State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct No. P-2008.0169

Final

Formation Capital Corporation, U.S.

Idaho Cobalt Project

Cobalt, Idaho

Facility ID No. 059-00010

April 23, 2009

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Permit Writer

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

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Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
gr	grain (1 lb = 7,000 grains)
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
gpm	gallons per minute
HAP	Hazardous Air Pollutant
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
$\mu g/m^3$	micrograms per cubic meter
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PC	permit condition
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAP	Toxic Air Pollutant
T2	Tier II operating permit
T2/PTC	Tier II operating permit and permit to construct
T/yr	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

1.2 Permitting Action and Facility Permitting History

This permit is the initial PTC for this facility.

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

2.2 Application Chronology

July 18, 2008	DEQ received a pre-permit construction application and permit application fee (Project No. P-2008.0116).
August 1, 2008	DEQ denied the pre-permit construction approval application.
September 12, 2008	DEQ received a pre-permit construction application (Project No. P-2008.0148).
September 26, 2008	DEQ denied the pre-permit construction approval application.
November 3, 2008	DEQ received a pre-permit construction application (Project No. P-2008.0169).
November 17, 2008	DEQ approved the pre-permit construction application.
November 13 - December 1, 2008	DEQ provided an opportunity to request a public comment period on the permit application and proposed permit to construct.
December 3, 2008	DEQ determined that the application was complete.
January 28, 2009	DEQ made available the draft permit and statement of basis for peer and Idaho Falls Regional Office (IFRO).
January 30, 2009	DEQ made available the draft permit and statement of basis for facility review.
April 22, 2009	DEQ received $5,000 PTC processing fee.
April 23, 2009	DEQ issued the final permit and statement of basis.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION[a]

Emission Unit ID No.	Source Description	Emissions Controls
EP201	Crusher Building Jaw Crusher, Cone Crusher Model: (electric-powered) Manufacture date: Spring 2009 Maximum capacity: 83.3 T/hr Maximum production: 1000.8 T/day (limited by ball mill capacity) Screen Model: (electric-powered) Manufacture date: Spring 2009 Maximum capacity: 83.3 T/hr. Maximum production: 1000.8 T/day (limited by ball mill capacity) Materials transfer (inside Crusher Building)	Enclosed Building and Crushing Building Dust Collector Baghouse Stack Manufacturer: CPE Filters Model: 120-TNFD-420-C Control efficiency: ≥95% for PM/PM_{10} Minimum moisture content of 5% and reasonable controls
EP1401 EP1402	Concentrator Fine Ore Storage Bin Manufacturer: Boss Tank Model: 13311 Manufacture date: Spring 2009 Maximum capacity: 510 tons	Concentrator Building Fine Ore Storage Bin Vent Stack Manufacturer: CPE Filers Inc. Model: 72-BF-016-C Control efficiency: ≥75% for PM/PM_{10} Minimum moisture content of 5% and reasonable controls
EP1601 EP3001	Mining operations Ram and Sunshine Portals	Minimum moisture content of 5% and reasonable controls
EP1501 EP1502	Cement Storage Silo Manufacturer: Columbian Techtank Model: N/A Manufacture date: Spring 2009 Maximum capacity: 158 tons	Cement Storage Silo Baghouse/Cartridge Filter Stack Manufacturer: Ultra Industries Model: BB-25-58-IIG Control efficiency: 99.8% for PM/PM_{10}
(fugitives)	Materials transfer and storage piles	Minimum moisture content of 5% and reasonable controls
EP101	Emergency generator (or equivalent[a]) Date of construction: after August 2008 Maximum capacity: 800 kW Maximum operation: 100 hr/yr (non-emergency) Fuel: Diesel Maximum fuel consumption: 57.2 gph Maximum displacement: 2.54 liters/cylinder	None

3.2 Emissions Inventory

Table 3.2 UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emission Unit ID No.	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Point Sources											
EP101		0.0705		1.132		3.108		0.357		0.018	
EP201		4.2000									
EP1601 or EP3001[a]		3.3457		0.552		4.688		18.476			
Point Source Total		**7.62**		**1.69**		**7.80**		**18.84**		**0.02**	
Fugitive Sources											
EP302		0.0022									
EP402		0.0010									
EP403		0.0289									
EP404		0.0289									
EP901		5.2369									
EP902		3.7144									
EP1101		0.0032									
EP1102		0.0032									
Tram Subtotal		**9.02**									
EP901		19.093									
EP902		3.7144									
EP1301		0.0032									
EP1302		0.0002									
EP1303		0.0032									
EP1304		0.0962									
EP2001		0.0022									>0.0044
No Tram Subtotal		**22.92**									
EP301		0.0004									
EP303		0.0022									
EP401		0.0002									
EP501		0.0001									
EP502		0.0048									
EP503		0.0048									
EP601		0.0010									
EP602		0.2010									
EP603		0.0768									
EP604		0.0065									
EP1001		1.2484									
EP1201		0.0673									
EP1401		0.0196									
EP1402		0.0196									
EP1501		0.0007									
EP1502		0.0003									
EP1701		0.0002									
EP1702		0.0249									
Process Subtotal		**1.68**									
Fugitives Total[b]		**24.60**									

a. The estimated emissions from the Ram or Sunshine Portal scenarios (EP1601 or EP3001) are equivalent.
b. The fugitives total includes the process fugitives and the maximum of the "tram" or "no tram" scenario emissions.

Table 3.3 CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emission Unit ID No.	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Point Sources											
EP101	0.282	0.0705	4.526	1.132	12.43	3.108	1.429	0.357	0.07	0.018	
EP201	0.125	0.2100									
EP1601 or EP3001[a]	1.560	1.6729	0.567	0.552	4.82	4.688	18.98	18.476			
Point Source Total		**1.96**		**1.69**		**7.80**		**18.84**		**0.02**	
Fugitive Sources											
EP302	0.0013	0.0022									
EP402	0.0016	0.0010									
EP403	0.0087	0.0289									
EP404	0.0087	0.0289									
EP901	1.0474	1.5856									
EP902	2.4569	3.7144									
EP1101	0.0016	0.0032									
EP1102	0.0016	0.0032									
Tram Subtotal		**5.37**									
EP901[c]	1.0474	5.7424									
EP902[c]	2.4569	3.7144									
EP1301	0.0016	0.0032									
EP1302	0.007	0.0002									
EP1303	0.0016	0.0032									
EP1304	0.0481	0.0962									
EP2001	0.0013	0.0022									0.0044
No Tram Subtotal		**9.57**									
EP301	0.0063	0.0004									
EP303	0.0013	0.0022									
EP401	0.003	0.0002									
EP501	0.0002	0.0001									
EP502	0.0001	0.0005									
EP503	0.0001	0.0005									
EP601	0.0016	0.0010									
EP602	0.197	0.2010									
EP603	0.633	0.0154									
EP604	0.0001	0.0007									
EP1001	0.149	0.2497									
EP1201	0.0401	0.0673									
EP1401	0.0029	0.0049									
EP1402	0.0029	0.0001									
EP1501	0.0068	0.0007									
EP1502	0.0006	0.0001									
EP1701	0.0008	0.0001									
EP1702	0.294	0.0075									
Process Subtotal		**0.56**									
Fugitives Total[b]		**10.13**									

a. The point source total includes the generator (EP101), the Crusher Building Baghouse (EP201) and the maximum of the Ram or Sunshine Portal (EP1601 or EP3001) emissions.
b. The fugitives total includes the process fugitives and the maximum of the "tram" or "no tram" scenario emissions.
c. Includes multiple emission sources; refer to the ambient air quality impact analysis in Appendix C and the application for additional information regarding the individual pounds per hour emission rates.

An emissions inventory for the facility was provided in the application. The emissions inventory was based on emission factors from various sections in AP-42 (including sections 11.9, 11.19, 13.2, and 13.3), the WRAP Fugitive Dust Handbook 2006, ore assay data (head analysis percent by weight of core samples), and manufacturer's certified emissions data for the diesel emergency generator. The emissions inventory was also based on the following operational assumptions: 1000.8 T/day, and 280,000 T/yr maximum ore throughput; and 500 hours of annual operation of the emergency generator based on the assumption that its sole function is to provide back-up power when electric power from the local utility is interrupted. TAP emissions from ore processing are conservatively estimated to be 100% emitted according to the percent by weight of total PM.

A summary of the uncontrolled and controlled point source emissions are shown in Table 3.2 and Table 3.3. A summary of controlled TAP emissions that exceeded the emission screening level (EL) and HAP emissions are shown in Table 3.4. The controlled emissions inventory is included in Appendix B.

Table 3.4 TAP EMISSIONS EXCEEDING EL AND HAP EMISSIONS SUMMARY

TAP	HAP	Emissions Screening Levels	24-hour Average[a]	Annual Average[a]
		lb/hr	lb/hr	lb/hr
Acetaldehyde	Acetaldehyde	3.00E-03		1.11E-05
Acrolein	Acrolein	1.70E-02	6.08E-05	3.47E-06
Antimony	Antimony	3.30E-02	3.30E-05	
Arsenic	Arsenic	1.50E-06		1.56E-02
Benzene	Benzene	8.00E-04		3.42E-04
Beryllium	Beryllium	2.80E-05		4.40E-07
Cadmium	Cadmium	3.70E-06		1.10E-07
Chromium	Chromium	3.30E-02	3.08E-04	
Cobalt	Cobalt	3.30E-03	3.10E-02	
Formaldehyde	Formaldehyde	5.10E-04		3.48E-05
	Lead		1.99E-06	
Manganese (dust)	Manganese	3.33E-01	3.59E-04	
Mercury (inorganic)	Mercury	7.00E-03	6.60E-07	
Nickel	Nickel	2.70E-05		4.40E-05
Polycyclic Organic Matter	Polycyclic Organic Matter	2.0E-06		1.98E-06
Selenium	Selenium	1.30E-2	1.98E-05	
Toluene	Toluene	2.50E+1	2.17E-03	1.24E-04
Xylenes	Xylenes	2.9E+01		8.51E-05
Uranium (natural) Soluble & Insoluble	Radionuclides	1.30E-2	6.60E-07	
Total HAP (T/yr)				**0.21**

a. 24-hour average only applies to non-carcinogenic TAP. Annual average only applies to carcinogenic TAP.

3.3 Ambient Air Quality Impact Analysis

The estimated emissions from regulated sources listed in Table 3.3 exceeded published modeling thresholds[1] for criteria pollutants PM_{10}, NO_X, and SO_2, and for toxic air pollutants which exceeded the applicable EL listed in Table 3.4. A full impact analysis of PM_{10}, NO_X, SO_2, and CO was performed, and the maximum predicted impacts of the proposed operating scenarios are listed in Table 3.5.

For TAP which did not exceed the EL, compliance with TAP increments was demonstrated using the controlled ambient concentration in accordance with IDAPA 58.01.01.210.08. Modeling conducted in the development of TAP rules indicates that if a controlled emission rate is below the applicable EL, controlled ambient concentrations are expected to be below the AAC or AACC. The controlled TAP emissions rates that were compared to the EL assumed the use of operational limitations, including operating hours and material usage limits (refer to Section 3.1 for additional information).

The facility has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The facility has also demonstrated compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any applicable AAC or AACC for TAP, except those TAP using T-RACT analysis (arsenic) to demonstrate pre-construction compliance.

Table 3.5 FULL IMPACT ANALYSIS RESULTS FOR CRITERIA POLLUTANTS AND TAP EXCEEDING EL

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient Concentration ($\mu g/m^3$)	AAC/AACC ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percentage of Limit
PM_{10}	24-hour	64.6	43	107.6		150	72%
PM_{10}	Annual	13.7	9.6	23.3		50	47%
NO_2	Annual	2.4	4.3	6.7		100	7%
SO_2	3-hr	339	34	373		1,300	29%
	24-hr	87.6	26	113.6		365	31%
	Annual	3.6	8	11.6		80	15%
CO	1-hour	1,443	3,600	5,043		40,000	13%
	8-hour	452	2,300	2,752		10,000	28%
Arsenic	Annual	1.28E-03		1.28E-03	2.3E-03[a]		56%
Cobalt	24-hour	9.90E-02		9.90E-02	2.5E-01		4%
Nickel	Annual	9.90E-02		1.00E-05	4.2E-03		0.3%

a. This value is the T-RACT allowable AACC; the AACC listed in IDAPA 58.01.01.586 for arsenic is 2.3E-04 $\mu g/m^3$, annual average.

[1] Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002 and IDAPA 58.01.01.585-586.

Table 3.6 T-RACT ANALYSIS SUMMARY[a]

TAP	Contributing Sources	Proposed T-RACT Control Measure	Emission Rate	Annual Average	T-RACT Concentration (AACC x 10)	Permit Conditions
			lb/hr	µg/m³	µg/m³	
Arsenic	Crusher Circuit, Sunshine & Ram Portals,	Crushing Building Dust Collector Baghouse	1.56E-02	1.28E-03	2.3E-03[a]	2.8
	Fugitives	Moisture content 5% and the use of reasonable controls (Fugitive Dust Control Plan)				2.9, 2.11

a. This value is the T-RACT allowable AACC; the AACC listed in IDAPA 58.01.01.586 for arsenic is 2.3E-04 µg/m³, annual average.

For the T-RACT analysis, a review of available control technologies was completed, including the EPA RBLC database. A moisture content of between 4.5 to 5% has been implemented to achieve the lowest achievable emission rate (LAER) from fugitive emissions. To minimize the emissions of arsenic, the applicant has proposed a minimum of 5% moisture content for fugitive sources and the use of an enclosure and dust collector baghouse for the Crusher Building, as summarized in Table 3.6. These control measures were selected based upon economic feasibility and technological feasibility, and included energy and environmental considerations.

In accordance with IDAPA 58.01.01.210.12, the applicant used T-RACT to demonstrate preconstruction compliance for arsenic, a TAP listed in IDAPA 58.01.01.586. As summarized in Table 3.5, the annual average ambient concentration at the point of compliance for arsenic is less than the T-RACT ambient concentration (10 times the applicable AACC). As a result, the facility has demonstrated compliance with IDAPA 58.01.01.210.12.b and .c that the TAP emissions increase due to this permitting action will not exceed any T-RACT ambient concentration.

In accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e, emission limits and other permit conditions for each T-RACT pollutant have been incorporated into the permit as summarized in Table 3.6 to assure that the facility will be operated in the manner described in the preconstruction compliance demonstration.

A summary of the ambient air quality impact analysis is included in Appendix C. A summary of the proposed T-RACT is included in Appendix D.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is located in Lemhi County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, CO, NO_2, SO_X, and Ozone.

4.2 Permit to Construct (IDAPA 58.01.01.201)

The application was submitted for a permit to construct in accordance with IDAPA 58.01.01.202 and 58.01.01.213. The proposed project does not meet permit to construct exemption criteria in IDAPA 58.01.01.220-223. Therefore, a permit to construct is required.

4.3 Tier II Operating Permit (IDAPA 58.01.01.401)

The application was submitted for a permit to construct (refer to Section 4.2). Therefore, the procedures of IDAPA 58.01.01.401 are not applicable.

