



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT No. 94459**

**I. INTRODUCTION**

This Class I Renewal permit is for the continued operation of Gold Road Mining Corp.'s Gold Road Mine. Permit No. 94459 renews and supersedes Permit No. 65238. A Class I permit is required because the facility is subject to National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category (NESHAP 40 CFR 63 Subpart EEEEEEE).

**A. Company Information**

Facility Name: Gold Road Mine  
Mailing Address: PO Box 869  
Oatman, AZ 86433  
Facility Location: 10277 West Oatman Highway  
Oatman, Mohave County, Arizona 86433

**B. Attainment Classification**

The facility is located in an area that is in attainment or unclassifiable for all criteria pollutants.

**II. PROCESS DESCRIPTION**

**A. Process Equipment**

The facility near Oatman, AZ is comprised of an underground mechanized mine with truck haulage to surface stockpiles of waste rock and ore, followed by milling of the ore to produce a gold and silver alloy commonly known as doré. The facility is capable of operating continuously for 24 hours per day and 365 days per year.

The major operations at the facility include: underground mining and hauling of ore and waste rock to stockpiles above ground, primary crushing and conveying, gold and silver ore concentrating using mills and the addition of lime, water, acid, and cyanide, leaching of the ore slurry in leach tanks, and electrowinning followed by smelting.

Process sources which emit air pollutants at this facility consists of crushers, a screen, a fine ore bin, conveyor belts, a diesel emergency generator, and the Dore smelting furnace.

Other emission sources include drilling, blasting, loading/unloading, wind erosion, haul truck/front end loader/water truck/other vehicle use on unpaved roads, tailings filtering/conveying/storage, and lime delivery/handling. Process sources which do not emit air pollutants consist of milling, and leaching, as these are wet processes.

**B. Control Devices**

There are several control devices at this facility for the abatement of particulate matter. The Fine Ore Storage Bin (A-9a) is equipped with a baghouse (A-9b), which also controls emissions from the transfer point from the Fine Ore Storage Bin to the Grinding Mill Belt Feeder. The Lime Silo Baghouse (A11-b) controls emissions from both the transfer point to the Lime Silo (A-11a) from delivery trucks and the transfer point from the Lime Silo to the Grinding Mill Belt Feeder (A-10). Emissions from Dore smelting furnace are controlled by the CSG scrubber (A-17).

Water sprays are also used at the facility to control particulate matter emissions from various crushing, screening, and material transfer points.

