Silver Falcon Mining Inc.



March 5, 2012

Mr. Bill Rogers
Department of Environment Quality
Air Quality Division
1410 N. Hilton
Boise, Idaho
83706

**Subject: Permit To Construct Application Submittal**

Dear Mr. Rogers,

Pursuant to Idaho Administrative Procedures Act (IDAPA) 58.01.01 - Department of Environmental Quality, Rules for the Control of Air Pollution in Idaho, Silver Falcon Mining Inc. is pleased to submit a comprehensive application for a Permit to Construct including the required supporting documentation. A hard copy as well as an electronic copy are provided for your reference.

The telephone discussion of March 2, 2012 between Chris Johnson, Bill Rogers and myself served as pre-application meeting with IDEQ and noted the submittal of the Permit To Construct Application to be done in person by Pascale Tutt on Monday, March 5, 2012 at the DEQ State Office in Boise.

Additional documentation can be provided at your request, if necessary.

Based on Information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

Should you have any questions, please do not hesitate to call me.

Sincerely,

Pascale Tutt

Pascale Tutt
Executive Assistant
Silver Falcon Mining Inc.
2520 Manatee Ave. West - Suite 200
Bradenton, FL
34205
T. 972-814-8302
F. 972-529-2898


# Silver Falcon Mining Inc.

## Permit to Construct Application

**Prepared by:**
**Silver Falcon Mining Inc.**
**2520 Manatee Ave. West #200**
**Bradenton, FL**
**34205**

**and CJ Environmental**
**PO Box 272**
**Pollock, ID 83547**

**Submitted to:**
**Idaho Department of Environmental Quality**
**Air Quality Division**
**1410 N. Hilton**
**Boise, Idaho 83706**

**March 5, 2012**

# Table of Contents

## Introduction

This Permit-to-Construct application is being submitted by Silver Falcon Mining Inc. for its Diamond Creek Mill located in Murphy, ID in support of our request for a Permit To Construct for the project. Air quality modeling performed in support of the application demonstrates compliance with the National Ambient Air Quality Standards for criteria pollutant and Idaho Toxic Air Pollutants acceptable ambient concentrations set forth in IDAPA 58.01.01.585 and 586. Appendix F includes a copy of the IDEQ completeness checklist for this type of application, documenting how all application completeness requirements have been met.

The facility Emission Inventory (in more detail in Appendix D) shows that facility-wide emissions are well below the 250 ton per year criteria pollutant major source category threshold for this non-designated facility, and below the 100 ton per year threshold for Title V major sources. Facility HAP emissions do not approach the HAP major source threshold of 25 tons/yr. Therefore, this proposed action is a minor modification to a minor source. As such, the facility is eligible for the Permit to Construct process being requested here.

The Diamond Creek Mill operations will consist of a crushing and screening operation, an non-vented, enclosed mill and an metallurgical assay lab building. It will process tailings from the War Eagle Mountain area. A small waste rock area will be located on the southeast side of the property. It will be located approximately 13 miles South West of Murphy, Idaho on land owned by the project proponents.

There will also be concurrent reclamation in the construction and operating phases as existing disturbed areas or new disturbance is reclaimed to post-use conditions.

## Project Location

The Diamond Creek Mill, operated by Silver Falcon Mining Inc. is located approximately 6 road miles from State Hwy 78 and 13 road miles from Murphy, Idaho. It is centered on 43 degrees North, 4 minutes and 27 seconds latitude and -116 degrees West, 36 minutes, 43 seconds longitude and can be found on the United States Geological Survey (USGS) Topographic Map. The property is a 20 acre plot which is privately owned. The property is within the Diamond Creek sub-basin of the Snake River in southwest Idaho. Elevations in the area range from 3680 feet to 3750 feet.

Figures 1-1 shows the general location on a regional map. Figure 1-2 provides a closer look at the property boundary, terrain in the vicinity, and project layout. More details on the facility location and operational layout are provided in the facility plot plan and process flow diagrams provided in Section 2.0 and the more detailed facility plot plan in the modeling description in Section 7.0. Please note that all figures are included electronically with this application package on the accompanying CD-ROM.

# FIGURE 1-1

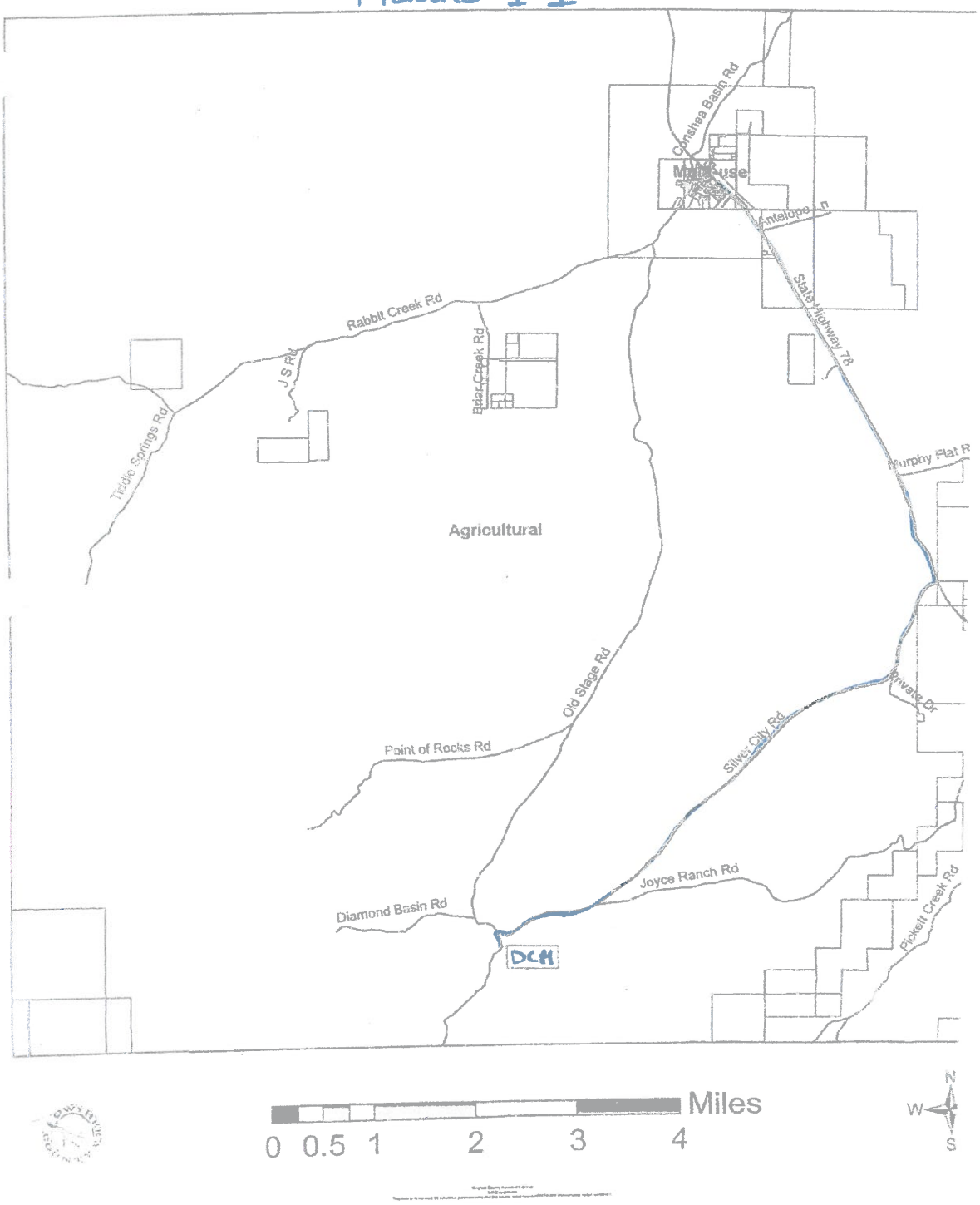

Gonshea Basin Rd
Mixed Use
Antelope Ln
State Highway 78
Murphy Flat R
Rabbit Creek Rd
J S Rd
Briar Creek Rd
Tickle Springs Rd
Agricultural
Old Stage Rd
Point of Rocks Rd
Silver City Rd
Joyce Ranch Rd
Diamond Basin Rd
DCH
Pickett Creek Rd
Miles
0 0.5 1 2 3 4
N
W
S

FIGURE 1-2.

EPA MyWATERS Mapper

Printed: Feb 28, 2012

# 1.0 Process Description

## Overview

Silver Falcon Mining Inc. is a junior resource production company specializing in gold and silver properties with its Diamond Creek Mill facilities located South West of Murphy, Idaho.

Presently, we are processing old dumps which were left on top of War Eagle Mountain and milling those tailings to recover precious metals. The process in which the precious metals are separated is thru crushing and gravity.

Silver Falcon Mining Inc. has obtained ownership of certain patented claims located on top of War Eagle Mountain.

The ore sitting on the claims is hauled down the mountain using 10 ton trucks to our Diamond Creek Mill facility located on Silver City road, Murphy, Idaho, in the foothills of War Eagle Mountain. Four trucks make five trips daily, hauling on average 200 Tons per day, Monday to Thursday during the hauling season. Our hauling season extends from July 1st to November 15th.

An average of 20,000 tons/year of ore have been hauled for the past 3 years.

Once at the mill;

- Trucks are recorded and weighed using our onsite truck scale.
- Material is dumped on the ground in our fenced in compound.
- A loader carries & loads the ore to a stacker belt.
- The raw ore pile is stacked using a 32" x 100' A-Frame stacker belt.
- Primary ore pile is 34' high and 70' across in a continuous line.
- The ore is fed to the primary crushing line using a loader.
- A steel 36" x 6' feeder conveyor feed the main jaw.
- Primary crusher is a Telesmith Jaw, Serial # 6048, Capacity 100 T/Hr. Mfg. 1968
- Material is Conveyored to a 4' x 14' Cedarapids, 2 deck, 1" primary, 3/8" secondary screens.
- 1" plus material goes to secondary Telesmith Jaw, serial # 5587, Capacity 25 T/Hr, Mfg. 1962
- 1" minus material feeds via conveyor to Shenyang Impact Crusher, Serial # 80504, Capacity 12 T/Hr., Mfg. 2008
- 3/8" minus is conveyored to stacking area.
- A dust control spray system is installed on the discharge of the Impact Crusher. This added moisture controls dust from the impact crusher along with material on the recirculation belt.
- Material is stacked using a loader & stacker (32" x 100' A-Frame stacker belt).
- Mill feed is loaded into 2 x 20 Ton ore Bins. Conveyors & Bins are covered.

- Material enters mill from covered conveyor belt and is run thru the ball mill which pulverizes the ore to 20 mesh minus. The mill is fully enclosed and unvented. Immediately after this step, the material is moistened, and stays moist through its transport from the ball mill.
- 20 mesh minus slurry is pumped to our primary classifier, a falcon gravity separator.
- Concentrates from the Falcon are further classified using a Deister table.
- Tailings from the Falcon are transferred to a spiral classifier for further recovery.
- Tailings from the Spiral Classifier are pumped to our Clarifier.
- Clarifier underflow is pumped to a belt press. All processes up to here are inside the enclosed, unvented ball mill. Clean water is re-circulated and solids are conveyored outside the building
- A loader then stacks the tailings in our bermed tailings pile area on our site.

## Equipment List for Outdoor Crushing Line

**Total capacity – 100 T/Hour**

**Primary Initial Crusher**
Telesmith Jaw Crusher
18" x 32" jaw
Serial No. 6048
Capacity – 100 T/Hr
Year of Manufacture: 1968

**Secondary Crusher**
Telesmith Jaw Crusher
10" x 21" jaw
Serial No. 5587
Capacity - 25T/Hr
Year of Manufacture: 1962

**Impact Crusher**
Shenyang Impact Crusher,
Serial # 80504, Capacity 12 T/Hr.,
Mfg. 2008

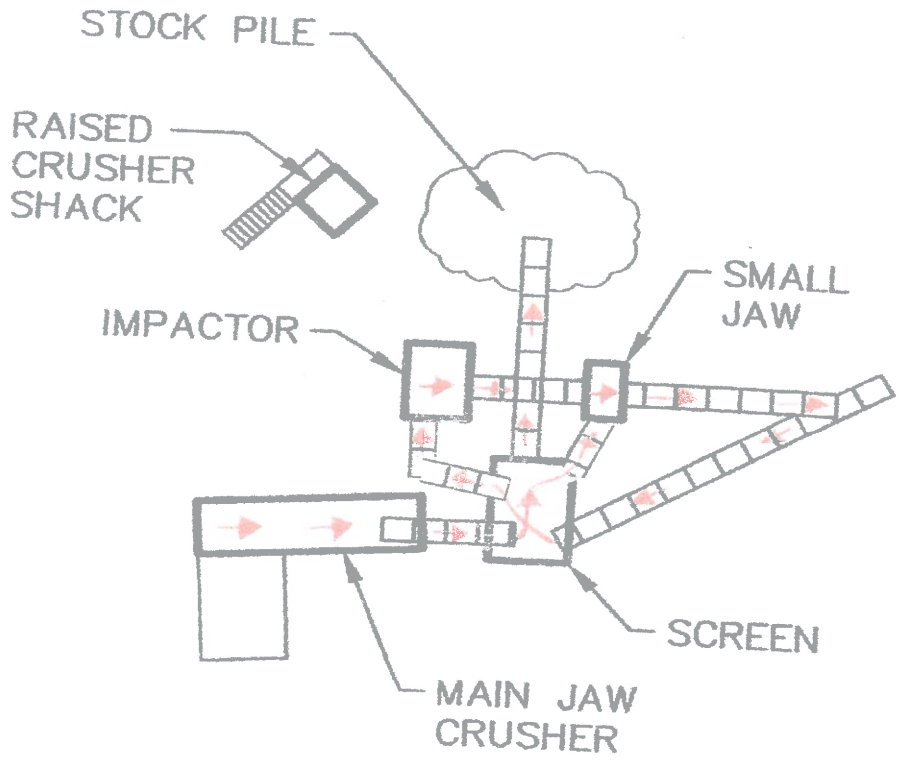
**Screen Deck**
Cedarapids
Size - 4' x 14'
2 deck
1" primary screen
3/8" secondary screen

**Stacker Conveyor**
A- Framed Conveyor
Size 36" x 100'
Stack Height max : 35'
36" wide belt

## 2.0 Process Flow Diagrams

Figure 2-1 below shows the flow through the facility's crushing and screening operation. Those processes, and all facility operations, are powered by the primary generator at this off-the-grid facility.

**Figure 2-1 Silver Falcon Mining Crushing and Screening Operations Process Flow Diagram**




The following page shows a picture of the crushing and screening processes in operation.

Verbal descriptions of material flow through and processes at the facility are included in section 1. After being crushed, the ore is brought into the fully enclosed, unvented ball mill. After initial processing, the ore is moistened. The tailings or waste rock remain wet as they exit the mill and through their placement in the waste rock area shown on the facility plot plan in Section 6. The concentrated ore is transported, in smaller quantities, in enclosed containers, to the assay lab. The emission inventory shows that all operations at the assay lab are exempt from air quality permitting via IDAPA 58.01.01.220.1.a. Wind Erosion is conservatively included over

10 acres of the 20 acre facility in the emission inventory and modeling analysis, including the crushing operations area, its feed areas, and the entire waste rock area.

**Figure 2-2 Silver Falcon Mining Crushing and Screening Operations, July 2011**

## 3.0 Applicable Requirements

Table 3-1 cites the applicable and inapplicable requirements of the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01) for air emitting activities at the facility affected by the proposed action:

Table 3-1 **Applicable and Inapplicable IDAPA 58.01.01 Requirements**

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 000 | LEGAL AUTHORITY<br>General Applicability | N/A | No | N/A | No substantive requirements (Note B) |
| 001 | TITLE AND SCOPE<br>General Applicability | N/A | No | N/A | No substantive requirements (Note B) |
| 002 | WRITTEN INTERPRETATIONS<br>General Applicability | N/A | No | N/A | No substantive requirements (Note B) |
| 003 | ADMINISTRATIVE APPEALS<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 004 | CATCHLINES<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 005 | DEFINITIONS<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 006 | GENERAL DEFINITIONS<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 007 | DEFINITIONS FOR THE PURPOSES OF SECTIONS 200 THROUGH 225 AND 400 THROUGH 461<br>General Applicability | N/A | Yes | N/A | Sections 400-461 don't apply for this application; not requesting and don't need a Tier II Operating permit<br><br>No substantive requirements |
| 008 | DEFINITIONS FOR THE PURPOSES OF SECTIONS 300 THROUGH 386<br>General Applicability | N/A | No | N/A | No substantive requirements |
| 009 | DEFINITIONS FOR THE PURPOSES OF 40 CFR PART 60<br>General Applicability | Recordkeeping, Monitoring and Reporting | Yes | Yes | No substantive requirements |
| 010 | DEFINITIONS FOR THE PURPOSES OF 40 CFR PART 61 AND 40 CFR PART 63 | N/A | Yes | N/A | No substantive requirements |
| 011 | DEFINITIONS FOR THE PURPOSE OF SECTIONS 790 THROUGH 799 | N/A | No | N/A | N/A |
| 106 | ABBREVIATIONS<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 107 | INCORPORATIONS BY REFERENCE<br>General Applicability | N/A | Yes | N/A | No substantive requirements |
| 121 | COMPLIANCE REQUIREMENTS BY DEQ<br>General Applicability | As specified for individual requirements | Yes | Yes | No existing compliance requirements. Will meet any subsequent requirements |
| | | | | | |

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 122 | INFORMATION ORDERS BY DEQ<br>General Applicability | N/A | No | N/A | Confirms regulatory authority |
| 123 | CERTIFICATION OF DOCUMENTS<br>General Applicability | Recordkeeping | Yes | Yes | Certification accompanies this submission on form GI in Appendix A |
| 124 | TRUTH, ACCURACY AND COMPLETENESS OF DOCUMENTS<br>General Applicability | Recordkeeping | Yes | Yes | |
| 125 | FALSE STATEMENTS<br>General Applicability | Recordkeeping | Yes | Yes | |
| 126 | TAMPERING<br>General Applicability | Recordkeeping | Yes | Yes | |
| 127 | FORMAT OF RESPONSES<br>General Applicability | Recordkeeping | Yes | Yes | |
| 128 | CONFIDENTIAL INFORMATION<br>General Applicability | Recordkeeping | Yes | Yes | |
| 130-136 | UPSET, BREAKDOWN, AND EXCESS EMISSIONS REQUIREMENTS | Reporting/Recordkeeping | Yes | Yes | |
| 140-149 | VARIANCE PROCEDURES and PETITIONS<br>General Applicability | N/A | No | N/A | N/A |
| 155 | CIRCUMVENTION<br>General Applicability | Recordkeeping | Yes | Yes | No installation or use of any device conceals an emission of air pollutants. |
| 156 | TOTAL COMPLIANCE<br>General Applicability | Recordkeeping | Yes | Yes | |
| 157 | TEST METHODS AND PROCEDURES<br>General Applicability | Recordkeeping | Yes | Yes | |
| 160 | PROVISIONS GOVERNING SPECIFIC ACTIVITIES AND CONDITIONS<br>General Applicability | Recordkeeping | Yes | Yes | |
| 161 | TOXIC SUBSTANCES<br>General Applicability | Recordkeeping | Yes | Yes | State regulatory authority |
| 162 | MODIFYING PHYSICAL CONDITIONS<br>General Applicability | N/A | No | N/A | Confirms regulatory authority |
| 163 | SOURCE DENSITY | N/A | No | N/A | State regulatory authority not invoked because of ambient impact compliance demonstration |
| 164 | POLYCHLORINATED BIPHENYLS (PCBS)<br>Requirements or Standards: Prohibits burning PCB containing materials, in quantities greater that five (5) ppm, except for disposal. | N/A | No | N/A | N/A. facility does not conduct this activity |
| 200 - 203 | PROCEDURES AND REQUIREMENTS FOR PERMITS TO CONSTRUCT<br>General Applicability | N/A | Yes | Yes | Confirms regulatory authority and describes procedure for permit applications |
| 204 | PERMIT REQUIREMENTS FOR NEW MAJOR FACILITIES OR MAJOR MODIFICATIONS IN NONATTAINMENT AREAS | N/A | No | N/A | N/A |

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 205 | PERMIT REQUIREMENTS FOR NEW MAJOR FACILITIES OR MAJOR MODIFICATIONS IN ATTAINMENT OR UNCLASSIFIABLE AREAS | N/A | No | N/A | N/A |
| 206 - 208 | OPTIONAL OFFSETS FOR PERMITS TO CONSTRUCT; EMISSION REDUCTION CREDIT; NET AIR QUALITY BENEFIT | N/A | Yes | N/A | N/A |
| 209 | PROCEDURES FOR ISSUING PERMITS | N/A | Yes | N/A | Documents state permit issuing methodology |
| 210 | DEMONSTRATION OF PRECONSTRUCTION COMPLIANCE WITH TOXIC STANDARDS | Recordkeeping/Reporting | Yes | Yes | EI and section 4.0 document three TAPs emitted above IDAPA ELs. Section 7.0 documents compliance with IDAPA AAC and AACC impact limits. |
| 211 | CONDITIONS FOR PERMITS TO CONSTRUCT | N/A | Yes | N/A | Documents state regulatory authority |
| 212 | OBLIGATION TO COMPLY | Specific for each requirement | Yes | N/A | Documents facility's requirement to comply with state, federal, and permit requirements |
| 213 | PRE-PERMIT CONSTRUCTION | N/A | Yes | N/A | N/A |
| 214 | DEMONSTRATION OF PRECONSTRUCTION COMPLIANCE FOR NEW AND RECONSTRUCTED MAJOR SOURCES OF HAZARDOUS AIR POLLUTANTS | Recordkeeping/Reporting | Yes | Yes | N/A. Not a major source |
| 220 – 223 | EXEMPTIONS FROM PERMIT TO CONSTRUCT REQUIREMENTS | Recordkeeping/Reporting | Yes | Yes | Backup Emergency Generator included in application qualifies for exemption via 222.01.c.i for 100hp backup generator . Assay lab furnaces qualify for exemption via 222.0`.a for laboratory equipment |
| 224 - 227 | FEES | N/A | Yes | N/A | Application fee accompanies submittal, check copy in Appendix C. |
| 228 | APPEALS | N/A | Yes | N/A | |
| 300-387 | PROCEDURES AND REQUIREMENTS FOR TIER I OPERATING PERMITS General Applicability | N/A | No | N/A | Emissions put the proposed ICP below thresholds for inclusion in the Title V program |
| 400-461 | PROCEDURES AND REQUIREMENTS FOR TIER II OPERATING PERMITS | N/A | No | N/A | N/A |
| 500 | REGISTRATION PROCEDURES AND REQUIREMENTS FOR PORTABLE EQUIPMENT | N/A | No | N/A | N/A |
| 510 | STACK HEIGHTS AND DISPERSION TECHNIQUES | Air Dispersion Modeling; Recordkeeping, Reporting | Yes | Yes | Section 7 demonstrates compliance with regulatory modeling requirements |
| 511 | APPLICABILITY | Recordkeeping | Yes | Yes | |