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

The facility is classified as a natural minor facility because without limits on the potential to emit, the estimated emissions of criteria pollutant and HAP do not have the potential to exceed major source thresholds. The facility is not classified as a major facility for Tier I permitting purposes, in accordance with IDAPA 58.01.01.008.10. The facility is not a designated facility as defined in IDAPA 58.01.01.006.30.

4.5 PSD Classification (40 CFR 52.21)

The facility is classified as a natural minor facility, because without limits on the potential to emit, the estimated emissions of criteria pollutant and HAP do not have the potential to exceed PSD major source thresholds. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a).

4.6 NSPS Applicability (40 CFR 60)

Subpart LL

40 CFR 60, Subpart LL ..... Standards of Performance for Metallic Mineral Processing Plants

40 CFR 60.380 ..... Applicability and designation of affected facility

In accordance with §60.380(a), the provisions of this subpart are applicable to the following affected facilities in the metallic mineral processing plant: each crusher, screen, conveyor belt transfer point, storage bin, enclosed storage area, truck loading station, and truck unloading station.

In accordance with §60.380(b), the facility is subject to the requirements of this part because the facility will commence construction after August 24, 1982.

40 CFR 60.381 ..... Definitions

This section contains the definitions of this subpart.

40 CFR 60.382 ..... Standard for particulate matter.

In accordance with §60.382(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.

In accordance with §60.382 (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.

Permit Condition 2.4 includes the requirements of this section.

40 CFR 60.383 ..... Reconstruction.

In accordance with §60.383(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.

In accordance with §60.383(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.

Permit Condition 2.18 includes the requirements of this section.

§ 60.384 Monitoring of operations.

Because the permittee has not proposed the use of a wet scrubber control device, the requirements of §60.384(a) and (b) are not applicable.

§ 60.385 Recordkeeping and reporting requirements.

In accordance with §60.385(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). Permit Condition 2.16 includes the requirements of this section.

Because the permittee has not proposed the use of a wet scrubber control device, the requirements of §60.385(b), (c), and (d) are not applicable.

In accordance with §60.385(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.

§ 60.386 Test methods and procedures.

In accordance with §60.386(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).

In accordance with §60.386(b), the owner or operator shall determine compliance 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.

Permit Condition 2.17 includes the requirements of this section.

Because the permittee has not proposed the use of a wet scrubber control device, the requirements of §60.386(c) are not applicable.

Subpart IIII

40 CFR 60, Subpart IIII..... Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60.4200 ..... Am I subject to this subpart?

In accordance with §60.4200(a)(2)(i), the facility is subject to this subpart because the permittee will operate a stationary compression ignition (CI) internal combustion engine (ICE) that will commence construction after July 11, 2005 and was manufactured after April 1, 2006.

40 CFR 60.4201 ..... What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4201 are not applicable.

40 CFR 60.4202 ..... What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4202 are not applicable.

40 CFR 60.4203 ..... How long must I meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4203 are not applicable.

40 CFR 60.4204 ..... What emission standards must I meet for non-emergency engines if I am an owner operator of a stationary CI internal combustion engine?

The permittee is not operating a non-emergency stationary CI ICE, so the requirements of §60.4204 are not applicable.

40 CFR 60.4205 ..... What emission standards must I meet for emergency engines if I am an owner operator of a stationary CI internal combustion engine?

Because the emergency generator is model year 2007 or later with a displacement of less than 30 liters per cylinder (30.5 liters/12 cylinders=2.55 liters/cylinder), and is not a fire pump engine, the permittee

shall comply with the emission standards for new nonroad CI engines in §60.4202 for all pollutants, in accordance with §60.4205(b).

The emission standards of §89.112 and §89.113 apply to an emergency generator with a maximum engine power between 50 HP and 3,000 HP, and a displacement of less than 10 liters per cylinder, in accordance with §60.4202(a)(2).

The exhaust emission standards in §89.112 for kW>560 (Tier 2) and the Cummins Exhaust Emission Compliance Statement provided in the application (refer to Appendix B) for the emergency generator are as follows:

Nonroad engines >750 HP (Tier 2)	NMHC+NO_X (g/HP-hr)	CO (g/HP-hr)	PM (g/HP-hr)
Table 1 of 40 CFR 89.112	4.77	2.61	0.15
Compliance Statement	4.77	2.61	0.15

The smoke emission standards in §89.113 include opacity limits for the emergency generator during acceleration and lugging modes, and the methods of measurement.

Permit Condition 3.3 includes the exhaust and smoke emission standards of this section.

40 CFR 60.4206 ..... How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with §60.4206, the permittee shall operate and maintain stationary CI ICE that achieve the emission standards as required in §60.4205 according to the manufacturer's written instructions, over the life of the engine. Permit Condition 3.3 includes the requirements of this section.

40 CFR 60.4207 ..... What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

In accordance with §60.4207(a), the permittee shall use diesel fuel that meet the requirements of 40 CFR 80.510(a).

In accordance with §60.4207(b), beginning October 1, 2010, the permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

Permit Condition 3.4 includes the diesel fuel requirements of this section.

Because the permittee has not proposed to use non-compliant fuel, the facility is not located in Alaska, and has not proposed to operate under a national security exemption, the requirements of §60.4207(c), (d), and (e) are not applicable.

40 CFR 60.4208 ..... What is the deadline for importing or installing stationary CI ICE produced in the previous year?

In accordance with §60.4208 and the dates provided, the permittee shall not install or import an emergency generator that does not meet the applicable emission standards of Subpart IIII. Permit Condition 3.7 includes the requirements of this section.

40 CFR 60.4209 ..... What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with §60.4209(a), the permittee shall install a non-resettable hour meter prior to startup of the engine. Permit Condition 3.7 includes the requirements of this section.

40 CFR 60.4210 ..... What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4210 are not applicable.

40 CFR 60.4211 ..... What are my compliance requirements if I am an owner operator of a stationary CI internal combustion engine?

In accordance with 60.4211(a), the emergency generator shall be operated according to the manufacturer's written instructions. In addition, the permittee shall only change those settings that are permitted by the manufacturer.

In accordance with 60.4211(c), because the emergency generator is model year 2007 or later, and is subject to the emission standards specified in §60.4205(b), the permittee shall comply by purchasing an engine certified to the emission standards in §60.4205(b) and installing and configuring the engine according to the manufacturer's specifications.

In accordance with 60.4211(e), the emergency generator may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Because the emergency generator is meeting the requirements of 40 CFR 60.4205 but not 60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

Permit Condition 3.5 includes the requirements of this section.

40 CFR 60.4212 ..... What test methods and other procedures must I use if I'm an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section, in accordance with §60.4212.

Permit Condition 3.6 includes the requirements of this section.

40 CFR 60.4213 ..... What test methods and other procedures must I use if I am an owner or operator of a stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder?

Because the emergency generator has a displacement of less than 30 liters per cylinder, the requirements of §60.4213 are not applicable.

40 CFR 60.4214 ..... What are my notifications, reporting, and recordkeeping requirements if I am and owner or operator of a stationary CI internal combustion engine?

In accordance with 60.4214(b), because the stationary CI ICE is an emergency stationary ICE, the permittee is not required to submit an initial notification. Because the model year of the emergency generator is before 2011, additional recordkeeping requirements are not applicable.

40 CFR 60.4215 ..... What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

These requirements do not apply to this facility because the facility is not located in the specified locations.

40 CFR 60.4216 ..... What requirements must I meet for engines used in Alaska?

These requirements do not apply to this facility because the facility is not located in the specified location.

40 CFR 60.4217 ..... What requirements must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

These requirements do not apply to this facility because diesel fuel will be used in the emergency generator, and the use of special fuels has not been requested.

40 CFR 60.4218 ..... What part of the general provisions apply to me?

All general provisions apply to this facility except those specified in 40 CFR 60, Subpart IIII.

40 CFR 60.4219 ..... What definitions apply to this subpart?

This section contains the definitions and supporting tables for this subpart.

Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII identifies the requirements of Subpart A which are applicable to this facility.

4.7 NESHAP Applicability (40 CFR 61)

The facility is not subject to NESHAP.

4.8 MACT Applicability (40 CFR 63)

The facility does not belong to any of the specific source categories regulated by 40 CFR Part 63, and is below the major source thresholds of 10 tons/yr for each HAP and 25 tons/yr for any combination of HAP. However, the facility is subject to Subpart ZZZZ because it is an area source of HAP.

Subpart ZZZZ

40 CFR 63, Subpart ZZZZ ..... National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63.6580 ..... What is the purpose of subpart ZZZZ?

In accordance with §63.6580, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

40 CFR 63.6585 ..... Am I subject to this subpart?

Because the permittee owns or operates a stationary RICE at an area source of HAP emissions, the permittee is subject to this subpart in accordance with §63.6585.

In accordance with §63.6585(d), if you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart.

40 CFR 63.6590 ..... What parts of my plant does this subpart cover?

In accordance with §63.6590, this subpart applies to each affected source.

In accordance with §63.6590(a), an affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

Because the stationary RICE (emergency generator) is located at an area source of HAP emissions and was constructed on or after June 12, 2006, it is new in accordance with §63.6590(a)(2)(iii).

Because the emergency generator is a new stationary RICE located at an area source, the affected source (emergency generator) must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII for compression ignition engines. No further requirements apply for such engines under this part in accordance with §63.6590(c).

4.9 CAM Applicability (40 CFR 64)

The facility is classified as a natural minor facility for purposes of Title V, and is therefore not subject to CAM requirements. Refer to section 4.4 for further discussion regarding the natural minor classification.

4.10 Permit Conditions Review

This section describes the permit conditions for this initial permit.

New Permit Condition 2.3
Emissions from any baghouse/cartridge filter stack or from any stack, vent, or other functionally equivalent opening associated with the mining operations, mineral processing plant, or the emergency generator shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required in IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

This permit condition limits opacity from point sources as required by IDAPA 58.01.01.625. Compliance with this emissions rate limit is demonstrated by complying with Permit Condition 2.13 (visible emissions inspections).

New Permit Condition 2.4

- *In accordance with 40 CFR 60.382(a), on and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, no owner or operator shall cause to be discharged into the atmosphere from an affected facility any stack emissions that:*
  - *Contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.02 g/dscm).*
  - *Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing emission control device.*
- *In accordance with 40 CFR 60.382(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.*

These emission limits are required by NSPS Subpart LL. Refer to Section 4.6 for additional information.

New Permit Condition 2.5
The arsenic emissions from the Crushing Building Dust Collector Baghouse Stack shall not exceed any corresponding emission rate limits listed in Table 2.2.

Table 2.2 CRUSHER EMISSION LIMITS[1]

Source Description	*Arsenic[2]* *lb/hr[3]*
Crushing Building Dust Collector Baghouse Stack (EP201)	*5.45E-04*

1) In absence of any other credible evidence, compliance is assured by complying with this permit's operating, monitoring, and record keeping requirements.
2) TAP emission limit has been included in accordance with IDAPA 58.01.01.210.12.d.

The arsenic TAP emission limit is required based on the use of T-RACT analysis for this TAP in accordance with IDAPA 58.01.01.210.12.d and IDAPA 58.01.01.210.14.e.

Compliance with the arsenic TAP emissions rate limit is ensured by complying with Permit Condition 2.7 (throughput limits), Permit Condition 2.8 (use of a control device), Permit Condition 2.9 (moisture content), and Permit Conditions 2.10 and 2.11 (fugitive dust control).

New Permit Condition 2.6
The permittee shall not allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution in accordance with IDAPA 58.01.01.776.01.

This permit condition limits odors from the facility as required by IDAPA 58.01.01.776.01. Compliance with this standard is demonstrated by complying with the monitoring and recordkeeping requirements in Permit Condition 2.15.

New Permit Condition 2.7
The permittee shall process ore as the raw material, and the maximum throughput through the primary crusher shall not exceed 280,000 tons per year to ensure compliance with Permit Condition 2.5.

The annual crusher throughput requirement is required to ensure compliance with the annual PM_{10} NAAQS, and was developed based upon the emissions inventory, ambient air impact analysis, and proposed T-RACT provided in the application. Daily throughput limits on process equipment such as the primary crusher were not required because the facility-wide throughput is inherently limited by the maximum equipment throughput capacity of the ball mill (process bottleneck), as provided in the application.

New Permit Condition 2.8
The permittee shall install and operate the baghouses/cartridge filter systems listed in Table 2.1 to control PM, PM_{10}, and arsenic emissions from the Crusher Building to ensure compliance with the emission limits in Permit Condition 2.5 and in accordance with IDAPA 58.01.01.210.12.d and IDAPA 58.01.01.210.14.e.

The requirement to install and operate baghouse/cartridge filter system control devices is required to demonstrate compliance with the 24-hr and annual PM_{10} NAAQS, and because this was proposed as a method to minimize the identified TAP emissions (arsenic) in the T-RACT analysis.

New Permit Condition 2.9
The owner or operator shall ensure that all mined and waste material contains a minimum moisture content of 5% to control arsenic emissions from the facility, to ensure compliance with the emission limits Permit Condition 2.5 and in accordance with IDAPA 58.01.01.210.12.d and IDAPA 58.01.01.210.14.e. In absence of any other credible evidence, compliance with this permit condition is ensured by complying with the Fugitive Dust Control Plan required in Permit Condition 2.11.

The requirement to ensure a minimum moisture content of 5% was proposed as a method to minimize the identified TAP emissions (arsenic) in the T-RACT analysis. In absence of any other credible evidence, compliance with this permit condition is ensured by complying with Permit Condition 2.11 (fugitive dust control).

New Permit Condition 2.10
All reasonable precautions shall be taken to prevent particulate matter from becoming airborne in accordance with IDAPA 58.01.01.650-651. In determining what is reasonable, consideration will be given to factors such as the proximity of dust-emitting operations to human habitations and/or activities and atmospheric conditions which might affect the movement of PM. Some of the reasonable precautions include, but are not limited to, the following:

- *Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.*
- *Application, where practical, of asphalt, oil, water, or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust.*
- *Installation and use, where practical, of hoods, fans, and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations.*
- *Covering, when practical, open-bodied trucks transporting materials likely to give rise to airborne dusts.*
- *Paving of roadways and their maintenance in a clean condition, where practical.*
- *Prompt removal of earth or other stored material from streets, where practical.*

Reasonable control of fugitive emissions is required by IDAPA 58.01.01.650-651.

New Permit Condition 2.11
The Permittee shall develop and maintain a Fugitive Dust Control Plan to ensure compliance with Permit Conditions 2.9 and 2.10 and in accordance with IDAPA 58.01.01.210.12.d and IDAPA 58.01.01.210.14.e.

