



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 73215**

I. INTRODUCTION

This Class I Title V permit is for the operation of Bonanza Explorations' Copperstone Mine, which is located at 33° 51' 57'' N latitude and 114° 17' 26'' W longitude. Permit #73215 supersedes Registration #64739.

A. Company Information

Facility Name: Copperstone Gold Mine

Mailing Address: PO Box 647 Parker, AZ 85344

Facility Location: 33° 51' 57'' N latitude and 114° 17' 26'' W longitude

B. Attainment Classification (Source: 40 CFR §81.303)

Copperstone Mine is located in an area which is in attainment or unclassified for all criteria pollutants.

II. PROCESS DESCRIPTION

American Bonanza Gold Corporation (ABGC) previously operated the Copperstone underground mine from 2011-2013. The mine was non-operational from October 11, 2013 to June, 2014. Kerr acquired the operation in June 2014 through its wholly owned subsidiary Bonanza Explorations. Bonanza Explorations' operation will consist of an underground mine, an above ground mill and a cyanide gold leaching process with carbon in column gold recovery.

The mining cycle consists of drilling, blasting, mucking and backfill consisting of crushed rock fill. Blasting will occur underground. Annual throughput will be limited to 210,000 tons per year. Rock containing gold will be transported by haul truck from the pit area to the mill for processing through the crushing operations and staging in a fine ore storage bin. Previously, flotation milling was used to recover gold. In the proposed process cyanide leaching will be used to recover gold. Recovery via cyanide leaching will involve leaching in open cyanide leach vessels, post leach thickening, removal of copper using the Sulfidization, Acidification, Recycling and Thickening (SART) process, and gold recovery using carbon in column adsorption and electrowinning. The gold recovery process is an entirely wet process, therefore the particulate matter emissions are expected to be minimal.

III. LEARNING SITE EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely



impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

Upon review of ADEQ's database, it was determined that there are no learning sites within two miles of the facility.

IV. COMPLIANCE HISTORY

Copperstone Gold Mine previously held an Air Quality Registration and therefore did not require on-site inspections.

V. EMISSIONS

The facility's PTE is provided in Table-1 below:

Table 1:

Pollutant	Maximum Capacity to Emit	PTE w/ elective limits	Non-Fugitive Emissions	Significance Level
PM	55.93	52.27	3.6	-
PM₁₀	20.07	17.67	1.5	15
PM_{2.5}	2.44	2.1	0.22	10
NOx	28.11	1.6	1.6	40
CO	6.06	0.35	0.35	100
SOx	1.86	0.11	0.11	40
VOC	2.24	0.313	0.13	40
Total HAP	0.149	0.00498	0.00498	n/a
Hg Emissions (included in HAP)	0.003418	0.000195	0.000195	n/a

VI. MINOR NEW SOURCE REVIEW

The total emissions at Copperstone Gold Mine are below the Minor NSR thresholds.



VII. APPLICABLE REGULATIONS

Table 2 identifies applicable regulations and verification as to why that standard applies.

Table 2:

Unit	Rule	Discussion
Crushing, screening and material handling operations	NSPS Subpart LL	These regulations are applicable to the affected facilities in metallic mineral processing plants (crusher, screen, conveyor belt transfer point, storage bin, enclosed storage area, truck loading station, truck unloading station)
Emergency Generator	A.A.C. R18-2-719	These rules are standards of performance for existing stationary rotating machinery. They are applicable to all stationary gas turbines, oil-fired turbines, or internal combustion engines.
	40 CFR 63 Subpart ZZZZ	These NESHAP rules from 40 CFR 63 Subpart ZZZZ are applicable to stationary reciprocating internal combustion engines located at an area source of HAP emissions.
Gold processing Equipment	40 CFR 63 Subpart 7E	These NESHAP rules from 40 CFR 63 Subpart EEEEEEE are applicable to the leaching, copper removal process and gold recovery equipment.
Fugitive dust sources	A.A.C. R18-2 Article 6	These standards are applicable to all fugitive dust sources at the facility.
Other periodic activities	A.A.C. R18-2 Article 7	These standards are applicable to all fugitive dust sources at the facility.



VIII. PREVIOUS PERMIT AND CONDITIONS

A. Previous Permit Conditions

Table 3 compares the substantive conditions in Registration #64739 with the conditions in this new Class I permit and cross-references the previous conditions to their location in the renewal permit

Table 3:

Section No.	Determination			Comments
	Revised	Keep	Delete	
General Requirements			X	General Provisions – Replaced with Attachment “A”: General provisions as appropriate for Class I Title V permits
Specific Requirements	X			Divided into individual sections for crushing & screening equipment, existing emergency engines, gold ore processing and diesel storage vessels
Att. C	X			Revised to reflect the addition of the gold processing equipment and the removal of decommissioned equipment used in the flotation process.

IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

A. Facility Wide

1. Along with the semiannual compliance certification, the Permittee is required to submit reports of all recordkeeping, monitoring and maintenance required by the permit.
2. The Permittee is required to maintain, on-site, records of the manufacturer's specifications or an Operation and Maintenance Plan for all equipment listed in the permit.
3. The Permittee shall maintain records of the total daily throughput of material, in tons per day, processed by the crushing and screening plant. At the end of every month, the Permittee shall calculate and record the ore processed in the month, and 12-month rolling total of the ore processed.

