ROUGH DRAFT

EASTERN KERN AIR POLLUTION CONTROL DISTRICT
TECHNICAL SUPPORT DOCUMENT FOR
Golden Queen Mining Company, Ltd.
2024 TITLE V PERMIT RENEWAL NO: 1188-V-2017

2700 “M” Street, Suite 302
Bakersfield, California 93301
Telephone: 661-862-5250

APPLICATION RECEIVED FROM:	**Golden Queen Mining Co., LLC** **2818 SILVER QUEEN ROAD** **MOJAVE, CALIFORNIA 93501**
PLANT SITE LOCATION:	**2818 Silver Queen Road, Mojave, CA**
SECTION/TOWNSHIP/RANGE:	**NE06/T10N/R12W**
APPLICATION PROCESSED BY:	**Miguel Sandoval, Air Quality Engineer I**
APPLICATION REVIEWED BY:	**Gary Ray, Air Pollution Control Officer**
	_____Date:_____
NATURE OF BUSINESS:	**Mining, Extraction, and Refining of Gold and Silver Ore**
SIC Code:	**1041**
RESPONSIBLE OFFICIAL/ FACILITY CONTACT PERSON:	**Jason Rodden**
Title:	**Environmental**
Telephone:	**(661) 886-6935**

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I. INTRODUCTION

This Technical Support Document (TSD) pertains to 2023 Title V renewal of Permit No. 1188-V-2017 for Golden Queen Mining Company, LLC. (Golden Queen). Renewal of Title V Permit for Golden Queen allows continued operation a gold and silver ore mining operation at Soledad Mountain.

Attainment Classification

The facility is located in an area of the District designated Serious Nonattainment for the 2008, 8-hour Ozone National Ambient Air Quality Standards (NAAQS) but Attainment for the 1997, 8-hour Ozone NAAQS. The major source threshold is 25 tons per year for VOCs and NOx (as ozone precursors in an area designated as a sever for the 8-hour Ozone nonattainment area). The District is designated attainment or unclassifiable for the NAAQS for the pollutants NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$, and lead; these major source thresholds are 100 tons per year.

II. BACKGROUND

Pursuant to 40 CFR Part 63 Subpart EEEEEEE, National Emission Standards for Hazardous Air Pollutants (NESHAP): Gold Mine Ore Processing and Production Area Source Category, a Federal Part 70 Permit has been issued to Golden Queen. Golden Queen is hereby applying for a Title V Permit renewal.

Upon review of Golden Queen's Title V renewal application, District found that no significant modifications have occurred to the facility in the past 5 years that trigger NSPS or NESHAP requirements. Additionally, modified or new emission units did not trigger a Title I modification or "significant modification" in the last 5 years.

District staff made minor changes to the Title V permit including the following:

- Facility transfer of ownership (previous Golden Queen Mining Co.)
- Cancellation of two emissions units ('026 and '043)
- Addition of new emission units '014, '016, and '017 blast hole drilling rigs
- Revisions to amended District Rules 412 and 412.1
- Re-numeration of emissions units due to transfer of ownership
- Incorporation of modified emissions units ('001, '002, '004, '006, '007, '008, '011, '014).
- Clean up requirements for 40 CFR Part 60 Subpart IIII, Part 63 Subpart ZZZZ, and Part 63 Subpart EEEEEEE

On September 19, 2024, Staff provided Golden Queen Mining with a draft copy of the Title V permit for the initial 45-day review period. Facility staff had no comments on the draft Title V permit.
EPA Region IX was provided with a copy the proposed Golden Queen Mining Title V permit for their 45-day review period in accordance with 40 CFR Part 70, §70.8.

On Jan 24, 2025 EPA Region IX provided comments which consisted of the following:

1. Remove emergency affirmative defense provisions
2. All PM10 emissions limits to be labeled as the sum of filterable and condensable particulate matter.
3. All yearly emission limits should be labeled as 12 month rolling average.
4. TSD shall contain CO and HAP Potential to Emits (PTE)

References to emergency affirmative defense provisions under District Rule 201 and breakdown provisions under local District Rule 111 were removed. The District will work on amending these Rules pursuant to 70.4(i). In the meantime, facility will be subject to requirements of Rule 201.1 and Rule 111 locally until a new Rule is adopted and SIP approved. The District made changes to Title V permit and TSD as proposed by EPA comments and re-submitted draft for approval on 1/29/2025.

App. Rec.:	03/27/2023	
60-Days:	05/26/2023	
Deemed Complete:	05/31/2024	
Facility 45-Day Review:	Start: 09/19/2024	End: 11/03/2024
EPA 45-Day Review:	Start: 12/12/2024	End: 01/26/2025
30 Day Public Notice:	Start: 02/19/2025	End: 03/21/2025

III. FACILITY DESCRIPTION

Golden Queen mines and refines gold and silver ore. The mining and ore processing operation takes place at Soledad Mountain, located southwest of the city of Mojave. Golden Queen utilizes conventional open pit mining techniques to extract ore from the mountain. Gold and silver are separated from the overburden by cyanide heap-leaching operation and the Merrill-Crowe process.

A. ORE PROCESSING

Blast hole drills are used to make holes for blasting charges. Blasted ore is loaded into haul trucks by shovels and front-end loaders. Ore is trucked to the crushing plant, which has three different crushing stages; a jaw crusher is initially used to break down large ore chunks. Emissions from the primary crushing process are controlled through wet suppression. Ore is then collected in a coarse ore storage pile before being sent to screen and then to cone crusher. This is then conveyed to a cone crusher, where ore is broken down further. The primary screen and cone crusher are controlled by a wet scrubber. The ore is then sent through a final grinding stage, which uses a high-pressure grinding roller (HPGR); this reduces ore size down to a nominal minus 10 mesh (~ 1/16 in.) particle size. Fines created during the crushing process are collected in the fine ore bin which is controlled by the fine ore bin vent filter.

After completion of the crushing process, the ore undergoes agglomeration, where fine binding particles (cement, kiln dust, lime, etc.) are used to coat the larger ore particles to create a relatively uniform particle size. The agglomeration enhances solution percolation during the heap leach process, and is an alkalinity source which will minimize the evolution of cyanide from the leaching solution during the heap leach process.

B. HEAP LEACH PROCESS

Heap leaching consists of using a dilute, alkaline cyanide solution, applied to side-hill heap leach pads via drip irrigation type emitters. As the solution percolates through the heap leach pads, precious metals are dissolved from the ore and carried to the bottom of the heap. A perimeter dike is located at the toe of each heap, which creates a pond area for in-heap management of solutions, run-off from precipitation, and retention of the design storm event. The solution containing dissolved precious metals (pregnant solution) is collected on an impermeable heap leach pad liner inside the toe of the heap. Cyanide concentrations of the recycle and barren solutions range from 150 to 300 milligrams NaCN per liter with pH values between 10 and 11.