- *The Fugitive Dust Control Plan shall identify potential sources of fugitive dust and shall specify reasonable precautions for control of fugitive dust sources of arsenic. The Fugitive Dust Control Plan shall contain, at a minimum, the following information and requirements:*
  - *A list of all of the potential sources of fugitive dust from the facility.*

- *The owner or operator shall at all times be observant of all sources of fugitive dust emissions and monitor control strategies at least once per day when operating.*
- *Requirements for control strategies. A progressive control strategy may be used to reasonably control the emissions of fugitive dust. Progressive control strategy means that if the initial control strategy or strategies chosen do not adequately control fugitive dust emissions, the owner or operator shall employ successive control strategies as listed until fugitive dust control is achieved. Fugitive dust control shall be applied on a frequency such that visible emissions do not exceed any emission standard listed in this permit.*
- *Requirements for inspection. Each day that the facility is operated, the permittee shall conduct a facility-wide inspection of potential sources of fugitive emissions, during daylight hours and under normal operating conditions to ensure that the methods used to reasonably control fugitive emissions are effective in accordance with Permit Condition 2.10. If fugitive emissions are not being reasonably controlled, the permittee shall take corrective action as expeditiously as practicable.*
- *Requirements for monitoring and recordkeeping. The permittee shall maintain records of the results of each fugitive emission inspection. The records shall include, at a minimum, the date of each inspection and a description of the following: the permittee's assessment of the conditions existing at the time fugitive emissions were present (if observed), any corrective action taken in response to the fugitive emissions, and the date the corrective action was taken. The permittee shall also record any citizen complaint, an evaluation of whether the complaint has merit, and a summary of the corrective action taken. A compilation of the most recent five years of records shall be kept onsite and made available to DEQ representatives upon request.*
- *Requirements for training and orientation of employees about the requirements in the Fugitive Dust Control Plan.*

- *Reasonable precautions shall include the following in addition to Permit Condition 2.10:*
  - *Applying dust control at the initial point of material handling, such as the mine working face, to suppress dust throughout the material handling process.*
  - *Wetting the muck pile before and during loading. If necessary, additional water shall be used to wet the material in the trucks.*
  - *Prompt processing of stockpiled ore and waste rock so that it will not be allowed to dry and become airborne. Should the material begin to dry and produce dust, water shall be added as a matter of operational management.*
  - *While operating, the permittee shall observe areas within 100 meters of active mining and mineral processing operations and shall discourage public access to such areas.*
- *When the facility is operating, the owner or operator shall comply with the requirements in the Fugitive Dust Control Plan at all times.*
- *The requirements specified in the Fugitive Dust Control Plan shall be incorporated by reference to this permit and shall be enforceable permit conditions.*
- *A copy of the Fugitive Dust Control Plan shall remain onsite at all times and shall be submitted to the following address within 45 days of permit issuance:*

Air Quality Permit Compliance
Idaho Falls Regional Office
Department of Environmental Quality
900 N. Skyline, Suite B
Idaho Falls, ID 83402

This permit condition is required to ensure compliance with Permit Condition 2.9.

New Permit Condition 2.12
Within 60 days of permit issuance, the permittee shall have developed and submitted to DEQ an Operations and Maintenance (O&M) manual for the baghouses/cartridge filter systems listed in Table 2.1. The O&M manual shall describe the procedures that will be followed to comply with General Provision 2 and the manufacturer specifications for the control devices.

At a minimum, a schedule and procedures for corrective action that will be taken if visible emissions are present from the baghouses/cartridge filter systems at any time shall be included in the O&M manual, including procedures to determine whether bags or cartridges are ruptured, and procedures to determine if bags or cartridges are not appropriately secured in place. The permittee shall operate the baghouses/cartridge filter systems in accordance with the O&M manual.

The permittee shall maintain records of the results of each baghouse/cartridge filter system inspection. The records shall include a description of whether visible emissions were present and if visible emissions were present, a description of the corrective action that was taken. All records shall be maintained on-site and in accordance with General Provision 7.

The O&M manual shall be submitted to DEQ within 60 days of permit issuance at the following address and shall contain a certification by a responsible official. Any changes to the O&M manual shall be submitted within 15 days of the change.

Air Quality Permit Compliance
Idaho Falls Regional Office
Department of Environmental Quality
900 N. Skyline, Suite B
Idaho Falls, ID 83402

The operation and monitoring requirements specified in the O&M manual are incorporated by reference to this permit and are enforceable permit conditions.

The requirement to develop a baghouse/filter system O&M manual is required to demonstrate compliance with the 24-hr and annual PM_{10} NAAQS and to maintain the baghouse control efficiency rating used in the development of the emissions inventory.

New Permit Condition 2.13
Each month that the facility is operated, the permittee shall conduct a site-wide inspection of potential sources of visible emissions; including any stack, vent, or other functionally equivalent opening; during daylight hours and under normal operating conditions, to ensure compliance with Permit Condition 2.3. The inspection shall consist of a see/no see evaluation for each potential source of emissions. If any visible emissions are present from any point of emission, the permittee shall either take appropriate corrective action as expeditiously as practicable, or perform a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625. A minimum of 30 observations shall be recorded when conducting the opacity test. If opacity is greater than 20% for a period or periods aggregating more than three minutes in any 60-minute period, the permittee shall take all necessary corrective action and

report the exceedance in accordance with IDAPA 58.01.01.130-136.

The permittee shall maintain records of the results of each visible emissions inspection and each opacity test when conducted. The records shall include, at a minimum, the date and results of each inspection and test and a description of the following: the permittee's assessment of the conditions existing at the time visible emissions are present (if observed), any corrective action taken in response to the visible emissions, and the date corrective action was taken.

Monitoring for visible emissions from point sources is required to demonstrate compliance with IDAPA 58.01.01.625 (Permit Condition 2.3).

New Permit Condition 2.14
The permittee shall monitor and record the annual throughput on a monthly basis to demonstrate compliance with Permit Condition 2.7. Annual throughput shall be determined by summing each monthly throughput total over the previous consecutive 12-calendar month period.

Monitoring and recordkeeping are required to demonstrate compliance with throughput limits (Permit Condition 2.7).

New Permit Condition 2.15
The permittee shall maintain records of all odor complaints received to demonstrate compliance with Permit Condition 2.6. The permittee shall take appropriate corrective action as expeditiously as practicable. The records shall include, at a minimum, the date each complaint was received and a description of the following: the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.

Monitoring and recordkeeping of odor complaints is required to demonstrate compliance with IDAPA 58.01.01.776.01 (Permit Condition 2.6).

New Permit Condition 2.16
The owner or operator shall conduct a performance test and submit a written report of the results of the test as specified in 40 CFR 60.8(a) and in accordance with 40 CFR 60.385(a). Performance testing shall demonstrate compliance with the emission standards in Permit Condition 2.4.

- *Emission sources subject to performance testing shall include the Crushing Building Dust Collector Baghouse Stack and the Concentrator Building Fine Ore Storage Bin Vent.*

These emission limits are required by NSPS Subpart LL. Refer to Section 4.6 for additional information. The point sources which have been determined to be applicable to Subpart LL (the Crushing Building Dust Collector Baghouse Stack and the Concentrator Building Fine Ore Storage Bin Vent) are provided for clarification purposes only.

New Permit Condition 2.17
- *In conducting the performance tests required in Permit Condition 2.16, the owner or operator shall use as reference methods and procedures the test methods in 40 CFR 60, Appendix A or other methods and procedures as specified in 40 CFR 60.386(a), except as provided in 40 CFR 60.8(b).*
- *The owner or operator shall determine compliance with the particulate matter standards 40 CFR 60.382 as follows in accordance with 40 CFR 60.386(b):*
  - *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.

- *Method 9 and the procedures in 40 CFR 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.*

These emission limits are required by NSPS Subpart LL. Refer to Section 4.6 for additional information.

New Permit Condition 2.18
The permittee shall comply with the requirements of 40 CFR 60, Subpart A – General Provisions. The permittee shall follow the procedures relevant to reconstruction in 40 CFR 60.383, in accordance with 40 CFR 60.383. A summary of applicable requirements for affected facilities is provided in Table 2.3.

Table 2.3 NSPS 40 CFR 60, Subpart A – Summary of General Provisions for Owners and Operators of Affected Facilities

Section	*Subject*	*Summary of Section Requirements*
60.4	*Addresses*	• *All requests, reports, applications, submittals, and other communications associated with 40 CFR 60, Subpart LL shall be submitted to:* *Idaho Falls Regional Office* *Department of Environmental Quality* *Idaho Falls Regional Office* *900 N. Skyline, Suite B* *Idaho Falls, ID 83402* • *All requests, reports, applications, submittals, and other communications associated with 40 CFR 60, Subpart IIII shall be submitted to:* *Director Air and Waste* *US EPA* *1200 Sixth Avenue* *Seattle, WA 98101* *and* *Idaho Falls Regional Office* *Department of Environmental Quality* *Idaho Falls Regional Office* *900 N. Skyline, Suite B* *Idaho Falls, ID 83402*
60.7(a),(b), and (f)	*Notification and Recordkeeping*	• *Notification shall be furnished of commencement of construction postmarked no later than 30 days of such date.* • *Notification shall be furnished of initial startup postmarked within 15 days of such date.* • *Notification shall be furnished of any physical or operational change that may increase emissions postmarked 60 days before the change is made.* • *Records shall be maintained of the occurrence and duration of any startup, shutdown or malfunction; any malfunction of the air pollution control equipment; or any periods during which a CMS or monitoring device is inoperative.* • *Records shall be maintained, in a permanent form suitable for inspection, of all measurements, performance testing measurements, calibration checks, adjustments and maintenance performed, and other required information. Records shall be maintained for a period of two years following the date of such measurements, maintenance, reports, and records.*
60.8	*Performance Tests*	• *At least 30 days prior notice of any performance test shall be provided to afford the opportunity to have an observer to be present.* • *Within 60 days of achieving the maximum production rate, but not later 180 days after initial startup, performance test(s) shall be conducted and a written report of the results of such test(s) furnished.* • *Performance testing facilities shall be provided as follows:* *Sampling ports adequate for test methods applicable to such facility.*

Section	*Subject*	*Summary of Section Requirements*
		Safe sampling platform(s). *Safe access to sampling platform(s).* *Utilities for sampling and testing equipment.* • *Performance tests shall be conducted and data reduced in accordance with 40 CFR 60.8(b), (c), and (f).*
60.11(a), (d), (f), and (g)	*Compliance with Standards and Maintenance Requirements*	• *When performance tests are required, compliance with standards is determined by methods and procedures established by 40 CFR 60.8.* • *At all times, including periods of startup, shutdown, and malfunction, the owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.* • *For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.*
60.11(b), (c), and (e)	*Compliance with Standards and Maintenance Requirements (Opacity)*	• *Compliance with opacity standards shall be determined by Method 9 in Appendix A of 40 CFR 60. The permittee may elect to use COM measurements in lieu of Method 9, provided notification is made at least 30 days before the performance test.* • *The opacity standards shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided.* • *Opacity observations shall be conducted concurrently with the initial performance test required in 40 CFR 60.8 in accordance with the requirements and exceptions in 40 CFR 60.11(e).*
60.12	*Circumvention*	• *No permittee shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard.*
60.14	*Modification*	• *A physical or operational change which results in an increase in the emission rate to the atmosphere or any pollutant to which a standard applies shall be considered a modification, and upon modification an existing facility shall become an affected facility in accordance with the requirements and exemptions in 40 CFR 60.14.* • *Within 180 days of the completion of any physical or operational change, compliance with all applicable standards must be achieved.*
60.15	*Reconstruction*	• *An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate in accordance with the requirements of 40 CFR 60.15.*

General provisions are required by NSPS Subpart A, LL, and IIII. Refer to Section 4.6 for additional information.

New Permit Condition 2.19

Unless expressly provided otherwise, any reference in this permit to any document identified in IDAPA 58.01.01.107.03 shall constitute the full incorporation into this permit of that document for the purposes of the reference, including any notes and appendices therein. Documents include, but are not limited to:

- *Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60*

For permit conditions referencing or cited in accordance with any document incorporated by reference (including permit conditions identified as NSPS or NESHAP), should there be any conflict between the requirements of the permit condition and the requirements of the document, the requirements of the document shall govern, including any amendments to that regulation.

This permit condition clarifies that federal requirements are incorporated into the Rules in accordance with IDAPA 58.01.01.107. This permit condition also clarifies that with regard to permit conditions referenced in accordance with these federal requirements or the incorporation of these requirements by reference, should there be a conflict between the language of the permit condition and the language of the federal requirement, the language of the federal requirement shall govern.

New Permit Condition 3.3

- *The permittee shall operate and maintain the emergency generator according to the manufacturer's written instructions or procedures that are approved by the engine manufacturer, over the entire life of the engine, in accordance with 40 CFR 60.4206.*
- *The permittee shall comply with the certification emission standards for new nonroad CI engines in 40 CFR 60.4202, for all pollutants, for the same model year and maximum engine power in accordance with 40 CFR 60.4205(b) and 40 CFR 60.4202(a)(2).*
  - *Exhaust emissions from the emergency generator shall not exceed the exhaust emission standards contained in Table 3.2, in accordance with 40 CFR 89.112.*

Table 3.2 EMERGENCY GENERATOR EXHAUST EMISSIONS LIMITS[1]

$NMHC+NO_X$ (g/HP-hr)	*CO (g/HP-hr)*	*PM (g/HP-hr)*
4.77	*2.61*	*0.15*

1) Table 1 of 40 CFR 89.112, Tier 2 engines greater than 560 kW.

  - *Exhaust opacity from the emergency generator shall not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either the acceleration or lugging modes, in accordance with 40 CFR 89.113. Opacity levels are to be measured and calculated as set forth in 40 CFR part 86, subpart I.*

These emission standards are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

New Permit Condition 3.4

- *The permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(a), with a maximum sulfur content of 500 ppm, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent, in accordance with 40 CFR 60.4207(a).*
- *Beginning October 1, 2010, the permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(b), with a maximum sulfur content of 15 ppm, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent, in accordance with 40 CFR 60.4207(b).*

These fuel requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information. The diesel fuel sulfur content requirements in Subpart IIII are more stringent than the requirements of IDAPA 58.01.01.728; therefore the requirements of IDAPA 58.01.01.728 have not been included in this permit. It should be noted, however, that the requirements of IDAPA 58.01.01.728 are still applicable to the permittee.

New Permit Condition 3.5

- *Maintenance checks and readiness testing of the emergency generator is limited to 100 hours per year, in accordance with 40 CFR 60.4211(e). There is no time limit on the use of the emergency generator in emergency situations. The emergency generator may be operated for the purpose of*

maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine.

- *Any operation other than emergency operation, maintenance, and testing is prohibited in accordance with 40 CFR 60.4211(e). Anyone may petition EPA for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year.*
- *The permittee shall operate and maintain the emergency generator according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine manufacturer, in accordance with 60.4211(a). In addition, the permittee shall only change those settings that are permitted by the manufacturer.*
- *The emergency generator purchased by the permittee shall be certified to the applicable emission standard in 40 CFR 60.4205(b) for the same model year and maximum engine power, and shall be installed and configured according to the manufacturer's specifications, in accordance with 40 CFR 60.4211(c).*

These compliance requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

New Permit Condition 3.6
Owners and operators who conduct performance tests must do so according to the paragraphs of 40 CFR 60.4212 (a) through (d), in accordance with 40 CFR 60.4212.

These testing requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

New Permit Condition 3.7
- *The permittee shall comply with the deadlines for importing and installing an emergency generator produced in a previous model year, in accordance with 40 CFR60.4208 (a) through (g).*
- *In accordance with 40 CFR 60.4209(a), the permittee shall install a non-resettable hour meter prior to startup of the emergency generator.*

These requirements are required by NSPS Subpart IIII. Refer to Section 4.6 for additional information.