**C. Process Flow Diagrams**

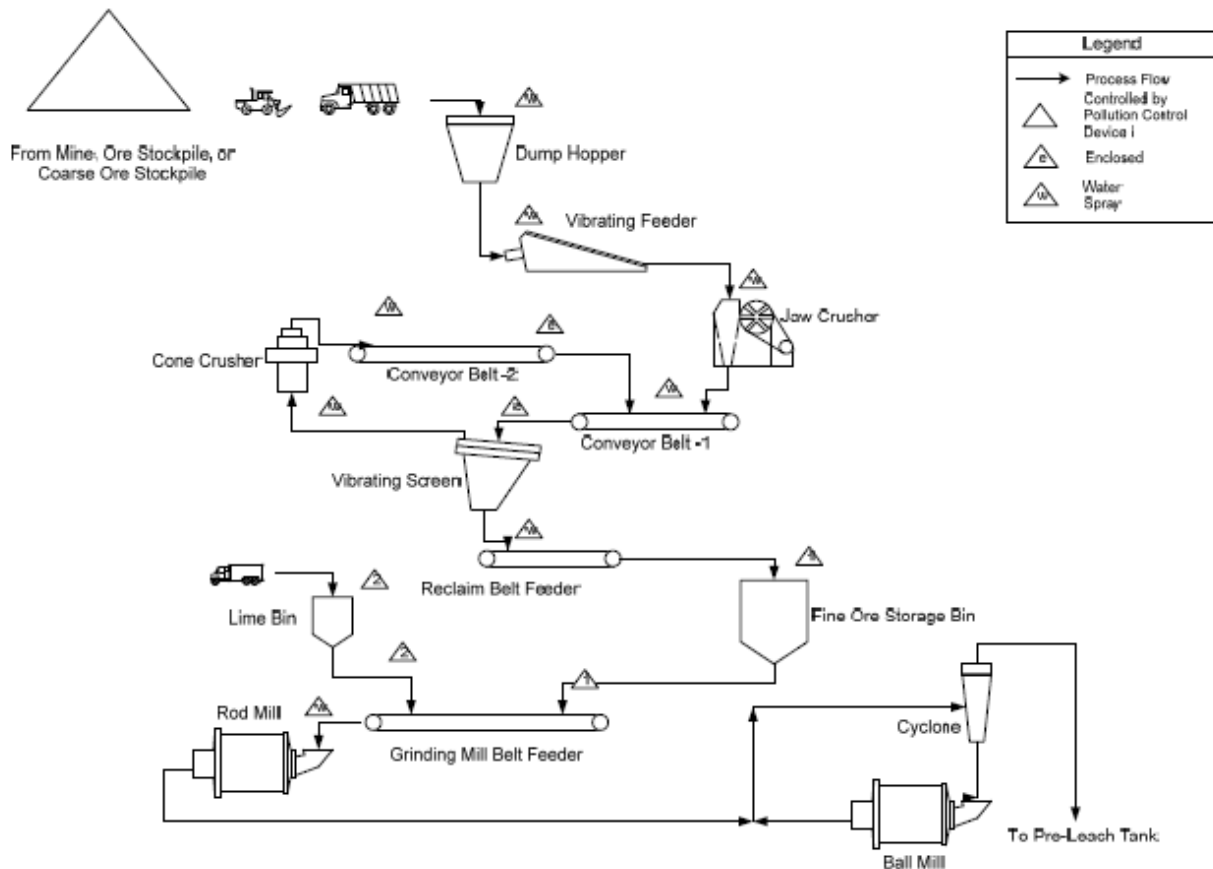


Figure 1: Crushing, Milling and Reclaim

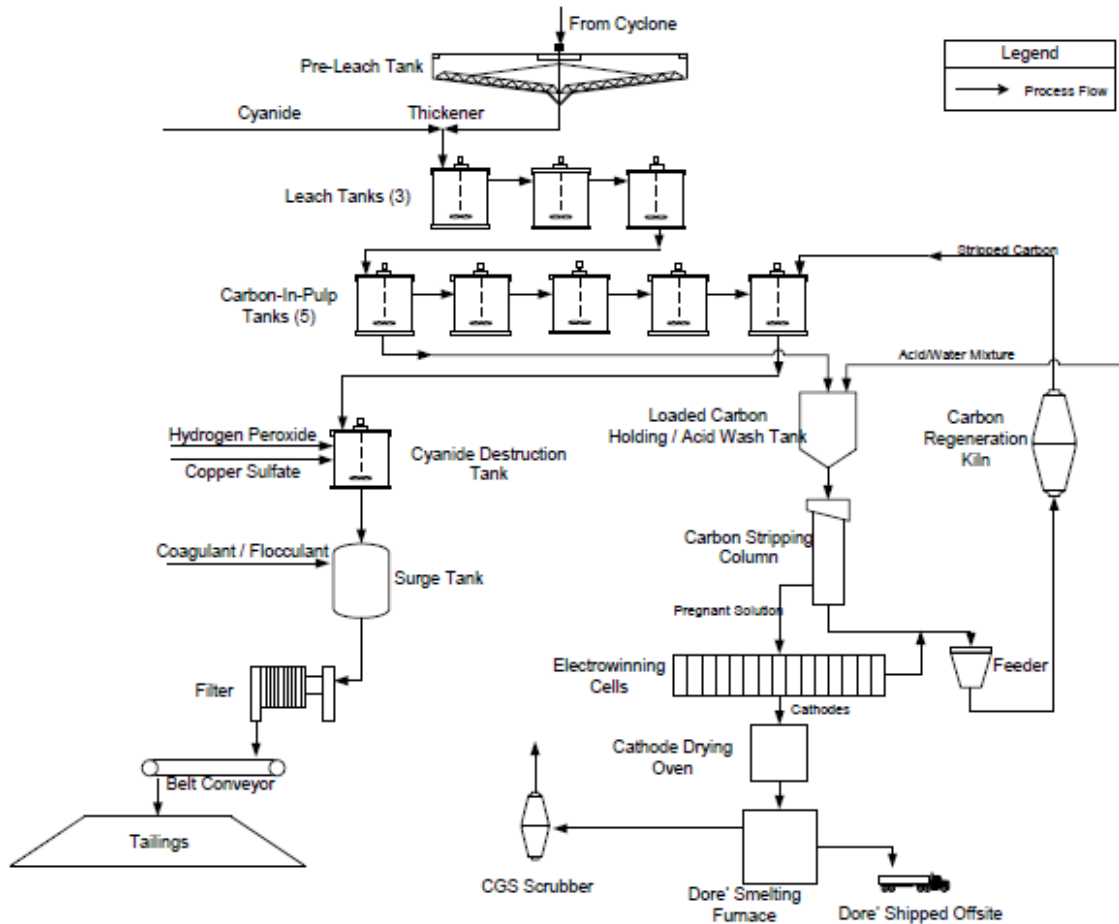


Figure 2: Leaching and Gold Recovery

### III. COMPLIANCE HISTORY

During the previous permit term, the Department completed four report reviews and five physical inspections. No inspections resulted in any enforcement actions. Performance testing has not been performed as the mine has had limited operation since January 2015. One potential deficiency was noted during a physical inspection. It is summarized below.

1. Inspection Report No: 289852
  - a. Physical inspection in September 2017. Visible emission surveys had not been taken. Mine was in care and maintenance mode awaiting ownership change. A copy of the EPA Reference Method 9 Certified Observer's current certification card was requested.

### IV. EMISSIONS

The facility's PTE was calculated using AP-42 emission factors assuming 8,760 yearly operating hours. The three emergency engine's PTE was based on 500 yearly operating hours. Wind speed inputs were based on monitoring data. Gaseous emission factors for blasting were based on the