C. MERRILL-CROWE PROCESS

Suspended solids and dissolved oxygen are first removed from the pregnant solution by using clarifying filters. The pregnant solution is sent through horizontal

leaf type clarifiers pre-coated with diatomaceous earth; this creates an extremely clear solution. In order to avoid major upsets in the circuit, two filters are in use while the other is undergoing cleaning, pre-coating, and being readied to go online as the next filter goes out of service. Solids removed by the clarifiers are sent to an agglomerator for particulate clustering. The clarified solution is then sent through a packed tower (de-aeration tank) to remove oxygen from the solution. The solution is percolated through a packing bed while under a vacuum, with flashing water vapor stripping oxygen from the solution. Special attention is given to eliminate any air leaking into the tower, as this can decrease the vacuum system's efficiency. The solution exits from the bottom of the tower, which results in a very low net suction head on the precipitate feed pumps.

At this point precious metals need to be precipitated out of solution. To do this, once the Zinc dust and the Oxidizing agent has been added to the solution it is pumped through filter presses. Zinc dust is added to the solution between the de-aeration tank and the precipitate feed pumps at a constant rate, utilizing a zinc slurry cone. The zinc combines with the cyanide in a rapid, cementation -type reaction and gold and silver are precipitated as micron-sized particles. Lead nitrate is also added, if necessary, to the zinc system in order to precipitate soluble sulfides ahead of the clarifiers and zinc precipitation, or to the zinc cone to enhance the effectiveness of the zinc dust. A low dosage must be used, since the lead nitrate will blind off the surface of the zinc and prevent the precipitation of precious metals, or can form a lead hydroxide gel and blind the filters, if excess quantities are used.

Final filtration of precious metals is accomplished with the precipitate filter feed pumps and filter presses. This precipitate will be trapped on the cloths that form the filtering section of the presses. The feed pumps must be carefully selected in order to avoid cavitation and the tendency of the pumps to pull air back into the solution. The pumps must have submerged liquid seals over the packing area or flushed double mechanical seals; the pumps are also required to have a low net positive suction head. Plate and frame type filters are then used to remove the gold and silver in the form of precipitate. The solution that has been pumped through the filter presses will not have any gold left in it. At this point the liquid will be referred to as the barren solution. The now-barren solution is then pumped to the barren solution tank and then returned to the heap.

The ore contains incidental concentrations of mercury, and a portion of this will be leached from the crushed ore on the heap along with the gold and silver into the pregnant solution. Any mercury present in the pregnant solution will be precipitated with the gold and silver. A mercury retort process will be used to remove mercury from the precipitate by electrically heating the precipitate above the boiling point of mercury (662F) and by means of a vacuum drawing the mercury vapor through a water-cooled condenser where the vapors become liquid; the chiller system is also equipped with a secondary aftercooler condenser, exhaust fumes from the mercury retort are then passed through a pocket air filter, cooled flow through a sulfonated carbon bed scrubber to capture any residual mercury, and ultimately out two stacks.

The sulfur-impregnated carbon reacts with mercury to form a more stable compound. This system provides control for PM_{10} and mercury emissions.

The remaining precipitate is then mixed with selected fluxes (mainly silica, borax, and soda ash) and melted in an induction furnace. Induction furnace is equipped with fume hood where exhaust is vented to a wet scrubber with 3-accending nozzles, then to a heater box, and ultimately to carbon bed adsorption system. Impurities in the melt combine to form slag; this is tapped as required and poured into slag pots. The remaining gold and silver (i.e. doré, a refined mixture of gold, silver, and some impurities) is poured into a series of cascading molds. The doré is then cooled, cleaned, and shipped to a commercial refinery. Slag is cooled and crushed in a roll crusher, and occluded particles of gold and silver are recovered on a gravity concentrating table for further processing. Tailings discharged from the super sacks and returned to active leaching areas on the heap.

D. ASSAY LABORATORY

Golden Queen Mining Company operates an assay laboratory as part of their gold mine operation. The assay laboratory consists of several components including sample preparation and weighing, fire assay laboratory, wet laboratory, and instrument room. Samples for the assay laboratory originate from many areas of the mine including blast hole samples, high pressure grinding roll (HPGR), samples bottle roll test, column leach test samples, Merrill-Crowe plant solution samples, and heap solution samples. A 25lb ore sample is dried, crushed, and then pulverized under one of two pulverizers equipped with dust control hoods. The sample is then precisely weighted and thoroughly mixed together. During the fire assay portion, the mixture is then heated at very high temperatures in one of two fusion furnaces until sample is fused together into a glass like slag. Lead is then added to react with molten slang to form a precious metal lead alloy. The third step is separation or cupellation. The precious metal lead alloy is placed in a cupel ceramic container and heated to approximately 1700F in the cupellation furnace with oxidizing environment. Lead melts at 620F, lead oxide at 1600F, and silver melts at 1760F.

The lead oxidizes to lead monoxide. The liquid lead oxide is absorbed by capillary action into the cupel lining which is made from a porous material rich in calcium or magnesium. This leaves only a small bead of precious metals. The next step of the process is separation via wet chemistry. Dissolution is the first step where nitric acid is added to the small precious metal bead where silver is dissolved leaving behind a gold bead. Titration is also used where hydrochloric acid is added to a dilute nitric acid solution of silver. Silver chloride is highly insoluble which precipitates or clusters from the solution which can then be simply filtered out. Low concentrations move on to instrumental analysis where an Inductive Coupled Plasma Mass Spectrometer (ICP-MS) instrument is used to analyze sample. The assay lab serves as a small scale refining operation where ore sample can be analyzed to pre-determine potential representation of gold in the ore.

E. GENERATOR SETS

Golden Queen Mining operates two stationary generator sets rated at greater than 50 brake horsepower (bhp). A 1250-kW Cummins generator set driven by a 2,220-bhp diesel engine is used to provide emergency backup power to the Merrill Crowe Plant. A 120-kW Mulitquip generator set driven by a 240-bhp diesel engine is used to provide power for a water pump located away from the operation site, but still within the property boundary.

F. FUEL ISLAND

Golden Queen operates a “fuel island” consisting of an aboveground diesel storage tank (permit exempt), a 1,000 gallon aboveground gasoline storage tank, and a 1,000 gallon fuel additive storage tank. Gasoline throughput is limited to 250,000 gallons per year, and fuel additive throughput is limited to 1,000 gallons per year. The gasoline storage tank is equipped with both Phase I and Phase II enhanced vapor recovery (EVR) equipment to control emissions of VOC and benzene from the tank;

G. MAINTENANCE OPERATIONS

Golden Queen has an on-site maintenance facility to provide equipment repair and maintenance services. The facility contains a small parts cleaning operation that is categorically exempt from permitting on account of its size and solvent throughput.