New Permit Condition 3.8
The permittee shall maintain documentation of supplier verification of the fuel oil sulfur content on an as-received basis for every shipment, in accordance with General Provision 7 and to demonstrate compliance with Permit Condition 3.4.

Monitoring and recordkeeping of fuel oil sulfur content is required to demonstrate compliance with Permit Condition 3.4.

New Permit Condition 3.9
The permittee shall record and maintain the operating hours of the emergency generator on a monthly and annual basis to demonstrate compliance with Permit Condition 3.5. Records of this information shall be maintained in accordance with General Provision 7.

Monitoring and recordkeeping are required to demonstrate compliance with the operating hours limit (Permit Condition 3.5).

New Permit Condition 3.10
The permittee shall maintain up-to-date documentation of any equivalent equipment used in place of the emergency generator listed in Table 3.1 onsite. Documentation shall include information on all of the parameters listed in Table 3.1, including the manufacturer, the model, the maximum capacity, the maximum fuel consumption, the date of manufacture, the date of any reconstruction, and the stack parameters.

The requirement to maintain documentation of any equivalent equipment is required to ensure that the emissions inventory and ambient air impact analysis provided in the application accurately reflect the equipment permitted.

New Permit Condition 3.11
The permittee shall comply with the requirements of 40 CFR 60, Subpart A – General Provisions. A summary of applicable requirements for affected facilities is provided in Table 2.3 of Permit Condition 2.18.

General provisions are required by NSPS Subpart A, LL, and IIII. The referenced summary table for this permit condition is provided in Permit Condition 2.18. Refer to Section 4.6 for additional information.

New Permit Condition 3.12
Unless expressly provided otherwise, any reference in this permit to any document identified in IDAPA 58.01.01.107.03 shall constitute the full incorporation into this permit of that document for the purposes of the reference, including any notes and appendices therein. Documents include, but are not limited to:

- *Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60*

For permit conditions referencing or cited in accordance with any document incorporated by reference (including permit conditions identified as NSPS or NESHAP), should there be any conflict between the requirements of the permit condition and the requirements of the document, the requirements of the document shall govern, including any amendments to that regulation.

This permit condition clarifies that federal requirements are incorporated into the Rules in accordance with IDAPA 58.01.01.107. This permit condition also clarifies that with regard to permit conditions referenced in accordance with these federal requirements or the incorporation of these requirements by reference, should there be a conflict between the language of the permit condition and the language of the federal requirement, the language of the federal requirement shall govern.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The permittee is subject to a processing fee of $5,000 in accordance with IDAPA 58.01.01.225 because its permitted emissions are between 10 to less than 100 tons per year. Refer to the chronology for fee receipt dates.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	7.8	0	7.8
SO_2	1.7	0	1.7
CO	18.9	0	18.9
PM_{10}	2.0	0	2.0
VOC	0.1	0	0.1
HAP[1]	0.0	0	0.0
Total[1]:	**30.5**	**0**	**30.5**
Fee Due			**$5,000.00**

[1] For the purposes of fee calculation, particulate and organic HAP/TAP are included in the PM_{10} and VOC emissions totals (respectively) and are therefore not included in the HAP/TAP emissions total.

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there was no comment on the application and there was no request for a public comment period on DEQ's proposed action. Refer to the chronology in Section 2.2 for comment period opportunity dates.

Appendix A – AIRS Information

AIRS/AFS Facility-wide Classification Form

Facility Name: Formation Capital Corporation, U.S.

Facility Location: Cobalt, Idaho

Facility ID: 059-00010 Date: 03/18/09

Project/Permit No.: P-2008.0169 Completed By: Morrie Lewis

☐ Check if there are no changes to the facilitywide classification resulting from this action. (compare to form with last permit)

☐ Yes, this facility is an SM80 source.

Identify the facility's area classification as A (attainment), N (nonattainment), or U (unclassified) for the following pollutants:

	SO2	PM10	VOC
Area Classification:	U	U	U

DO NOT LEAVE ANY BLANK

Check one of the following:

☒ **SIP** [0] - Yes, this facility is subject to SIP requirements. (do not use if facility is Title V)

OR

☐ **Title V** [V] - Yes, this facility is subject to Title V requirements. (If yes, do not also use SIP listed above.)

For SIP or TV, identify the classification (A, SM, B, C, or ND) for the pollutants listed below. Leave box blank if pollutant is not applicable to facility.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	B	B	B	B	B	B	B

☐ **PSD** [6] - Yes, this facility has a PSD permit.

If yes, identify the pollutant(s) listed below that apply to PSD. Leave box blank if pollutant does not apply to PSD.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☐ **NSR - NAA** [7] - Yes, this facility is subject to NSR nonattainment area (IDAPA 58.01.01.204) requirements.

Note: As of 9/12/08, Idaho has no facility in this category.

If yes, identify the pollutant(s) listed below that apply to NSR-NAA. Leave box blank if pollutant does not apply to NSR - NAA.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☐ **NESHAP** [8] - Yes, this facility is subject to NESHAP (Part 61) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

☒ **NSPS** [9] - Yes, this facility is subject to NSPS (Part 60) requirements.

If yes, what CFR Subpart(s) is applicable? A, LL, IIII

If yes, identify the pollutant(s) regulated by the subpart(s) listed above. Leave box blank if pollutant does not apply to the NSPS.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☒	☒	☐	☒	☒	☐

☐ **MACT** [M] - Yes, this facility is subject to MACT (Part 63) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

Appendix B – Emissions Inventory

Uncontrolled Emissions Inventory			NOx	CO	PM10	SOx	TOC		NOx	CO	PM10	SOx	TOC
Source ID	Source	Description	tpy	tpy	tpy	tpy	tpy		lbs/hr	lbs/hr	lbs/hr	lbs/hr	lbs/hr
EP101	1900-GE-901 - Generator		3.108	0.357	0.0705	1.132	0.018		12.434	1.429	0.2822	4.526	0.071
EP201	1200-DC-201 - Crushing Dust Collector	Building emissions jaw crusher cone crusher triple-deck screen (15) conveyor drops			4.2000						0.1250		
EP301	Ore Stockpile	Ore stockpile beside crusher bldg			0.0004						0.0157		
EP302	1200-LD-201- Tram Bin to Coarse Ore Stockpile	1200-LD-201- Tram drop to Coarse Ore Stockpile			0.0022						0.0013		
EP303	Loader grab from Coarse Ore Stockpile	Loader grab from Coarse Ore Stockpile			0.0022						0.0013		
EP401	Waste Rock Stockpile	Waste Rock Stockpile			0.0002						0.0070		
EP402	1200-LD-201- Tram Bin to Waste Rock Stockpile	1200-LD-201- Tram drop to Waste Rock Stockpile			0.0010						0.0016		
EP403	Loader grab from Waste Rock Stockpile	1200-LD-201- Tram drop to Waste Rock Stockpile			0.0289						0.0087		
EP404	Loader dump Waste Rock Stockpile into Truck	Loader dump Waste Rock Stockpile into Truck			0.0289						0.0087		
EP501	Conc bldg tailings pile	Tailings pile, inside alcove, small, wet, cleared daily			0.000038						0.0002		
EP502	Loader grab from Tailings Stockpile	Loader grab from Tailings Stockpile			0.0048						0.0001		
EP503	Loader dump Tailings to Truck	Loader dump Tailings to Truck			0.0048						0.0001		
EP601	TWSF Waste Rock truck dumping	Truck Dump Waste Rock To TWSF			0.0010						0.0016		
EP602	TWSF area management	TWSF area management			0.2010						0.2792		
EP603	TWSF wind erosion	TWSF wind erosion			0.0768						0.6044		
EP604	Truck Dumps Tailings TWSF	Truck Dumps Tailings (18 - 20% moisture content)			0.0065						0.0001		
EP901	Roads (tram scenario)	Totals (with tram)			5.2369						1.0474		
EP1001	Loader Traffic	Loader Traffic			1.2484						0.1486		
EP1101	1200-BN-201 - Mined Rock to Tram Bin	1200-BN-201 - Mined rock (Ore and waste) to Tram Bin			0.0032						0.0016		
EP1102	1200-FE-201 - Bin to Tram	1200-FE-201 - Tram Bin to Tram			0.0032						0.0016		
EP1201	Loader drop to Primary Crusher feed bin	Loader drop to Primary Crusher feed bin			0.0673						0.0401		
EP1401	1200-BN-203 - Fine Ore Bin (in)	1200-BN-203 - Fine Ore Bin (in)			0.0196						0.0029		
EP1402	1200-BN-203 - Fine Ore Bin (out) fully enclosed	1200-BN-203 - Fine Ore Bin (out) fully enclosed			0.0196						0.0000		
EP1501	1400-SI-401 - Cement Silo (in)	1400-SI-401 - Cement Silo (in)			0.0007						0.0068		
EP1502	1400-SI-401 - Cement Silo (out) fully enclosed	1400-SI-401 - Cement Silo (out) fully enclosed			0.0003						0.0006		
EP1601	Underground emissions vented from mine mouth	Cumulative underground emissions exhausting from the mine	4.688	18.476	3.3457	0.552			4.816	18.982	1.5575	0.567	
EP1701	Load /Unload at Topsoil stockpile	Load / unload at topsoil storage pile			0.0002						0.0008		
EP1702	Topsoil Stockpile	Topsoil stockpile			0.0249						0.2940		
	Total TRAM SCENARIO		**7.8**	**18.8**	**14.60**	**1.7**	**0.0**		**17.3**	**20.4**	**4.44**	**5.1**	**0.1**

NO TRAM SCENARIO These sources replace the yellow Tram Only sources. Truck dump Waste Rock is from Mine to TWSF instead of from Waste rock stockpile at the tram to TWSF

EP0901	Roads (no tram scenario)	Totals (with no tram)			19.0930						3.8186		
EP1301	Mined Rock truck dump	Mined Rock truck dump			0.0032						0.0016		
EP1303	Loader grab from mined rock pile	Loader grab from mined rock pile			0.0032						0.0016		
EP1304	Loader drop to Truck	Loader drop to Truck			0.0962						0.0481		
EP1302	Mined Rock stockpile	Portal Mined Rock Stockpile			0.0002						0.0070		
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)	Truck Dump Crusher Ore Pile (no tram scenario)			0.0022						0.0013		
	Total NO TRAM SCENARIO		**7.8**	**18.8**	**28.4953**	**1.7**	**0.0**		**17.3**	**20.4**	**7.2475**	**5.1**	**0.1**

Controlled Emissions Inventory		NOx	CO	PM10	SOx	TOC		NOx	CO	PM10	SOx	TOC		PM	
Source ID	Source	tpy	tpy	tpy	tpy	tpy		lbs/hr	lbs/hr	lbs/hr	lbs/hr	lbs/hr		lbs/hr	tpy
EP101	1900-GE-901 - Generator	3.108	0.357	0.0705	1.132	0.018		12.434	1.429	0.2822	4.526	0.071			
EP201	1200-DC-201 - Crushing Dust Collector			0.2100						0.1250				0.337	0.566
EP301	Ore Stockpile			0.0004						0.0157				0.031	0.001
EP302	1200-LD-201- Tram Bin to Coarse Ore Stockpile			0.0022						0.0013				0.001	0.002
EP303	Loader grab from Coarse Ore Stockpile			0.0022						0.0013				0.001	0.002
EP401	Waste Rock Stockpile			0.0002						0.0070				0.014	0.000
EP402	1200-LD-201- Tram Bin to Waste Rock Stockpile			0.0010						0.0016				0.002	0.001
EP403	Loader grab from Waste Rock Stockpile			0.0289						0.0087				0.018	0.061
EP404	Loader dump Waste Rock Stockpile into Truck			0.0289						0.0087				0.018	0.061
EP501	Conc bldg tailings pile			0.0000						0.0002				0.000	0.000
EP502	Loader grab from Tailings Stockpile			0.0005						0.0001				0.000	0.001
EP503	Loader dump Tailings to Truck			0.0005						0.0001				0.000	0.001
EP601	TWSF Waste Rock truck dumping			0.0010						0.0016				0.002	0.001
EP602	TWSF area management			0.2010						0.2792				0.372	0.268
EP603	TWSF wind eroision			0.0154						0.6044				1.209	0.031
EP604	Truck Dumps Tailings TWSF			0.0007						0.0001				0.000	0.001
EP901	Roads (tram scenario)			1.5856						1.0474					
EP1001	Loader Traffic			0.2497						0.1486					
EP1101	1200-BN-201 - Mined Rock to Tram Bin			0.0032						0.0016				0.002	0.003
EP1102	1200-FE-201 - Bin to Tram			0.0032						0.0016				0.002	0.003
EP1201	Loader drop to Primary Crusher feed bin			0.0673						0.0401				0.085	0.142
EP1401	1200-BN-203 - Fine Ore Bin (in)			0.0049						0.0029				0.003	0.005
EP1402	1200-BN-203 - Fine Ore Bin (out) fully enclosed			0.0000						0.0000				0.000	0.000
EP1501	1400-SI-401 - Cement Silo (in)			0.0007						0.0068					
EP1502	1400-SI-401 - Cement Silo (out) fully enclosed			0.0001						0.0006					
EP1601	Underground emissions vented from mine mouth	4.688	18.476	1.6729	0.552			4.816	18.982	1.5575	0.567			0.025	0.103
EP1701	Load /Unload at Topsoil stockpile			0.0001						0.0008					
EP1702	Topsoil Stockpile			0.0075						0.2940					
	Total TRAM SCENARIO	**7.8**	**18.8**	**4.1583**	**1.7**	**0.0**		**17.3**	**20.4**	**4.4388**	**5.1**	**0.1**		**2.122**	**1.253**
NO TRAM SCENARIO These sources replace the yellow Tram Only sources. Truck dump Waste Rock is from Mine to TWSF instead of from Waste rock stockpile at the tram to TWSF															
EP0901	Roads (no tram scenario)			5.7424						3.8186					
EP1301	Mined Rock truck dump			0.0032						0.0016				0.002	0.003
EP1303	Loader grab from mined rock pile			0.0032						0.0016				0.002	0.003
EP1304	Loader drop to Truck			0.0962						0.0481				0.102	0.203
EP1302	Mined Rock stockpile			0.0002						0.0070				0.0146	0.0004
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)			0.0022						0.0013				0.001	0.002
	Total NO TRAM SCENARIO	**7.8**	**18.8**	**8.3551**	**1.7**	**0.0**		**17.3**	**20.4**	**7.2475**	**5.1**	**0.1**		**2.201**	**1.336**
SUNSHINE PORTAL SCENARIO This scenario matches the No Tram scenario except for a different mine portal location, shorter roads, and no 1301-1304 transfer to alrger trucks outside the mine															
EP 3001	For the Sunshine Portal scenario: EP 3001 replaces EP1601.	4.688	18.476	1.6729	0.552	0.000		4.816	18.982	1.5575	0.567	0.000		0.025	0.103
EP 0902	Roads (Sunshine portal scenario)			3.7144						2.4569					
	Total SUNSHINE PORTAL SCENARIO	**7.8**	**18.8**	**6.2220**	**1.7**	**0.0**		**17.3**	**20.4**	**5.8262**	**5.1**	**0.1**		**2.080**	**1.124**
	universally represents tram scenario only emissions														
	universally represents tram scenario only emissions														
	All model sources named in blue highlights on each calculation worksheet									Ore processing emissions					
	Model source parameter derivation documented in bue text on each worksheet for each model source									Arsenic bearing PM					
	Green hourly emission rates are only for hours with wind speed over 12 mph														
	Cobalt source emission rates conservatively assumeshourly emission rate for PM=2*PM-10 hourly emission rate														
	Arsenic source emission rates uses calculated annual PM emissions														