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 512 | DEFINITIONS | Recordkeeping | Yes | Yes | |
| 513 | REQUIREMENTS | Recordkeeping | Yes | Yes | |
| 514 | OPPORTUNITY FOR PUBLIC HEARING | N/A | No | No | Documents regulatory authority and permit processing methodology |
| 515 | APPROVAL OF FIELD STUDIES AND FLUID MODELS | N/A | No | No | Administrative and/or procedural |
| 516 | NO RESTRICTION ON ACTUAL STACK HEIGHT | N/A | Yes | N/A | No substantive requirements |
| 550-561 | AIR POLLUTION EMERGENCY RULE | N/A | No | N/A | Applicability is case-by-case |
| 562 | SPECIFIC EMERGENCY EPISODE ABATEMENT PLANS FOR POINT SOURCES | N/A | No | N/A | Facility emissions make it unlikely to be required by the Department to prepare an Emergency Episode Abatement Plan. |
| 563 - 574 | TRANSPORTATION CONFORMITY | N/A | No | N/A | N/A |
| 575-581 | AIR QUALITY STANDARDS AND AREA CLASSIFICATION | Air Dispersion Modeling and Monitoring | Yes | Yes | Section 7 demonstrates compliance with regulatory modeling requirements |
| 582 | INTERIM CONFORMITY PROVISIONS FOR NORTHERN ADA COUNTY FORMER NON-ATTAINMENT AREA FOR PM-10 | No | NA | N/A | N/A |
| 585-586 | TOXIC AIR POLLUTANTS NON-CARCINOGENIC INCREMENTS, TOXIC AIR POLLUTANTS CARCINOGENIC INCREMENTS | Recordkeeping/Reporting | Yes | Yes | Section 7.0 documents compliance with IDAPA AAC and AACC impact limits while employing T-RACT. |
| 587 | LISTING OR DELISTING TOXIC AIR POLLUTANT INCREMENTS | N/A | No | N/A | Documents regulatory authority |
| 590 | NEW SOURCE PERFORMANCE STANDARDS | Monitoring, Reporting, Recordkeeping | Yes | Yes | Compliance with any applicable NSPS is documented in permit application |
| 591 | NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS | N/A | No | N/A | N/A. |
| 600-609 | RULES FOR CONTROL OF OPEN BURNING | N/A | No | N/A | N/A for proposed action |
| 610 | INDUSTRIAL FLARES | N/A | No | N/A | No substantive requirements |
| 611-616 | RULES FOR CONTROL OF OPEN BURNING | N/A | No | N/A | N/A for proposed action. |
| 625 | VISIBLE EMISSIONS | Monitoring, Reporting, Recordkeeping | Yes | Yes | Will be followed where required in permit |
| 626 | GENERAL RESTRICTIONS ON VISIBLE EMISSIONS FROM WIGWAM BURNERS | N/A | No | N/A | N/A. |
| 650-651 | RULES FOR CONTROL OF FUGITIVE DUST | Reasonable steps taken to control or mitigate fugitive dust | Yes | Yes | Reasonable precautions will be utilized to control fugitive emissions at this facility, consistent with IDAPA regs and the proposed permit. |

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 675 | FUEL BURNING EQUIPMENT - PARTICULATE MATTER<br>Facility operates fuel burning equipment. | | No | N/A | See rules 676-680 |
| 676 | STANDARDS FOR NEW SOURCES | Recordkeeping | Yes | N/A | The few facility combustion sources will meet IDAPA emission standards |
| 677 | STANDARDS FOR MINOR AND EXISTING SOURCES | N/A | No | N/A | The few facility combustion sources will meet IDAPA emission standards |
| 678-680 | COMBINATIONS OF FUELS | N/A | No | N/A | " |
| 681 | TEST METHODS AND PROCEDURES | Use of required test procedure(s) | No | N/A | " |
| 700 | PARTICULATE MATTER -- PROCESS WEIGHT LIMITATIONS. | | Yes | Yes | See rules 701-703 |
| 701 | PARTICULATE MATTER – NEW EQUIPMENT PROCESS WEIGHT LIMITATIONS. | Monitoring and Testing | Yes | Yes | Where applicable, process weight limitations will be met by project |
| 702 | PARTICULATE MATTER -- EXISTING PROCESS WEIGHT LIMITATIONS | Monitoring and Testing | No | N/A | Where applicable, process weight limitations will be met by project |
| 703 | PARTICULATE MATTER – OTHER PROCESSES | N/A | No | N/A | Where applicable, process weight limitations will be met by project |
| 725 | RULES FOR SULFUR CONTENT OF FUELS<br>General Applicability | N/A | No | N/A | Generator fuel will meet IDAPA sulfur content requirements; supopolier carries nothing >0.15% S |
| 726 | DEFINITIONS AS USED IN SECTIONS 727 THROUGH 729 | N/A | No | N/A | |
| 727 | RESIDUAL FUEL OILS | N/A | No | N/A | N/A |
| 728 | DISTILLATE FUEL | N/A | No | N/A | N/A |
| 729 | COAL | N/A | No | N/A | N/A |
| 750-751 | RULES FOR CONTROL OF FLUORIDE EMISSIONS | N/A | N/A | N/A | N/A |
| 775-776 | RULES FOR CONTROL OF ODORS<br>General Applicability | Facility representatives will investigate any odor complaint or identified issue. | Yes | N/A | (Note A); No substantive requirements for regulated units or activities. |
| 785-787 | RULES FOR CONTROL OF INCINERATORS | N/A | No | N/A | N/A |
| 790 – 802 | EMISSION STANDARDS FOR CONTROL OF NONMETALLIC MINERAL PROCESSING PLANTS | N/A | No | N/A | N/A |
| 805-808 | RULES FOR CONTROL OF HOT-MIX ASPHALT PLANTS | N/A | No | N/A | N/A |
| 815-826 | RULES FOR CONTROL OF KRAFT PULPING MILLS | N/A | No | N/A | N/A |
| 835-839 | RULES FOR CONTROL OF RENDERING PLANTS | N/A | No | N/A | N/A |

| Citation under IDAPA 58.01.01 | Title | Compliance Determination Method (Recordkeeping, Monitoring, Reporting, Test Method) | Applicable Yes or No | In Compliance Yes or No | Explanation Code and/or Additional Information |
|---|---|---|---|---|---|
| 845-848 | RULES FOR CONTROL OF SULFUR OXIDE EMISSIONS FROM SULFURIC ACID PLANTS | N/A | No | N/A | N/A |
| 855-858 | COMBINED ZINC AND LEAD SMELTERS | N/A | No | N/A | N/A |
| 859 | STANDARDS OF PERFORMANCE FOR MUNICIPAL SOLID WASTE LANDFILLS THAT COMMENCED CONSTRUCTION.....MAY 30, 1991 | N/A | No | N/A | N/A |
| 860 | EMISSION GUIDELINES FOR MUNICIPAL SOLID WASTE LANDFILLS THAT COMMENCED CONSTRUCTION.....MAY 30, 1991 | N/A | No | N/A | N/A |
| 861 | STANDARDS OF PERFORMANCE FOR HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS THAT COMMENCED CONSTRUCTION.....MARCH 16, 1998 | N/A | No | N/A | N/A |
| 862 | EMISSION GUIDELINES FOR HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS THAT COMMENCED CONSTRUCTION BEFORE JUNE 20, 1996 | N/A | No | N/A | N/A |

APPLICABILITY EXPLANATION CODES

N/A -Not Applicable

IDEQ PTC Application Form FRA in Appendix A documents the applicability of Federal Regulations.

The two New Source Performance Standards (NSPS) requirements that potentially apply to activities at the ICP are Subpart LL for Metallic Mineral Processing Plants and Subpart IIII (ZZZZ) for Stationary Compression Ignition Internal Combustion Engines.

NSPS Subpart LL (40CFR60.380) applies to listed activities or activity types "at the mill or concentrator". The NSPS Subpart LL applies to each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station at the mill or concentrator. At the Diamond Creek Mill facility, the affected facilities or activities include only the crushers, screen, and conveyor belt transfer points No other facilities listed in Subpart LL are present at the facility. There is no stack for those processes. Emission controls consist of adding water to the flow at the jaw crusher to increase ore moisture to at least 10 percent, which reduces or eliminates particulate emissions, and physical covers on most or all conveyors and drop points. The NSPS subpart LL emission limit for the above listed operations is 0.05 grams per dscm which translates to 0.0218 gr/dscf, or opacity limits of 7 or 10 percent. Those opacity limits would be applicable to the processes listed earlier in this paragraph. An attachment in Appendix A provides a copy of Subpart LL with the applicable parts highlighted in yellow.

NSPS Subpart IIII would apply to the backup 100KW diesel generator, which was manufactured in 2007, though it's provisions would be minimal since that generator is only 100KW, and it is only a backup power source. That generator would meet exemption criteria under IDAPA 58.01.01.220 as it is a 100KW diesel burning internal combustion engine. It is to be used exclusively for emergency backup purposes and should be operated less than 500 hrs annually.

NESHAPS Subpart ZZZZ applies to the primary 750KW generator providing the electrical power needed to support facility operations at this off the grid location. That generator was manufactured in 1999. An attachment in Appendix A provided by Eric Clark of IDEQ documents applicable Subpart ZZZZ requirements. The facility generator is a 750KW compression ignition engine manufactured in 1999.

# 4.0 Potential To Emit / Emission Sources / T-RACT Demonstration

Air emission sources at the Diamond Creek Mill area facility include delivery of up to 91,000 tons of ore per year to a pile, loaders grabbing from that pile and dropping ore into a crushing cycle that includes three crushers, one screen, and eight covered conveyors. Drop points are also covered. The facility is off the electric power grid. It is powered by a primary 750KW generator. The facility has a 100KW generator for emergency replacement of the primary generator capacity; it is exempt from permitting via IDAPA 58.01.01.222.01.c.1. Processes after the ore is crushed other than in the assay lab are either in the fully enclosed unvented ball mill, or involve wet material that eliminates dust. Processes in the assay lab are exempt from permitting via IDAPA 58.01.01.222.01.a. Wind erosion is included from disturbed surfaces, including the tailings management area. Water is applied twice daily on all disturbed areas, and more often on onsite roads, by the facility water truck.

Actual throughput is driven by the impact crusher's need, the primary method for getting the ore down to the 3/8" size subsequent processing requires. The impact crusher capacity is 12 tons per hour. The emission inventory overestimates facility-wide throughout by assuming each individual component of the crushing line operates at its own capacity, when in reality the maximum throughput for the entire process is the impact crusher 12 tons per hour.

Detailed information on the emissions sources is included on the PTC forms in Appendix A. All emission calculations, their derivations, references, and defense are shown in the emission inventory in Appendix D. Also included in Appendix D is documentation supporting the data used in the emission calculations. The emission inventory is also provided in electronic form in the files on the accompanying CD-ROM.

The proposed facility Potential To Emit criteria air pollutants and IDAPA 585 or 586 TAPs is summarized in Table 4-1. More details on those emission estimates can be found in the emission summary, from which this table of controlled potential emissions was taken.

**Table 4-1 Potential to Emit Criteria Pollutants and IDAPA TAPs**

| | PM | PM 10 | PM2.5 | VOC's | SO 2 | CO | NOx | Benzene | Formaldehyde | POM | Zinc | Arsenic | Copper | Magnesium Oxide |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point Sources (tons/yr) | 3.08 | 1.77 | 1.71 | 2.78 | 4.67 | 26.2 | 65.0 | 0.024 | 0.0024 | 0.0001 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitives (tons/yr) | 4.99 | 2.45 | 0.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.0000 | 0.0000 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total (tons/yr)** | **8.07** | **4.22** | **2.63** | **2.78** | **4.67** | **26.2** | **65.0** | **0.024** | **0.0024** | **0.0001** | **0.00** | **0.00** | **0.00** | **0.00** |
| Point Sources (lbs/hr) | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.8 | 0.006 | 0.0006 | 0.0000 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitives (lbs/hr) | 1.30 | 0.57 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.0000 | 0.0000 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total (lbs/hr)** | **2.01** | **0.97** | **0.60** | **0.63** | **1.07** | **5.98** | **14.8** | **0.006** | **0.0006** | **0.0000** | **0.00** | **0.00** | **0.00** | **0.00** |

TAP emissions are estimated from the primary generator and the assay lab vents. The emission inventory documents that all the potential emissions from the assay lab are well below IDAPA 585 or 586 TAP ELs and qualify for a BRC TAP exemption. Therefore, they do not require modeling, and support the exemption for those assay lab vents. As shown in the Emissions Totals worksheet in the emission inventory, three IDAPA 586 TAPs (benzene, formaldehyde, and POM) are emitted above their respective IDAPA 586 ELs. Modeling results show that maximum predicted impacts from each of those three TAPs are less than 21% of their applicable IDAPA 586 AACCs.

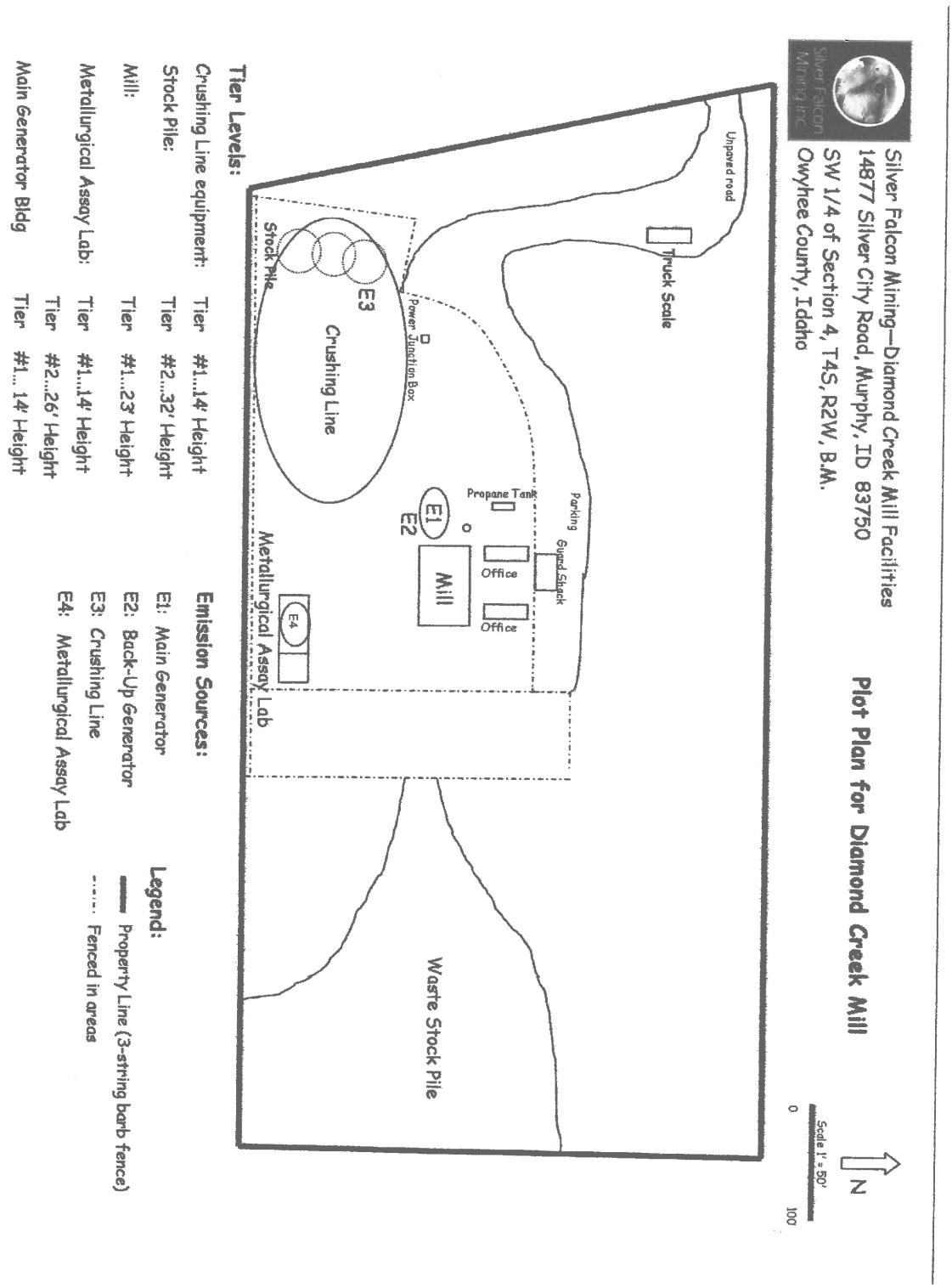
# 5.0 Facility Classification

The Diamond Creek Mill area facility is located in Owyhee County, which has been designated by the US EPA as "attainment" or "unclassified" for all criteria pollutants. For attainment or unclassified areas, a source is considered a Prevention of Significant Deterioration of Air Quality (PSD) Program major source if it has the potential to emit: (1) 10 tons per year or more of any hazardous air pollutant, or (2) 25 tons per year or more of combined hazardous air pollutants or, (3) 100 tons per year or more of a regulated pollutant if the source is classified as one of twenty-eight designated industrial source categories or, (4) 250 tons per year or more of a regulated pollutant from a stationary source. For the Title V Operating Permit program, a source is considered major if potential emissions exceed 100 tons per year. For HAPs, a source is considered major if it emits more than 10 tons per year of an individual HAP or more than 25 tons of HAPs per year cumulatively.

This Diamond Creek Mill facility is not a designated facility and will not produce emissions in excess of any of the above thresholds. As described by the tables in Section 4 of this application, the facility's potential to emit is sufficiently low (less than 65 tons per year for all criteria air pollutants) to be considered a minor source of air emissions, not reaching PSD, Title V, or HAP major source thresholds.

# 6.0 Scaled Plot Plan

The facility plot plan is included below, and is supplemented by figures 7-1 through 7-5 in the modeling report in Section 7.0 and the first of the four Process Flow Diagrams in Section 2. All figures are also provided as stand alone electronic files on the accompanying CD-ROM.



## 7.0 Ambient Impact Assessment

**Purpose**
This section describes the modeling conducted to verify compliance with all applicable air quality impact limits to support the facility's air permit application.

**Model Description / Justification**
The model chosen, consistent with IDEQ and EPA guidance, is AERMOD. AERMOD replaced the Industrial Source Complex model ISCST3 as the primary recommended model for facilities with multiple emission sources. AERMOD was applied as recommended in EPA's *Guideline on Air Quality Models*, consistent with guidance in IDEQ's *Air Quality Modeling Guideline*, as described in the IDEQ-approved modeling protocol. Recommended regulatory default options were employed. Terrain data was processed consistent with EPA guidance for AERMAP using USGS NED data. BeeLine BEEST modeling software was employed. Meteorological data recommended for this application by Kevin Schilling of the IDEQ Monitoring, Modeling, and Emission Inventory program was supplied by IDEQ. The Prime building downwash algorithm was employed. Modeling analyses were performed for all TAP pollutants emitted above IDEQ emission thresholds, as described in Section 4.0. Chemical transformation of emissions was not considered except for the use of PVMRM to assess short term NO as recommended by IDEQ's Kevin Shilling. All these details were consistent with the IDEQ approved modeling protocol.

**Emission and Source Data**
Model stack and emissions data for the facility's generator were exactly as recommended by Kevin Schilling of IDEQ. A copy of the source test data supporting the model emission rates for that source is included in Appendix D. TAP emissions for the generator are documented in the inventory of potential emissions, and in Appendix D in the worksheet "Primary Generator". Three TAPs (benzene, formaldehyde, and POM) were identified to be released at rates exceeding IDAPA 585 or 586 EL modeling thresholds. Annual average impacts were predicted. Those three IDAPA 586 TAPs were the derivation of all criteria pollutant emission rates are documented on each worksheet in the emission inventory.

Other model sources include the initial drop of incoming ore ahead of the crushing and screening operation, the loader transfers to get the material into the crushing and screening process, the three crushers and one screening unit, and conveyor transfers to get the material through the process. The only model source included for processes after the crushing operation is wind erosion from half the surface area of the facility. The ball mill is fully enclosed. All outflow from the ball mill is wet. The tailings from the mill are placed in a storage area in the southeast side of the facility while still wet. When they dry, they could contribute to wind erosion.. One model source was also added for wind erosion across half the plant property where activity or vegetation removal leave the soil exposed to wind erosion. An onsite water truck will be used on the roads regularly and on the exposed areas twice daily to control dust.