IV. FACILITY LOCATION

Figure 1: General Location of Golden Queen Mining Facility

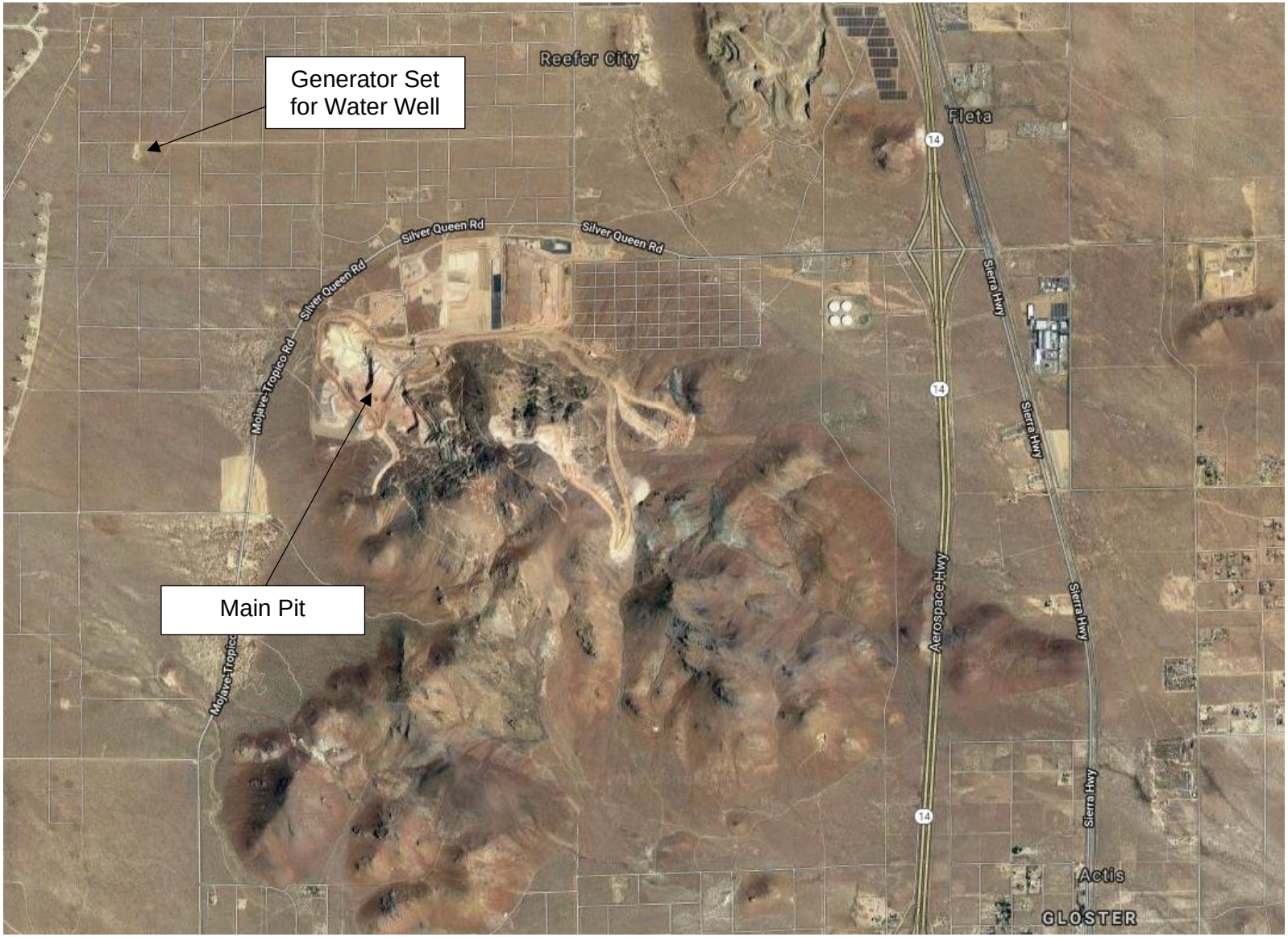

Figure 2: Satellite View of Soledad Mountain Operation

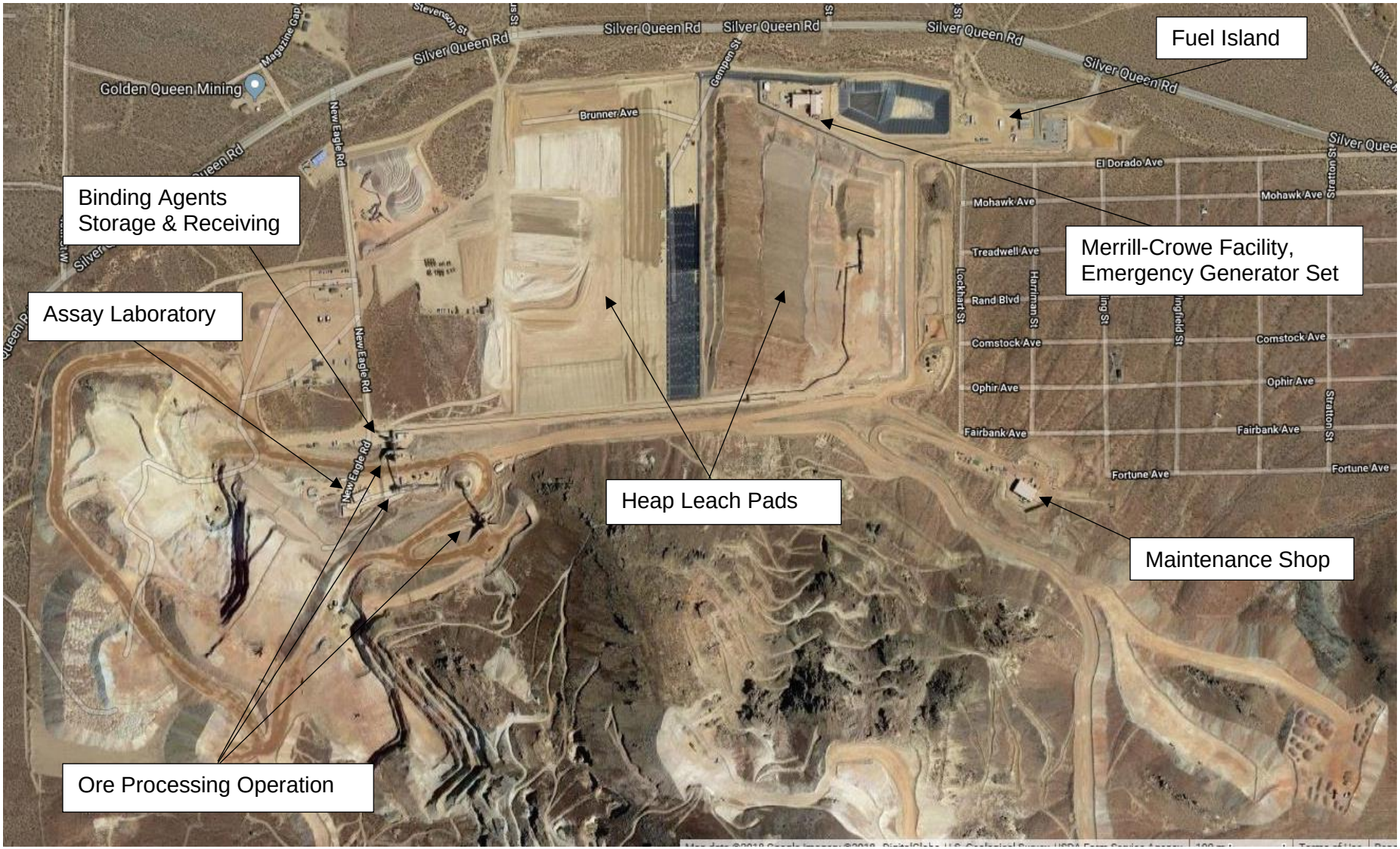

Figure 3: Satellite View of Golden Queen Facility

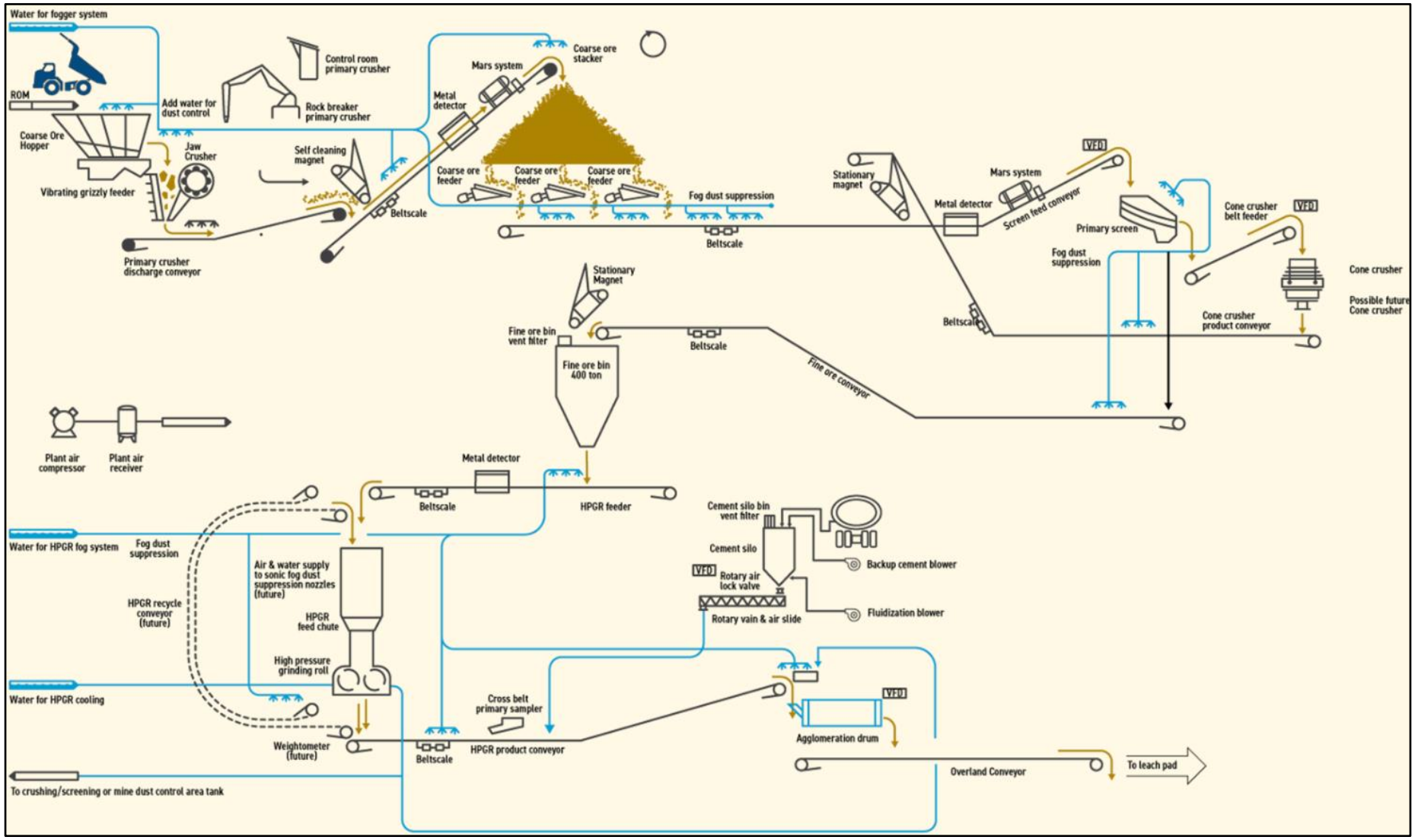

Figure 4: Process Flow Diagram

V. POTENTIAL EMISSIONS

Tables 1 and 2 below list Golden Queen's plant-wide stationary source emissions.

Table 1

Criteria Pollutant Emissions (tons per year)					
Pollutant:	PM_{10}	SOx	NOx	VOC	CO
*Potential Emissions:	14.84	0.03	5.6	0.48	7.71

*Estimated by Source including fugitive and heavy duty non-road engines April 2023

Other Regulated Air Pollutant Emissions HAP (tons per year)				
Pollutant:	HAPs	PAHs	Hydrogen Cyanide	Mercury
*Potential Emissions:	0.22	0.01	0.42	0.003

Table 2

Facility-Wide GHG Emissions	
*CO2e (tpy):	11,672

*Reported by Source 2023 calendar year

Carbon Dioxide Equivalent, CO_2 Equivalent (CO_2e): Measure for comparing carbon dioxide with other GHGs, based on the quantity of those gases multiplied by the appropriate Global Warming Potential (GWP).

Global Warming Potentials

Greenhouse Gases	**GWP**
Carbon dioxide (CO_2)	1
Nitrous oxide (N_2O)	21
Methane (CH_4)	310
Hydrofluorocarbons (HFCs)	**
Perfluorocarbons (PFCs)	**
Sulfur Hexafluoride (SF_6)	23,900

**GWP varies based on each pollutant.

Global Warming Potential (GWP): The capacity to heat the atmosphere, calculated as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram (kg) of a substance relative to that of 1 kg of CO2. GWP shall be calculated according to the factors for a 100-year time horizon, as stated in 40 CFR Part 98 Subpart A Table A-1 (Global Warming Potentials).