TAPs from Ore

Total PM lbs/hr **2.2013** (road dust not included)

IDAPA TAP listing		elemental form	Percent (%) by weight of ore	TAP Emission (lbs/hr)	IDAPA EL	Ratio of TAP to EL	Require Modeling?	AAC (ug/m3)	AACC (ug/m3)	Modeled impact (ug/m3)	Can T-RACT be employed?	T-RACT Adjusted AACC	Ratio of modeled results to Applicable Impact Limit	Pass T-RACT?
aluminum,	Al Metal and oxide		N/A				no							
	Al Pyro Powders	silicate	5.04	1.11E-01	0.333	0.33	no							
	Al Soluble Salts	silicate	5.04	1.11E-01	0.133	0.83	no							
antimony, compounds			0.0015	3.30E-05	0.033	0.00	no							
arsenic, ***		Cobaltite CoAsS	0.71	1.56E-02	1.50E-06	10419.60	yes		2.30E-04	1.58E-03	yes	2.30E-03	0.69	yes
beryllium/compounds			0.00002	4.40E-07	2.80E-05	0.02	no							
cadmium/compounds			0.000005	1.10E-07	3.70E-06	0.03	no							
chromium, metal	Cr (II) compounds	trace element, no CrVI	0.007	1.54E-04	0.033	0.00	no							
	Cr (III) compounds	trace element, no CrVI	0.007	1.54E-04	0.033	0.00	no							
	CrVI	trace element, no CrVI		0.00E+00	5.60E-07	0.00	no							
Cobalt	Co Carbonyl	dominantly Cobaltite CoAsS	1.41	3.10E-02	0.007	4.43	yes	5		0.00983			0.002	
	Co hydrocarbonyl	dominantly Cobaltite CoAsS	1.41	3.10E-02	0.007	4.43	yes	5		0.00983			0.002	
	Co Metal Dust, Fume	dominantly Cobaltite CoAsS	1.41	3.10E-02	0.0033	9.41	yes	2.5		0.00983			0.004	
Copper	Cu Fume		0.7	1.54E-02	0.13	0.12	no							
	Cu Dust and Mists		0.7	1.54E-02	0.067	0.23	no							
iron,	iron oxide fume		13.36	2.94E-01	0.333	0.88	no							
lead,			0.00009	1.98E-06	0.1488	0.00	no							
manganese,	Mn dust and compounds		0.0163	3.59E-04	0.333	0.00	no							
mercury,	Hg (Aryl and Inorganic)		0.00003	6.60E-07	0.007	0.00	no							
molybdenum,			0.00009	1.98E-06	0.333	0.00	no							
nickel,	Nickel		0.002	4.40E-05	2.70E-05	1.63	yes	0.0042		0.00001			0.002	
selenium,	Se compounds		0.0009	1.98E-05	0.013	0.00	no							
silver,	Ag Metal		0.00003	6.60E-07	0.007	0.00	no							
	Soluble compounds		0.00003	6.60E-07	0.001	0.00	no							
tungsten,	Insoluble Compounds		0.00026	5.72E-06	0.333	0.00	no							
	Soluble Compounds		0.00026	5.72E-06	0.067	0.00	no							
uranium, compounds			0.00003	6.60E-07	0.013	0.00	no							
zinc, metal			0.0034	7.48E-05	0.667	0.00	no							
	Zn chloride fume		0.0034	7.48E-05	0.067	0.00	no							
	Zn oxide fume		0.0034	7.48E-05	0.333	0.00	no							
	Zn oxide dust		0.0034	7.48E-05	0.667	0.00	no							
zirconium, compounds			0.0013	2.86E-05	0.333	0.00	no							

Lead emission threshold listed is equivalent to modeling threshold of 100 lbs/mo in IDEQ Modeling Guidelines Table 1

***	%As by wt
Ore	0.7100
Waste rk, tailings	0.0710
Mined rock	0.5255

Appendix C – Ambient Air Quality Impact Analysis

MEMORANDUM

DATE: February 23, 2009

TO: Morrie Lewis, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-2008.0169

SUBJECT: Modeling Demonstration for Idaho Cobalt Project Permit to Construct for Formation Capital Corporation, U.S.'s Facility near Cobalt, Idaho

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1.0 Summary

Formation Capital Corporation, U.S., (hereafter Formation) submitted an application for a Permit to Construct (PTC) for the Idaho Cobalt Project (hereafter ICP) on November 3, 2008. The application was declared complete on December 3, 2008.

Refer to the PTC statement of basis to review the history of the prior two submittals for this project.

A revised modeling demonstration was submitted on February 3, 2009 following DEQ's request for Formation Capital's consultant to review the meteorological data file for the modeling analysis. The revised modeling was based on a corrected meteorological data file.

IDAPA 58.01.01.203.02 (or Idaho Air Rules Section 203.02) requires the facility to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). Idaho Air Rules Section 210 requires the facility to demonstrate compliance with the toxic air pollutants (TAPs) increments, which are listed in Sections 585 and 586 of the Idaho Air Rules.

CJ Environmental performed the ambient air dispersion modeling demonstration submitted for this project on behalf of Formation. DEQ also performed verification analyses to provide more conclusive assurance that emissions from the proposed project will not cause or significantly contribute to a violation of an ambient air quality standard. The submitted modeling analyses, in combination with DEQ's verification analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling, except as discussed in Section 3.5; 4) showed that predicted pollutant concentrations from emissions associated with the facility were below applicable TAP increments at all receptor locations (see Section 3.5. DEQ Sensitivity Analysis).

Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Permitting Considerations for Permit Writers	
Formation Capital's staff must maintain visual observation at a minimum distance of 100 meters from areas of active operation. Routine surveillance of the surrounding area is necessary for this unposted and unfenced perimeter to be considered an ambient air boundary.	This requirement should not create any difficulties considering Formation has stated they will have staff trained to discourage public access to site and the ambient air boundary analysis submitted with the application states that staff would have an unrestricted view of the original ambient air boundary perimeter—which extends to far greater distances than 100 meters. The final effect of the DEQ sensitivity analysis and subsequent ambient air boundary investigation is that no additional burden is being placed on Formation. If anything, it will be easier for the facility to maintain proper surveillance of the areas deemed to be within the ambient air boundary, and this alternative approach to establishing the ambient air boundary is deemed appropriate with respect to having the legally binding right to post the areas within the 100 meter setback perimeter for no trespassing due to the fact the US Forest Service requires Formation to provide for the public's physical safety on these unpatented mining claims.
The T-RACT ambient design concentration for arsenic is predicted to be below the T-RACT allowable increment.	No special permit conditions for arsenic emissions are warranted. Compliance has been demonstrated provided the facility operates in the manner proposed in the permit application.
Emergency Electrical Generator (Source EP101) NO_x impacts were modeled using a 500 hour per year limitation on operation. The generator was modeled as operating at 24 hours per day.	The permit should include an annual limitation of 500 hours per year on the generator as requested by the applicant. This is the standard operating limitation for emergency electrical generators for the purpose of Title V permitting potential to emit.
Future Modeling Considerations for Modeling Staff	
Met data processing	Any future projects requiring a modeling demonstration for this facility should include an updated analysis of the land use characteristics of the area surrounding the meteorological data collection tower. The analysis should be based on either aerial photographs of the area or the current AERMET processing methods provided for in the current AERMOD guidance, which may include the use of the AERSURFACE tool. This will account for the effects of unvegitated areas (roads and other barren areas) and shrubland versus assuming complete coniferous forest coverage for all 360 degrees around the on-site met tower. This primarily affects the surface roughness values used in the AERMET processing of the data.
Additional years of met data	It is generally accepted goal to use a meteorological data set of 5 years of for any modeling project when that amount of data is available. The QA/QC data provided indicates that several options for continuous 5-year data sets using the on-site met data tower are available for this facility. A single year of met data was proposed in the modeling protocol, and this was approved by DEQ. Had DEQ been aware the additional data existed, a 5-year data set would have been required.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

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

2.1.1 Area Classification

The ICP facility will be located in Lemhi County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

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

2.1.2 Significant Impact Analyses

The project is for a PTC for a greenfield facility. A full impact analysis for all sources to be included in the permit was presented in the application.

2.1.3 Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of Idaho Air Rules Section 006.120, then a full impact analysis is necessary to demonstrate compliance with Idaho Air Rules Section 203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. CRITERIA AIR POLLUTANTS APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

[a] Idaho Air Rules Section 006.120
[b] Micrograms per cubic meter
[c] Idaho Air Rules Section 577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year
[g] Concentration at any modeled receptor
[h] Never expected to be exceeded more than once in any calendar year
[i] Concentration at any modeled receptor when using five years of meteorological data
[j] Not to be exceeded more than once per year

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been developed. EPA has asserted through a policy memorandum that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard.

2.1.3 TAPs Analyses

This project consists of the construction of a greenfield facility. All increases in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact dispersion analysis for any TAP with a requested potential emission rate that exceeds the screening emission rate limit (EL) specified by Idaho Air Rules Section 585 or 586. TAPs compliance demonstrations must follow the requirements of Idaho Air Rules Section 210.

The submitted modeling demonstration files contained emission rates for aluminum and nickel. Ambient impact results were not presented in the modeling report for these pollutants. It was assumed by modeling staff that these hourly emission rates represent the potential uncontrolled emissions under the requested operating scenarios. When these emissions were summed it was verified that the facility-wide hourly emission rates did not exceed the most stringent screening emission rate limits (EL) specified in Idaho Air Rules Section 585 and 586. The EL for aluminum (soluble salts) is 0.133 lb/hr, and the facility-wide emission rate of aluminum is 0.030 lb/hr.

2.2 Background Concentrations

Ambient background concentrations for criteria air pollutants were required for this modeling demonstration. Ambient background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations used in these analyses are listed in Table 3. Background concentrations for NO_2, SO_2, CO, and PM_{10} were based on remote rural default values.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	43
	Annual	9.6
NO_2[c]	Annual	4.3
SO_2[d]	3-hour	34
	24-hour	26
	Annual	8
CO[e]	1-hour	3,600
	8-hour	2,300
Pb[f]	Quarterly	0.03

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Nitrogen dioxide
[d] Sulfur dioxide
[e] Carbon monoxide
[f] Lead

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling.* Memorandum to Mary Anderson, March 14, 2003.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used in the submitted modeling analyses.

Table 4. MODELING PARAMETERS		
Parameter	**Description/ Values**	**Documentation/Additional Description**
Model	AERMOD	AERMOD, Version 07026
Meteorological data	Single Year	Met data covering the entire year of 2004 was used. On-site met data was processed with 2004 Missoula, Montana surface data and 2004 Great Falls, Montana upper air data using AERMET, Version 06341.
Land Use (urban or rural)	Rural	The surrounding area is rural, and is considered a remote rural location. Urban heat rise coefficients were not used in the modeling.
Terrain	Considered	United States Geologic Survey (USGS) digital elevation map (DEM) files were used to establish the surrounding terrain and the elevations of receptors and hill heights were estimated by the applicant using AERMAP.
Building downwash	Downwash algorithm	Building downwash effects were considered in the modeling. Two structures were included in the modeling demonstration. No other structures were anticipated to be constructed within the structure influence zone of any source of emissions.
Receptor grid	Grid 1	25 meter spacing along the ambient air boundary
	Grid 2	50 meter spacing at varying distances from the ambient air boundary. The 50 meter spacing was used in areas where the highest impacts were predicted to occur.
	Grid 3	250 meter spacing in a 5,750 meter (X) by 5,500 meter (Y) grid centered on the facility

3.1.1 Modeling protocol

A modeling protocol was submitted by CJ Environmental, on behalf of Formation/ICP, prior to submission of the PTC application, on March 27, 2008. DEQ sent the facility's consulting team a modeling protocol approval letter via email on April 7, 2008. The protocol approval also provided additional comments on the project's dispersion modeling demonstration.

3.1.2 Model Selection

AERMOD was used by Formation to conduct the ambient air analyses. DEQ determined AERMOD is the most-appropriate model for this project, considering regional meteorology, terrain, and the configuration of the proposed industrial facility.

3.1.3 Meteorological Data

The ICP application used a single year of meteorological (met) data—January 1, 2004 through December 31, 2004. The on-site met data was processed with surface data from Missoula, Montana, and upper air data from Great Falls, Montana.

AERMET requires the input of the surface roughness length, albedo, and Bowen ratio values that correspond to the characteristics of the land features surrounding the site of the location the met data was collected. Current guidance recommends the use of a radial distance of 1 kilometer for this analysis. Formation provided additional documentation on the selection of the surface characteristic values in a support memorandum submitted by email on January 5, 2009.

The submitted met data used an assumption that the entire area surrounding the on-site met station consisted of coniferous forest with an average moisture climate. DEQ prefers the applicant either use the EPA-developed AERSURFACE program with 1992 National Land Climate Database information, or develop these values using the currently accepted calculation methods for the three variables based on aerial photographs and direct knowledge of the land cover that exists at the met data collection site. In the event future modeling is necessary this issue should be revisited.

For this project, DEQ determined through review of the submitted modeling analysis and DEQ's sensitivity analysis, that the maximum ambient impacts for the pollutants of primary concern (PM_{10} and arsenic) are predicted to occur at receptors nearest to the emission sources. Impacts drop off sharply as distance from the emission sources increases. Alteration of the surface characteristic parameters values, most notably surface roughness, the parameter affecting turbulence to the greatest extent, will likely not alter this to the extent that compliance is truly uncertain.

A spreadsheet submitted as part of the quality assurance for the met data indicates that met data has been collected at the facility's on-site met station from June 2000 through October 2007. Future modeling demonstrations for this site should evaluate whether the additional years of met data should be used to develop a more robust met data set, provided the data is determined to be sound. This issue should be reviewed by the Stationary Source Modeling Coordinator. The selection of design concentration values (1^{st} highest high, 2^{nd} highest high value, versus 6^{th} highest high value, etc.) would be adjusted according to the number of years of met data used.

3.1.4 Terrain Effects

The modeling analyses conducted by Formation considered elevated terrain. AERMAP was used to determine the actual elevation of each receptor and the controlling hill height elevation from United Geological Survey (USGS) digital elevation map (DEM) files for the area surrounding the facility. The domain for the project accounted for terrain that exceeded a 10% slope at all receptors. Elevations of emission sources, buildings, and receptors were developed based on surrounding terrain elevations as extracted from the DEM files.

3.1.5 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the plot plan submitted with the application to the facility layout in the modeling files. The facility has not been constructed yet so aerial or satellite photographs of the proposed layout are unavailable.