All facility buildings, including the planned assay building, are included in the modeling analysis with their actual dimensions.

## Table 7-1 Model Source Data

| POINT SOURCES | | Easting (X) | Northing (Y) | Base Elevation | Stk Ht | Temperature | Exit Vel | Stack Diam | PMTEN | PM25 | CO | NO2 | SO2 | TOX | Parameter justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Source ID** | **Source Description** | **(m)** | **(m)** | **(m)** | **(ft)** | **(°K)** | **(mps)** | **(ft)** | **(lb/hr)** | **(lb/hr)** | **(lb/hr)** | **(lb/hr)** | **(lb/hr)** | **(lb/hr)** | **Stack parameters exactly as recommended by Kevin Schilling, IDEQ** |
| GEN | primary generator | 533533.9 | 4772154.5 | 1116.7 | 31 | 897 | 44.7 | 0.9367 | 0.403 | 0.391 | 5.984 | 14.83 | 1.067 | 1 | |

| AREA SOURCES | | Easting (X) | Northing (Y) | Base Elevation | Rel Ht | Easterly Length | North Length | Angle from North | Vert Dim | PMTEN | PM25 | CO | NO2 | SO2 | TOX | Parameter justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source ID | Source Description | (m) | (m) | (m) | (ft) | (ft) | (ft) | | (m) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | Actual dimensions of disturbed ground, low release ht, little initial vertical size |
| WINDEROS | wind erosion | 533425.2 | 4772082.3 | 1121.1 | 0 | 1066.3 | 408.5 | | 1.5 | 0.354 | 0.177 | | | | | |

| VOLUME SOURCES | | Easting (X) | Northing (Y) | Base Elev | Rel Ht | Hor Dim | Ver Dim | PMTEN | PM25 | CO | NO2 | SO2 | TOX | Parameter justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source ID | Source Description | (m) | (m) | (m) | (ft) | (ft) | (ft) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) |
| PJAW | primary jaw crusher | 533500.9 | 4772119.6 | 1119.8 | 12 | 0.93 | 2.79 | 0.054 | 0.01 | | | | | Horiz rel 4' wide/.4.3, vert dim 6' tall/2.15 |
| SJAW | secondary jaw crusher | 533510.0 | 4772127.1 | 1119.2 | 12 | 0.70 | 2.79 | 0.014 | 0.003 | | | | | Horiz rel34' wide/4.3, vert dim 6' tall/2.15 |
| IMP | impact crusher | 533501.2 | 4772127.0 | 1119.0 | 12 | 0.70 | 2.79 | 0.003 | 0.001 | | | | | Horiz rel 3' wide/4.3, vert dim 6' tall/2.15 |
| SCRN | screen | 533507.9 | 4772121.1 | 1119.8 | 12 | 0.93 | 2.79 | 0.056 | 0.004 | | | | | Horiz rel 4' wide/4.3, vert dim 6' tall/2.15 |
| CONV | 8 conveyors | 533511.0 | 4772129.2 | 1119.0 | 14 | 30.23 | 0.70 | 0.037 | 0.01 | | | | | Horiz dim 64.5'/4.3, vert dim 1.5' drop/2.15 |
| LDR | 2 loader drops | 533472.5 | 4772112.6 | 1120.0 | 5 | 1.63 | 4.65 | 0.002 | 0.001 | | | | | Parameters based upon loader dimension, horiz dim 7'wide drop/4.3, vert dim 10'/2.15 |
| OREPILE | deliv ore drop to pile | 533466.5 | 4772110.2 | 1120.1 | 17 | 1.63 | 4.65 | 0.0504 | 0.0076 | | | | | Parameters based upon loader dimension except rel ht mid pt on pile ht, horiz dim 7'wide drop/4.3, vert dim 10'/2.15 |

All generator potential TAP emissions were modeled via the TOX 1 lb/hr model source. Actual impacts from generator TAP emissions were calculated on the right side of the "Primary Generator" worksheet in the emission inventory in Appendix D by multiplying through the annual average impact prediction for IDAPA 586 HAPs. Modeling assumed each source operated 24 hours per day, every day of the year, far in excess of proposed operations. Iterative modeling was performed with increasing stack heights until compliance with the $NO_2$ 1 hour average NAAQS at 31' stack height. Modeling results therefore used a 31' stack height. The facility is currently adjusting the generator stack to that height.

All model sources were assumed to operate continuously through the year, very conservative since the emission rates for some equipment (crushers and screen) would go through the anticipated annual throughput of 17,000 tons ore per year in 170 hours at the throughput rates that went into the model emission factors. The smaller backup generator was not modeled because it is only used as backup for the primary generator, which has much higher emissions . No model source factors were employed, except those required for the PVMRM ozone limiting method for estimating short term maximum $NO_2$ impacts. PVMRM was applied exactly as recommended by Kevin Schilling of IDEQ, as documented notes from him in notes in Appendix E (except the original NO2 and ozone data he provided was replaced with Lakeland data he provided a few days later and recommended to use instead).

Figure 7-1 shows the facility layout on a Google earth aerial photo. The Google earth photo was taken before project development. The road in the northwest corner and the ridges and ground features to the north center and north east of the property boundary were used to ground truth the figure and gridding. We cut the property boundary a little small in the model to be conservative.

**Figure 7-1 Model Facility Layout**

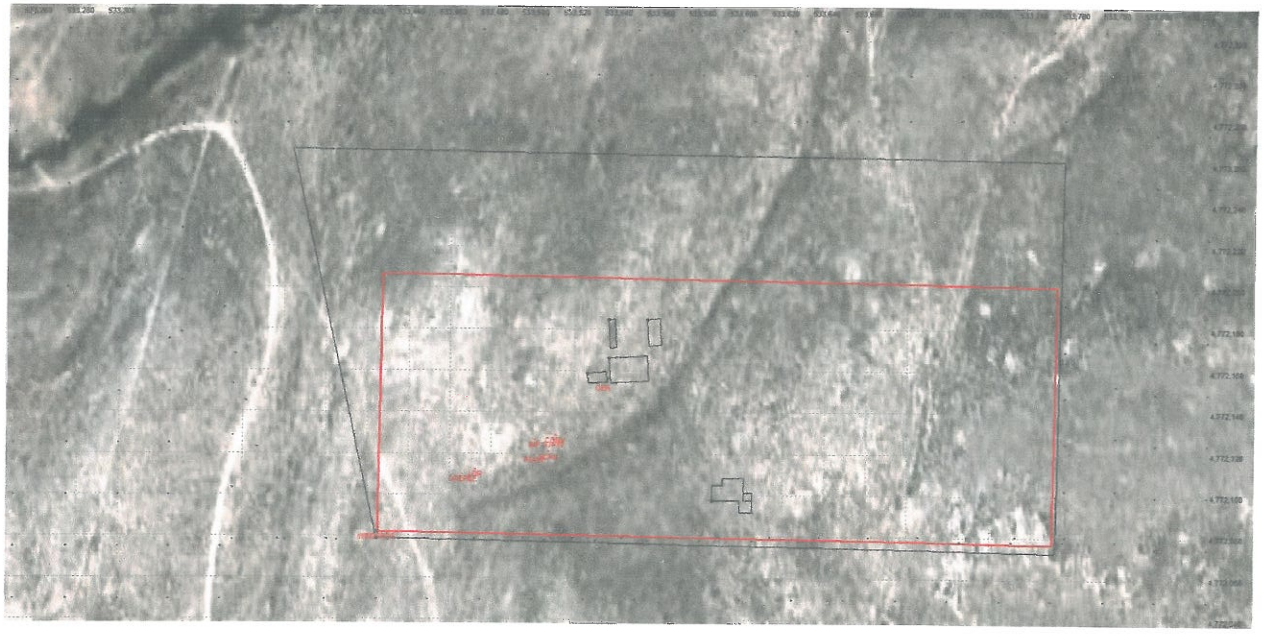
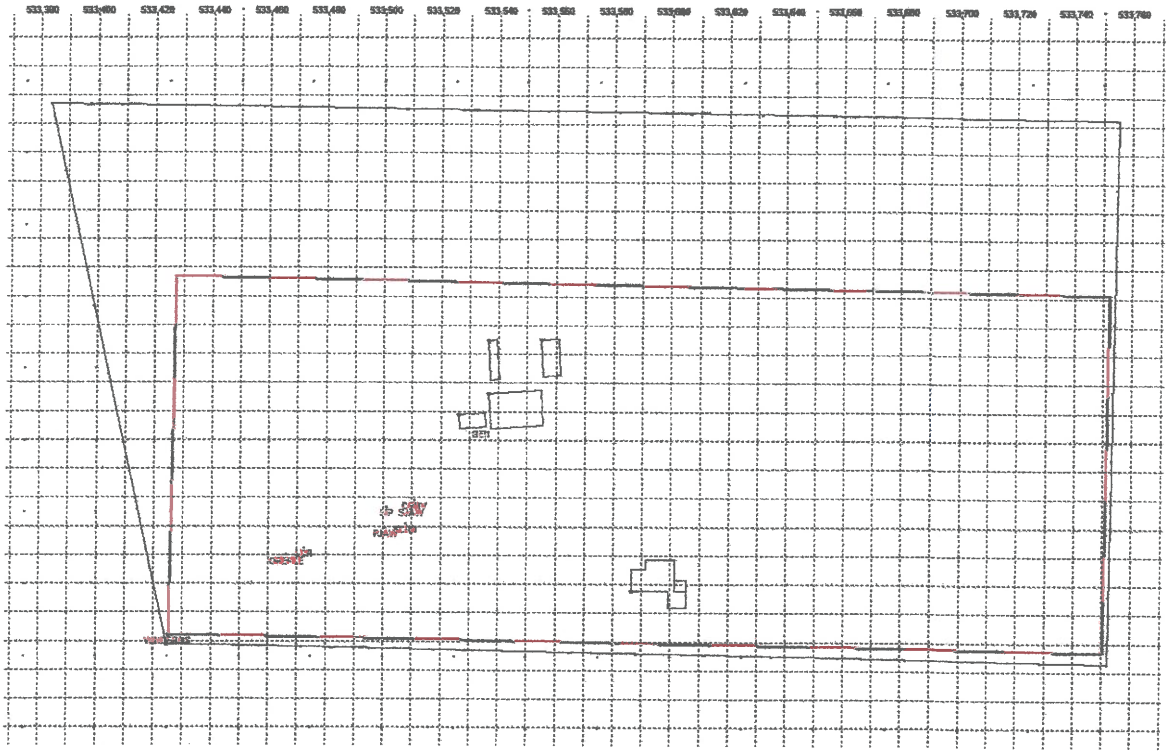


Figure 7-2 shows the model source details. The ore pile and crushing operation sources are shown in red in the southwest portion of the property. The mill building in black and the generator source in red are near the property center. The assay building will be constructed as shown in the south central area of the property. The large red outlined box shows the model wind erosion source area. The other black shapes within the property boundary identify other smaller buildings. The property boundary is shown as a solid black line around the facility. That boundary is fenced. The facility also has security staff onsite at all times. The grid lines are UTM NAD83 coordinates. The dots on and outside the property boundary are the innermost model receptors.

**Figure 7-2 Model Layout: Biochar unit and Lumber Dry Kiln vicinity**

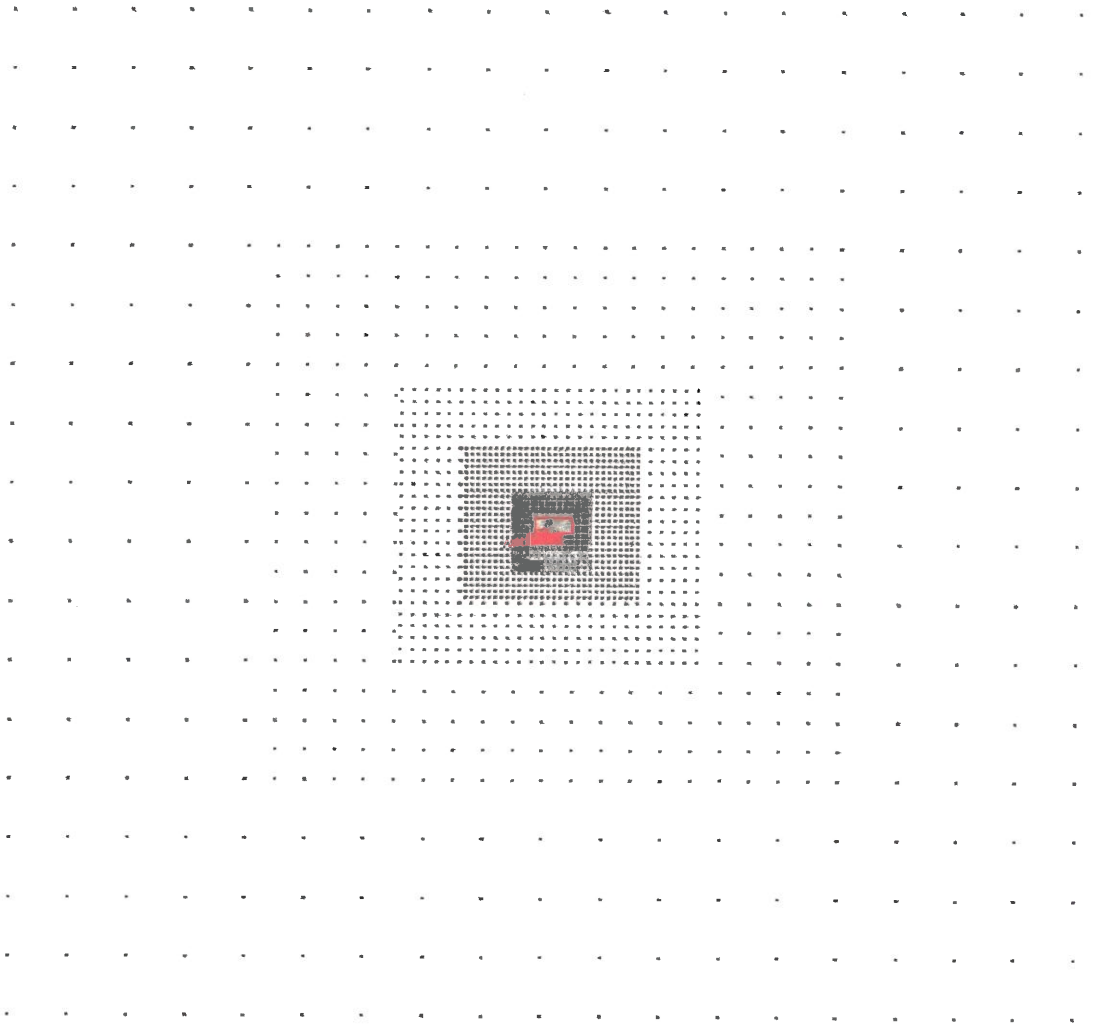


**Ambient Air Boundary / Receptor Network**

The 20 acre facility property boundary is entirely fenced. The facility also has people onsite at all times to discourage unauthorized access. The area is wide open, with views for some distance from the property, and little regular public or human activity out in the desert between Murphy and Silver City. Therefore, the property boundary is used as the ambient air boundary.

AERMOD model receptors were placed at 25 meter intervals along the ambient air boundary and for 100 meters beyond. Receptors were then placed at 50 meter intervals to 500 meters, and 100 meter intervals out to 1 kilometer, as per the IDEQ-approved modeling protocol. We also added receptors at 250 meter density out to 2 kilometers, and at 500 meter density out to 4 kilometers. All required elevation information, including for sources, buildings, and receptors, was calculated from the NED elevation data using AERMAP through the BEEST processing software. Figure 7-5 shows the complete model receptor network.

**Figure 7-3 Model Receptor Network**



All model predicted maximum facility impacts occurred near the ambient air boundary, within the 25 meter grid density. Model predicted maximum impacts dropped off steadily toward the end of the receptor network. The receptor networks employed in the modeling was consistent with IDEQ modeling guidance, and ensured that the analysis meets or exceeds IDEQ receptor network requirements and capture the maximum impact from the facility. Therefore, no supplemental receptor network or expansion of the model domain was required or included.

**AERMAP Input and Elevation Data**

All building, source base and receptor elevations were calculated from USGS 7.5-degree 30m or less horizontal resolution NED data (UTM NAD 83) downloaded from the USGS website, as recommended by IDEQ. Electronic data files sufficient to review or duplicate the AERMAP model application are included with this submittal.

**Meteorological Data and Local Parameters**

Five years of meteorological data representative of the Boise, Idaho area were provided by IDEQ in model ready form by Kevin Schilling of IDEQ. That data was used in this modeling analysis. A copy of the meteorological data used is included in the electronic submittal accompanying this submittal.

**Land Use Classification**

The facility is in an unpopulated rural desert area that would be considered rural by the Auer classification scheme, or any other consideration. Therefore, rural dispersion algorithms were used everywhere in the modeling analyses, and no urban areas were included.

**Background Concentrations**

IDEQ rural remote criteria pollutant background values were used, consistent with the IDEQ approved modeling protocol. IDEQ limits TAP emission increases based upon the impacts of the proposed increase in TAP emissions. Therefore, background concentrations are not considered in this analysis.

**Evaluation Of Compliance With Applicable Impact Standards**

The impact limit standards applicable to this permit application are the NAAQS for criteria air pollutants, and the IDAPA 58.01.01.586 limits for the three TAPs documented as emitted above the respective ELs in Section 3.0. Model predicted maximum impacts are the highest predicted impact for the annual average period and all TAP analyses, the highest first maximum over five years for all shorter averaging periods for criteria pollutants with three exceptions because of percentile based short term NAAQS standards. PM results reported are highest sixth maximum over five years, consistent with EPA and IDEQ guidance. The 8$^{th}$ highest PM2.5 24 hour average max over five years (well above the 98$^{th}$ percentile over three years the NAAQS is based upon) is reported as modeled worst case maximum in Table 7-2. NO2 results reported are the 8$^{th}$ maximum over five years directly output by PVMRM, as recommended by Kevin Schilling of IDEQ. The generator stack was adjusted up to 31', as needed to showed compliance with the one hour average NO2 NAAQS. Table 7-2 shows the maximum model predicted impact each year for each pollutant for each averaging period modeled. A percent of allowable impact column is included to be consistent with the IDEQ MI forms.

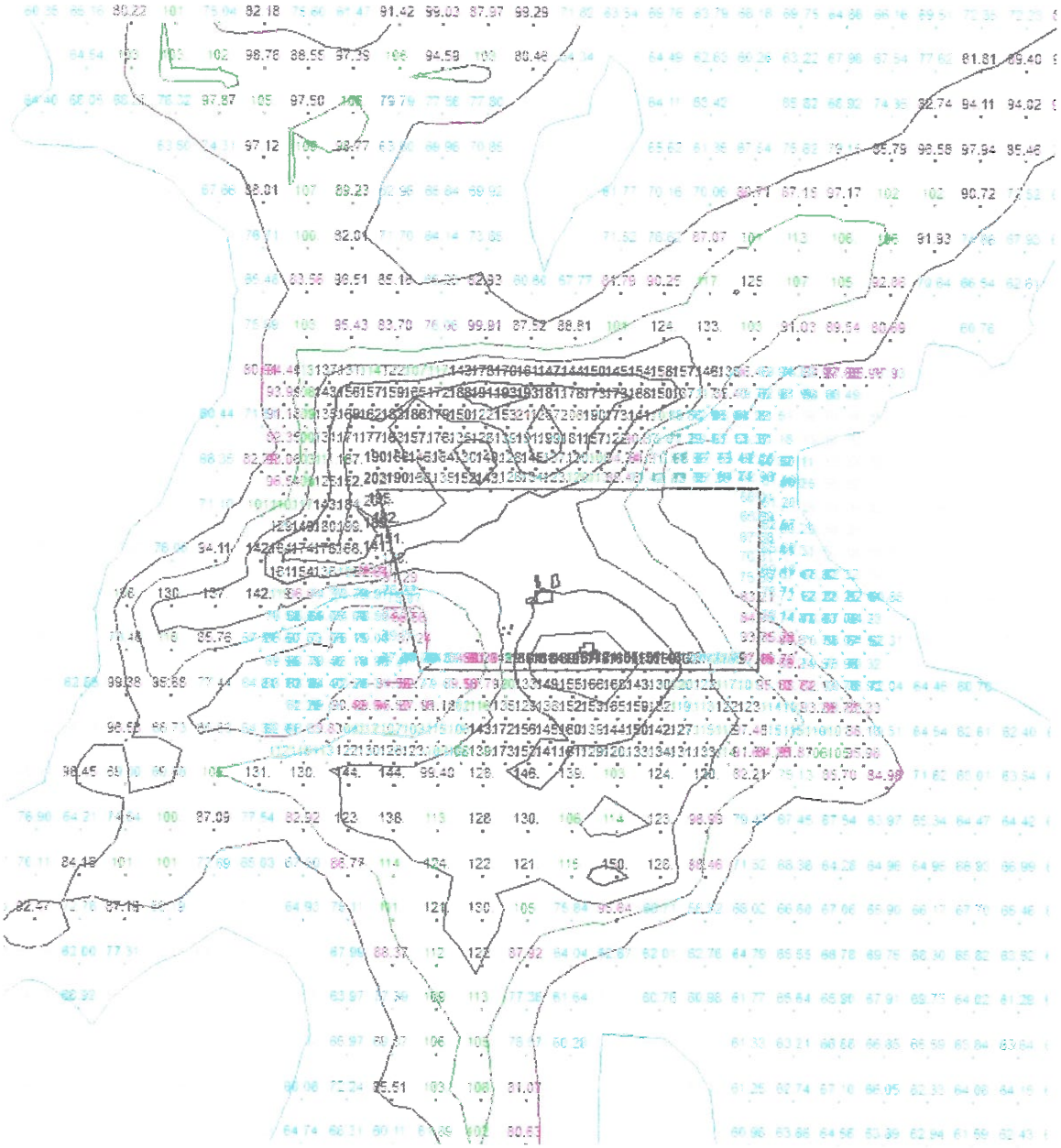
**Table 7-2 Background Concentrations, Ambient Impact Limits and Method of Comparison with Ambient Air Quality Standards**

| Pollutant | Averaging Period | Background Conc. (µg/m³) | Modeled Worst Case Impact (µg/m³) | Max Pot. Ambient Conc. (µg/m³) | NAAQS (µg/m³) | Max Ambient Conc as % of NAAQS | Location Of Highest Model Impact |
|---|---|---|---|---|---|---|---|
| PM-10 | 24-hour | 43 | 28.5 | 71.5 | 150 | 47.7% | E property bndry |
| PM-2.5 | 24-hour | 19.3 | 8.9 | 28.2 | 35 | 80.6% | On E property boundary |
| | Annual | 6.3 | 3.0 | 9.3 | 15 | 62.0% | On E property boundary |
| SO2 | 1-hour | 33.1 | 39.1 | 72.2 | 195 | 37.0% | 75m N of N central prop bndry |
| | 3-hour | 120 | 26.6 | 146.6 | 1300 | 11.3% | 100m N of N central prop bndry |
| | 24-hour | 26 | 9.5 | 35.5 | 365 | 9.7% | On S property boundary |
| | Annual | 8 | 1.8 | 9.8 | 80 | 12.3% | On S property boundary |
| NOx | 1-hour | PVMRM includes measured background | | 185.4 | 188.7 | 98.3% | 75m N of N central prop bndry |
| CO | 1-hour | 3600 | 219 | insignificant | 40000 | insignificant | 75m N of N central prop bndry |
| | 8-hour | 2300 | 92.1 | insignificant | 10000 | insignificant | 25m off NW property bounndry |
| Benzene | Annual | N/A | 0.0092 | 0.0104 | 0.1200 | 7.7% | On S property boundary |
| Formaldehyde | Annual | N/A | 0.0009 | 0.0011 | 0.0770 | 1.2% | On S property boundary |
| POM | Annual | N/A | 0.00054 | 0.0001 | 0.0003 | 17.8% | On S property boundary |

As noted previously, the generator stack height was determined by iterative modeling to verify a stack height that would result in a compliance demonstration for the 1 hour average $NO_2$ NAAQS. That stack height was 31 feet, which is the stack height proposed and modeled. No other pollutant modeled out to half the applicable impact standard, though predicted particulate concentrations exceed half the NAAQS primarily because of background concentrations used.