2001 research study, Factors Affecting ANFO Fumes Production, conducted by Pittsburgh Research Center's Experimental Mine.

The facility has a potential-to-emit (PTE) does not exceed significant thresholds of any pollutants. The facility's PTE is provided in Table 1 below:

**Table 1: Potential to Emit (tpy)**

Pollutant	PTE from (latest permitting action)	Change in PTE	PTE	Major/Minor NSR Triggered?
NO <sub>x</sub>	4.56	+0.03	4.59	No
PM <sub>10</sub>	1.04	-0.01	1.03	No
PM <sub>2.5</sub>	0.33	+0.70	1.03	No
CO	1.05	+0.02	1.07	No
SO <sub>2</sub>	0.002	+0.002	0.004	No
VOC	0.12	+0.05	0.17	No
Pb	N/A	+0.000004	0.000004	No
HAPs	0.002	0	0.002	No
GHG (CO <sub>2</sub> e)	217.61	+3.39	221	No

## V. APPLICABLE REGULATIONS

Table 2 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

**Table 2: Applicable Regulations**

Unit & year	Control Device	Rule	Discussion
Dump Hopper, Primary (Jaw) Crusher, Conveyor Belt 1, Conveyor Belt 2, Vibrating Screen, Secondary (Cone) Crusher, Ore Bin Conveyor, Fine Ore Storage Bin, Grinding Mill Belt Feeder	Water sprays, Baghouse	NSPS Subpart LL	Applicable to metallic mineral processing plants