VI. EQUIPMENT LISTING

Unit No.	Description of Source
001	Blast Hole Drilling Operation
002	Blast Hole Drilling Operation
004	Ore Processing Operation
005	Binding Agents Receiving and Storage Operation
006	Heap Leach Operation
007	Merrill-Crowe Facility
008	Assay Laboratory
009	Emergency Generator Set
010	Gasoline Dispensing Facility with Aboveground Storage Tank
011	Blast Hole Drilling Rig
012	Prime Generator Set
013	Fuel Additive Storage Tank
014	Blast Hole Drilling Operation
016	Blast Hole Drilling Operation

VII. APPLICABLE FEDERAL REQUIREMENTS

Sources are subject to the most recently Board adopted version of a rule. Most of the rules this facility is subject to are part of the State Implementation Plan (SIP) but a few are considered “local only” meaning they are not part of the SIP. In some instances a current rule will differ from the SIP approved version due to a revision. This is called a SIP gap and happens when EPA has not yet acted on a SIP submittal.

Enforcement of a rule awaiting SIP approval should guarantee compliance with its SIP approved counterpart. This is because the pending rule will be at least as stringent as the SIP rule. The table below lists all rules and regulations this facility is subject to. SIP approved rules list their approval date along with current revision date (if applicable), thus making them federally enforceable.

Rule No.	Rule Title and Description of Conditions
Rule 108 SIP Approved 2004	**Stack Monitoring** (Amended 7/24/03) Upon the request of and as directed by the Control Officer, the owner shall provide, install, and operate continuous monitoring equipment on such operations as directed. The owner shall maintain, calibrate, and repair the equipment and shall keep the equipment operating at design capabilities.

Rule No.	Rule Title and Description of Conditions
Rule 108.1 SIP Approved 2001	**Source Sampling (Amended 5/2/96)** Upon the request of the Control Officer and as directed by him the owner of any source operation which emits or may emit air contaminants, for which emission limits have been established, shall provide the necessary and proper facilities for source sampling. The applicable test method, if not specified in the rule, shall be conducted in accordance with Title 40 CFR, Subpart 60, Appendix A - Reference Methods, except particulate matter (PM_{10}) for compliance with Rule 210.1 requirements shall be conducted in accordance with Title 40 CFR, Subpart 51, Appendix M, Method 201 or 201A. Where no test method exists in the preceding references for a source type source sampling shall be conducted in accordance with California Air Resources Board (CARB) approved methods.
Rule 114 SIP Approved 1999	**Severability (Amended 5/2/96)** If any provision, clause, sentence, paragraph, section or part of these Regulations or application thereof to any person or circumstance shall for any reason be adjudged by a court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of this Regulation and the application of such provision to other persons or circumstances, but shall be confined in its operation to the provision, clause, sentence, paragraph, section or part thereof directly involved in the controversy in which such judgment shall have been rendered and to the person or circumstance involved, and it is hereby declared to be the intent of the Eastern Kern Air Pollution Control Board that these Regulations would have been issued in any case had such invalid provision or provisions not been included.
Rule 201.1 Title V Rule Revised 2012	**Applicability of Federally Enforceable Conditions** Federally Enforceable Conditions **shall apply** to Design Conditions, Operational Conditions, Special Conditions, Compliance Testing Requirements, and Emission Limits. Any District or State-only condition (not required by the EPA) does not apply.
Rule 201.1	**Permit Life** The life of this permit shall be five years from the date of issuance.
Rule 201.1	**Administrative Permit Amendment and Minor Permit Modification** Administrative Permit Amendment and Minor Permit Modification are those actions taken by the District as defined in Rule 201.1.

Rule No. **Rule Title and Description Conditions**

Rule 201.1 Compliance with Permit Conditions

A. Golden Queen shall comply with all permit conditions;

B. Permit does not convey any property rights or any exclusive privilege;

C. Non-compliance with any permit condition shall be grounds for permit termination, revocation and reissuance, modification, enforcement action or denial of permit renewal;

D. Golden Queen shall not use “need to halt or reduce a permitted activity in order to maintain compliance” as a defense for non-compliance with any permit condition;

E. Pending permit action or notification of anticipated non-compliance does not stay any permit condition; and

F. Within a reasonable time period, Golden Queen shall furnish any information requested by the APCO, in writing, for purpose of determining: 1) compliance with the permit, or 2) whether or not cause exists for a permit or enforcement action.

Rule 201.1 Referencing of District and Applicable Requirements

Pursuant to Rule 201.1.VI.C. District hereby references the following documents which are clearly identified and available to the District and to the public:

Each reference shall include, at a minimum, title or document number, author and recipient if applicable, date, citation of relevant sections of the Rule or document, and identification of specific source activities or equipment for which the referencing applies.

Rule No. **Rule Title and Description Conditions**

Rule 201.1 Emergency Provisions

A. Golden Queen shall comply with the requirements of Rule 111 and the emergency provisions contained in all permit streamlining requirements imposed in accordance with Subsection VI.J. all District-only rules which apply in accordance with Subsection VI.K.1. and all applicable federal requirements not subsumed by such permit streamlining requirement(s) or District-only rules;

B. Within two weeks of an emergency event, an owner or operator of the source shall submit to the District a properly signed, contemporaneous log or other relevant evidence which demonstrates that:

1) An emergency occurred;

2) The permittee can identify the cause(s) of the emergency;

3) The facility was being properly operated at the time of the emergency;

4) All steps were taken to minimize the emissions resulting from the emergency; and

5) Within two working days of the emergency event, the permittee provided the District with a description of the emergency and any mitigating or corrective actions taken;

C. In any enforcement proceeding, the permittee has the burden of proof for establishing that an emergency occurred.

Rule 201.1 Right of Entry

Golden Queen shall allow entry of District, CARB, or U.S. EPA officials for purpose of inspection and sampling, including:

A. Inspection of the stationary source, including equipment, work practices, operations, and emission-related activity;

B. Inspection and duplication of records required by the permit to operate; and

C. Source sampling or other monitoring activities.

Rule No.	Rule Title and Description Conditions

Rule 201.1 Testing

Golden Queen shall conduct stack testing annually and at other times as specified by U.S. EPA or the District, in accordance with the methodology outlined in EPA Methods 5, 10, 18, 20 or equivalent, to verify compliance with emission limits and the accuracy of any continuous in-stack monitors. The District and U.S. EPA shall be notified at least 30 days in advance of the testing to allow an observer to be present and the report of results shall be transmitted to the District as soon as they are available. (District Rule 210.1)

Rule 201.1 Record Keeping

A. Recording of maintenance of all monitoring and support information associated with all permit streamlining requirements imposed in accordance with Rule 201.1, Subsection VI.J., all District-only rules which apply in accordance with Rule 201.1, Subsection VI.K.1., and all applicable federal requirements not submitted by such permit streamlining requirement(s) or District-only rules, including:

1) Date, place, and time of sampling;
2) Operating conditions at time of sampling;
3) Date, place, and method of analysis; and
4) Results of analysis;

B. Retention of records of all required monitoring data and support information for a period of at least five years from the date of sample collection, measurement, report, or application; and

C. Any other record keeping deemed necessary by the APCO to ensure compliance with all permit streamlining requirements imposed in accordance with Rule 201.1, Subsection VI.J., all District-only rules which apply in accordance with Rule 201.1, Subsection VI.K.1., and all applicable federal requirements not subsumed by such permit streamlining requirement(s) or District-only rules.