Figure 7-4 shows model predicted maximum 1 hour average NO2 impacts. Modeling was performed using PVMRM, so background concentrations are included in the model results. This figure shows maximum predicted impacts occur 75 meters north of the north central property boundary, along the rim to the north of the desert facility location. All receptors with predicted impacts over 100 $\mu g/m^3$ (light green contour) are shown. The figure shows that model predicted impacts drop off with further distance from the facility.

**Figure 7-4 Model Predicted Maximum 1 Hour Average $NO_2$ Impacts**



Model results show impacts from (conservatively estimated) potential emissions of TAPs are below respective IDAPA 585 or 586 TAP AAC or AACC impact limits.

**Electronic Copies of the Modeling Files**

Electronic copies of all input, output, and support modeling files necessary to duplicate the model results are kept with CJ Environmental. Those files include:

- Silver falcon 0301 5yr met_pp.ext, where:
  pp = the pollutant ID as in Table 7-1, and
  ext = .DAT for AERMOD input files, .LST for AERMOD model output files
  PVMRM will be added on the $NO_2$ modeling analysis file name
- Silver Falcon AERMAP.MAP and.MOU AERMAP input and output files
- The KBOI_2001-2005.PFL and SFC AERMET meteorological data files provided by IDEQ, and
- Silver Falcon 0301.* Bpip-prime building downwash file

# APPENDIX A

- Form CSPTC
- Form GI
- Form EU1 - Main Generator
- Form EU1 - Back-up Generator
- Form EU2
- Form FRA
    1. Subpart LL
    2. Subpart ZZZZ

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**Air Permit Hotline – 1-877-5PERMIT**

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

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

| COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER | | |
|---|---|---|
| 1. Company Name | Silver Falcon Mining Inc. | |
| 2. Facility Name | Diamond Creek Mill | 3. Facility ID No. |
| 4. Brief Project Description - One sentence or less | Processing tailings thru crushing, screening and gravitational separation for the recuperation of precious metals thru an assay lab. | |

**PERMIT APPLICATION TYPE**

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

6. ☒ Minor PTC ☐ Major PTC

**FORMS INCLUDED**

| Included | N/A | Forms | | DEQ Verify |
|---|---|---|---|---|
| ☒ | ☐ | Form CSPTC – Cover Sheet | | ☐ |
| ☒ | ☐ | Form GI – Facility Information | | ☐ |
| ☐ | ☒ | Form EU0 – Emissions Units General | | ☐ |
| ☒ | ☐ | Form EU1– Industrial Engine Information | Please specify number of EU1s attached: 2 | ☐ |
| ☒ | ☐ | Form EU2– Nonmetallic Mineral Processing Plants | Please specify number of EU2s attached: 1 | ☐ |
| ☐ | ☒ | Form EU3– Spray Paint Booth Information | Please specify number of EU3s attached: ____ | ☐ |
| ☐ | ☒ | Form EU4– Cooling Tower Information | Please specify number of EU3s attached: ____ | ☐ |
| ☐ | ☒ | Form EU5 – Boiler Information | Please specify number of EU4s attached: ____ | ☐ |
| ☐ | ☒ | Form CBP– Concrete Batch Plant | Please specify number of CBPs attached: ____ | ☐ |
| ☐ | ☒ | Form HMAP – Hot Mix Asphalt Plant | Please specify number of HMAPs attached: ____ | ☐ |
| ☐ | ☒ | PERF – Portable Equipment Relocation Form | | ☐ |
| ☐ | ☒ | Form AO – Afterburner/Oxidizer | | ☐ |
| ☐ | ☒ | Form CA – Carbon Adsorber | | ☐ |
| ☐ | ☒ | Form CYS – Cyclone Separator | | ☐ |
| ☐ | ☒ | Form ESP – Electrostatic Precipitator | | ☐ |
| ☐ | ☒ | Form BCE– Baghouses Control Equipment | | ☐ |
| ☐ | ☒ | Form SCE– Scrubbers Control Equipment | | ☐ |
| ☐ | ☒ | Form VSCE – Venturi Scrubber Control Equipment | | ☐ |
| ☐ | ☒ | Form CAM – Compliance Assurance Monitoring | | ☐ |
| ☒ | ☐ | Forms EI— Emissions Inventory | | ☐ |
| ☒ | ☐ | PP – Plot Plan | | ☐ |
| ☒ | ☐ | Forms MI1 – MI4 – Modeling | (Excel workbook, all 4 worksheets) | ☐ |
| ☒ | ☐ | Form FRA – Federal Regulation Applicability | | ☐ |

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General Information **Form GI**
Revision 7
2/18/10

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

***All information is required. If information is missing, the application will not be processed.***

## IDENTIFICATION

| 1. Company Name | 2. Facility Name: |
|---|---|
| Silver Falcon Mining Inc. | Diamond Creek Mill |

| 3. Brief Project Description: | Processing tailings thru crushing, screening and gravitational separation for the recuperation of precious metals thru an assay lab. |
|---|---|

## FACILITY INFORMATION

| | | | | |
|---|---|---|---|---|
| 4. Primary Facility Permit Contact Person/Title | Pascale Tutt | | Executive Assistant | |
| 5. Telephone Number and Email Address | 972-814-8302 | | pascale@silverfalconmining.com | |
| 6. Alternate Facility Contact Person/Title | Brian Boyle | | Mill Manager | |
| 7. Telephone Number and Email Address | 208-914-1140 | | brian@silverfalconmining.com | |
| 8. Address to Which the Permit Should be Sent | 14877 Silver City Road | | | |
| 9. City/County/State/Zip Code | Murphy | Owyhee | Idaho | 83650 |
| 10. Equipment Location Address (if different than the mailing address above) | | | | |
| 11. City/County/State/Zip Code | | | | |
| 12. Is the Equipment Portable? | ☐ Yes ☒ No | | | |
| 13. SIC Code(s) and NAICS Code | Primary SIC: 14 | Secondary SIC: | NAICS: 212221 | |
| 14. Brief Business Description and Principal Product | We are a junior mining company who at the present time is crushing, screening and milling tailings from the old works of War Eagle Mountain and processing them for precious metal extraction | | | |
| 15. Indentify any adjacent or contiguous facility that this company owns and/or operates | none | | | |
| 16. Specify the reason for the application | ☒ Permit to Construct (PTC)<br>For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.<br>☐ Incorporate the PTC at the time of the Tier I renewal<br>☐ Co-process the Tier I modification and PTC<br>☐ Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c)<br>☐ Tier I Permit<br>☐ Tier II Permit<br>☐ Tier II/Permit to Construct | | | |

## CERTIFICATION

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

| 17. Responsible Official's Name/Title | Pascale Tutt | Executive Assistant | |
|---|---|---|---|
| 18. Responsible Official's Signature | Pascale Tutt | Date: | 3/5/2012 |

19. ☒ Check here to indicate that you would like to review the draft permit prior to final issuance.

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For assistance, call the
**Air Permit Hotline – 1-877-5PERMIT**

Emissions Units - Industrial Engine Information **Form EU1**
Revision 8
1/15/10

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

## IDENTIFICATION

| 1. Company Name: | 2. Facility Name: | |
|---|---|---|
| Silver Falcon Mining Inc. | Diamond Creek Mill | |
| 3 Brief Project Description: | Processing tailings thru crushing, screening and gravitational separation for the recuperation of | |

## ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit: ☐ New Unit ☒ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #: Date Issued:

| 5. Engine Displacement: (liters per cylinder) | 6. Ignition Type: ☒ Compression ☐ Spark |
|---|---|
| 7. Use ☐ Emergency ☒ Non-Emergency | |

| 8. Engine ID Number: | 9. Maximum Rated Engine Power: | | |
|---|---|---|---|
| Main Generator | 750 Brake Horsepower (bhp) | | |
| 10. Construction Date: | 11. Manufacturer: | 12. Model: | 13. Model Year: |
| October 1999 | Caterpillar | 3412 | 1999 |
| 14. Date of Modification (if applicable): | 15. Serial Number (if available): | 16. Control Device (if any): | |
| | 2WJ02549 | | |

## FUEL DESCRIPTION AND SPECIFICATIONS

| 17. Fuel Type | ☒ Diesel Fuel (#2) (gal/hr) | ☐ Gasoline Fuel (gal/hr) | ☐ Natural Gas (cf/hr) | ☐ Other Fuels (unit: ) |
|---|---|---|---|---|
| 18. Full Load Consumption Rate | | | | |
| 19. Actual Consumption Rate | 230 gal/day | | | |
| 20. Sulfur Content wt% | 15 ppm | N/A | N/A | |

## OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):
none

22. Operating Schedule (hours/day, months/year, etc.):
24 hrs/day

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

# Emissions Units - Industrial Engine Information **Form EU1**

Revision 8
1/15/10

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

## IDENTIFICATION

| 1. Company Name: | 2. Facility Name: | |
|---|---|---|
| Silver Falcon Mining Inc. | Diamond Creek Mill | |

3 Brief Project Description: Processing tailings thru crushing, screening and gravitational separation for the recuperation of

## ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

4. Type of Unit: ☐ New Unit ☒ Unpermitted Existing Unit
☐ Modification to a Unit with Permit #: Date Issued:

5. Engine Displacement: (liters per cylinder) 6. Ignition Type: ☒ Compression ☐ Spark

7. Use ☒ Emergency ☐ Non-Emergency

| 8. Engine ID Number: | 9. Maximum Rated Engine Power: | | |
|---|---|---|---|
| Back up Generator | 100 Brake Horsepower (bhp) | | |
| 10. Construction Date: | 11. Manufacturer: | 12. Model: | 13. Model Year: |
| October 1999 | Caterpillar | 3054C | 2007 |
| 14. Date of Modification (if applicable): | 15. Serial Number (if available): | 16. Control Device (if any): | |
| | CAT00C44CN4E00833 | | |

## FUEL DESCRIPTION AND SPECIFICATIONS

| 17. Fuel Type | ☒ Diesel Fuel (#2) (gal/hr) | ☐ Gasoline Fuel (gal/hr) | ☐ Natural Gas (cf/hr) | ☐ Other Fuels (unit: ) |
|---|---|---|---|---|
| 18. Full Load Consumption Rate | | | | |
| 19. Actual Consumption Rate | none | | | |
| 20. Sulfur Content wt% | 15 ppm | N/A | N/A | |

## OPERATING LIMITS & SCHEDULE

21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):
none

22. Operating Schedule (hours/day, months/year, etc.):
emergency only

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For assistance, call the
**Air Permit Hotline – 1-877-5PERMIT**

Emissions Units - Nonmetallic Mineral Processing Plant **Form EU2**
Revision 5
08/28/08

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

**This form requests information about equipment at a nonmetallic mineral processing plant, as defined in 40 CFR 60.671, that generates fugitive emissions only.**

**In addition, Form EU0 and appropriate control equipment forms should be used for each stack emission point from the same plant.**

| IDENTIFICATION | | |
|---|---|---|
| 1. Company Name:<br>Silver Falcon Mining Inc. | 2. Facility Name:<br>Diamond Creek Mill | 3. Facility ID No: |
| 4. Brief Project Description: | Process tailings thru crushing, screening and gravitational separation for the [illegible] | |

| EQUIPMENT (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| 5. Equipment Description | 6. Construction Date | 7. Serial Number | 8. Equipment ID Number (company's) | 9. Rated Capacity | 10. Emission Control Type |
| Telesmith Jaw Crusher | 02/2010 | 6048 | | 100 tons/hr | none |
| Telesmith Jaw Crusher | 02/2010 | 5587 | | 25 tons/hr | none |
| Shenyang Impact Crusher | 02/2010 | 80504 | | 12 tons/hr | control water spray system at discharge |
| Screen Plant | | | | 100 tons/hr | none |
| Conveyor Transfer | | | | 100 tons/hr | none |
| Loader Transfer | | | | 100 tons/hr | none |
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| OPERATING SCHEDULE (hours/day, or hours/week, or months/year, or other) | |
|---|---|
| 11 Actual Operation | 25 hrs/week |
| 12. Maximum Operation | 40 hrs/week |

**DEQ AIR QUALITY PROGRAM**
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For assistance, call the
**Air Permit Hotline – 1-877-5PERMIT**

# AIR PERMIT APPLICATION

Revision 6
10/7/09

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

| IDENTIFICATION | |
|---|---|
| 1. Company Name:<br>Silver Falcon Mining Inc. | 2. Facility Name:<br>Diamond Creek Mill |
| 3. Brief Project Description: | Processing tailings thru crushing, screening and gravitational separation for the recuperation of precious metals thru an assay lab. |

| APPLICABILITY DETERMINATION | |
|---|---|
| 4. List applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60).<br><br>Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units. | List of applicable subpart(s):<br><br>NSPS Subpart LL<br>NSPS Subpart IIII for the backup generator<br><br>☐ Not Applicable |
| 5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR part 61 and 40 CFR part 63.<br><br>Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. EPA has a web page dedicated to NESHAP that should be useful to applicants. | List of applicable subpart(s):<br><br>NSPS Subpart ZZZZ for the primary generator<br><br>☐ Not Applicable |
| 6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages.<br><br>**Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete. | ☑ A detailed regulatory review is provided (Follow instructions and example).<br><br>☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date. |

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

***It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.***

Applicable Silver Falcon Mining sources are the crushing plant components and feed. There are no controls, all emissions are fugitive, so the provisions that will apply are opacity limitations

**Subpart LL—Standards of Performance for Metallic Mineral Processing Plants**

**Source:** 49 FR 6464, Feb. 21, 1984, unless otherwise noted.

**§ 60.380 Applicability and designation of affected facility.**

(a) The provisions of this subpart are applicable to the following affected facilities in metallic mineral processing plants: Each crusher and screen in open-pit mines; each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station at the mill or concentrator with the following exceptions. All facilities located in underground mines are exempted from the provisions of this subpart. At uranium ore processing plants, all facilities subsequent to and including the beneficiation of uranium ore are exempted from the provisions of this subpart.

(b) An affected facility under paragraph (a) of this section that commences construction or modification after August 24, 1982, is subject to the requirements of this part.

**§ 60.381 Definitions.**

All terms used in this subpart, but not specifically defined in this section, shall have the meaning given them in the Act and in subpart A of this part.

*Bucket elevator* means a conveying device for metallic minerals consisting of a head and foot assembly that supports and drives an endless single or double strand chain or belt to which buckets are attached.

*Capture system* means the equipment used to capture and transport particulate matter generated by one or more affected facilities to a control device.

*Control device* means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more affected facilities at a metallic mineral processing plant.

*Conveyor belt transfer point* means a point in the conveying operation where the metallic mineral or metallic mineral concentrate is transferred to or from a conveyor belt except where the metallic mineral is being transferred to a stockpile.

*Crusher* means a machine used to crush any metallic mineral and includes feeders or conveyors located immediately below the crushing surfaces. Crushers include, but are not limited to, the following types: jaw, gyratory, cone, and hammermill.

*Enclosed storage area* means any area covered by a roof under which metallic minerals are stored prior to further processing or loading.

*Metallic mineral concentrate* means a material containing metallic compounds in concentrations higher than naturally occurring in ore but requiring additional processing if pure metal is to be isolated. A metallic mineral concentrate contains at least one of the following metals in any of its oxidation states and at a concentration that contributes to the concentrate's commercial value: Aluminum, copper, gold, iron, lead, molybdenum, silver, titanium, tungsten, uranium, zinc, and zirconium. This definition shall not be construed as requiring that material containing metallic

compounds be refined to a pure metal in order for the material to be considered a metallic mineral concentrate to be covered by the standards.

*Metallic mineral processing plant* means any combination of equipment that produces metallic mineral concentrates from ore. Metallic mineral processing commences with the mining of ore and includes all operations either up to and including the loading of wet or dry concentrates or solutions of metallic minerals for transfer to facilities at non-adjacent locations that will subsequently process metallic concentrates into purified metals (or other products), or up to and including all material transfer and storage operations that precede the operations that produce refined metals (or other products) from metallic mineral concentrates at facilities adjacent to the metallic mineral processing plant. This definition shall not be construed as requiring that mining of ore be conducted in order for the combination of equipment to be considered a metallic mineral processing plant. (See also the definition of *metallic mineral concentrate.* )

*Process fugitive emissions* means particulate matter emissions from an affected facility that are not collected by a capture system.

*Product packaging station* means the equipment used to fill containers with metallic compounds or metallic mineral concentrates.

*Railcar loading station* means that portion of a metallic mineral processing plant where metallic minerals or metallic mineral concentrates are loaded by a conveying system into railcars.

*Railcar unloading station* means that portion of a metallic mineral processing plant where metallic ore is unloaded from a railcar into a hopper, screen, or crusher.

*Screen* means a device for separating material according to size by passing undersize material through one or more mesh surfaces (screens) in series and retaining oversize material on the mesh surfaces (screens).

*Stack emissions* means the particulate matter captured and released to the atmosphere through a stack, chimney, or flue.

*Storage bin* means a facility for storage (including surge bins and hoppers) of metallic minerals prior to further processing or loading.

*Surface moisture* means water that is not chemically bound to a metallic mineral or metallic mineral concentrate.

*Thermal dryer* means a unit in which the surface moisture content of a metallic mineral or a metallic mineral concentrate is reduced by direct or indirect contact with a heated gas stream.

*Truck loading station* means that portion of a metallic mineral processing plant where metallic minerals or metallic mineral concentrates are loaded by a conveying system into trucks.

*Truck unloading station* means that portion of a metallic mineral processing plant where metallic ore is unloaded from a truck into a hopper, screen, or crusher.

[49 FR 6464, Feb. 21, 1984, as amended at 65 FR 61760, Oct. 17, 2000]

**§ 60.382 Standard for particulate matter.**

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an affected facility any stack emissions that:

(1) Contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.02 g/dscm).

(2) Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing emission control device.

(b) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.

[49 FR 6464, Feb. 21, 1984, as amended at 65 FR 61760, Oct. 17, 2000]

**§ 60.383 Reconstruction.**

(a) The cost of replacement of ore-contact surfaces on processing equipment shall not be considered in calculating either the "fixed capital cost of the new components" or the "fixed capital cost that would be required to construct a comparable new facility" under §60.15. Ore-contact surfaces are: Crushing surfaces; screen meshes, bars, and plates; conveyor belts; elevator buckets; and pan feeders.

(b) Under §60.15, the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components (except components specified in paragraph (a) of this section) that are or will be replaced pursuant to all continuous programs of component replacement commenced within any 2-year period following August 24, 1982.

**§ 60.384 Monitoring of operations.**

(a) The owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber for any affected facility using a wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ±250 pascals (±1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) The owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to a wet scrubber for any affected facility using any type of wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ±5 percent of design scrubbing liquid flow rate and must be calibrated on at least an annual basis in accordance with manufacturer's instructions.

**§ 60.385 Recordkeeping and reporting requirements.**

(a) The owner or operator subject to the provisions of this subpart shall conduct a performance test and submit to the Administrator a written report of the results of the test as specified in §60.8(a).

(b) During the initial performance test of a wet scrubber, and at least weekly thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

(c) After the initial performance test of a wet scrubber, the owner or operator shall submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber

pressure loss (or gain) or liquid flow rate differ by more than ±30 percent from the average obtained during the most recent performance test.

(d) The reports required under paragraph (c) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

(e) The requirements of this subsection remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected sources within the State will be relieved of the obligation to comply with this subsection, provided that they comply with requirements established by the State.