3.1.6 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. Two structures were included in the modeling demonstration on the basis that they were within the structure influence zone of an emission source. DEQ staff assumes that any structures associated with the Tram loading facility qualify for exclusion as a structure that may cause building-induced downwash. This is based on the typically porous nature, with regard to wind flow, of any expected structures associated with the Tram loading operations.

3.1.7 Ambient Air Boundary

The application contains a description of the ambient air boundary used in the submitted analysis. See

Figure 1-2 titled IDAHO COBALT PROECT CLAIM and Figure 6-IA, titled PLOT PLAN, of the submitted permit application, to review the ambient air boundary. The ambient air boundary was set at the unpatented mine claim boundaries for the northern portion of the claims held by the applicant. These areas are to be actively used by Formation during operation of the mining and processing at this site. This area includes the SUN claims, the northern portion of the HZ claims, and all claims north of the HZ claims, as shown in Figure 1-2 of the application.
Areas external to these boundaries, including Blackbird mine properties were treated as ambient air.

The control measures to prohibit public access to the areas within the claimed ambient air boundary as provided in the permit application included the following:

- A manned gate at the southern road access point which provides access to the Blackbird Mine remediation site and the Idaho Cobalt Project. This is the sole road access point to the site.
- Signs will be posted at the manned gate area and at a point where Bucktail Creek and South Fork of Big Deer Creek meet.
- The applicant has also stated that staff will have a direct line of sight of the ambient air boundary from the various locations within the facility, and "staff will be trained to observe and discourage unauthorized access."

DEQ staff reviewed the submitted ambient air boundary analysis in regard to the definition of *ambient air*, per 40 CFR 50.1(e), which states:

> *Ambient air* means that portion of the atmosphere, external to buildings, to which the general public has access.

The first step in establishing the ambient air boundary is to determine the areas of land the facility will occupy that the public may access. In order to prohibit public access to areas of land the facility will occupy it is necessary for the facility to be legally capable of prohibiting public access within the claimed ambient air boundary. A legal ability to control public access allows a permittee to post no trespassing signs at regular intervals along the boundary as a control measure. A conclusive determination on this issue was not obtained through the permitting process; therefore, DEQ staff conducted a "common sense" sensitivity analysis to resolve any concerns that the public may be exposed to concentrations of pollutants in excess of applicable standards and increments. DEQ acknowledges that is unlikely that any member of the public would be at a location within the ambient air boundary for any significant length of time. This also supports the common sense analysis approach instead of continuing to pursue the legal justification originally requested.

See Section 3.5 of this memorandum to review the discussion of the sensitivity analysis. Based on the results of the sensitivity analysis, DEQ believes Formation can adequately control public access to any location within the site that would be within the most conservative ambient air boundary, which is immediately next to active mining and processing operations. The U.S. Forest Service will require that Formation effectively control public access near any areas of activity for public safety reasons, and this alone can be used as a basis for establishing an ambient air boundary that is clearly acceptable. The facility will have staff in areas of active operation, and should have a clear line of sight to observe the surrounding area. Formation's staff will have the right to request any member of the public leave the area immediately on the basis of their personal safety.

As a result of the sensitivity analysis, DEQ concluded that ambient impacts of the pollutants of concern for this project will not exceed the applicable NAAQS or TAPs increment (TAP increment per the T-RACT increment) at a distance of approximately 100 meters from any area of mining or processing

activity.

3.1.8 Receptor Network

The maximum ambient impacts presented in Formation's modeling analyses occurred at or near the ambient air boundary. A spacing of 50 meters was used in these areas that were external to ambient air boundary. The facility is located in an area with steep terrain, and the DEQ Modeling Guideline recommends receptor spacing to be set at 25 meters to 50 meters. The use of 250 meter spacing in all areas external to the grid using 50 meter spacing was adequate because ambient impacts within the 250 meter spaced grid did not contain any hot spots with elevated ambient impacts.

The receptor locations used by Formation met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined that the receptor grid was adequate to reasonably resolve the maximum modeled ambient impacts.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for DEQ modeling:

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

The short-term emission rates listed in Table 5 were modeled by Formation for 24 hours per day for the short-term averaging period NAAQS. The PM_{10} and SO_2 emission rates used in the annual averaging period NAAQS compliance demonstration were the same as those used for the short-term averaging period NAAQS. Formation's modeling analysis and DEQ's sensitivity analysis used the same method—short-term PM_{10} and SO_2 emission rates were used to demonstrate compliance with the annual averaging period NAAQS, which is a worst-case approach.

Only NO_2 impacts relied on an annual average emission rate for NAAQS compliance. The annualized hourly emission rates (maximum annual rates divided by 8,760 hours per year) are listed in Table 6 and were modeled to evaluate compliance with annual standards.

Additional factors were used in the modeling demonstration, which affect the modeling analysis:

- 50% reduction in the emission rate for all fugitive road sources during the winter season. This affects PM_{10} emissions only.
- A threshold wind speed of 12 miles per hour applied to Sources EP301, EP401, EP501, EP603, and EP1702. These are rock, ore, topsoil, and tailings waste storage piles and affects predicted impacts of PM_{10}, arsenic and cobalt.

Table 5. MODELED CRITERIA POLLUTANT EMISSIONS RATES				
Source ID	Description	Emission Rates (lb/hr[a])		
		PM_{10}[b] 24hr avg, and annual avg	SO_2[c], 3-hr avg, 24-hr avg, and annual avg	CO, 1-hr avg and 8-hr avg
EP201	Dust collector baghouse stack	0.125		
EP101	Backup electrical generator	0.282	4.526	1.429
EP1101	Transfer to tram bin	0.0016		
EP1102	Transfer from tram bin to tram	0.0016		
EP302	Transfer from tram to ore stockpile	0.0013		
EP402	Transfer from tram to waste rock stockpile	0.0016		
EP403	Loader grab from waste rock stockpile	0.0087		
EP404	Loader drop WR to truck	0.0087		
EP303	Loader grab from ore stockpile	0.0013		
EP1001	Loader traffic to PCFB	0.149		
EP503	Loader drop tails to truck	1.00E-04		
EP601	Waste rock drop toTWSF	0.0016		
EP604	Tailings drop to TWSF	1.00E-04		
EP2001	NO TRAM drop to ore stockpile	0.0013		
EP1701	Load/unload topsoil stockpile	0.0008		
EP1301	Mine truck dump to pile	0.0016		
EP1303	Loader grab from pile	0.0016		
EP1304	Loader drop to retruck	0.0481		
EP901A1 through EP901A16	16 individual sources–Fugitive vehicle road dust emissions–used in all 3 operating scenarios Located south of concentrator building	0.0348 (each source)		
EP901B1 through EP901B10	10 individual sources–Fugitive vehicle road dust emissions—used in all 3 operating scenarios Located south of crusher building	0.0983 (each source)		
EP901D1 through EP901D25	25 individual sources-fugitive vehicle road dust emissions-used in all 3 operating scenarios Located west side of tailings waste storage facility	0.0361 (each source)		
EP901C1 through EP901C90	90 individual sources-fugitive vehicle road dust emissions-used in all 3 operating scenarios Located east of RAM portal and tram area	0.0367 (each source)		
EP9021 through EP90211	11 individual sources of fugitive road dust emissions used in the SUNSHSC (sunshine portal) operating scenario—located east of sunshine portal	0.108 (each source)		
EP1201	primary crusher feed bin	0.0401		
EP502	Loader from stock pile to truck	0.0001		
EP1401	fine ore bin vent	0.0029		
EP1501	cement silo intake vent	0.0068		
EP1601	Mine vent for underground emissions RAM portal area	1.56	0.567	18.98
EP1502	cement silo outflow fugitives	0.0006		
EP3001	Sunshine portal	1.56	0.567	18.98
EP401	waste rock storage pile	0.0026		
EP301	coarse ore stock pile	0.0063		
EP602	TWSF area management	0.197		
EP1702	Topsoil stock pile	0.294		
EP1302	Mined rock stock pile	0.007		
EP603	Tailing and waste rock storage facility area	0.633		

[a.] Pounds per hour
[b.] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers, 24-hour averaging period
[c.] Sulfur dioxide
[d] Carbon monoxide
[e] NA = pollutant not emitted by this source

Table 6. MODELED CRITERIA ANNUAL EMISSIONS RATES		
Source ID	Description	Emission Rates (lb/hr[a])
		NO_2[b]
EP101	Backup electrical generator	0.71
EP1601	Mine vent for underground emissions RAM portal area	1.07
EP3001	Sunshine portal	1.07

[b.] Nitrogen dioxide

The non-carcinogenic toxic air pollutant (TAP) 24-hour averaged emission rates listed below in Table 7 were modeled to demonstrate compliance with AACs and the carcinogenic TAP annual-averaged emissions listed below in Table 7 were modeled for 8,760 hours per year to determine compliance with AACCs. Emissions of all other TAPs were estimated to be below emissions screening levels (ELs) listed in Idaho Air Rules Section 585 and 586, and air impact analyses were not required.

Table 7. MODELED TOXIC AIR POLLUTANTS EMISSIONS RATES			
Source ID	Description	Toxic Air Pollutants	
		Arsenic Carcinogenic TAP (lb/hr)	Cobalt Non-carcinogenic TAP (lb/hr)
EP201	Dust collector baghouse	5.45E-04	3.52E-03
EP1101	Transfer to tram bin	3.84E-06	4.51E-05
EP1102	Transfer from tram bin to tram	3.84E-06	4.51E-05
EP302	Transfer from tram to ore stockpile	3.63E-06	3.76E-05
EP402	Transfer from tram to waste rockpile	1.56E-07	4.51E-05
EP403	Loader grab from waste rock stockpile	9.89E-06	2.44E-04
EP404	Loader drop of waste rock to haul truck	9.89E-06	2.44E-04
EP303	Loader grab from ore stockpile	3.63E-06	3.76E-05
EP503	Loader drop of tailings to truck	1.66E-07	1.88E-06
EP601	Waste rock drop to TWSF	1.56E-07	4.51E-05
EP604	Tailings drop to TWSF	1.06E-07	2.54E-06
EP2001	NO TRAM drop to ore stockpile	3.63E-06	3.76E-05
EP1301	Mine truck drop to pile	3.84E-06	4.51E-05
EP1303	Loader grab from pile	3.84E-06	4.51E-05
EP1304	Loader drop to ore truck	2.44E-04	1.36E-03
EP1201	Primary crusher feed bin	2.31E-04	1.13E-03
EP502	Load from "aili" stockpile to truck	1.66E-07	1.88E-06
EP1401	Fine ore bin vent	7.94E-06	8.22E-05
EP1601	Mine vent for underground emissions	1.24E-04	7.01E-04
EP3001	Sunshine portal	1.24E-04	7.01E-04
EP401	Waste rock storage pile	5.75E-08	7.33E-05
EP301	Coarse ore stock pile	1.30E-06	1.87E-04
RP501	Concentrator building tailings stock pile	1.57E-07	NA[b]
EP602	TWSF area management	6.52E-05	5.56E-03
EP1302	Mined rock stock pile	4.25E-07	NA[b]
EP603	Tailing waste	4.51E-05	4.88E-05

[a.] Pounds per hour

[b] Pollutant not emitted by this source

3.3 Emission Release Parameters

Table 8 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources. The release parameters were accepted by DEQ as submitted.

Table 8. POINT SOURCE STACK PARAMETERS					
Release Point	Description	Stack Height (m)[a]	Modeled Stack Diameter (m)	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
EP201	Dust collector baghouse stack	10.97	0.91	293.2	19.40
EP101	Backup electrical generator	0.91	0.20	787.0	77.01

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

Table 9 provides emissions release parameters, including release height, initial horizontal dispersion coefficient, and initial vertical dispersion coefficient for volume sources. The release parameters were accepted by DEQ as submitted.

Table 9. VOLUME SOURCE RELEASE PARAMETERS				
Release Point	Description	Release Height (m[a])	Initial Horizontal Dispersion Coefficient σ_{y0} (m)	Initial Vertical Dispersion Coefficient σ_{z0} (m)
EP901A1 through EP901A16	16 individual sources–Fugitive vehicle road dust emissions–used in all 3 operating scenarios Located south of concentrator building	1.52	11.34	1.70
EP901B1 through EP901B10	10 individual sources–Fugitive vehicle road dust emissions—used in all 3 operating scenarios Located south of crusher building	1.52	11.34	1.70
EP901D1 through EP901D25	25 individual sources-fugitive vehicle road dust emissions-used in all 3 operating scenarios Located west side of tailings waste storage facility	1.52	11.34	1.70
EP901C1 through EP901C90	90 individual sources-fugitive vehicle road dust emissions-used in all 3 operating scenarios Located east of RAM portal and tram area	1.52	11.34	1.70
EP9021 through EP90211	11 individual sources of fugitive road dust emissions used in the SUNSHSC (sunshine portal) operating scenario—located east of sunshine portal	1.52	11.34	1.70
EP1201	Primary crusher feed bin	4.57	1.7	2.13
EP502	Loader from stock pile to truck	1.52	1.42	2.13
EP1401	Fine ore bin vent	18.59	0.43	8.65
EP1501	Cement silo intake vent	14.63	0.43	6.8
EP1601	Mine vent for underground emissions RAM portal area	2.29	4.25	2.13
EP1502	Cement silo outflow fugitives	14.63	0.43	6.8
EP3001	Sunshine portal	2.29	4.25	2.13

[a] Meters

Table 10 provides emissions release parameters, including release height, easterly length, northerly length, angle from north, and the vertical dimension for area sources. The release parameters were accepted by DEQ as submitted.

Table 10. AREA SOURCE RELEASE PARAMETERS

Release Point	Description	Release Height (m[a])	Easterly Length (m)	Northerly Length (m)	Angle From North (degrees)	Vertical Dimension (m)
EP1101	Transfer to tram bin	2.44	3.66	3.05		1.83
EP1102	Transfer from tram bin to tram	1.52	2.13	1.52		0.91
EP302	Transfer from tram to ore stockpile	4.57	3.05	3.05		3.05
EP402	Transfer from tram to waste rockpile	4.57	3.05	3.05		3.05
EP403	Loader grab from waste rock stockpile	1.22	2.5	1.5		1.22
EP404	Loader drop WR to truck	3.66	6	3		1.22
EP303	Loader grab from ore stkpl	1.22	2.5	1.5	40	1.22
EP1001	Loader traffic to PCFB	1.22	3	22	38	2.44
EP503	Loader drop tails to truck	3.66	6	3		1.22
EP601	Waste rock drop toTWSF	1.83	4.57	4.57		3.6
EP604	Tailings drop to TWSF	1.83	4.57	4.57		3.66
EP2001	NO TRAM drop to ore stockpile	1.83	3.05	3.05		3.66
EP1701	Load/unload topsoil stockpile	1.83	4.57	4.57		3.66
EP1301	Mine truck dump to pile	1.83	4.57	4.57		3.66
EP1303	Loader grab from pile	1.22	2.5	1.5		1.22
EP1304	Loader drop to retruck	3.66	6	3		1.22

[a] Meters

Table 11 provides emissions release parameters, including release height, radius of the circular area, and the vertical dimension for circular area sources. The release parameters were accepted by DEQ as submitted.