Rule No.	Rule Title and Description Conditions
Rule 201.1	**Periodic Monitoring**

Non-Point

Golden Queen shall conduct testing semi-annually, in accordance with the methodology contained in EPA Method 22 for all active non-point sources. This testing will be the basis for determining compliance with the visible emission standard in District Rule 401. If no emissions are observed utilizing Method 22, the non-point source shall be deemed to be in compliance with the visible emission standard. If emissions are observed from any non-point source and that source is not operating under breakdown condition as defined in and allowed for in District Rule 111, Golden Queen shall conduct testing on that non-point source within 24 hours of the Method 22 testing in accordance with EPA Method 9 to verify compliance with the visible emission standard.

NOTE: This requirement does not apply to fugitive emissions resulting from activities not covered by a permit to operate unless the source is subject to District Rule 210.1 (NSR) requirements.

Golden Queen shall conduct ambient monitoring of PM10 in accordance with the requirements of a District approved Monitoring Protocol, as well as ambient monitoring of hydrogen cyanide (HCN) from Heap Leach Pads during operations, and during detoxification and closure, in accordance with the requirements of a District approved Monitoring Protocol.

Rule No.	Rule Title and Description Conditions
Rule 201.1	**Point** Golden Queen shall conduct testing semi-annually, in accordance with the methodology contained in EPA Method 22 for all active/in use point sources. This testing will be the basis for determining compliance with the visible emission standard in District Rule 401. If no emissions are observed utilizing Method 22, the point source shall be deemed to be in compliance with the visible emission standard. If emissions are observed from any point source and that point source is not operating under breakdown condition as defined in and allowed for in District Rule 111, Golden Queen shall conduct testing on that point source: A. Within 24 hours of the Method 22 testing in accordance with EPA Method 9 to verify compliance with the visible emission standard. If compliance is not documented: B. Within 30 days of the Method 9 testing in accordance with EPA Method 5 or 5D to verify compliance with the requirements of District Rules 404.1, 405, and/or 210.1.
Rule 201.1	**Monitoring, Testing, Record Keeping Requirements** (GDF Phase I) Applies to EU 036. All data necessary to demonstrate qualifications for the exemptions allowed in District Rule 412 shall be maintained on the premise at all times and shall be submitted for District review upon request. Such records shall include exemption status and volume delivered to each stationary storage container serviced. A. Compliance with the vapor recovery requirements of District Rule 412 shall be demonstrated using California Air Resources Board (CARB) Method 202; B. True vapor pressure shall be determined using Reid vapor pressure ASTM Method No. D-323-82 at storage temperature; and C. The test method to determine vapor tightness of delivery vessels shall be EPA Method 27.

Rule No.	Rule Title and Description Conditions
Rules 201.1 and 412	**Monitoring, Testing, Record Keeping Requirements** (GDF Phase II) Applies to EU 036. Verification that each CARB-certified Phase II Vapor Recovery System meets or exceeds the requirements of tests specified in District Rule 412.1, Subsection V.C. shall be maintained. These test results shall be dated and shall contain the names, addresses, and telephone numbers of person(s) responsible for system installation and testing. Facility shall be pressure tested to determine proper installation and function before startup, and thereafter as directed by the Control Officer if not consistently operated leak-free or a major modification is implemented. Tests shall be conducted in accordance with test procedures found in CARB's "Test Procedures for Determination of the Efficiency of Gasoline Vapor Recovery Systems at Service Stations".
Rule 201.1	**Additional Monitoring** Diesel standby and emergency piston engines do not require opacity monitoring if utilizing California diesel or other low-sulfur, low aromatic fuel. Fuel records shall be kept for verification purposes and an operational log for hours of operation. All control equipment shall be inspected annually for proper operation. Golden Queen shall maintain all records of control equipment maintenance for a period of five years. Monitoring shall be the responsibility of the source; however, a visible emissions inspection or Method 9 conducted by a District inspector may be counted as meeting the requirement for the source to conduct same if the information and records generated by the inspector meets the requirements of the permit and a copy of the records are maintained by the source for a period of five years. Record keeping provisions associated with all monitoring requirements shall include the following information: A. Identification of stack or emission point being monitored; B. Operational conditions at the time of monitoring; C. Records of any monitoring conducted, including records of emission or operational parameter values and the date, place and time of sampling or measurement; and D. Where corrective action is triggered, description of the corrective action and the date, time and results of any corrective action. Scrubbers: Weekly records of pressure drop and scrubber liquid flowrate shall be kept.

Rule No.	Rule Title and Description Conditions
Rule 201.1	**Reporting** A. Any non-conformance with permit requirements, including any attributable to emergency conditions (as defined in Rule 201.1) shall be promptly reported to the APCO and in accordance with Rule 111; B. Monitoring report shall be submitted at least every six months identifying any non-conformance with permit requirements, including any previously reported to the APCO; C. All reports of non-conformance with permit requirements shall include probable cause of non-conformance and any preventative or corrective action taken; D. Progress report shall be made on a compliance schedule at least semi-annually and including: 1) Date when compliance will be achieved, 2) Explanation of why compliance was not, or will not be achieved by the scheduled date, and 3) Log of any preventative or corrective action taken; and E. Each monitoring report shall be accompanied by a written statement from the responsible official certifying the truth, accuracy, and completeness of the report.
Rule 209 SIP Approved (1972)	**Conditional Approval (Amended 11/09/95)** The Control Officer shall issue an Authority to Construct or a Permit to Operate, subject to conditions to insure compliance of the operation of any article, machine, equipment or other contrivance within the standards of Rule 208 and 208.1, in which case the conditions shall be specified in writing. Commencing work under such Authority to Construct or operation under such Permit to Operate shall be deemed acceptance of all conditions so specified. The Control Officer shall issue an Authority to Construct or Permit to Operate with revised conditions upon receipt of a new application, if the applicant demonstrates the article, machine, equipment or other contrivance can be operated within the standards of Rule 208 and 208.1 under the revised conditions.