[49 FR 6464, Feb. 21, 1984, as amended at 54 FR 6676, Feb. 14, 1989; 65 FR 61760, Oct. 17, 2000]

**§ 60.386 Test methods and procedures.**

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

(b) The owner or operator shall determine complance with the particulate matter standards §60.382 as follows:

(1) Method 5 or 17 shall be used to determine the particulate matter concentration. The sample volume for each run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121 °C (250 °F)) in order to prevent water condensation on the filter.

(2) Method 9 and the procedures in §60.11 shall be used to determine opacity from stack emissions and process fugitive emissions. The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed.

(c) To comply with §60.385(c), the owner or operator shall use the monitoring devices in §60.384(a) and (b) to determine the pressure loss of the gas stream through the scrubber and scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three determinations shall be computed.

[54 FR 6676, Feb. 14, 1989, as amended at 65 FR 61760, Oct. 17, 2000]

## NESHAP 40 CFR 63, SUBPART ZZZZ REQUIREMENTS

Note: If the engine or engines were constructed, modified or reconstructed after July 11, 2005, they are subject to 40 CFR 60, Subpart IIII. If the engine or engines were both constructed or reconstructed on or prior to July 11, 2005 they are subject to 40 CFR 63, Subpart ZZZZ. For NESHAP Subpart ZZZZ, if Tier certified IC engines have not been proposed, then NESHAP Subpart ZZZZ applies and NSPS Subpart IIII does not apply. Delete the appropriate sections that do not apply. It is possible that both subparts apply. They both would apply if one engine is subject to IIII and the other is subject to ZZZZ.

*{If the IC engines are subject to **ZZZZ**, include the following Section, otherwise delete it:}*

1. **Compliance Date for Affected Sources**

*{Keep only if engine(s) are subject to 40 CFR 63, Subpart ZZZZ, otherwise delete.}*

In accordance with 40 CFR 63.6595(a)(1), the affected source must comply with the applicable emission and operating limitations of the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63, Subpart ZZZZ by May 3, 2013.

2. **Startup Time Requirements**

*{If the engine or engines are subject to 40 CFR 63, Subpart ZZZZ, include the condition, otherwise delete condition.}*

On and after May 3, 2013, the engine's time spent at idle during startup shall be minimized to a period needed for appropriate and safe loading of the engine, but not to exceed 30 minutes, after which time the emission standards associated with this permit apply in accordance with 40 CFR 63.6625(h).

*{If the engine or engines are subject to 40 CFR 63, Subpart ZZZZ and rated at ≤ 300 bhp, include the two following conditions, otherwise delete.}*

3. **Maintenance Requirements**

In accordance with 40 CFR 63.6603(a), on and after May 3, 2013, the following emission limits or operating restrictions are required for the XXX bhp engine*(s):{add both engines bhp if they are each subject to ZZZZ}*. The permittee must meet the following requirements, except during periods of startup.

- Change Oil and filter every 1,000 hours of operation or annually, whichever comes first.
- Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first.
- Inspect hoses and belts every 500 hours of operations or annually, whichever comes first, and replace as necessary

4. **Alternative Maintenance Requirements**

In accordance with 40 CFR 63.6625(i), on and after May 3, 2013, the permittee has the option of implementing an oil analysis program to extend the specified oil change frequency in the Emissions and Operating Limitations permit condition. The oil analysis must be performed at the same frequency specified for changing the oil. The analysis program must at a minimum analyze the following three parameters:

- Total Base Number, viscosity, and percent water content.

The limits for these parameters are as follows:

- Total Base Number is less than 30% of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20% from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5.

If any of the limits are exceeded, and the IC engine is in operation, the permittee must change the oil within two days of receiving the results of the analysis. If any of the limits are exceeded, and the IC engine is not in operation, the permittee must change the oil within two days or before commencing operation of the IC engine, whichever is later.

The permittee must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

5. **Engine(s) Emission Limitations**

*{If the engine(s) is rated at 300 bhp to ≤ 500 bhp, include the following condition}*

In accordance with 40 CFR 63.6603(a), on and after May 3, 2013 for the engine(s) the permittee shall:

- Limit concentration of CO in the exhaust to 49 ppmvd at 15% $O_2$; or
- Reduce CO emissions in the exhaust by 70% or more.

*{If the engine(s) is rated at > 500 bhp, include the following condition}*

In accordance with 40 CFR 63.6603, on and after May 3, 2013 for the engine(s) the Permittee shall:

- Limit concentration of CO in the exhaust to 23 ppmvd at 15% $O_2$; or
- Reduce CO emissions in the exhaust by 70% or more.

*{If the engine(s) is rated at > 300 bhp, include the following five conditions}*

6. **CO Emission Reduction Compliance**

In accordance with 40 CFR 63.6612, on and after May 3, 2013 for demonstrating compliance with the CO emissions reductions requirement for the engine(s) the permittee shall:

- Measure the $O_2$ percentage at the inlet and outlet of the control device, using a portable CO and $O_2$ analyzer, using ASTM D6522–00 (2005). Measurements to determine $O_2$ percentage must be made at the same time as the measurements for CO concentration.
- Measure the CO concentration at the inlet and the outlet of the control device, using a portable CO and $O_2$ analyzer, using ASTM D6522–00 (2005) or Method 10 of 40 CFR appendix A. The CO concentration must be at 15% $O_2$, dry basis.

7. **Formaldehyde or CO Emission Concentration Compliance**

In accordance with 40 CFR 63.6612, on and after May 3, 2013 for demonstrating compliance with the formaldehyde or CO emissions concentration requirements for the engine(s), the Permittee shall:

- Select the sampling port location and the number of traverse points, using Method 1 or 1A of 40 CFR part 60, appendix A §63.7(d)(1)(i). If using a control device, the sampling site must be located at the outlet of the control device.

- Determine the $O_2$ concentration of the engine exhaust at the sampling port location using Method 3 or 3A or 3B of 40 CFR part 60, appendix A, or ASTM Method D6522–00 (2005). Measurements to determine $O_2$ concentration must be made at the same time and location as the measurements for formaldehyde concentration.
- Measure moisture content of the engine exhaust at the sampling port location using Method 4 of 40 CFR part 60, appendix A, or Test Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348–03. Measurements to determine moisture content must be made at the same time and location as the measurements for formaldehyde concentration.
- Measure formaldehyde at the engine exhaust, using Method 320 or 323 of 40 CFR part 63, appendix A; or ASTM D6348–03 (provided in ASTM D6348–03 Annex A5 (Analyte Spiking Technique), the percent R must be greater than or equal to 70 and less than or equal to 130). Formaldehyde concentration must be at 15% $O_2$, dry basis. Results of this test consist of the average of the three 1-hour, or longer, runs.
- Measure CO concentration at the engine exhaust using Method 10 of 40 CFR part 60, appendix A, ASTM Method D6522–00 (2005)(Method 320 of 40 CFR part 63, appendix A, or ASTM D6348–03). CO concentration must be at 15% O2, dry basis. Results of this test consist of the average of the three 1-hour, or longer, runs.

8. **Engine Performance Testing Requirements**

In accordance with 40 CFR 63.6612 and 63.6615, on and after May 3, 2013 for demonstrating compliance with the emissions limits or reduction in CO or formaldehyde emissions performance testing requirements for the engine(s), the permittee shall:

- Conduct an initial performance tests by November 30, 2013 (180 days after May 13, 2013).
- Conduct three separate test runs for each required performance test. Each test run must last at least 1 hour.
- Submit a Notification of Intent to the Administrator (EPA) to conduct a performance test at least 60 days before the performance test is scheduled.

*{If the IC engine is rated at > 500 bhp, include the following bullet point}*

- Conduct subsequent performance tests every 8,760 hours of operation or 3 years, whichever comes first.

9. **Engine Performance Emissions Reductions Determination Requirements**

In accordance with 40 CFR 63.6620, on and after May 3, 2013 the permittee shall use Equation 1 to determine compliance with the percent reduction requirement:

- $[(C_i - C_o) \div C_i] \times 100 = R$ (Equation 1)
- Where: $C_i$ = concentration of CO or formaldehyde at the control device inlet, $C_o$ = concentration of CO or formaldehyde at the control device outlet, and R = percent reduction of CO or formaldehyde emissions.

In accordance with 40 CFR 63.6620, on and after May 3, 2013 the Permittee shall normalize the carbon monoxide (CO) or formaldehyde concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen, or an equivalent percent carbon dioxide ($CO_2$). If pollutant concentrations are to be corrected to 15 percent oxygen and $CO_2$ concentration is measured in lieu of oxygen concentration measurement, a $CO_2$ correction factor is needed. Calculate the fuel-specific $F_o$ value for the fuel burned during the test using values obtained from Method 19, section 5.2, and the following equation:

- $F_o = (0.209 \times F_d) \div F_c$ (Equation 2)
- Where: $F_o$ = Fuel factor based on the ratio of oxygen volume to the ultimate $CO_2$ volume produced by the fuel at zero percent excess air, 0.209 = Fraction of air that is oxygen, percent/100, $F_d$ = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm3 /J (dscf/106 Btu), and $F_c$ = Ratio of the volume of $CO_2$ produced to the gross calorific value of the fuel from Method 19, dsm3 /J (dscf/106 Btu).

In accordance with 40 CFR 63.6620, on and after May 3, 2013 the Permittee shall calculate the $CO_2$ correction factor for correcting measurement data to 15 percent oxygen, as follows:

- $X_{CO2} = 5.9 \div F_o$ (Equation 3)
- Where: $X_{CO2}$ = $CO_2$ correction factor, percent, 5.9 = 20.9 percent $O_2$ − 15 percent $O_2$, the defined $O_2$ correction value, percent.

In accordance with 40 CFR 63.6620, on and after May 3, 2013 the Permittee shall calculate the $NO_X$ and $SO_2$ gas concentrations adjusted to 15 percent $O_2$ using $CO_2$ as follows:

- $C_{adj} = C_d \times (X_{CO2} \div \%CO_2)$ (Equation 4)
- Where: $\%CO_2$ = Measured $CO_2$ concentration measured, dry basis, percent.

10. **Engine Performance Tests Administrator Petition Requirements**

In accordance with 40 CFR 63.6620, on and after May 3, 2013 if the permittee complies with the emission limitation to reduce CO and is not using an oxidation catalyst, if the permittee complies with the emission limitation to reduce formaldehyde and is not using NSCR, or if the permittee complies with the emission limitation to limit the concentration of formaldehyde in the stationary RICE exhaust and is not using an oxidation catalyst or NSCR, the Permittee shall petition the Administrator (EPA) for operating limitations to be established during the initial performance test and continuously monitored thereafter; or for approval of no operating limitations. The Permittee shall not conduct the initial performance test until after the petition has been approved by the Administrator (EPA). The petition shall contain the requirements specified in 40 CFR 63, ZZZZ for Stationary Reciprocating Internal Combustion Engines.

11. **Continuous Emissions Monitoring (CEMS) Requirements**

*If the engine or engines are subject to 40 CFR 63, Subpart ZZZZ, include the condition, otherwise delete condition. This condition only applies if the engine(s) is > 500 HP and the permittee elects to use CEMS.*

In accordance with 40 CFR 63.6625(a) on and after May 3, 2013 the permittee shall install, operate, and maintain a CEMS according to the following requirements:

- Monitor CO and either $O_2$ or $CO_2$ at both the inlet and outlet of the oxidation catalyst.
- Each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

- Must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) of each CEMS according to the requirements in §63.8 and according to the applicable performance specifications of 40 CFR part 60, appendix B as well as daily and periodic data quality checks in accordance with 40 CFR part 60, appendix F, procedure 1.
- The CEMS data must be reduced as specified in §63.8(g)(2) and recorded in parts per million or parts per billion (as appropriate for the applicable limitation) at 15 percent oxygen or the equivalent $CO_2$ concentration.

12. **Continuous Parameter Monitoring System (CPMS) Requirements**

*Include this condition only if the engine(s) is > 500 HP and the permittee elects to use CPMS; otherwise delete.*

In accordance with 40 CFR 63.6625(b) and 40 CFR 63.6635 on and after May 3, 2013 the permittee shall install, operate, and maintain a CPMS according to the following requirements:

- The CPMS must complete a minimum of one cycle of operation for each successive 15-minute period. You must have a minimum of four successive cycles of operation to have a valid hour of data.
- Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the Permittee must conduct all monitoring in continuous operation at all times that the unit is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.
- For purposes of calculating data averages, you must not use data recorded during monitoring malfunctions, associated repairs, out of control periods, or required quality assurance or control activities. You must use all the data collected during all other periods in assessing compliance. Any 15-minute period for which the monitoring system is out-of-control and data are not available for required calculations constitutes a deviation from the monitoring requirements.
- For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of the measurement range, whichever is larger.
- The Permittee must conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in your site-specific monitoring plan at least annually.
- The Permittee must conduct a performance evaluation of each CPMS in accordance with your site-specific monitoring plan.

In addition, the Permittee shall prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined as follows:

- The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations.

- Sampling interface ( e.g., thermocouple) location such that the monitoring system will provide representative measurements.
- Equipment performance evaluations, system accuracy audits, or other audit procedures.
- Ongoing operation and maintenance procedures in accordance with provisions in §63.8(c)(1) and (c)(3).
- Ongoing reporting and recordkeeping procedures in accordance with provisions in §63.10(c), (e)(1), and (e)(2)(i).

13. **Operational Requirements**

*{If the engine or engines is rated at ≤ 300 bhp, include the following condition, otherwise delete.}*

In accordance with 40 CFR 63.6625 on and after May 3, 2013 the permittee shall operate and maintain the engine(s) and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop a specific maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

14. **Crankcase Emission Requirements**

*{If the engine or engines are subject to 40 CFR 63, Subpart ZZZZ, include the condition, otherwise delete condition. This condition only applies if the engine(s) is ≥ 300 HP.}*

In accordance with 40 CFR 63.6625(g), on and after May 3, 2013, any engine that does not have a closed crankcase ventilation system must install one of the following:

- Closed crankcase ventilation system that prevents crankcase emissions from being emitted into the atmosphere.
- Open crankcase filtration system to reduce crankcase emissions by filtering the exhaust system

The permittee shall follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters. Or the Permittee can request the Administrator (EPA) to approve different maintenance requirements that are as protective as manufacturer requirements.

*{If the engine or engines has an oxidation catalyst and is measuring the inlet and outlet temperatures on the catalyst, include the following condition, otherwise delete.}*

15. **Temperature Measurement Device Requirements**

In accordance with 40 CFR 63.6625 on and after May 3, 2013 the permittee shall install, operate, and maintain a temperature measurement device for the engine(s) according to the requirements of 40 CFR 63, ZZZZ for Stationary Reciprocating Internal Combustion Engines, as follows:

- Locate the temperature sensor and other necessary equipment in a position that provides a representative temperature.
- Use a temperature sensor with a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit), or 1.0 percent of the temperature value, whichever is larger, for a non-cryogenic temperature range.
- Use a temperature sensor with a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit), or 2.5 percent of the temperature value, whichever is larger, for a cryogenic temperature range.

- Conduct a temperature measurement device calibration check at least every 3 months.

*{If the engine or engines has an oxidation catalyst and has a CPMS, include the following condition, otherwise delete.}*

16. **Reducing CO Emissions Using an Oxidation Catalyst and Using a CPMS Requirements**

In accordance with 40 CFR 63.6630 on and after May 3, 2013 for the engine(s) the permittee has demonstrated initial compliance with the reduction in CO emissions if:

- *{Using the CO percent reduction requirement, otherwise delete:}* The average reduction of emissions of CO determined from the initial performance test achieves the required CO percent reduction; and
- *{or Using the CO emissions limitation requirement, otherwise delete:}* The average CO concentration determined from the initial performance test is less than or equal to the CO emission limitation; and
- The permittee has installed a CPMS to continuously monitor catalyst inlet temperature according to the requirements in §63.6625(b); and
- The permittee has recorded the catalyst pressure drop and catalyst inlet temperature during the initial performance test.

*{If the engine or engines does not have an oxidation catalyst and has a CPMS, include the following condition, otherwise delete.}*

17. **Reducing CO Emissions Not Using an Oxidation Catalyst and Using a CPMS Requirements**

In accordance with 40 CFR 63.6630 on and after May 3, 2013 for the engine(s) the permittee has demonstrated initial compliance with the reduction in CO emissions if:

- *{Using the CO percent reduction requirement, otherwise delete:}* The average reduction of emissions of CO determined from the initial performance test achieves the required CO percent reduction; and
- *{or Using the CO emissions limitation requirement, otherwise delete:}* The average CO concentration determined from the initial performance test is less than or equal to the CO emission limitation; and
- The permittee has installed a CPMS to continuously monitor operating parameters approved by the Administrator (if any) according to the requirements in §63.6625(b); and
- The permittee has recorded the approved operating parameters (if any) during the initial performance test.

*{If the Primary IC engine has an oxidation catalyst and has a CEMS, include the following condition, otherwise delete.}*

18. **Reducing CO Emissions Using an Oxidation Catalyst and Using a CEMS Requirements**

In accordance with 40 CFR 63.6630 on and after May 3, 2013 for the engine(s) the permittee has demonstrated initial compliance with the reduction in CO emissions if:

- *{Using the CO percent reduction requirement, otherwise delete:}* The Permittee has installed a CEMS to continuously monitor CO and either $O_2$ or $CO_2$ at both the inlet and outlet of the oxidation catalyst according to the requirements in §63.6625(a); and

- *{or Using the CO emissions limitation requirement, otherwise delete:}* The Permittee has installed a CEMS to continuously monitor CO and either $O_2$ or $CO_2$ at the outlet of the oxidation catalyst according to the requirements in §63.6625(a); and
- The permittee has conducted a performance evaluation of your CEMS using PS 3 and 4A of 40 CFR part 60, appendix B; and
- The average reduction of CO calculated using §63.6620 equals or exceeds the required percent reduction. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average percent reduction achieved during the 4-hour period.

*{If the Primary IC engine is rated at > 500 bhp and equipped with an oxidation catalyst, include the following condition, otherwise delete.}*

19. **Oxidation Catalyst Maintenance Requirements**

In accordance with 40 CFR 63.6640, on and after May 3, 2013, for an engine that implements the use of an oxidation catalyst to reduce CO emissions, limit the concentration of formaldehyde, or limit the concentration of CO, the Permittee shall ensure the following:

- Maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100% load, plus or minus 10% from the pressure drop across the catalyst that was measured during the initial performance test.
- Maintain the temperature of the engine exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F. The permittee may petition the EPA for a different temperature range.

*{Always include the following condition.}*

20. **Notification & Reporting Address**

Any notifications or reporting required by the National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines, 40 CFR 63, Subpart ZZZZ or Subpart A – General Provisions shall be submitted to the following address in accordance with 40 CFR 63.13:

Air Quality Permit Compliance
XX Regional Office
Department of Environmental Quality
Appropriate Street Address
XX, ID XXXX
Phone: (208) XXX-XXXX
Fax: (208) XXX-XXXX

And

EPA Region 10
Manager, Federal and Delegated Air Programs Unit
Office of Air, Waste, and Toxics
1200 Sixth Avenue, Suite 900
(AWT–107)
Seattle, WA 98101

*{If the engine is equipped with a CEMS or a CPMS, include the following condition.}*

21. **Reporting Requirements**

In accordance with 40 CFR 63.6650 on and after May 3, 2013 for the engine(s) the permittee shall submit a compliance report:

- If there are no deviations from any emission limitations or operating limitations that apply to the engine(s), a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in §63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or
- If the engine(s) had a deviation from any emission limitation or operating limitation during the reporting period, the information in §63.6650(d). If there were periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in §63.8(c)(7), the information in §63.6650(e); or
- If the engine(s) had a malfunction during the reporting period, the information in §63.6650(c)(4).

The compliance report shall be submitted:

- Semiannually according to the requirements in §63.6650(b)(1)–(5) for engines that are not limited use stationary RICE subject to numerical emission limitations; and
- Annually according to the requirements in §63.6650(b)(6)–(9) for engines that are limited use stationary RICE subject to numerical emission limitations.
- Semiannually according to the requirements in §63.6650(b).
- Semiannually according to the requirements in §63.6650(b).

22. **Recordkeeping Requirements**

In accordance with 40 CFR 63.6655 and 40 CFR 63.6660 on and after May 3, 2013 the permittee shall maintain records for the engine(s) according to the requirements of 40 CFR 63, ZZZZ for Stationary Reciprocating Internal Combustion Engines. The records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1)

- The permittee shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record
- The permittee shall keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).