Unit & year	Control Device	Rule	Discussion
Leaching Equipment, Electrowinning Cell and Rectifier, Dore Smelting Furnace, Carbon Regeneration Kiln	CGS Scrubber	NESHAP Subpart EEEEEEE	Applicable to gold mine ore processing and production
Lime Silo, Leaching Equipment, Dore Smelting Furnace, Electrowinning Cell and Rectifier, Cathode Drying Oven, Carbon Regenerative Kiln, Tailings Belt Conveyor, Welder-Port and Rock Saw	Baghouse, CGS Scrubber	A.A.C. R18-2-702.B.3, C, and -730	Standard of Performance for unclassified sources
GenSet Skid Mounted Generator, Dewalt Generator and Dayton Generator	N/A	A.A.C. R18-2-719 and NESHAP Subpart ZZZZ	NESHAP Subpart ZZZZ is applicable to existing RICE located at an area source for HAPs.
Heat Exchanger/Boiler (electric)	N/A	A.A.C. R18-2-730	NESHAP Subpart 6J does not apply as electric boilers are exempt
Rod Mill, Ball Mill, Vibrating Feeder	Water Sprays	A.A.C. R18-2-721	Applicable to mills and material handling facilities
Fugitive dust sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	These standards are applicable to any spray painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

## VI. PREVIOUS PERMIT REVISIONS AND CONDITIONS

**A. Previous Permit Revisions**

Permit No. 65238 was transferred from Mojave Desert Minerals, LLC to Gold Road Mining Corp. in Permit Transfer No. 67979 on September 21, 2017, and the permit was amended to reflect the new ownership.

**B. Changes to Current Renewal**

Table 3 addresses the changes made to the sections and conditions from Permit No. 65238:

**Table 3: Previous Permit Conditions**

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language
Att. "B" Section I		X		Facility Wide Requirements: Revised to represent the most recent template language
Att. "B" Sections II.A, III.A, IV.A, V.A, VI.A		X		Applicability section revised to include new equipment and represent the most recent template language
Att. "B" Conditions V.C.1 and V.G.1			X	These conditions, which contained requirements for initial demonstrations of compliance, have been removed because they have been fulfilled and are no longer needed in the permit.
Att. "B" Section VIII			X	Mobile Source Requirements removed
Att. "C"		X		Equipment List: Revised to reflect the most recent equipment operating at the facility and to include equipment information provided.

## VII. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 4 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

**Table 4: Permit No. 94459**

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Dump Hopper, Primary (Jaw) Crusher, Conveyor Belt 1, Conveyor Belt 2, Vibrating Screen, Secondary (Cone) Crusher, Ore Bin Conveyor , Fine Ore Storage Bin, Grinding Mill Belt Feeder	PM	0.05 g/dscm  7% opacity for stack emissions  10% opacity for fugitive sources	Calibrate, maintain, and operate monitoring devices which can be used to determine daily the material throughputs to individual process sources, monthly visible emission surveys	Record the daily process rates and hours of operation of all material handling facilities  Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	Report all 6-minute periods for which the opacity exceeded the applicable requirement
Vibrating Feeder, Rod Mill, Ball Mill	PM	20% Opacity	Calibrate, maintain, and operate monitoring devices which can be used to determine daily the material throughputs to individual process sources, monthly visible emission surveys	Record the daily process rates and hours of operation of all material handling facilities.  Record the observer name, date, results of the instantaneous survey or 6-minute	Report all 6-minute periods for which the opacity exceeded 20% opacity

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
				observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	
Lime Silo with Baghouse, Leaching Equipment, Electrowinning Cell and Rectifier, Cathode Drying Oven (electric), CGS Scrubber, Carbon Regeneration Kiln (Electric), Rock Saw, Heat Exchanger/ Boiler (electric)	PM	20% Opacity	Monthly visible emission surveys	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	Report all 6-minute periods for which the opacity exceeded 20%.
Dore Smelting Furnace, Leaching Equipment, Electrowinning Cell and Rectifier, CGS Scrubber, Carbon Regeneration Kiln (Electric)	Mercury	0.17 lb of mercury per ton of concentrate processed	Performance testing of Dore Smelting Furnace,	Keep records of the weights of each batch of concentrate processed and calculate, and record the total weight in tons of concentrate processed on a daily and monthly basis	<p>Submit an initial notification no later than 120 calendar days after startup</p> <p>Submit an initial Notification of Compliance Status</p> <p>In the event a deviation occurs during a semi-annual reporting period, the Permittee shall submit a</p>



Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					deviation report to the Director
Engines	PM	40% Opacity	A Method 9 observer is required to conduct a monthly survey of visible emissions.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	Report all 6-minute periods for which the opacity exceeded 40%.
	SO <sub>2</sub>	1.0 lb SO <sub>2</sub> /million Btu	N/A	Keep daily records of the sulfur content of the fuel being fired in the engine	Report to the Director any daily period during which the sulfur content of the fuel being fired in the machine exceeds 0.8 percent
Fugitive Dust	PM	40% Opacity	A Method 9 observer is required to conduct a monthly survey of visible emissions.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	Report all 6-minute periods for which the opacity exceeded 40%.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Abrasive Blasting	PM	20% Opacity	N/A	Record the date, duration and pollution control measures of any abrasive blasting project.	N/A
Spray Painting	VOC	20% Opacity Control 96% of the overspray	N/A	Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.	N/A
Demolition/ Renovation	Asbestos	N/A	N/A	Maintain records of all asbestos related demolition or renovation projects including the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents	N/A

---

### **VIII. COMPLIANCE ASSURANCE MONITORING (CAM)**

The CAM rule applies to pollutant-specific emission units (PSEU) at a major Title V source if the unit meets all of the following criteria:

- A. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
- B. The unit uses a control device to achieve compliance with the emission limit or standard; and
- C. The unit has "potential pre-control device emissions" of the applicable regulated air pollutant equal to or greater than 100% of the amount (tons/year) required for a source to be classified as a major source. "Potential pre-control device emissions" means potential to emit (PTE, as defined in Title V) except emissions reductions achieved by the applicable control device are not taken into account.

The general purpose of monitoring required by the CAM rule is to assure compliance with emission standards by ensuring that control devices meet and maintain the assumed control efficiencies. Compliance is ensured through requiring monitoring of the operation and maintenance of the control equipment and, if applicable, operating conditions of the pollutant-specific emissions unit. For the PSEUs that have post control potential to emit equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source, for each parameter monitored, the owner shall collect four or more data values equally spaced over each hour. Such units are defined as "large" PSEUs. For all other PSEUs ("small" PSEUs), the monitoring shall include some data collection at least once per 24-hour period. There are no emission units subject to CAM requirements at Gold Road Mine.

### **IX. ENVIRONMENTAL JUSTICE ANALYSIS**

The EPA (Environmental Protection Agency) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards. The renewal permit does not allow or permit any increases in emissions and will not result in any additional impacts.

### **X. LEARNING SITE EVALUATION**

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct 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.

This renewal will not result in any increase in emissions as there are no changes to any equipment. Hence the facility is exempt from the learning sites evaluations.

## XI. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AQD	Air Quality Division
A.R.S.	Arizona Revised Statutes
BACT	Best Available Control Technology
Btu/ft <sup>3</sup>	British Thermal Units per Cubic Foot
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent basis
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FLM	Federal Land Manager
°F	degrees Fahrenheit
ft	Feet
g	Gram
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
HHV	Higher Heating Value
hp	Horsepower
hr	Hour
IC	Internal Combustion
kW	Kilowatt
MW	Megawatts
NAAQS	National Ambient Air Quality Standard
NO <sub>x</sub>	Nitrogen Oxides
NO <sub>2</sub>	Nitrogen Dioxide
N <sub>2</sub> O	Nitrous Oxide
NSPS	New Source Performance Standards
O <sub>3</sub>	Ozone
Pb	Lead
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter less than 10 µm nominal aerodynamic diameter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PSD	Prevention of Significant Deterioration
psia	Pounds per square Inch (absolute)
PTE	Potential to Emit
sec	Seconds
SO <sub>2</sub>	Sulfur Dioxide
TPY	Tons per Year

VOC.....Volatile Organic Compound

yr..... Year