Rule No.	Rule Title and Description Conditions
Rule 210.1 SIP Approved 1981	**Standards for Authority to Construct (Amended 5/4/00)** A. Permittee may make a change to this permitted facility that is not addressed or prohibited by the federally enforceable conditions of this Part 70 permit without obtaining a Part 70 permit revision if: 1) The Permittee has obtained all permits and approvals required by District Rules 201 and 210.1 (unless the change is exempt under District Rule 202); 2) The change is not subject to any requirements under Title IV of the Clean Air Act; 3) The change is not a Title I modification; and 4) The change does not violate an applicable requirement of the Clean Air Act or a federally enforceable term or condition of this permit. B. For a change that qualified under this section, the Permittee shall provide contemporaneous written notice to the District and the U.S. EPA (except for a change that is exempt under District Rule 202). This written notice shall describe the change, including the date it was made, and shall contain other information as required to determine new applicable requirements of the Clean Air Act that apply as a result of the change; C. Upon satisfying the requirements of paragraph B above, the Permittee may make the proposed change; D. Changes that qualify under this section are not subject to the requirements for Part 70 revisions; E. The Permittee shall include each off-permit change made under this section in the application for renewal of this Part 70 permit; and F. The permit shield(s) provided in this permit do not apply to off-permit changes made under this section.

Rule No.	Rule Title and Description Conditions
Rule 210.4 SIP Approved 2013	**Prevention of Significant Deterioration (PSD)** Golden Queen may be subject to District Rule 210.4, Prevention of Significant Deterioration (PSD) if it undergoes major modification(s).
Rule 301 and 201.1	**Permit Fees** Every applicant for an Authority to Construct or a Permit to Operate shall pay a filing fee. For issuance of an Authority to Construct, or an initial Permit to Operate, the applicant shall pay fees as prescribed in Rule 301. For issuance of an Authority to Construct, application processing fees shall also be paid as prescribed in Rule 303. The applicant shall receive credit for filing fees paid. Annually on the anniversary of issuance of a Permit to Operate, the permittee shall pay a renewal fee as prescribed in Rule 301. Fees collected pursuant to Rule 201.1, Section VIII.B. shall supplement applicable Rules 301 and 301.3 fee requirements. **Payment of Supplemental Fee** An owner or operator, or his designee, shall pay an annual supplemental fee for a permit to operate pursuant to Rule 201.1 as determined by the calculation method in Subsection VIII.B.3., to provide a District-wide fee rate of $25 per ton of fee-based emissions (CPI-adjusted) for all facilities subject to Rule 201.1, unless Rule 201.1 VIII.B.2. applies.
Rule 301.4	**Greenhouse Gas Fee (Adopted 1/12/2012)** Any stationary source that has actual GHG emissions, in the prior calendar year, greater than or equal to 100,000 tons of CO2e, as calculated in accordance with 40 CFR Part 98, shall pay a Consumer Price Index (CPI) adjusted GHG fee per ton of CO2e being emitted. Sources subject to this Rule shall submit an annual report of GHG emissions to the District no later than the thirty-first day of March.

Rule No.	Rule Title and Description Conditions
Rule 401 SIP Approved 2001	**Visible Emissions (Amended 11/29/93)** Unless otherwise stated in equipment specific permits, the following limits apply: A person shall not discharge into the atmosphere, from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is: A. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or B. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A.
Rule 404.1 SIP Approved 2008	**Particulate Matter Concentration - Desert Basin (Amended 1/24/07)** A. A person shall not discharge into the atmosphere from any single source operation, in service on the date this Rule is adopted, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions. B. A person shall not discharge into the atmosphere from any single source operation, the construction or modification of which commenced after the adoption of this Rule, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions.
Rule 405 SIP Approved 1984	**Particulate Matter - Emission Rate (Amended 5/1/97)** A person shall not discharge into the atmosphere from any source operation, particulate matter in excess of the limits set forth in the allowable particle emissions based on process weight rate table included in Rule 405.
Rule 407 SIP Approved 1972	**Sulfur Compounds (Adopted 4/18/72, Renumbered 5/89)** A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 percent by volume calculated as sulfur dioxide (SO_2).
Rule 412 SIP Approved 1995	**Gasoline Transfer into Stationary Storage Containers, Delivery Vessels and Bulk Plants (Amended 1/13/2022)** A person shall not transfer gasoline into storage or delivery vessels unless provisions are made to recover 95% of the displaced vapors.

Rule No.	Rule Title and Description Conditions
Rule 412.1 SIP Approved 1996	**Transfer of Gasoline into Vehicle Fuel Tanks (Amended 1/13/2022)** No person shall transfer gasoline into vehicle fuel tanks unless CARB-Certified Phase II dispensing equipment is utilized and maintained in correct working order.
Rule 422 SIP Approved 1977	**Federal New Source Performance Standards (NSPS) (Amended 1/11/18)** Provisions of Part 60, Chapter 1, Title 40, Code of Federal Regulations are hereby adopted by reference and made a part hereof. All new and modified sources shall comply with standards, criteria and requirements set forth therein. All applicable requirements of 40 CFR Part 60, Subparts A (General Requirements), LL (Metallic Mineral Processing Plants), and IIII (Compression Ignition Internal Combustion Engines) apply to this facility.
Rule 423 SIP Approved 1977	**National Emission Standards for Hazardous Air Pollutants and Source Categories (NESHAPS) Amended 1/11/18)** Provisions of Title 40, Chapter 1, Parts 61 and 63, Code of Federal Regulations are hereby adopted by reference and made a part hereof. All sources of hazardous air pollution shall comply with applicable standards, criteria and requirements set forth herein. All applicable requirements of 40 CFR Part 61, Subpart M (Asbestos) and 40 CFR Part 63, Subparts A (General Provisions), ZZZZ (RICE), and Subpart EEEEEEE (Gold Mine Ore Processing and Production) apply to this facility. **Asbestos** Golden Queen shall comply with the applicable requirements of Sections 61.145 through 61.147 of the National Emission Standard for Asbestos for all demolition and renovation projects.
CAA Section 112(r)(7)	**Clean Air Act** Should this stationary source, as defined in 40 C.F.R. section 68.3, become subject to the accidental release prevention regulations in part 68, then the owner or operator shall submit a risk management plan (RMP) by the date specified in section 68.10 and shall certify compliance with the requirements of part 68 as part of the annual compliance certification as required by 40 C.F.R. part 70 or 71.
40 CFR 68	**Risk Management Plan** Should this stationary source, as defined in 40 CFR section 68.3, become subject to the accidental release prevention regulations in part 68, then the owner or operator shall submit a risk management plan (RMP) by the date specified in section 68.10 and shall certify compliance with the requirements of part 68 as part of the annual compliance certification as required by 40 CFR part 70 or 71.