# APPENDIX B

1. Equipment List

# APPENDIX B

| Equipment Name | Emission Location | Capacity |
|---|---|---|
| Primary Generator | E1 | 750 kW |
| Back-up Generator | E2 | 100 kW - Exempt via IDAPA 58.01.01.222.01.c.1 |
| Primary Crusher | E3 | 100 T/Hr |
| Secondary Crusher | E3 | 25 T/Hr |
| Impact Crusher | E3 | 12 T/HR |
| Screen Deck | E3 | 1" primary screen/3/8 secondary screen |
| Stacker Conveyor | E3 | Max Height 35' |
| Loader Transfer | E3 | 100 T/Hrs |
| (3) propane assay furnace | E4 | 190,000 BTU/Hr - Exempt via IDPA 58.01.01.222.01.a |
| (3) electric cupel kilns | E4 | 2300F - Exempt via IDPA 58.01.01.222.01.a |
| (1) Vcella TL400 electric kiln | E4 | 1200 lbs - 2300F - Exempt via IDPA 58.01.01.222.01.a |
| Nuaire Fume Hood | E4 | 584 Btu/Hr - Exempt via IDPA 58.01.01.222.01.a |

KMEC
Kendall Mining & Equipment Co

**Model HD-2DB**

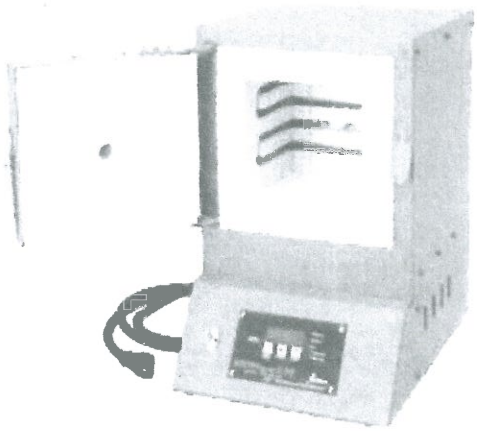
**Heavy Duty Hand Crafted Propane Furnace**

**Specifications**

- **Operating Range: 900˚-2850˚F**
- **Casing: 10ga Rolled Steel**
- **Refractory: Harbison-Walker Kast-O-Lite Rated 3200˚F**
- **Refractory Supports: 3/8" HR steel**
- **Top: Thickness: 3" Steel Supported**
- **Top: 3/8" Steel Supported Rotating and Removable**
- **Base Thickness: 3" - 3/8"steel refractory supports**
- **Wall Thickness: 3" - 3/8"steel refractory supports**
- **Outside Dimensions with Top 19" H X 14" W**
- **Chamber Dimensions 13"H X 8.5"W .**
- **Chamber Volume 737 Cubic inches**
- **Burner(s): 0-30 PSIG adjustable LP regulator, combination forced air injection or natural aspiration**
- **Burner(s): Rating adjustable to 190,000 BTU ea**
- **Furnace Weight 139# Base 20# Lid - TTL 159# Crates Burners skid etc. 60#**
- **Shipping Weight 220#**

- **Safety Notes:** Outside surface temperatures can reach as High as 300˚F Please note required PPE and clearances below.
- **PPE:** Proper Personal Protective Equipment should be worn at all times when operating this equipment.
- **Outside Use:** Maintain a distance of 2' or 24" from exterior wall to any combustable horizontally.
- **Outside Use:** Maintain a distance of 8' or 96" from top exterior to any combustable vertically.
- **Outside Use:** Use only in a well ventilated area.
- **Inside Use Note:** Use of this furnace requires good ventilation to remove heat and fumes from work area.
- **Inside Use Note:** Where a properly rated vent hood is installed, Inside distances may be adjusted.
- **Inside Use Note:** Where used indoors installation of CO detectors are required.
- **Inside Use Note:** Where used indoors installation of fixed combustable and toxic gas detectors must be installed.
- **Inside Use:** Maintain a distance of 4' or 96" from top exterior to any combustable horizontally.
- **Inside Use:** Maintain a distance of 13' or 156" from top exterior to any combustable vertically.

KENDALL MINING & EQUIPMENT CO.
20152 Linda Ln. Caldwell ID. 83607
(208) 459-1172



we have (3x) of these in the furnace room Cupellinos area.

# XPRESS-Q-11A

**Bronze Clay China Painting Crystalline Glazes Decals Dolls Enameling Fast Firings Glass Fusing Glaze Testing Lost Wax Casting Low-Fire Ceramics Porcelain and Stoneware Silver Clay**

## Features

Paragon Xpress-Q-11

The Xpress-Q-11A fires rapidly to 2350F. Create breathtaking jewelry or small keepsakes using almost any medium you can imagine: silver clay, enameling, china painting, glass, lost wax casting, ceramics, stoneware, and porcelain. Since the kiln opens from the front instead of the top, it is ideal for copper enameling. The Xpress-Q-11A is a true multipurpose kiln.

Imagine the glass you could sag, slump, and fuse with this kiln. Make pendants, earrings, cufflinks, and even bracelets. Enjoy the glittering beauty of dichroics. This kiln will give you years of creative enjoyment. It is light-weight; take it with you to seminars or on vacation.

The Xpress-Q-11A comes with the Sentry Xpress digital controller, which is mounted in the kiln base (instead of a side switch box) to save table space. The front control panel is tilted for easy operation.

The Sentry Xpress 3-key controller is packed with features. It includes Cone-Fire and 8-segment Ramp-Hold modes. (Note: Ramp-Hold and Cone-Fire on the Sentry Xpress do not include some of the advanced features of the 12-key Sentry 2.0.)

**Features of the Sentry Xpress 3-key Controller for Ceramic Kilns**

- Fire to a pyrometric cone by merely entering cone number and slow, medium or fast speed.
- Program Review lets you check the program you are about to fire.
- Set a temperature alarm to remind yourself to close a vented lid.
- Design Ramp-Hold programs with up to 8 segments (steps).
- Skip a segment in Ramp-Hold during firing.
- Hold (soak) the temperature in both Cone-Fire and Ramp-Hold.
- Control both heating and cooling in Ramp-Hold.
- Add hold time in Ramp-Hold during firing.
- Change the target temperature in Ramp-Hold during firing.
- Temperature Display throughout firing and cooling in your choice of Â°F or Â°C
- Thermocouple Offset adjusts the thermocouple readout.

- Set the Delay to turn on the kiln later to suit your schedule.
- Error Messages report mechanical problems such as a disconnected thermocouple, stuck relay or broken element.
- 12 Month Warranty
- LED Lights show whether you are in program, review, or firing mode.
- Colorful, illustrated instruction manual. Download it from the â€œAdditional Informationâ€ section below to review these features in more detail.

A 1/2â€ hole is stamped into the steel door case and includes a brushed stainless steel cover. We have left the firebrick behind the hole undrilled so that you can drill it to the exact size that you need for a peephole, vent hole, or extra pyrometer hole. (Most people do not need the hole and leave the firebrick undrilled.)

The Xpress-Q-11A heating element, exposed in dropped, recessed insulating firebrick grooves, is easy to replace. The 2 1/2â€ thick firebricks store plenty of heat for slow cooling through the glass annealing range. For small glass pieces such as jewelry, you can anneal without having to turn the elements back on during cooling. (Extra heat is necessary for annealing large pieces, however.)

Unlatch and open the door with one hand. No extra stand is needed; the built-in base stays cool during operation.

The Xpress-Q11A can ship by UPS. Enjoy lower shipping cost and faster service. Specially designed cartons and foam padding assure that the kiln will arrive safely.

Paragon kilns are built to be dependable. They are loaded with attention to details, such as the costly nickel-plated copper wire with high temperature glass-braided insulation. Wires are fastened to the elements with heat-dissipating connectors refined and proven over many years in Paragon kilns.

Becky Johnson, a glass teacher in Dallas, Texas, describes opening the kiln: â€œI like to open the kiln with my students so that we can review and admire each otherâ€™s treasures together. The transformation of the glass inside the kiln is magical and mystical. It changes from pieces of arranged cut glass to awe-inspiring art. To be some part of that process is a true gift.â€

â€œParagon kilns just go on working forever,â€ said Jeff Zamek, author of â€œWhat Every Potter Should Know.â€ He added, â€œParagon kilns have one of the lowest incidences of repair of any kiln manufactured in the U.S.â€

The Furniture Kit

The furniture kit consists of carefully selected fireclay shelves and posts for this particular model. When estimating the price of the kiln, include the cost of furniture. The furniture allows you to stack multiple layers of ware. Without it, you could fire only the ware that would fit on the kiln bottom.

Q-11A, Xpress-Q-11-A & TnF-Q-11 Furniture Kit

1 C-2 (5â€ x 5â€ x 3/8â€ ) Shelf

4 - 2â€ long 1" wide Square Posts

1 lb. Bag Kiln Wash

Shipping Weight: 2 lbs.

## Specifications

| | | | |
|---|---|---|---|
| Max. Temperature | 2300F 1259C | Kiln Type | Front Loading Square |
| | | Sides | 4 |
| Amps | 12 | | |
| Phase | 1 | | |
| Watts | 1440 | | |
| Nema | 5-15P | | |

Products



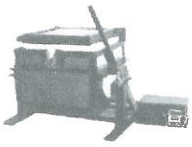
## Tilting Electric Furnace
## For Smelting Gold, Silver, Copper, Base Alloys; to Pouring Ingots.

**Features:**

- Automatic temperature controls with digital readout- Furnace maintains temperature set by operator
- Rugged yet light weight construction for long life
- Vented lid which latches in up position
- Heavy wall clay graphite crucible with spout
- Insulating brick lining for maximum heat retention
- Bracking winch for precise safe movement during pour
- Hydraulic lift standard on TL 400

(Model Shown: **TL 400**)

| Model # | Crucible Size | Maximum Temperature | Approximate Capacity Red Brass | Approximate Shipping Weight | Price |
|---|---|---|---|---|---|
| TL 16 | #16 | 2300F | 70 lbs. | 300 lbs. | $2,855.00 |
| TL 60 | #60 | 2300F | 200 lbs. | 500 lbs. | $4,547.00 |
| TL 150 | #150 | 2300F | 450 lbs. | 700 lbs. | $6,745.00 |
| TL 225 | #225 | 2300F | 700 lbs. | 900 lbs. | $8,878.00 |
| TL 300 | #300 | 2300F | 900 lbs. | 1000 lbs. | $11,043.00 |
| TL 400 | #400 | 2300F | 1200 lbs. | 1200 lbs. | $12,393.00 |



Model Shown: **TL 16**

Model Shown: **TL 60**

Vcella Kilns Inc
171 Mace St # B, Chula Vista

Web (2)

Pacific Coa
Tilting Elect

## Front Load Kilns

**Features:**

- All Kilns are 2300F Maximum Temperature
- All Kilns may be used for any media

**Options:**

- Solid state electronic temperature control are available for all Kilns.

(Model Shown: **50**)

| Model | Inside Dimensions W | D | H | Outside Dimensions W | D | H | Cubic Feet | Weight | Volts | Amps | Watts | Price | Crating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6" | 6" | 6.5" | 14" | 15" | 23" | 0.14 | 70 lbs. | 120 | 12 | 1440 | $783.00 | $26.00 |
| 9 | 9" | 10" | 6.5" | 17" | 19" | 23" | 0.34 | 95 | 120 | 15 | 1800 | $958.00 | $31.00 |
| 11 | 9" | 10" | 11" | 17" | 19" | 27" | 0.57 | 125 | 120 | 15 | 1800 | $1,106.00 | $52.00 |
| 12 | 12" | 12" | 6.5" | 20" | 21" | 23" | 0.54 | 130 | 120 | 15 | 1800 | $1,106.00 | $52.00 |
| 13 | 12" | 12" | 8" | 20" | 21" | 24" | 0.75 | 140 | 240 | 20 | 3600 | $1,210.00 | $52.00 |
| 16 | 16" | 16" | 11" | 24" | 25" | 27" | 1.40 | 190 | 240 | 20 | 4800 | $1,563.00 | $52.00 |
| 18 | 18" | 25" | 11" | 26" | 30" | 27" | 2.90 | 340 | 240 | 45 | 10800 | $2,734.00 | $57.00 |
| 21 | 20" | 20" | 8" | 28" | 30" | 25" | 1.90 | 230 | 240 | 24 | 5760 | $2,246.00 | $57.00 |
| 30 | 16" | 16" | 15.5" | 24" | 25" | 32" | 2.30 | 270 | 240 | 24 | 5760 | $2,361.00 | $62.00 |
| 40 | 16" | 17" | 20" | 24" | 26" | 36" | 3.10 | 370 | 240 | 30 | 7200 | $2,814.00 | $67.00 |
| 50 | 20" | 20" | 20" | 28" | 30" | 49" | 4.60 | 420 | 240 | 36 | 8640 | $3,075.00 | $67.00 |

# Personnel, Product, and Environmental Protection

## 1 Description of Class II, Type B2 Safety Cabinet

The **LabGard NU-430** biological safety cabinet is a Class II, Type B2 Total Exhaust cabinet featuring flow-through construction with no internal recirculation of air within the cabinet. Required air to operate the cabinet is taken either from the room through the work access opening or through the supply air intake duct directly into the supply air blower.

The **LabGard NU-435** biological/chemical fume hood is a Class II, Type B2 Total Exhaust cabinet featuring the same basic design parameters as the NU-430.

**USE:** Type B2 cabinets may be used for work with volatile toxic chemicals and radionuclides required as an adjunct to microbiological studies.*

* Definition from NSF / ANSI 49

this one

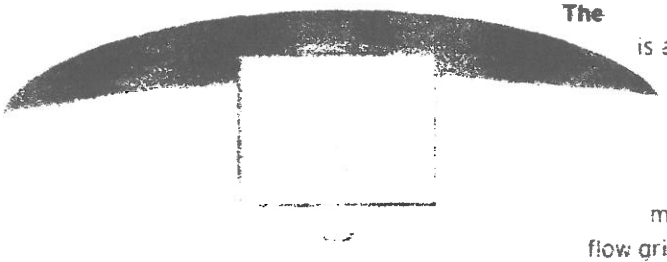
### NU-430

- **UL listed, UL-C listed (115 VAC)**
- **CE (230 VAC)**
- Supply and Exhaust HEPA filter standard UL Class II
- Can use standard, internal service valves
- Can use ultraviolet light
- Must use label "Do Not Use Toxic or Explosives in Cabinet"
- NSF Listed (115 VAC)

### NU-435

- **UL Classified (115 VAC)**
- Supply HEPA filter UL Class I
- Exhaust HEPA filter to UL 586
- No ultraviolet germicidal light available
- Only use remote service valves
- No label restrictions
- Available in 115 V, 60 Hz. only
- NSF Listed (115 VAC)

## 6 Electronic Airflow Control System



**The Electronic Airflow Control System** is a microprocessor module that establishes and maintains an optimum balance between the supply air system and exhaust air system through constant monitoring of airflow using a digital dual thermistor airflow sensor and a digital differential velocity pressure flow grid. The first sensor monitors down flow air within the work zone, the pressure flow grid monitors exhaust flow. The information is received by the Electronic Control System to control both down flow and exhaust flow (if optional actuated valve is installed) according to calibrated setpoints as calibrated by the service technician. The system maintains a complete diagnostic function and has remote contacts for remote sensing of various functions.

**Plumbing Services:** Service ball valves with the type of service specified by the removable button on the handle, are located in the work zone. The service ball valves are not recommended for pressure over 75 p.s.i. (5.2 BAR). Reducing valves should be installed external to the cabinet if necessary. Service valves should never be used for oxygen service. A special needle valve for oxygen service is required and available. External on/off valves are recommended for all installations.

## 7 Specifications

| | NU-430-400 / 435-400 | NU-430-600/ 435-600 |
|---|---|---|
| Concurrent Balance Value CFM/CMH: | 829 / 1409 | 1227 / 2075 |
| Certification Exhaust Value CFM/CMH: | 754 / 1281 | 1100 / 1869 |
| Plant Duct Static Pressure Eng/Metric | 1.7" w.g. / 43 mm w.g. | 2.0" w.g. / 51 mm w.g. |
| Heat Rejected, BTU, Per Hour | 474 | 584 |
| Electrical: Volts, AC, Hz | 115, 60 /230, 50/60) | 115, 60 /230, 50/60) |
| Amps: Blower / Lights | 5 / (3) | 7 / (4) |
| Amps: Duplex | 3 / (3) | 3 / (3) |
| Amps: Total | 8 / (6) | 10 / (7) |
| 12ft. Power Cord (one) | 14 GA - 3 Wire, 15A | 14 GA - 3 Wire, 15A |
| Crated Shipping Weight: | 570 lbs. / 259 kg. | 760 lbs. / 345 kg. |
| Net Weight: | 520 lbs. / 236 kg. | 710 lbs. / 322 kg. |

***Note:*** The NU-430-435 must be ducted and certified to meet the performance requirements

# APPENDIX C

1. **Application Fee**

7216

SYNOVUS BANK

**SILVER FALCON MINING, INC**
2520 MANATEE AVENUE WEST, SUITE 200
BRADENTON, FL 34205

63-1416/631

2/27/2012

PAY TO THE ORDER OF Department of Environmental Quality

$ **1,000 00

One Thousand and 00/100********** DOLLARS

Department of Environmental Quality
1410 N Hilton
Bosie, ID 83706

AUTHORIZED SIGNATURE

MEMO Permit application fee for PTC

⑈007216⑈ ⑆063141166⑆ 1004158059⑈

7216

SILVER FALCON MINING, INC

Department of Environmental Quality 2/27/2012

| Date | Type | Reference | Original Amt | Balance Due | Discount | Payment |
|---|---|---|---|---|---|---|
| 2/27/2012 | Bill | Permit/Assay Lab/Gen | 1,000 00 | 1,000 00 | | 1,000.00 |
| | | | | | Check Amount | 1,000 00 |

| | | |
|---|---|---|
| Synovus Bank | Permit application fee | 1,000 00 |

# Appendix D

1. Emission Inventory
2. 1999 Caterpillar 3412 Diesel Generator Fuel Test

# Emission Inventory - Crushed Stone Processing Operations
## Silver Falcon Mining, Inc.

| Source | SCC | Emission Factors PM (lb/ton) | PM10 (lb/ton) | PM2.5 (lb/ton) | |
|---|---|---|---|---|---|
| Primary Crushing | 3-05-020-01 | 1.20E-03 | 5.40E-04 | 1.00E-04 | |
| Secondary Crushing | 3-05-020-02 | 1.20E-03 | 5.40E-04 | 1.00E-04 | |
| Tertiary Crushing | 3-05-020-03 | 1.20E-03 | 5.40E-04 | 1.00E-04 | |
| Fines Crushing | 3-05-020-05 | 3.00E-03 | 1.20E-03 | 7.00E-05 | |
| Screening | 3-05-020-02, 03 | 2.20E-03 | 7.40E-04 | 5.00E-05 | |
| Fines Screening | 3-05-020-21 | 3.60E-03 | 2.20E-03 | ND | |
| Conveyor Transfer Point | 3-05-020-06 | 1.40E-04 | 4.60E-05 | 1.30E-05 | |
| Loader Transfer Point | 3-05-020-31 | 3.20E-05 | 1.05E-05 | 2.97E-06 | ratioed from PM10 per conveyor transfs |

## Actual capacities

crushing cycle (tons/hr) 12

*jaw crusher, which takes rock from 1" to required 3/8"*

annual throughput (tons/yr) 17000

## Potential capacities

crushing cycle — *hourly capacity of each individual component assuming continuous opetation year-round*

*far exceeds actual or planned throughput*

*exceeds potential throughput because entire crushing cycle is limited by impact crusher to 12 tons/hr*

Emission calculations will conservatively use individual equipment capacity, though overall capacity will be limited to 12 tons/hr by impact crusher

**Annual Operating Hours:** 8760 **Uncontrolled**

water spray to incr MC to >10%

| Source | Capacity (tons/hr) | Emission Rates PM (lb/hr) | PM (tons/yr) | PM10 (lb/hr) | PM10 (tons/yr) | PM2.5 (lb/hr) | PM2.5 (tons/yr) |
|---|---|---|---|---|---|---|---|
| Primary Jaw Crusher | 100 | 0.120 | 0.526 | 0.054 | 0.237 | 0.010 | 0.044 |
| Secondary Jaw Crusher | 25 | 0.030 | 0.131 | 0.014 | 0.059 | 0.003 | 0.011 |
| Impact Crusher | 12 | 0.014 | 0.063 | 0.006 | 0.028 | 0.001 | 0.005 |
| Screen Plant | 100 | 0.220 | 0.964 | 0.074 | 0.324 | 0.005 | 0.022 |
| Conveyor Transfers (8) | 100 | 0.112 | 0.491 | 0.037 | 0.161 | 0.010 | 0.046 |
| Loader Transfers (2) | 100 | 0.006 | 0.028 | 0.002 | 0.009 | 0.001 | 0.003 |

Emission Factors For Crushing, Screening and Conveyor Transfers From AP42 Table 11.19.2-2.