Table 11. CIRCULAR AREA SOURCE RELEASE PARAMETERS

Release Point	Description	Release Height (m[a])	Radius of Circle (m)	Vertical Dimension (m)
EP401	Waste rock storage pile	1.83	6.1	1.83
EP301	Coarse ore stock pile	2.44	12.19	2.44
EP501	Concentrator building tailings stock pile	1	2.5	1
EP602	TWSF area management	1.5	75	3
EP1702	Topsoil stock pile	2.44	91.44	
EP1302	Mined rock stock pile	1.22	3.2	6

[a] Meters

Table 12 provides emissions release parameters, including release height, horizontal dimension, and the total area of the polygon this area source. The release parameters were accepted by DEQ as submitted.

Table 12. POLYGON AREA SOURCE RELEASE PARAMETERS

Release Point	Description	Release Height (m[a])	Horizontal Dimension (m)	TOTAL AREA (m^2)[b]
EP603	Tailing and waste rock storage facility	3	6	245,155

[a] Meters

[b] Square meters

3.4 Results for Ambient Impact Analyses

The modeling demonstration was presented based on three individual operating scenarios. These scenarios were assumed to occur independently of each other. Formation evaluated the impacts from each of these scenarios to determine the design concentrations for the proposed project. The three scenarios

were:

1) TRAM Scenario with RAM portal operational labeled TRAMSCEN in the modeled source groups,
2) RAM portal operation without TRAM (truck hauling of ore to milling area) labeled NOTRAMSC in the modeling source groups, and,
3) Sunshine Mine portal operational with no TRAM operation and shortened distances required for truck hauling of ore to milling area labeled SUNSHSC in the modeling source groups.

3.4.1 Full Impact Analyses

Formation provided a full impact analysis for this project. The results presented in Formation's modeling report are listed in Table 13. The design concentration listed is the highest impact for any of the 3 operating scenarios evaluated by Formation.

Table 13. RESULTS OF FULL IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS
CO[a]	1-hour	1,443	3,600	5,043	40,000	13%
	8-hour	452	2,300	2,752	10,000	28%
PM_{10}[d]	24-hour	64.6	43	107.6	150	72%
	Annual	13.7	9.6	23.3	50	47%
SO_2[e]	3-hour	339	34	373	1,300	29%
	24-hour	87.6	26	113.6	365	31%
	Annual	3.6	8	11.6	80	15%
NO_2[f]	Annual	2.4	4.3	6.7	100	7%

[a] Carbon monoxide
[b] Micrograms per cubic meter
[c] National ambient air quality standards
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[e] Sulfur dioxide
[f] Nitrogen dioxide

3.4.2 Toxic Air Pollutant Impact Analyses

Modeling for TAPs was required to demonstrate compliance with the TAP increments specified by IDAPA 58.01.01.585 and 586. The results of the TAPs analyses are listed in Table 14.

Table 14. RESULTS OF TAP ANALYSES				
TAP	Averaging Period	Maximum Modeled Concentration (ug/m^3)[a]	ACC/AACC[b] (ug/m^3)	Percent of AAC/AACC
Carcinogenic				
Arsenic	Annual	1.28E-03	2.3E-03[c]	56%
Non-carcinogenic				
Cobalt	24-hour	9.9E-02	2.5[d]	4%

[a] Micrograms per cubic meter

[b] Acceptable ambient concentration for non-carcinogens/acceptable ambient concentration for carcinogens

[c] The AACC listed in IDAPA 58.01.01.586 for arsenic is 2.3E-04 $\mu g/m^3$, annual average. This value is a T-RACT allowable AACC, which increases the Section 586 AACC by a factor of 10.

[d] Cobalt metal, dust, fume is the most restrictive increment of the three forms of cobalt regulated under Section 585. Cobalt carbonyl and cobalt hydrocarbonyl are the other two forms of cobalt TAP, each with an increment of 5 $\mu g/m^3$, 24 hour average.

3.5 DEQ Sensitivity Analyses

3.5.1 *Overview*

DEQ conducted an additional modeling run to identify ambient impacts in areas of the unpatented mining claims where DEQ was not satisfactorily convinced the public does not have a legal right to access the land. Discrete receptors were placed throughout the interior of Formation's claimed ambient air boundary at distances as close as approximately 50 meters of the submitted modeling demonstration's haul roads and other emission sources. This exercise was intended to verify that no violations of the ambient air standards for TAPs and criteria air pollutants would exist at any location where the public might legally have the right to have access. This sensitivity analysis justifies the Department's recommendation for issuance of this permit using the submitted ambient air quality analysis without fully resolving the ambient air boundary issue for the modeling demonstration.

DEQ's understanding of the requirements of the Record of Decision is that Formation must prohibit public access to any areas of the site where personal injury or harm could occur. This was assumed by DEQ to include all areas where mining and processing operations are to actively occur, which are represented as the modeled emission sources. By determining whether there are specific locations within the patented mining claims where exceedances of any ambient standard is predicted to occur, additional requirements could be recommended by DEQ modeling staff for consideration in the development of the PTC for this project.

The modeling demonstration used Formation's submitted source and emissions scenarios presented in the November 3, 2008 modeling demonstration. The surface and upper air meteorological data files that DEQ obtained from Formation on February 3, 2009, were used in this sensitivity analysis. The February 3, 2009 meteorological data files corrected missing data issues with the original meteorological data files and this is the appropriate data to use for the sensitivity analysis. The results of DEQ's analysis are listed in Tables 15 and 16 below. Design concentrations for short-term averaging periods were the highest 2nd high values, and were the highest 1st high values for the annual averaging periods. See Figure 1 in Appendix A to review a graphic depicting the receptor grid for the sensitivity analysis. Figure 2 in Appendix A shows the receptor locations and emission sources surrounding the RAM portal area and the ambient impacts for PM_{10}, 24-hour average under the NOTRAM operating scenario. Figures were generated using graphics capabilities with Bee-Line BEEST for Windows software, Version 9.74. Arsenic impact results were similar to the 24-hour

PM_{10} impacts.

Table 15. RESULTS OF DEQ SENSITIVITY FULL IMPACT ANALYSES						
Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS
CO[a]	1-hour	5,116	3,600	8,716	40,000	22%
	8-hour	2,225	2,300	4,525	10,000	45%
PM_{10}[d]	24-hour	121.0 (88.9[g])	43	164 (131.9)	150	109% (88%)
	Annual	31.0[h]	9.6	40.6	50	81%
SO_2[e]	3-hour	215.1	34	249.1	1,300	19%
	24-hour	42.9	26	68.9	365	19%
	Annual	8.9	8	16.9	80	21%
NO_2[f]	Annual	16.6	4.3	20.9	100	21%

[a] Carbon monoxide
[b] Micrograms per cubic meter
[c] National ambient air quality standards
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[e] Sulfur dioxide
[f] Nitrogen dioxide
[g] 2nd highest high impact value at a receptor that was below PM_{10} 24-hr NAAQS when added to background value. Values in parentheses demonstrate compliance.
[h] This design concentration for annual PM_{10} impacts is extremely conservative because it was obtained by using the daily emission inventory modeled over the entire year instead of using the average annual PM_{10} emission scenario. Note that compliance was demonstrated without the 100 meter setback.

Table 16. RESULTS OF DEQ SENSITIVITY TAP ANALYSES				
TAP	Averaging Period	Maximum Modeled Concentration (ug/m^3)[a]	ACC/AACC[b] (ug/m^3)	Percent of AAC/AACC
Carcinogenic				
Arsenic	Annual	5.37E-03[e] (2.17E-03[f])	2.3E-03[e]	233% (94%)
Non-carcinogenic				
Cobalt	24-hour	9.8E-02	2.5[d]	4%

[a] Micrograms per cubic meter
[b] Acceptable ambient concentration for non-carcinogens/acceptable ambient concentration for carcinogens
[c] The AACC listed in IDAPA 58.01.01.586 for arsenic is 2.3E-04 $\mu g/m^3$, annual average. This value is a T-RACT allowable AACC, which increases the Section 586 AACC by a factor of 10.
[d] Cobalt metal, dust, fume is the most restrictive increment of the three forms of cobalt regulated under Section 585. Cobalt carbonyl and cobalt hydrocarbonyl are the other two forms of cobalt, each with an increment of 5 $\mu g/m^3$, 24 hour average.
[e] This impact was attributed to the NOTRAM scenario. The TRAM scenario had a maximum ambient impact of 2.53E-03 $\mu g/m^3$, annual average. The maximum predicted impact for the RAMPORTAL scenario was 5.67E-03 $\mu g/m^3$, annual average.
[f] The design concentration listed in parentheses is the highest impact at a receptor that was below the T-RACT AACC increment for arsenic.

3.5.2 Discussion of Results

Design concentration values selected for NAAQS with short-term averaging periods were the highest second high values, which is appropriate when using a met data set of a single year of data.

The only criteria pollutant in the sensitivity analysis with a predicted exceedance of a NAAQS standard was PM_{10}, for the 24-hour average. The impacts fall off quickly with increasing distance from the emission sources. Each of the three operating scenarios had predicted ambient impacts at a single receptor with an ambient impact that exceeded the 24-hour average PM_{10} NAAQS. These

impacts occurred at receptors located generally within 50 meters or so of the emission sources. DEQ's analysis shows that at a distance of 100 meters of the emission sources, ambient impacts will be below the PM_{10} NAAQS.

It is important to note that even for the scenario where all emission sources were modeled as operating during the same time and the individual operating scenarios are ignored, impacts were predicted to exceed the 24-hour PM_{10} standard at the same receptor in the individual operating scenarios of the RAM portal with the tram operational (TRAMSCEN) and the RAM portal without operation of the tram (NOTRAMSC). The design concentration (highest 2nd high value) for the TRAMSCEN scenario was 119 $\mu g/m^3$, 24-hr avg, and for the NOTRAMSC scenario was 121 $\mu g/m^3$, 24-hr avg. The Sunshine portal scenario (SUNSHSC) had a single receptor with a predicted impact of 118 $\mu g/m^3$, 24-hr avg. With the ambient background concentration of 43 $\mu g/m^3$, 24-hr avg, the total impacts are above the NAAQS standard of 150 $\mu g/m^3$, 24-hr avg. All impacts above an ambient standard were located within the 100 meter boundary.

For the TAPs analysis, only arsenic impacts were predicted to be above the allowable T-RACT increment. As in the case for the PM_{10} ambient impacts, arsenic impacts that exceeded the T-RACT increment occurred at three receptors closest to the emission sources for the RAMPORTL emission source grouping. At a distance of approximately 100 meters from these emission sources, ambient impacts had fallen to levels that complied with the T-RACT increment. This observation was valid for the RAMPORTL and the NOTRAMSC scenarios. Thus, the requirement for a 100-meter setback to ambient air is further justified.

DEQ performed another modeling run with additional receptors placed near the concentrator and crushing area and the topsoil stock pile and the tailing and waste rock storage facility areas. The results of this additional analysis did not provide any ambient impacts of concern and did not alter any conclusions obtained from the original sensitivity analysis.

4.0 Conclusions

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

Appendix A

Graphics for DEQ Sensitivity Analysis:

Figure 1—Receptor Grid

Figure 2—PM_{10} Ambient Impacts

Figure 1—DEQ Sensitivity Analysis Receptor Grid

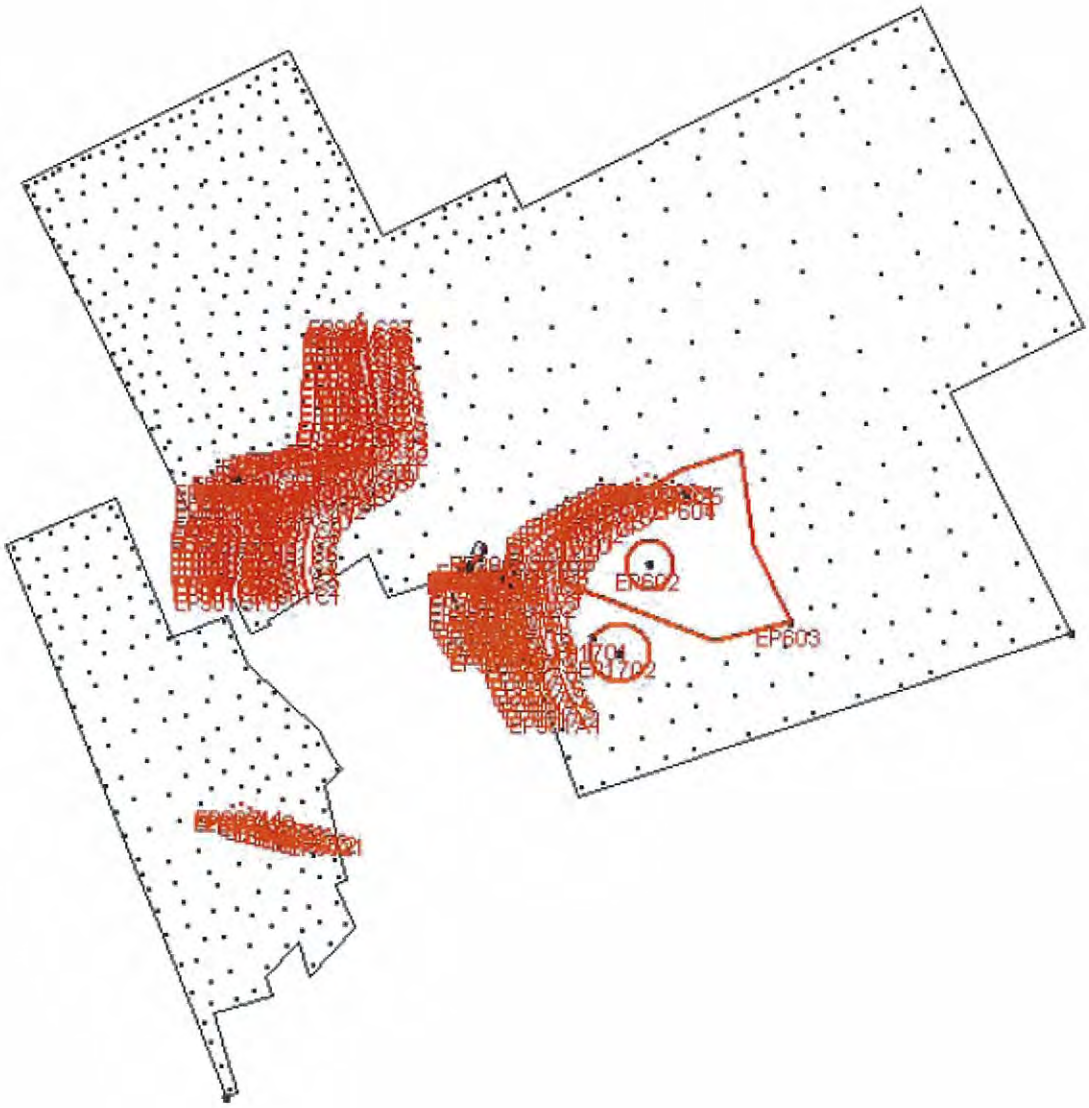
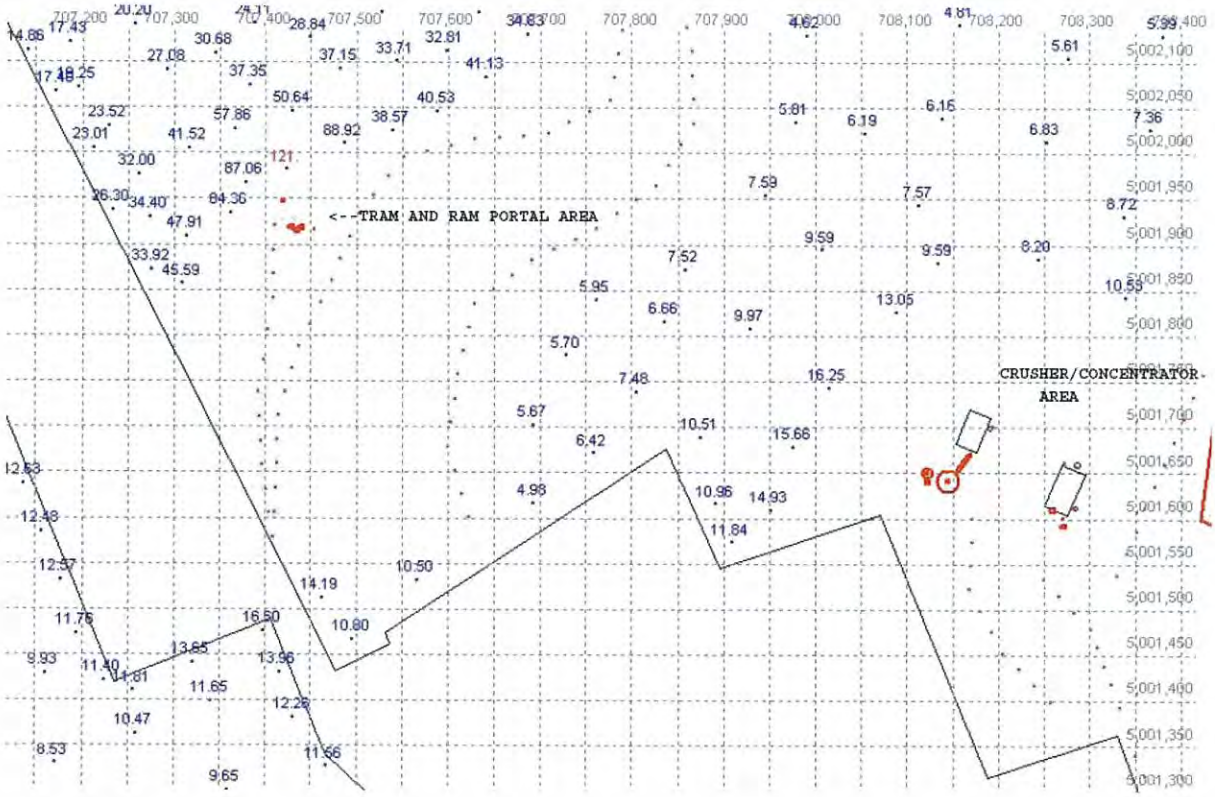