B. Metallic Mineral Processing

The permittee shall conduct monthly opacity checks according to condition I.A.2 of Attachment “B” of the Permit.

C. Gold Ore Processing



1. The Permittee is required to monitor and measure the weight of concentrate produced by electrowinning process using weigh scales for each batch prior to being fed to the smelt furnace before drying in any ovens.
2. The Permittee is required to maintain the systems for measuring weight within ± 5 percent accuracy.

D. Fugitive Dust

1. The Permittee is required to keep record of the dates and types of dust control measures employed.
2. The Permittee is required to show compliance with the opacity standards by having a Method 9 certified observer perform a monthly survey of visible emission from fugitive dust sources. The observer is required to conduct a 6-minute Method 9 observation if the results of the initial survey appear on an instantaneous basis to exceed the applicable standard.
3. The Permittee is required to keep records of the name of the observer, the time, date, and location of the observation and the results of all surveys and observations.
4. The Permittee is required to keep records of any corrective action taken to lower the opacity of any emission point and any excess emission reports.

E. Periodic Activities

1. The Permittee is required to record the date, duration and pollution control measures of any abrasive blasting project.
2. The Permittee is required to record the date, duration, and quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
3. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

X. TESTING REQUIREMENTS

The Permittee shall conduct an initial performance test for mercury emission limits on the units involved in gold ore processing. The permittee shall conduct performance tests annually thereafter.

XI. MODELING REQUIREMENTS

The non-fugitive emissions of the facility are below the permitting exemption threshold (half the significance level) and is not a new source, therefore, ADEQ is not required to perform a National Ambient Air Quality Standard (NAAQS) compliance review to determine if the source may

interfere with attainment or maintenance of NAAQS. Also, at the time of the previous permit (Permit #50890) the facility had performed modeling analysis to demonstrate compliance with NAAQS. The criteria pollutant modeling results from the prior permitting process are still applicable to this source. The table below shows the results from the air dispersion modeling done for Permit #50890:

TABLE 7-1. STATE NAAQS MODELING RESULTS

Pollutant Analysis Type	Averaging Period	Modeling Year	Maximum			Location (NAD27)		Highest or Avg. Background Modeled Conc.				
			Conc. Type ²	Modeled Conc. (µg/m ³)	Time (YYMMDDHH)	UTME (m)	UTMN (m)	Modeled Conc. ³ (µg/m ³)	Conc. + Background (µg/m ³)	NAAQS (µg/m ³)	Exceed NAAQS?	
PM ₁₀ NAAQS	24-hr A ¹	2001 - 2005	H6H	49.37	05012424	750.125	3,750.144	49.37	56.67	106.03	150	No
	24-hr B ¹	2001 - 2005	H6H	49.37	05012424	750.125	3,750.144	49.37	56.67	106.03	150	No
PM _{2.5} NAAQS	24-hr A ¹	2001	H1H	6.13	01110724	750.159	3,750.154	7.02	26.90	33.92	35	No
		2002	H1H	6.73	02102724	750.149	3,750.151					
		2003	H1H	7.64	03011024	750.125	3,750.144					
		2004	H1H	6.85	04120924	750.125	3,750.144					
		2005	H1H	7.74	05010524	750.125	3,750.144					
	24-hr B ¹	2001	H1H	6.13	01110724	750.159	3,750.154	7.02	26.90	33.92	35	No
		2002	H1H	6.73	02102724	750.149	3,750.151					
		2003	H1H	7.64	03011024	750.125	3,750.144					
		2004	H1H	6.85	04120924	750.125	3,750.144					
		2005	H1H	7.74	05010524	750.125	3,750.144					
Annual A ¹	2001	H1H	1.76	-	750.083	3,750.306	1.75	9.85	11.60	15	No	
	2002	H1H	1.60	-	750.083	3,750.306						
	2003	H1H	1.67	-	750.093	3,750.258						
	2004	H1H	1.66	-	750.093	3,750.264						
	2005	H1H	2.06	-	750.149	3,750.151						
Annual B ¹	2001	H1H	1.76	-	750.083	3,750.306	1.75	9.85	11.60	15	No	
	2002	H1H	1.60	-	750.083	3,750.306						
	2003	H1H	1.67	-	750.093	3,750.258						
	2004	H1H	1.66	-	750.093	3,750.264						
	2005	H1H	2.06	-	750.149	3,750.151						

XII. LIST OF ABBREVIATIONS

- A.A.C. Arizona Administrative Code
- ADEQ Arizona Department of Environmental Quality
- Btu/ft³ British Thermal Units per Cubic Foot
- Btu/hr British Thermal Units per Hour
- CFR Code of Federal Regulations
- CO Carbon Monoxide
- EPNG El Paso Natural Gas Company
- FERC Federal Energy Regulatory Commissions
- HAP Hazardous Air Pollutant
- hp Horsepower
- lb/hr Pound per Hour
- NO_x Nitrogen Oxides
- PM Particulate Matter
- PM₁₀ Particulate Matter Nominally less than 10 Micrometers
- SO_x Sulfur Oxides
- VOC Volatile Organic Compound