Loader Transfer Emission Factor Calculated From Equation 1, AP42 13.2.4 Where:

Mean Wind Speed (U) = 10 mph
Moisture Content (M) = 2.5%
Particle Size Multiplier (k) =
TSP = 0.74
PM = TSP/0.8 = 0.925
PM10 = 0.35
PM2.5 = 0.053

$$EF\left(\frac{lb}{ton}\right) = (k \times 0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

water spray to get moisture content to >10% 50%

Moisture content near 10% due to spray on impact crusher feeding material 25%

**Controlled**

| Source | Capacity (tons/hr) | Emission Rates PM (lb/hr) | PM (tons/yr) | PM10 (lb/hr) | PM10 (tons/yr) | PM2.5 (lb/hr) | PM2.5 (tons/yr) |
|---|---|---|---|---|---|---|---|
| Primary Jaw Crusher | 100 | 0.120 | 0.526 | 0.054 | 0.237 | 0.010 | 0.044 |
| Secondary Jaw Crusher | 25 | 0.030 | 0.131 | 0.014 | 0.059 | 0.003 | 0.011 |
| Impact Crusher | 12 | 0.007 | 0.032 | 0.003 | 0.014 | 0.001 | 0.003 |
| Screen Plant | 100 | 0.165 | 0.723 | 0.056 | 0.243 | 0.004 | 0.016 |
| Conveyor Transfers (8) | 100 | 0.112 | 0.491 | 0.037 | 0.161 | 0.010 | 0.046 |
| Loader Transfers (2) | 100 | 0.006 | 0.028 | 0.002 | 0.009 | 0.001 | 0.003 |

## FUGITIVE EMISSIONS FROM DELIVERY OF INCOMING ORE

17000 actual tons processed per year

Maximum daily operations
5 trucks
5 trips/day
4 months/yr July - Oct
10 hrs/day

10 ton payload

**WORST CASE THROUGHPUTS**

250 tons per day assumes max truck capacity 365 days/yr
25 tons/hr
91250.0 tons/yr

**TABLE 3. FUGITIVE EMISSIONS FROM AGGREGATE HANDLING**

| | Emission Factor | | | Potential Emissions | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PM | PM10 | PM2.5 | PM | | PM10 | | PM2.5 | |
| Source | lb/ton | lb/ton | lb/ton | lb/hr | tons/yr | lb/hr | tons/yr | lb/hr | tons/yr |
| Agg. Trans to Bins | 5.33E-03 | 2.02E-03 | 3.06E-04 | 1.33E-01 | 0.2433 | 0.0504 | 0.0921 | 0.0076 | 0.0139 |
| | | | **Total** | **0.1333** | **0.2433** | **0.0504** | **0.0921** | **0.0076** | **0.0139** |

$$EF\left(\frac{lb}{ton}\right) = (k \times 0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Drop Point Emission Factor from Equation 1, AP42 13.2.4:
Mean Wind Speed (U) = 10 mph
Moisture Content (M) = 2.5%
Particle Size Multiplier (k) =
PM10 = 0.35
TSP = 0.74
PM = TSP/0.8 = 0.925
PM2.5 = 0.053

AP-42 equation minus k 0.0057652
PM= 0.0053328
PM10= 0.0020178
PM2.5= 0.0003056

Appendix D - Attachment 1 copy Ore delivery drop to pile

**STOCKPILE WIND EROSION EMISSIONS**

AP-42 Fourth Edition Sept 91
This section was not included in the Fifth Edition
Section 8 Mineral Products Industry
8.19.1 Sand and gravel processing

10 acres disturbed
AP-42 Sept 85
Section 8 Mineral Products Industry
8.19 Construction Aggregate processing
8.19.1 Sand and gravel processing
Inactive storage piles

| | | | | |
|---|---|---|---|---|
| | TSP= | 3.5 | lb/acre/day | Table 8.19.1-1 |
| | PM10= | 1.7 | lb/acre/day | Table 8.19.1-1 |
| assume | PM2.5= | 0.5 | PM10 | |
| | Usage | 365 | Days/yr | |
| | **Crusher area** | 195 | meter circle | |
| | | 29864.8 | square meters | |
| | | 7.38 | acres | |

Roads gravelled, site watered twice per day, roads more frequently with onsite water truck
50% Control Efficiency

| **Pollutant** | **Controlled emissions** | | **Uncontrolled emissions** | |
|---|---|---|---|---|
| | Lbs/hr | Tons/yr | Lbs/hr | Tons/yr |
| Total Particulate | 0.729 | 3.19 | 1.458 | 6.39 |
| PM10 | 0.354 | 1.55 | 0.708 | 3.10 |
| $PM_{2.5}$ | 0.177 | 0.78 | 0.354 | 1.55 |

**Emergency generator**

| Diesel Generator Operating Perameters | |
|---|---|
| Generator Size (kw) = | 100 |
| Generator Size (hp) = | 134.10 |
| BSFC (Btu/hp-hr) = | 7,000 |
| Heat Imput (MMBtu/hr) = | 0.9387 |
| Actual Operating Hours (hr/yr) = | 50 |
| Potential Operating Hours (hr/yr) = | 500 |
| Max Sulfur % = | 0.15 |

emergency backup

**Exempt from IDEQ permitting via IDAPA 58.01.01.222.01.c.1**
**stationary engine 100 hp or less**

**Not used except to replace capacity from primary generator**

| Pollutant | Emission Factor[a] (lb/MMBtu) | (lbs/hr) | (tons/yr) |
|---|---|---|---|
| PM (total) [b] | 0.31 | 0.291 | 0.0727 |
| PM-10 (total) [b] | 0.31 | 0.291 | 0.0727 |
| *P.M.-2.5* | 0.31 | 0.291 | 0.0727 |
| CO [b] | 0.95 | 0.892 | 0.2229 |
| NOx[b] | 4.41 | 4.140 | 1.0349 |
| $SO_2$ [b] (total SOx presumed SO2) | 0.29 | 0.272 | 0.0681 |
| VOC [b] (total TOC--> VOCs) | 0.36 | 0.338 | 0.0845 |
| **Non-PAH HAPs** | | | |
| Acetaldehyde[c] | 7.67E-04 | 7.20E-04 | 0.0002 |
| Acrolein[c] | 9.25E-05 | 8.68E-05 | 0.0000 |
| Benzene[c,e] | 9.33E-04 | 8.76E-04 | 0.0002 |
| 1,3-Butadiene[c,e] | 3.91E-05 | 3.67E-05 | 0.0000 |
| Ethylbenzene[e] | | | |
| Formaldehyde[c,e] | 1.18E-03 | 1.11E-03 | 0.0003 |
| Hexane[e] | | | |
| Isooctane | | | |
| Methyl Ethyl Ketone[e] | | | |
| Pentane[e] | | | |
| Propionaldehyde[e] | | | |
| Quinone[e] | | | |
| Methyl chloroform[e] | | | |
| Toluene[c,e] | 4.09E-04 | 3.84E-04 | 0.0001 |
| Xylene[c,e] | 2.85E-04 | 2.68E-04 | 0.0001 |
| **PAH HAPs** | | | |
| Acenaphthene[c] | 1.42E-06 | 1.33E-06 | 3.3E-07 |
| Acenaphthylene[c] | 5.06E-06 | 4.75E-06 | 1.2E-06 |
| Anthracene[c] | 1.87E-06 | 1.76E-06 | 4.4E-07 |
| Benzo(a)anthracene[c] | 1.68E-06 | 1.58E-06 | 3.9E-07 |
| Benzo(a)pyrene[c,e] | 1.88E-07 | 1.76E-07 | 4.4E-08 |
| Benzo(b)fluoranthene[c] | 9.91E-08 | 9.30E-08 | 2.3E-08 |
| Benzo(g,h,I)perylene[c] | 4.89E-07 | 4.59E-07 | 1.1E-07 |
| Benzo(k)fluoranthene[c] | 1.55E-07 | 1.45E-07 | 3.6E-08 |
| Chrysene[c] | 3.53E-07 | 3.31E-07 | 8.3E-08 |
| Dibenzo(a,h)anthracene[c] | 5.83E-07 | 5.47E-07 | 1.4E-07 |
| Fluoranthene[c] | 7.61E-06 | 7.14E-06 | 1.8E-06 |
| Fluorene[c] | 2.92E-05 | 2.74E-05 | 6.9E-06 |
| Indeno(1,2,3-cd)pyrene[c] | 3.75E-07 | 3.52E-07 | 8.8E-08 |
| Naphthalene[c,e] | 8.48E-05 | 7.96E-05 | 2.0E-05 |
| Phenanthrene[c] | 2.94E-05 | 2.76E-05 | 6.9E-06 |
| Pyrene[c] | 4.78E-06 | 4.49E-06 | 1.1E-06 |

a) Emission factors are from AP-42
b) AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96
c) AP-42, Table 3.3-2, Speciated Organic Compoun Emission Factors for Uncontrolled Diesel Engine, **Emission Factor Rating E**, 10/96
d) (reserved)
e) IDAPA Toxic Air Pollutant

**Facility:**

**Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel fueled, uncontrolled)**

| Diesel Generator Operating Parameters | |
|---|---|
| Generator Size (kw) = | 750 |
| Generator Size (hp) = | 1,005.75 |
| BSFC (Btu/hp-hr) = | 7,000 |
| Heat Imput (MMBtu/hr) = | 7.0403 |
| Actual Operating Hours (hr/yr) = | 2,080 |
| Potential Operating Hours (hr/yr) = | 8,760 |
| Max Sulfur % = | 0.15 |

Supplier guarantee

| | |
|---|---|
| Manufacturer: | Caterpillar |
| Model: | SR4B |
| Serial Number: | 6EJ01232 |
| Engine Model: | 3412 |
| Engine Serial Number: | 2WJ02549 |
| Date of Manufacture: | 1999 |
| Tier Category: | 1 |
| Stack Height: | 31 ft. |
| Stack Diameter: | 8 in. |

| Pollutant | Emission Factor[a] (lb/MMBtu) | Emissions (lb/hr) | Emissions at Max Hours (T/yr) |
|---|---|---|---|
| PM[b] | 0.1 | 0.704 | 3.08 |
| PM-10 (total)[c] | 0.0573 | 0.403 | 1.77 |
| PM-2.5 (total) | 0.0556 | 0.391 | 1.71 |
| CO[d] | 0.85 | 5.984 | 26.21 |
| NOx[d] | from source test | 14.833 | 64.97 |
| $SO_2$[c] (total SOx presumed SO2) | 0.1515 | 1.067 | 4.67 |
| VOC[c] (total TOC--> VOCs) | 0.09 | 0.634 | 2.78 |
| **Non-PAH HAPs** | | | |
| Acetaldehyde[e] | 2.52E-05 | 1.77E-04 | 7.77E-04 |
| Acrolein[e] | 7.88E-06 | 5.55E-05 | 2.43E-04 |
| Benzene[c,e] | 7.76E-04 | 5.46E-03 | 2.39E-02 |
| Formaldehyde[c,e] | 7.89E-05 | 5.55E-04 | 2.43E-03 |
| Toluene[c,e] | 2.81E-04 | 1.98E-03 | 8.66E-03 |
| Xylene[c,e] | 1.93E-04 | 1.36E-03 | 5.95E-03 |
| **PAH HAPs** | | | |
| Acenaphthene[c1] | 4.68E-06 | 3.29E-05 | 1.44E-04 |
| Acenaphthylene[c1] | 9.23E-06 | 6.50E-05 | 2.85E-04 |
| Anthracene[c1] | 1.23E-06 | 8.66E-06 | 3.79E-05 |
| Benzo(a)anthracene[c1] | 6.22E-07 | 4.38E-06 | 1.92E-05 |
| Benzo(a)pyrene[c1,e] | 2.57E-07 | 1.81E-06 | 7.92E-06 |
| Benzo(b)fluoranthene[c1] | 1.11E-06 | 7.81E-06 | 3.42E-05 |
| Benzo(g,h,I)perylene[c1] | 5.56E-07 | 3.91E-06 | 1.71E-05 |
| Benzo(k)fluoranthene[c1] | 2.18E-07 | 1.53E-06 | 6.72E-06 |
| Chrysene[c1] | 1.53E-06 | 1.08E-05 | 4.72E-05 |
| Dibenzo(a,h)anthracene[c1] | 3.46E-07 | 2.44E-06 | 1.07E-05 |
| Fluoranthene[c1] | 4.03E-06 | 2.84E-05 | 1.24E-04 |
| Fluorene[c1] | 1.28E-05 | 9.01E-05 | 3.95E-04 |
| Indeno(1,2,3-cd)pyrene[c1] | 4.14E-07 | 2.91E-06 | 1.28E-05 |
| Naphthalene[c1,e] | 1.30E-94 | 9.15E-94 | 4.01E-93 |
| POM | 4.50E-06 | 3.17E-05 | 1.39E-04 |
| Phenanthrene[c1] | 4.08E-05 | 2.87E-04 | 1.26E-03 |
| Pyrene[c1] | 3.71E-06 | 2.61E-05 | 1.14E-04 |

6.69 g/bkhp/hr 6728.4675 g/hr 14.83

1999 model 3412 NOx source test 3/20-24/00, Sierra Nevada Brewing Co

1.483

Model impact per lb/hr emissions

8.8865 1.68893

24 hr ave annual ave

Model predicted max impact

| EL | AAC/AACC | Modeling Required? | | % of AAC/AACC | Meets AAC/AACC |
|---|---|---|---|---|---|
| 3.03E-03 | 4.50E-01 | NO | | | |
| 0.017 | 12.5 | NO | | | |
| 8.00E-04 | 1.20E-01 | YES | 9.23E-03 | 7.7% | YES |
| 5.10E-04 | 7.70E-02 | YES | 9.38E-04 | 1.2% | YES |
| 2.50E+01 | 18750 | NO | | | |
| 2.90E+01 | 21750 | NO | | | |
| 2.00E-06 | 3.00E-04 | NO | | | |
| 3.33 | 2500 | NO | | | |
| 2.00E-06 | 3.00E-04 | YES | 5.35E-05 | 17.8% | YES |

a) Emission factors are from AP-42
b) AP-42, Table 3.4-1, Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines, 10/96
c) AP-42, Table 3.4-3, Speciated Organic Compound Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
c1) AP-42, Table 3.4-4, PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
d) AP-42, Table 3.4-2, Particulate and Particle-Sizing Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
e) IDAPA Toxic Air Pollutant

# Assay Lab vents

3 exempt 190,000 BTU/hr propane fired assay furnaces
3 11" x 15" x 18" electric cupel kilns
1 Vcella model TL400 electric kiln

all vented a 10,000 CFM fan

Worst case volatilizing rates from heated ore

Lab tech Norm Kendall

* Note - Vcella kiln only used instead of cupel kilns for larger quantities when needed

| **volatizing rates** | **Furnaces** | **Cupel Oven, kiln** | |
|---|---|---|---|
| zinc | 16 | | mg/hr |
| lead oxide | 0.2 | 2 | g/hr |
| arsenic | 0.01 | | mg/hr |
| copper | 0.5 | 10 | mg/hr |
| magnesium oxide | 0.5 | | mg/hr |

| **volatizing rates** | max emission rates translated to lbs/hr | | Uncontrolled | Controlled | *lowest potentially applicable* | | | Uncontrolled |
|---|---|---|---|---|---|---|---|---|
| | (lbs/hr) | (lbs/hr) | Total emissions (lb/hr) | Total emissions (lb/hr) | **IDAPA 585 or 586 EL** | Exceed IDAPA EL, require modeling? | Exceed 10% of IDAPA EL (BRC TAP exemption threshold) | Total emissions (tons/yr) |
| zinc | 3.53E-05 | | 3.53E-05 | 3.53E-05 | 0.333 | no | no | 1.54E-04 |
| lead oxide | 4.41E-04 | 4.41E-03 | 4.85E-03 | 4.85E-03 | NA | no | no | 2.12E-02 |
| arsenic | 2.20E-08 | | 2.20E-08 | 2.20E-08 | 1.50E-06 | no | no | 9.66E-08 |
| copper | 1.10E-06 | 2.20E-05 | 2.31E-05 | 2.31E-05 | 0.013 | no | no | 1.01E-04 |
| magnesium oxide | 1.10E-06 | | 1.10E-06 | 1.10E-06 | 0.667 | no | no | 4.83E-06 |

**Exempt from parmitting via IDAPA 58.01.01.222.01.a**

## Controlled Emissions

### Point Sources

| Source | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cat 3412 750KW Generator | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | | | | |
| Exempt 100KW generator | 0.07 | 0.07 | 0.07 | 0.08 | 0.07 | 0.22 | 1.03 | 0.0002 | 0.0003 | 0.0000 | | | | |
| Exempt assay bldg lab fan | | | | | | | | | | | 1.5E-04 | 9.7E-06 | 1.0E-04 | 4.8E-06 |
| Total | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00015 | 0.00000 | 0.00010 | 0.00000 |

emergency generator only used to replace capacity of primary generator

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cat 3412 750KW Generator | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | | | | |
| Exempt 100KW generator | 0.29 | 0.29 | 0.29 | 0.89 | 0.27 | 0.89 | 4.14 | 0.0009 | 0.0011 | 0.0000 | | | | |
| Exempt assay bldg lab fan | | | | | | | | | | | 3.5E-05 | 2.2E-06 | 2.3E-05 | 1.1E-06 |
| Total | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | 0.00004 | 0.00000 | 0.00002 | 0.00000 |

### Fugitive Sources

| Source | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 crushers | 0.89 | 0.31 | 0.06 | | | | | | | | | | | |
| 1 screen | 0.72 | 0.24 | 0.02 | | | | | | | | | | | |
| 8 conveyor transfers | 0.11 | 0.04 | 0.01 | | | | | | | | | | | |
| 2 loader transfers | 0.03 | 0.01 | 0.00 | | | | | | | | | | | |
| Ore delivery | 0.24 | 0.09 | 0.01 | | | | | | | | | | | |
| Wind erosion | 3.19 | 1.65 | 0.76 | | | | | | | | | | | |
| Total | 4.89 | 2.48 | 0.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 crushers | 0.16 | 0.07 | 0.01 | | | | | | | | | | | |
| 1 screen | 0.17 | 0.06 | 0.00 | | | | | | | | | | | |
| 8 conveyor transfers | 0.11 | 0.04 | 0.01 | | | | | | | | | | | |
| 2 loader transfers | 0.01 | 0.00 | 0.00 | | | | | | | | | | | |
| Ore delivery | 0.13 | 0.05 | 0.01 | | | | | | | | | | | |
| Wind erosion | 0.73 | 0.35 | 0.18 | | | | | | | | | | | |
| Total | 1.30 | 0.57 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

## Facility-Wide Total Controlled Emissions

| | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point Sources | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00015 | 0.00 | 0.00 | 0.00 |
| Fugitives | 4.89 | 2.48 | 0.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00 | 0.00 | 0.00 |
| Total | 8.07 | 4.22 | 2.63 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00 | 0.00 | 0.00 | 0.00 |

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point Sources | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.000032 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitives | 1.30 | 0.57 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00 | 0.00 | 0.00 |
| Total | 2.01 | 0.97 | 0.60 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.000032 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| IDAPA 585 or 586 EL (lb/hr) | 0.0089 | 0.00051 | 0.000006 | 0.00051 | 0.0089 | 17.3 | 25 |
| Requires Modeling? | yes | yes | yes | no | no | no | no |
| Modeled max concentration (ann ave ug/m3) | 0.0092 | 0.0009 | 0.0001 | | | | |
| IDAPA 586 AACC | 0.1200 | 0.0770 | 0.0003 | | | | |
| Modeling shows compliance? | yes | yes | yes | | | | |

## Uncontrolled Emissions

### Point Sources

| Source | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cat 3412 750KW Generator | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Exempt 100KW generator | 0.07 | 0.07 | 0.07 | 0.08 | 0.07 | 0.22 | 1.03 | 0.0002 | 0.0003 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Exempt assay bldg lab vents | | | | | | | | | | | 1.5E-04 | 9.7E-06 | 1.0E-04 | 4.8E-06 |
| Total | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00015 | 0.00000 | 0.00010 | 0.00000 |

emergency generator only used to replace capacity of primary generator

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cat 3412 750KW Generator | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Exempt 100KW generator | 0.29 | 0.29 | 0.29 | 0.89 | 0.27 | 0.89 | 4.14 | 0.0009 | 0.0011 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Exempt assay bldg lab vents | | | | | | | | | | | 3.5E-05 | 2.2E-06 | 2.3E-05 | 1.1E-06 |
| Total | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | 0.00004 | 0.00000 | 0.00002 | 0.00000 |

### Fugitive Sources

| Source | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 crushers | 0.72 | 0.32 | 0.06 | | | | | | | | | | | |
| 1 screen | 0.66 | 0.32 | 0.02 | | | | | | | | | | | |
| 8 conveyor transfers | 0.46 | 0.18 | 0.05 | | | | | | | | | | | |
| 2 loader transfers | 0.03 | 0.01 | 0.00 | | | | | | | | | | | |
| Ore delivery | 0.24 | 0.09 | 0.01 | | | | | | | | | | | |
| Wind erosion | 0.19 | 0.10 | | | | | | | | | | | | |
| Total | 2.64 | 1.01 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 crushers | 0.16 | 0.07 | 0.01 | | | | | | | | | | | |
| 1 screen | 0.22 | 0.07 | 0.01 | | | | | | | | | | | |
| 8 conveyor transfers | 0.11 | 0.04 | 0.01 | | | | | | | | | | | |
| 2 loader transfers | 0.01 | 0.00 | 0.00 | | | | | | | | | | | |
| Ore delivery | 0.13 | 0.05 | 0.01 | | | | | | | | | | | |
| Wind erosion | 0.00 | 0.00 | 0.00 | | | | | | | | | | | |
| Total | 0.64 | 0.24 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |

## Facility-Wide Total Uncontrolled Emissions

| | PM (tons/yr) | PM 10 (tons/yr) | PM2.5 (tons/yr) | VOC's (tons/yr) | SO 2 (tons/yr) | CO (tons/yr) | NOx (tons/yr) | Benzene (tons/yr) | Formaldehyde (tons/yr) | POM (tons/yr) | Zinc (tons/yr) | Arsenic (tons/yr) | Copper (tons/yr) | Magnesium Oxide (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point Sources | 3.06 | 1.77 | 1.71 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00015 | 0.00000 | 0.00010 | 0.00000 |
| Fugitives | 2.64 | 1.01 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Total | 5.72 | 2.77 | 1.86 | 2.78 | 4.67 | 26.21 | 64.97 | 0.0239 | 0.0024 | 0.0001 | 0.00015 | 0.00000 | 0.00010 | 0.00000 |

| | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point Sources | 0.70 | 0.40 | 0.39 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | 0.00004 | 0.00000 | 0.00002 | 0.00000 |
| Fugitives | 0.64 | 0.24 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 | 0.0000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| Total | 1.34 | 0.64 | 0.43 | 0.63 | 1.07 | 5.98 | 14.83 | 0.0055 | 0.0006 | 0.0000 | 0.00004 | 0.00000 | 0.00002 | 0.00000 |

## 2.7 *Sierra Nevada Brewing Company, Chico, CA*

Sierra Nevada Brewing Company (SNBC) purchased two 750 kW generators to provide emergency back-up power for brewery operations in 1997 and 1999. Both generators are powered by Caterpillar 3412 diesel engines. To meet air quality requirements, SNBC installed DPFs on the engines in 1999 and 2000. Two catalyzed DPFs were installed in parallel on each engine. The engines operate on CARB diesel fuel.

Engine emissions before and after installation of the DPFs are summarized in the table below. Emissions before installation of the filter system were provided by Caterpillar, Inc. and are emissions for the engine operating at 75% load. SNBC typically operates their engines at about 80% load, but the emissions data at 80% were not available from Caterpillar, Inc. As suggested by Caterpillar, Inc., uncontrolled engine emissions from NOx and PM were reduced by 7% and 25%, respectively, to account for the use of cleaner burning CARB diesel fuel. ARB performed source tests on SNBC's engines on March 20-24, 2000.