Figure 2—DEQ Sensitivity Analysis

PM_{10} Impacts for Area of Concern for the NOTRAM Scenario



Note: Ambient Impacts are in units of micrograms per cubic meter, 24-hour average

Appendix D – Proposed T-RACT

ICP Dust Control Technology as T-RACT for IDAPA 586 TAPs included in ICP Ore and Waste Rock

Background

The only potential emissions of TAPs regulated in IDAPA 585 or 586 TAPs at or near IDAPA ELs at the facility are from minerals or elements that are components of the ore and to a lesser extent the waste rock and tailings, and are therefore released as components of fugitive particulate emissions during material handling.

Handling of ore and waste is a solid material handling exercise, with particle sizes up to 12 inches. Handling such materials necessarily involves large equipment such as trucks and front end loaders. Emission estimates for TAP emissions are very conservative. Those emission estimates assume that the percentage of the TAP in the ore (or by-product) will equal the percentage of the PM emitted for each fugitive release involving ore or by-products. This is understood to be a gross overestimate of the amount of TAPs emitted, especially for arsenic and cobalt. The vast majority of those two minerals are components of the mineral cobaltite. The entire process is designed to ensure that the cobaltite is retained in the concentrated ore. The economic feasibility of the project requires that the cobaltite be captured intact as the net result of the project efforts. Cobaltite retention is expected to make the estimates of arsenic and cobalt emissions at least an order of magnitude below those included in the emission inventory for this application.

There are three main sources of emissions associated with the ore handling that potentially reach IDAPA TAP ELs. Those sources are the material gathering and transfers, the milling process, and emissions from wind erosion or management of the materials in the TWSF area. There are several locations and processes that result in emissions of PM; however, only those processes where the proposed P2 technique is applicable are described in this section (i.e. the tram loading station, the tram unloading station, and the TWSF). Processes within the mill are subject to high efficiency control devices that meet or exceed NSPS Subpart LL requirements. Consequently, processes that meet or exceed NSPS Subpart LL requirements are not included in the T-RACT discussion below.

EPA Clearinghouse Review

A review of the EPA Clean Air Technology Center – RACT/BACT/LAER Clearinghouse database for Mining Operations showed that there was at least one applicable site where Lowest Achievable Emission Rate (LAER) was successfully employed as a result of the modeled emission rates of PM. The site, Aggregate Industries, Sloan Quarry (ID # NV-0045) is a sand and gravel mine, an asphalt concrete plant, and a concrete batch plant. It is important to note that the Sloan Quarry was permitted as a major source for PM-10 in a non-attainment area, unlike the Idaho Cobalt Project (ICP) which is a minor source within an attainment area and is located in a remote area with limited access. To control fugitive emissions of PM at the Sloan Quarry,

moisture control was employed as the pollution prevention (P2) technique. Moisture content was maintained between 4.5 to 5 percent for aggregate less than one-quarter inch in diameter during aggregate mining, handling, and transferring.

Base Case Description

The general process and the P2 techniques employed in the base case are described in this section. The proposed P2 technique being proposed as T-RACT involves the application of moisture to solids in order to mitigate dust production from material transfers and handling. As noted above, there is a precedent for accepting 4.5 to 5% moisture content as LAER using a P2 methodology for a major source in a nonattainment area.

Dust control will be applied at the initial point of material handling, i.e. the mine working face. Additionally, most of the mine production will originate below the ground water table and will already contain natural moisture. At the working face, water will be applied to the freshly blasted material to suppress dust throughout the material handling process. The target moisture content of 5% water by weight will be achieved by wetting the muck pile before and during loading. If necessary, additional water will be used to wet the material in the trucks. Because the mined rock and pre-crusher materials (most of the material being transferred to generate potential emissions) will consist of large particle sizes (gravel and larger), the moisture will be concentrated in the fine fraction of the particles.

Within the mine, there are few other practical alternatives to further reduce particulate and TAP emissions. Increasing the moisture content in the mined material would not be practical because more moisture would result in more fluid material that would be harder to control and contain. Furthermore, the vast majority of underground emissions, probably far more than estimated in the emission inventory, will never exit the mine because of the large particle sizes, high humidity in the mine, and long distances between the particulate emission sources and the release point.

During the subsequent material transfers, regardless of the mined rock conveyance system (i.e. tram or no tram), the same P2 technique will be employed. The moisture content of the mined rock at the mine portal will be a target of 5% water by weight, as discussed above. Stockpiled ore and waste rock will contain at least 5% moisture, and will be processed promptly so that it will not be allowed to dry and become airborne. Should the material begin to dry and produce dust, water will be added as a matter of operational management.

The crushing and concentration processes take place indoors within the mill, with all emissions routed through a baghouse with controls exceeding NSPS Subpart LL requirements. The concentrate (product) and tailings (waste) will be stabilized at a high moisture content (~19%) which will virtually eliminate dust.

The concentrate is placed directly into fully enclosed steel bins and is then hauled off site for refining. All tailings produced during the concentration processes will have a

moisture content of approximately 19%. The moist tailings will be stockpiled at the mill facility and loaded via loader grabs and drops into haul trucks. The haul trucks will then transport the tailings to the 57-acre TWSF area for deposition. The material transfers at the TWSF prompt placement and compaction of all received material on a daily basis followed by revegetation/reclamation afterward. In addition to representing P2 techniques for mine by-product management, this TWSF management plan is required for compliance with Formation's land use agreement with the USFS.

There are no additional capital costs associated with the base case.

Enclosure Case Description

As an alternative scenario, the enclosure of fugitive emissions sources and installation of particulate removal devices was analyzed for economic and technologic feasibility. It is technologically feasible to enclose the fugitive emissions sources described above so that emissions could be captured and removed before the air stream is released to the environment. A technical investigation of this alternative was documented in a technical memorandum by Telesto Solutions, Inc. and is included as attachment 5, Appendix D.

The approach to controlling dust emissions at the portal site loading and unloading stations would be to construct a steel building that would enclose the portal pad area where the transfers take place and the stockpiles are located. The building also needs to be large enough to enclose the tram towers and loading bins, to be effective when the tram is in service. To enclose the loading area at the portal, the building would have a footprint of 60 feet by 60 feet, totaling 3,600 square feet, with an eve height of 25 feet on the upper bench and an eve height of 65 feet from the base of the lower tram tower.

To control emissions at the mill site loading and unloading station a second building would be constructed. To enclose the unloading area at the mill site, this building would have a footprint of 130 feet by 275 feet, totaling 35,750 square feet, with an eave height of 80 feet. The assumption was made that the structures would be pre-engineered and manufactured off-site and assembled on-site. The building would be permanently affixed to a concrete foundation and would have two 20 foot by 20 foot openings.

At the TWSF, particulate matter is generated from two sources; wind erosion from the static portions of the pile, and vehicle activity associated with placement of the tailings and waste rock. The vehicle activity (truck transport and dumping, dozer spreading, and compaction) is the larger of the two sources. The control approach would be to provide a semi-portable structure that would enclose the placement activity. The structure would be ventilated through a baghouse. The activity cycle would be to construct the temporary structure, place material inside the structure until it is impractical to place any more material inside the structure, then move the structure to a new location and begin the cycle anew.

This plan would require two structures, one for active placement and another that is being prepared for active placement. It is estimate that a newly prepared structure would be

needed every two weeks. The proposed structures are Sprung type structures, chosen for their characteristics of rapid assembly and disassembly. The proposed structures would measure 120 by 200 feet.

The total cost of this alternative is $36.8M (Telesto Solutions, 2008).

The emission reduction that could be reasonably expected from this alternative is 4.4 lb per year (0.0022 ton per year) or a total of 48.6 lb (0.024 ton) over the project life (Table 4-3).

Conclusion

The discussions above describe P2 techniques that could be employed throughout the material handling, storage, and processing phases of the project. Both the base case which uses moisture control to mitigate particulate emissions and an alternative case that uses enclosures as mitigation were considered.

Implementing the alternative case would result in a cost of $36.8M for a reduction of 0.0022 tpy of annual emissions, or a total reduction of 0.024 tons over the life of the mine (11 yrs). This is equivalent to $16.7B per ton of annual emission reduction or a total of $1.52B per ton of emission captured over the life of the mine. Because the reduction in TAP arsenic emissions is so small to begin with, an order of magnitude of reduction in emissions is economically prohibitive.

The extraordinary per ton cost to implement the enclosure option not economically feasible. The proposed base case controls represent the lowest emissions of the TAPs that the facility is capable of meeting by application of P2 technology that is reasonably available, considering both technologic and economic feasibility. The base case dust control P2 methodology described, state of the art for any mine, will produce the lowest emissions of TAPs that this source is capable of meeting by the application of a reasonably available and economically feasible technology. Furthermore, the techniques to be employed are consistent with the precedent set by LAER demonstration at another site in a more highly impacted area. Additionally, because the site is remote and isolated, regardless of the ambient air boundary location (claim boundaries), public exposure is extremely limited. On that basis, Formation proposes the base case methodology as T-RACT for the IDAPA 586 carcinogenic TAP arsenic in the ore and associated materials.

Emission Reduction

The table below depicts the TAP arsenic emissions effected by the base case and enclosure case scenarios. Because the no-tram scenario is results in greater emission rates, emission sources related to the tram scenario were excluded from the sum. A reasonable control efficiency of 90% using baghouses was used to calculate the reduction in TAP arsenic emissions in the enclosure scenario.

Table 4-3 Cost Comparison of Control Options

Source ID	Source	PM lbs/hr	PM tpy	Arsenic ton/yr Base Case	Arsenic ton/yr Enclosures
PORTAL					
EP1301	Mined Rock truck dump	0.002	0.003	1.68E-05	1.68E-06
EP1303	Loader grab from mined rock pile	0.002	0.003	1.68E-05	1.68E-06
EP1304	Loader drop to Truck	0.102	0.203	1.07E-03	1.07E-04
EP1302	Mined Rock stockpile	0.0146	0.0004	1.95E-06	1.95E-07
EP1101	1200-BN-201 - Mined Rock to Tram Bin	0.002	0.003	1.68E-05	1.68E-06
EP1102	1200-FE-201 - Bin to Tram	0.002	0.003	1.68E-05	1.68E-06
	Total PORTAL	**0.1227**	**0.2165**		
MILL SITE					
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)	0.001	0.002	1.59E-05	1.59E-06
EP301	Ore Stockpile	0.031	0.001	5.68E-06	5.68E-07
EP302	1200-LD-201- Tram Bin to Coarse Ore Stockpile	0.001	0.002	1.59E-05	1.59E-06
EP303	Loader grab from Coarse Ore Stockpile	0.001	0.002	1.59E-05	1.59E-06
EP401	Waste Rock Stockpile	0.014	0.000	2.52E-07	2.52E-08
EP402	1200-LD-201- Tram Bin to Waste Rock Stockpile	0.002	0.001	6.82E-07	6.82E-08
EP403	Loader grab from Waste Rock Stockpile	0.018	0.061	4.33E-05	4.33E-06
EP404	Loader dump Waste Rock Stockpile into Truck	0.018	0.061	4.33E-05	4.33E-06
EP1201	Loader drop to Primary Crusher feed bin	0.085	0.142	1.01E-03	1.01E-04
	Total MILL SITE	**0.1724**	**0.2732**		
TWSF					
EP601	TWSF Waste Rock truck dumping	0.002	0.001	6.82E-07	6.82E-08
EP602	TWSF area management	0.372	0.268	1.90E-04	1.90E-05
EP603	TWSF wind eroision	1.209	0.031	2.18E-05	2.18E-06
EP604	Truck Dumps Tailings TWSF	0.000	0.001	4.63E-07	4.63E-08
	Total TWSF	**1.5828**	**0.3003**		
				2.45E-03	2.45E-04
				Reduction (tpy) = 0.0022	
				(lb/y) = 4.4	
				Total (ton) * = 0.024	
				(lb) = 48.561	
			COST	$0	$36,800,000
			COST PER TON	$0	$16,671,661,946
			COST PER TON *	$0	$1,515,605,631

Represents emmissions sources related to the "Tram" scenario.
Emission rate using moisture control as the P2 technique in the Base Case scenario.
Emission rate after enclosing the emission sources at the Portal, Mill Site, and TWSF. Emission rates were reduced 90% to represent a reasonable control efficiency using bag houses.

* Assumes an 11 year mine life.