yr)*(ton/2000lb)= 0.79 tons/yr

VOC Uncontrolled Evaluation

475hp back-up - diesel

475 hp
0.00247 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, assumed as TOC, 10/96)

0.000705*475 = 1.17 lbs/hr
033 lbs/hr *(500 hr/yr)*(ton/2000lb)= 0.29 tons/yr

Q =		3,017 acfm		http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf
Annualized Cost, High Point Cost Per CFM[b]:	$	8	USD/cfm	
Annualized Cost, Low Point Cost Per CFM[b]:	$	50	USD/cfm	
Median Annualized Cost ($/cfm):	$	29	USD/cfm	
Cost Year Basis:		2002		
CEPCI 2002[c]:		395.6		
CEPCI 2012[c]:		584.6	Aug-13	
Median Annualized Cost in 2012 Dollars:	$	42.85	USD/cfm	
Annualized Cost in 2012 Dollars Using Estimated	$	129,293		

	CO	VOC
Control Efficiency:	90%	90%
Tons Controlled:	0.713925	0.26
Cost of Control ($/ton):	$ 181,102.00	$ 489,782

Notes

a Estimate based on similarly sized engine (475 hp Caterpillar 3406E) as seen in the following link: http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf

b From Air Pollution Control Fact Sheet EPA-452/F-03-018 available at: ttp://www.epa.gov/ttncatc1/dir1/fcataly.pdf

c Chemical Engineering Plant Cost Index, Chemical Engineering August 2013,Volume 120, Number 8, pg. 56

CO and VOC Oxidation Catalyst BACT Analysis for the 275 hp Tier 4 Diesel Air Compressor

Source	CO Emiss. (tpy)	VOC Emiss. (tpy)	Q (cfm)[a]
(AP-42, Sec. 3.3, Table 3.3-1, 10/96)	8.05	2.98	3,017

Background Calculations

CO Uncontrolled Evaluation

275hp air compressor- diesel

275 hp
0.00668 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

0.00668*275 = 1.84 lbs/hr
1.84 lbs/hr *(8760hr/yr)*(ton/2000lb)= 8.05 tons/yr

VOC Uncontrolled Evaluation

275hp air compressor- diesel

275 hp
0.00247 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, assumed as TOC, 10/96)

0.00247*275 = 0.68 lbs/hr
0.68 lbs/hr *(8760hr/yr)*(ton/2000lb)= 2.98 tons/yr

Q =	3,017	acfm	http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf
Annualized Cost, High Point Cost Per CFM[b]:	$ 8	USD/cfm	
Annualized Cost, Low Point Cost Per CFM[b]:	$ 50	USD/cfm	
Median Annualized Cost ($/cfm):	$ 29	USD/cfm	
Cost Year Basis:	2002		
CEPCI 2002[c]:	395.6		
CEPCI 2012[c]:	584.6	Aug-13	
Median Annualized Cost in 2012 Dollars:	$ 42.85	USD/cfm	
Annualized Cost in 2012 Dollars Using Estimated Flowrate:	$ 129,293		

	CO	VOC
Control Efficiency:	90%	90%
Tons Controlled:	7.241454	2.68
Cost of Control ($/ton):	$ 17,854.60	$ 48,287

Notes

a Estimate based on similarly sized engine (475 hp Caterpillar 3406E) as seen in the following link: http://www.asia.donaldson.com/en/exhaust/support/datalibrary/1053747.pdf

b From Air Pollution Control Fact Sheet EPA-452/F-03-018 available at: ttp://www.epa.gov/ttncatc1/dir1/fcataly.pdf

c Chemical Engineering Plant Cost Index, Chemical Engineering August 2013,Volume 120, Number 8, pg. 56

APPENDIX D: ELECTRONIC FILES