**Emission Reduction Summary**

| Pollutant | Emission Rate Before Controls (g/bhp-hr) | Emission Rate After Controls (g/bhp-hr) | Percent Reduction |
|---|---|---|---|
| CO | 0.84 | 0.084 | 90 |
| HC | 0.33 | 0.033 | 90 |
| PM | 0.164[a] | 0.025[a] | 85 |
| NOx | 6.69[b] | 5.85 | 12 |

[a] PM emission rate reduced 25% per Caterpillar, Inc. to account for lower PM emissions from CARB diesel fuel.

[b] NOx emission rate reduced 7% per Caterpillar, Inc. to account for lower NOx emissions from CARB diesel fuel.

More information on this project is available at:
www.nescaum.org/documents/rpt030612dieselgenerators.pdf.

# APPENDIX E

1. IDEQ Modeling Approval Letter
2. IDEQ PVMRM Guidance

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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

C. L. "BUTCH" OTTER, GOVERNOR
TONI HARDESTY, DIRECTOR

September 15, 2011

Ron Spidell
Spidell and Associates
Boise, ID

RE: Modeling Protocol for the Silver Falcon Mining, Inc. proposed facility near Murphy

Ron:

DEQ received your dispersion modeling protocol submitted to me via email on September 6, 2011. The modeling protocol was submitted on behalf of Silver Falcon Mining, Inc. (Silver Falcon). The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct application for a proposed new rock crushing facility.

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

- Comment 1: The submitted application must provide thorough and complete justification and documentation of release parameters of all sources included in the modeling analyses. As results approach applicable standards, DEQ will demand a greater degree of stack parameter justification. In the protocol discussion of dispersion parameters for volume sources, it is sometimes confusing when the term "horizontal dimension" or "vertical dimension" is used. It is not clear whether the protocol is referring to the horizontal dimension of a source/building or the initial dispersion coefficients. Please clarify this in the submitted application.

*Data for all source releases was checked onsite, then documented in Table 1 of the AQ modeling report in section 7 of this application*

- Comment 2: The proposed receptor grid appears reasonable. However, it is the applicant's responsibility to use a sufficiently tight receptor network such that the maximum modeled concentration is reasonably resolved. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.

*The modeling report documents that all model predicted maximum impacts occurred within 75 meters of the ambient air boundary, the fenced property boundary, in areas of 25 meter grid density. Figure 7-4 shows that the only pollutant which approaches an applicable impact limit, $NO_2$ one hour average, shows that model predicted maximum impacts drop off promptly away from the property boundary to much lower values than the model predicted maximum.*

- Comment 3: The emissions calculations in the protocol were not reviewed by DEQ so approval of this protocol does not constitute approval of emissions calculation methods.

However, DEQ does approve of the method used to adjust certain fugitive emissions as a function of windspeed.

- Comment 4: The current version of AERMOD is 11103, and this version should be used for all modeling performed for permitting purposes.

*Potential emission calculations are documented in the emission inventory supporting this submittal. As documented in Sections 4 and 7, no model source factors were used. PVMRM ozone limiting method was used to model $NO_2$, exactly s recommended by IDEQ's Kevin Schilling.*

- Comment 5: The protocol proposes to model material handling, loader, and stockpile transfers as elevated line sources. DEQ suggests modeling these sources as volume sources to better characterize turbulence caused by physical dropping of material and any downwash from structures/equipment.

*Volume sources were used in the modeling. Source parameter derivation is documented in the emission inventory, and in Table 7-1.*

- Comment 6: The protocol does not indicate whether there are other emissions sources on the property or nearby. If there are, these sources need to be discussed and possibly considered in any cumulative impact analyses.

*A thorough survey was performed to identify all facility emission sources. This can be verified by following the process description, and cross referencing it with the emission inventory. Section 4 of the application provides support for that comparison. There are no external sources nearby in this rural area.*

- Comment 7: Annual $PM_{10}$ modeling is not required. The annual standard has been revoked.

*No results for annual PM10 modeling are reported*

- Comment 8: The protocol does not adequately discuss and justify the selection of the ambient air boundary. If there are any leasing agreements or if the crushing facility supports other processing at the site, the application must provide an analysis that evaluates whether all facilities constitute a single facility or if they are all separate facilities. The application should also describe how public access (anyone not under the direct control of the permittee) is precluded from the site.

*As the application documents, the entire 20 acre facility is fenced. The facility is staffed at all times, including security personnel onsite when not actively operating. The area is wide open, allowing a good view of any approach. Unauthorized access would be noticed and is prevented*

- Comment 9: The protocol states DEM data will be used to evaluate elevations. Although elevations from DEMs will be accepted, DEQ recommends the use of USGS National Elevation Dataset (NED) files from the seamless data server. NED files represent more up-to-date data than DEMs, which are no longer updated. Whichever source of elevation data are used, the same datum must be used for locations of sources,

buildings, the ambient air boundary, and receptors. The application must identify the datum associated with all UTM coordinates used.

*NED data was used, as described in the Section 7 AQ modeling report*

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP and AERMAP input and output files) are submitted with an analysis report. If DEQ provided model-ready meteorological data files, then these do not need to be resubmitted to DEQ with the application. If you have any further questions or comments, please contact me at (208) 373-0112.

Sincerely,

*Kevin Schilling*

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

There is modeling guidance for 1-hour $NO_2$ on the Bee-Line Software website (www.beeline-software.com). Log in, then click on SUPPORT, WEBINARS. Check out the presentation of "NAAQS modeling with AERMOD version 11103.

The following is a summary of procedures for NO2 modeling using BEEST.

1. In the "Control Options" tab, under "CO Options," click define pollutant and make sure the pollutant name is NO2 and the averaging period is 1-hour.

2. In the "Control Options" tab, under "AER Option," click "non-default" under regulatory status; then click "NO2 Modeling . . ." under "Non-Default Options."

3. In the "Control Options" tab, under "NO2 Options," click "PVMRM" under "Select Ozone Limiting Method." In the space for "Equilibrium Ratio . . ." type in 0.9 (this has been established as a default value).

4. In the "Control Options" tab, under "NO2 Options," click the box for "Use Temporally Varying Ozone" for Variable Background ozone Values. Select HROFDY from the drop down, then click on "Define BackGround." For the hours 1 – 24 enter the following ozone concentrations in ppb, respectively: 27.88, 28.54, 26.80, 24.08, 22.13, 21.37, 19.70, 22.84, 30.45, 37.83, 43.82, 48.80, 52.99, 54.97, 57.10, 57.57, 57.13, 55.09, 48.98, 39.00, 30.92, 28.49, 29.43, 29.61. These values are based on monitoring data from Parma as described below.

5. In the "Source Options" tab, under "Groups," check the box for "ALL" and "Include Background with ALL" under "Group Definitions." Click on "Enter or Change Background" under "Background Concentrations." In the "Background" window that opens, select "UG/M3" from the drop down for "Background Units." Also, check the box "Temporally Varying," and select "HROFDY" from the drop down. Click on "Define Background," then enter the following NO2 concentrations in ug/m3, respectively: 50.0, 48.1, 45.7, 46.2, 56.7, 54.9, 56.7, 60.1, 54.9, 48.1, 39.5, 32.6, 34.3, 34.3, 37.8, 46.4, 49.8, 61.8, 70.4, 85.9, 79.0, 75.5, 63.5, 49.8.

6. In the "Source Options" tab, under "NO2 Ratio," click a space under "SET NAME" or "NO2 Ratio Sets," then select the emissions source/sources you want to define a given NO2 ratio for. In the space under "Set NO2 Ratio," type in the NO2/NOx ratio applicable for the source(s) selected. See discussion below for applicable NO2/NOx ratios for generator engines.

7. In the "Met Options" tab, make sure you use a 5-year met data set.

8. In the "Output Options" tab, for NO2 select only the box for 8th highest values at Each Receptor.

Background concentrations for 1-hour $NO_2$ were based on monitoring data collected between June 2009 and June 2010, in Meridian, Idaho. A separate background value was used for each hour of the day, based on the 2nd highest value monitored for that hour.

Hourly ozone data were used in PVMRM to estimate the conversion of NO to $NO_2$. Ozone data from the 2007 study, *Ozone and its Precursors in the Treasure Valley, Idaho*, were used for modeling (Final Report, May 2008, Desert Research Institute). Hourly data from Parma, Idaho, were collected from June 27, 2007 through October 12, 2007. These data were sorted by hour and then the mean and standard deviation was calculated for each hour across all days. For each hour modeled, a background ozone value equal to the mean plus one standard deviation was used as input to PVMRM. This method is reasonably conservative because it does not account for seasonal variation in ozone concentrations, and the Parma data were collected during the time of year when maximum ozone concentrations are expected. Also, Parma ozone concentrations are expected to be considerably higher than ozone concentrations in other areas outside of the treasure valley, given the emissions of ozone precursors in the area and the meteorology of the area.

An $NO_2/NOx$ ratio for NOx emissions is also used in PVMRM. The $NO_2/NOx$ ratio for the generator engine can calculated using a method established in Texas Natural Resource Conservation Commission (TNRCC) rules for Permits by Rule for Turbines and Engines (Chapter 106, subchapter W, §106.511, §106.512). For IC engines without catalytic converters, the $NO_2/NOx$ ratio is a function of the NOx emissions rate. For an emissions rate of less than 2.0 g/hp-hr, the $NO_2/NOx$ ratio is 0.4. For an emissions rate of 2.0 – 10.0 g/hp-hr, the $NO_2/NOx$ ratio is defined by 0.15 + (0.5/Q) where Q is the emissions rate in g/hp-hr.

Accurate data on emissions release parameters for the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity are typically difficult to find for IC engines. In general, DEQ will be very skeptical of exhaust flows over 50 m/sec and exhaust temperatures over 700 K for 200 hp engines and 900 K for 500 hp engines. Exhaust flows can calculated using the following formula from the State of Washington Department of Ecology (Washington State Department of Ecology. *Suitability of Diesel-Powered Emergency Generators for Air Quality General Order of Approval: Evaluation of Control Technology, Ambient Impacts, and Potential Approval Criteria*. June 23, 2006):

Flow = 0.284 $m^3$/(sec·100 hp)

The stack diameter is then set such that the flow velocity is 44.6 meters/second (as per WA guidance). From a table in the guidance, the following stack temperatures were given as a function of engine power in hp: 100 hp = 670 K; 150 hp = 702 K; 200 hp = 734 K; 300 hp = 799 hp; 500 hp = 897 K; 6900 hp = 1100 K.

If NAAQS compliance still cannot be demonstrated we may be able to look into refining background concentrations.

# APPENDIX F

## Minor Source Permit To Construct Application Completeness Checklist

| | |
|---|---|
| Company Name: | Silver Falcon Mining Inc. |
| Location: | Murphy, Idaho |
| Facility Name: | Diamond Creek Mill |
| Project: | Processing tailings thru crushing, screening and gravitational separation for the recuperation of precious metals thru assay lab |

---

### I. Actions Recommended before Submitting Application

Action Yes/No

Refer to the Rule. Read the Permit to Construct requirements contained in IDAPA 58.01.01.200-228, Rules for the Control of Air Pollution in Idaho.

*Yes* *PTC Application Requirements in IDAPA 58.01.01.200-228 have been reviewed and followed in this PTC application*

Refer to DEQ's Permit to Construct Guidance Document. DEQ has developed a guidance document to aid applicants in submitting a complete permit to construction application.

*Yes* *The DEQ's Permit to Construct Guidance Document was used as a reference for developing this PTC application*

Consult with DEQ Representatives. It is recommended that the applicant schedule a pre-application meeting with DEQ to discuss application requirements before submitting the permit to construct application. The meeting can be in person or on the phone.

Yes Several issues were discussed via phone conversation with both the DEQ Air Quality Hotline and with IDEQ **Stationary Source Permit Program Coordinator** Bill Rogers. This was to ensure the components of the application would meet the requirements and would satisfy the requirements of the pre-application meeting with DEQ.

Submit Ambient Air Quality Modeling Protocol. It is strongly recommended that an ambient air quality modeling protocol be submitted to DEQ at least (2) weeks before the permit to construct application is submitted.

*Yes* *An Ambient Air Quality Model was submitted to DEQ in September 2011 and was approved with the resolution of additional items which were subsequently addressed. See Appendix E - Attachment 2.*

II. **Application Content**

Apply for a Permit To Construct. Submit a Permit To Construct application using forms available on DEQ's website.

*Yes* *This PTC application did use all forms available from the DEQ's website. See Appendix A*

Permit to Construct Application Fee. The permit to construct application fee of $1,000 must be submitted at the time the original permit to construct application is submitted.

*Yes* *A copy of the check which will be submitted at the same time of application is included. See Appendix C*

Process Description(s). The process of processes for which construction is required must be described in sufficient detail and clarity such that a member of the general public not familiar with air quality can clearly understand the proposed project. A process flow diagram is required for each process.

*Yes* *A detailed processed description is included in the application. See Section 1.0.*
*Yes* *A process flow diagram was included in the application. See Section 2.0*

Equipment List. All equipment that will be used for which construction is requested must be described in detail. Such description includes, but is not limited to , manufacturer, model number or other descriptor, serial number, maximum process rate, proposed process rate, maximum heat input capacity, stack height, stack diameter, stack gas flowrate, stack gas temperature, etc.

*Yes* *A detailed equipment list is included in the application. See Appendix B*

Potential to Emit. Submit the uncontrolled potential to emit (pre-control equipment emissions estimates) and the controlled potential to emit (post-control equipment emissions estimates) for all equipment for which construction is requested. Any limit on the equipment for which is construction is requested may become a limit on that equipment in the permit to construct.

*Yes* *Documentation show process considerations that limit throughput to levels below those proposed in the emission inventory. See Section 4.0*

Potential to Emit and Modeled Ambient Concentration for all Regulated Air Pollutants. All proposed emissions limits and modeled ambient concentrations for all regulated air pollutants must demonstrate compliance with all applicable air quality rules and regulations.

*Yes* *Ambient Air Model shows compliance for all emissions in this application. See Appendix D - Attachment 1*

Scaled Plot Plan. It is required a scaled plot plan be included in the permit to construct application and it must clearly label the location on of each proposed process and the equipment that will be used in the process.

*Yes* *A scaled Plot Plan was included in the application. See Section 2.0*

List all Applicable Requirements. All applicable requirements must be cited by the rule or regulation section/subpart that applies for each emissions unit.

*Yes* *All Applicable Requirements were met and are listed in the application. See Section 3.0, Table 3-1*

Certification of Permit to Construct Application. The permit to construct application must be signed by the Responsible Official and must contain a certification signed by the Responsible Official. The certification must state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

*Yes* *IDAPA 58.01.01.123 rule was included in the submittal letter to Bill Rogers. See Cover Letter*

Submit the Permit to Construct Application. Submit the permit to construct application and application fee to the following address.

*Yes* *A check will be hand-delivered on the day the application will be submitted.*

# Idaho Department of Environmental Quality - Air Quality Division
# Exemption Criteria and Reporting Requirements for Toxic Air Pollutant (TAP) Emissions Checklist

*With documentation, in red italics, showing why the Silver Falcon Mining Permit application meets all applicable TAP permit requirements*

**This checklist is designed to assist in documenting that a facility qualifies and complies with the *Exemption Criteria and Reporting Requirements for Toxic Air Pollutants*, IDAPA 58.01.01.223.**

☒ Refer to the Rule. Read the *Exemption Criteria and Reporting Requirements for Toxic Air Pollutant Emissions,* IDAPA 58.01.01.223 (Section 223), Rules for the Control of Air Pollution in Idaho (Rules).

*Application completed consistent with our best interpretation of applicable regulations, checked with IDEQ in advance as possible*

**General Information**

☒ Fugitive toxic air pollutant emissions shall not be considered in determining whether a source meets the applicable exemption criteria. A list of toxic air pollutants is given in Rules Section 585 and 586.

☒ Toxic air pollutants are regulated in accordance with Rules Section 210 only from emission units constructed or modified on or after July 1, 1995.

*Application and emission inventory document emission estimates of all applicable TAPs, and include modeling of three TAPs whose emissions exceed IDAPA 586 ELs to show compliance with AACC impact limits*

☒ Record Retention. In accordance with Rules Section 220 the source shall maintain documentation on site which shall identify the exemption determined to apply to the source and verify that the source qualifies for the identified exemption. Documentation shall be kept for the life of the source (but not less than five years) or until a permit to construct or operating permit is issued which covers operation of the source.

*Copies of this entire permit application, including the TAP exemptions for the assay lab, will be maintained onsite*

Annual Report. Facilities that have exempted toxic air pollutant emissions in accordance with a Level I, Level II, or Level III exemption shall submit a report labeled "Toxic Air Pollutant Exemption Report" by May 1 each year for exemptions claimed during the previous 12 month period. The report shall state the date construction has or will commence and shall include copies of all exemption determinations by the owner or operator for Level I, Level II, or Level III exemptions (Rules Section 223.05).

*This permit application will serve as the report required under the referenced rule*

**Below Regulatory Concern (BRC) Exemption (Rules Section 223.01)**

☒ Calculate the uncontrolled emissions (Rules Section 210.05) of each toxic air pollutant from new emissions units. Uncontrolled emission rates are emissions at maximum capacity without the effect of physical or operational limitations. See Quantification of Emission Rates (Rules Section 210.02). Show calculations and state all assumptions.

☒ Calculate the increase of TAP emissions from modified emissions units. Show calculations and state all assumptions. The increase in TAP emissions from modified emission units which are

aggregated and compared to the exemption criteria is determined by subtracting the potential to emit the TAP before the modification from the uncontrolled potential to emit after the modification. In conducting this analysis please note the following for TAP emission increase determinations:

- Uncontrolled emission rates after the modification are emissions at maximum capacity without the effect of physical or operational limitations.
- When determining the emissions increase from existing permitted emissions units the emission rate before the modification is equivalent to the TAP emission limits contained in the permit or, if there no emission limits in the permit, by determining what the emission rate is under the physical or operational limitations contained in the permit.
- The emission increase determination for TAPs described above only applies to determine what emissions increases are for comparing to the TAP exemption thresholds. This method shall not be used to determine if a modification will occur. Emissions increases for modifications are determined in accordance with IDAPA 58.01.01.006.63 and IDAPA 58.01.01007.04 (projected actual emissions are subtracted from baseline actual emissions to determine if an emissions increase will occur for modification determinations).
- Questions often arise regarding polyaromatic hydrocarbons as they are listed in Rules Section 586 of the Rules. The following two points are provided for clarification.
    1) The following group of 7 PAH's shall be combined and considered as one TAP equivalent in potency to benzo(a)pyrene:

        Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a, h) anthrancene, chrysene, indeno(1,2,3,-cd) pyrene, benzo (a) pyrene

    2) All other PAH's are considered as a single pollutant and the emission of each is compared to the PAH increment listed in Rules Section 586.

☒ Aggregate the uncontrolled emissions increase of each TAP from new and modified emissions units.

☒ The source qualifies for a BRC exemption if the uncontrolled emission increase for all toxic air pollutants is less than or equal to 10% of the screening emission levels (EL) listed in Rules Section 585 & 586.

*This permit application, in text is Section 4 and in more detail in the Emission Inventory on worksheet "Assay Lab vents" document that we quality for the BRC exemption for all TAPs released from the assay lab.*

**Level I Exemption (Rules Section 223.02)**

☐ The uncontrolled emission rate from all new and modified emissions units shall be less than the applicable screening emission levels (EL) listed in Rules Section 585 & 586; or the uncontrolled ambient concentration for all toxic air pollutants shall be less than the applicable ambient concentration increment listed in Rules Sections 585 & 586. Calculate and document the uncontrolled emission rate from new and modified sources as described above.

☐ Aggregate the uncontrolled emissions increase of each TAP from new and modified emissions units.

☐ The source qualifies for a Level I exemption if the aggregated uncontrolled emissions from the new and modified emission units is less than or equal to all applicable screening emission levels (EL) listed in Rules Section 585 and 586.

☐ Model the uncontrolled emissions for each TAP from new emissions units and the increase in emissions from all modified emissions units. Refer to Quantification of Ambient Concentrations

(Rules Section 210.03) and the State of Idaho Air Quality Modeling Guideline (http://www.deq.idaho.gov/air/data_reports/publications.cfm#model). Maintain electronic input, output, and BIPinput modeling files.

☒ The source qualifies for a Level I exemption if the uncontrolled ambient concentration from each new and modified emission unit is less than or equal to all applicable acceptable ambient concentration increments listed in Rules Section 585 and 586.

*The application in Section 4 and the emission inventory on Emission Totals worksheet, document the IDAPA regulated TAPs are potentially emitted by the facility. Four (from the assay lab) were exempted via IDAPA 58.01.01.220.a with a BRC TAP exemption. Numerous others were potentially emitted from the primary and backup generators, as shown on the Primary generator and 100KW backup generator worksheets. No TAP potentially emitted from the backup generator were released at rates reaching IDAPA 585 or 586 ELs, thereby qualifying the backup generator for a TAP Level I exemption..*

*All of the primary generator TAPs released but three were emitted below their respective IDAPA 585 or 586 ELs. The three generator TAPs whose emissions exceeded IDAPA 586 ELs were modeled, showing compliance with their respective IDAPA 586 AACC impact limits.*

**Level II and Level III Exemptions (Rules Sections 223.03 & 223.04)**

☒ A stationary source may choose to document a Level II or Level III exemption. However Level II and Level III exemption criteria are more stringent than Level I exemption criteria. Consequently there is little practical use for these levels of exemptions. Therefore, this checklist does not detail Level II or Level III exemption criteria.

*Not applicable to this permit application.*