Federal Rule	Rule Title and Description Conditions
40 CFR 70.5d	**Compliance Certification** The owner/operator shall comply with the following procedures for compliance certification: A. Submittal of a compliance certification by the owner or operator to the U.S. EPA and copy to the APCO within 60 days after end of compliance certification period; B. Compliance certification period shall begin July 1 of each year and end June 30 of the following year; C. Such compliance certification shall identify the basis for each permit term or condition, e.g., specify the emissions limitation, standard or work practice, and a means of monitoring compliance with the term or condition; D. Such compliance certification shall include compliance status and method(s) used to determine compliance for the current time period and over entire reporting period; and E. Such compliance certification shall include any additional inspection, monitoring or entry requirement promulgated pursuant to Sections 114(a) and 504(b) of the CAA. Any application form, report, or compliance certification submitted pursuant to these regulations shall contain certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. U.S. EPA's Mailing Address: Director, Enforcement and Compliance Assurance Division (Attn: ENF-2-1) U.S. Environmental Protection Agency 75 Hawthorne Street San Francisco, CA 94105 Or by email to aeo_r9@epa.gov or CDX

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Federal Rule	Rule Title and Description Conditions
40 CFR 82	**Protection of Stratospheric Ozone** Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR §82.156. Equipment used during maintenance, service, repair, or disposal of appliances must meet the standards for recycling and recovery equipment in accordance with 40 CFR §82.158. Persons performing maintenance, service, repair or disposal of appliances must be certified by a certified technician pursuant to 40 CFR §82.161.
	District Local Rules Only
Rule 107	**Inspections (Amended 5/2/96)** Inspections shall be made by the enforcement agency for the purpose of obtaining information necessary to determine whether air pollution sources are in compliance with applicable rules and regulations, including authority to require record keeping and to make inspections and conduct tests of air pollution sources.
Rule 111 Rescinded from SIP 2016	**Equipment Breakdown (Amended 5/2/96)** An occurrence which constitutes a breakdown condition, and which persists only until the end of the production run or 24-hours, whichever is sooner (except for continuous monitoring equipment, for which the period shall be ninety-six (96) hours), shall constitute a violation of any applicable emission limitation or restriction prescribed by these Rules and Regulations; however, no enforcement action may be taken provided the owner or operator demonstrates to the Control Officer that a breakdown condition exists and the proper requirements are met.
Rule 419	**Nuisance (Adopted 4/18/72)** A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

VIII. NEW, MODIFIED AND CANCELED EMISSION UNITS:

Eight Emission Units have been modified and two new Emission Unit has been installed at Golden Queen since the previous issuance of Title V permit (September 2018). As described below, all new and modified emission units have been considered minor facility modifications and do not increase plant-wide emissions to an amount that will exceed the established limits; therefore, public noticing of each modification was not required.

New and modified emission units have contributed to the following increase in the potential to emit (ton/year): PM_{10} – 2.06. Summary of modified and new emissions units are below.

New Units:

Emissions Unit	New
014	New Blast Hole Drilling Rig was permitted. Drilling rig is a source of particulate matter during blast hole drilling. Equipment is equipped with water injection and dust curtain for dust control. *Potential emission increase ton/yr: PM_{10} – 0.66*
016	New Blast Hole Drilling Rig was permitted. Drilling rig is a source of particulate matter during blast hole drilling. Equipment is equipped with water injection and dust curtain for dust control. *Potential emission increase ton/yr: PM_{10} – 0.97*
017	New Blast Hole Drilling Rig was permitted. Drilling rig is a source of particulate matter during blast hole drilling. Equipment is equipped with water injection and dust curtain for dust control. *Potential emission increase ton/yr: PM_{10} – 0.77*

Modified Units:

Emissions Unit	Modified
004B	Modification of Ore Processing Operation: to replace cone crusher electric motor. *No increase in permitted emissions.*
001A	Modification of Drilling Rig: to replace Diesel engine. *No increase in permitted emissions.*

001B	Modification of Drilling Rig: to increase hours of operation. *Potential emission increase ton/yr: PM_{10} – 0.29*
002A	Modification of Drilling Rig: to increase hours of operation. *Potential emission increase ton/yr: PM_{10} – 0.03*
006B	Modify Heap Leach System: Install an Intermediate Leach System (ILS) at their cyanide heap leach operation to increase water flow. *No increase in permitted criteria emissions.*
007C	Modify Merrill-Crowe Plant: Install Additional Mercury Retort *No increase in permitted criteria emissions.*
008B	Replace Two Assay Furnaces: *No increase in permitted criteria emissions.*
011A	Replace Drilling Rig #5 Diesel Engine: Engine is considered permit exempt mobile engine (provides vehicle propulsion and drilling power). *No increase in permitted emissions.*
007D	Modify Merrill-Crowe Plant: Replace Mercury Retort, Increase Operating Hours. *No increase in permitted criteria emissions.*
004C	Modification of Ore Processing Operation: Addition of Dust Control Components. *No increase in permitted emissions.*
008C	Modification of Assay Lab: Add New Furnace. New furnace controlled by existing central dust collector. *No increase in permitted emissions.*
007E	Modify Merrill-Crowe Plant: Add Dust Collector to Melt Furnace.

Addition of new baghouse to supplement existing wet scrubber is expected to result in an overall decrease in emissions for melt furnace circuit.

No increase in permitted emissions.

IX. COMPLIANCE:

A summary of Violations filed against Golden Queen Mining because on non-compliance and Variances filed by Golden Queen Mining to maintain compliance are summarized below.

A. Notice of Violations (NOV)

2018 - 2020 Violations

None

2021 Violations

Violation Date	Compliance Date	Violation Description	NOV Number
10/11/21	10/11/2021	Fugitive dust from quarry over listed visible emissions limit. After investigation the NOV was withdrawn.	10132021DA_A

2022 Violations

Violation Date	Compliance Date	Violation Description	NOV Number
02/25/22	02/25/22	PTO 1188030C, exceedance in 5% visible emission limits for furnace stack. NOV closed without a monetary fine.	2252022DA-A

2023 - 2024 Violations

None

B. Variances

2018-2024

None

C. Breakdowns

2018 -2024

None

X. MONITORING AND RECORDKEEPING REQUIREMENTS:

A. Monitoring Requirements

Golden Queen shall conduct routine inspections on all required control equipment. The following monitoring procedures shall be used.

1. Non-Point

Golden Queen shall conduct testing semi-annually, in accordance with the methodology contained in EPA Method 22 for all non-point sources. This testing will be the basis for determining compliance with the visible emission standard in District Rule 401. If no emissions are observed utilizing Method 22, the non-point source shall be deemed to be in compliance with the visible emission standard. If emissions are observed from any non-point source and that source is not operating under breakdown condition as defined in and allowed for in District Rule 111, Golden Queen shall conduct testing on that non-point source within 24 hours of the Method 22 testing in accordance with EPA Method 9 to verify compliance with the visible emission standard.

NOTE: This requirement does not apply to fugitive emissions resulting from activities not covered by a permit to operate unless the source is subject to District Rule 210.1 (NSR) requirements.

Golden Queen shall conduct ambient monitoring of PM10 in accordance with the requirements of a District approved Monitoring Protocol, as well as ambient monitoring of hydrogen cyanide (HCN) from Heap Leach Pads during operations, and during detoxification and closure, in accordance with the requirements of a District approved Monitoring Protocol.

2. Point

Golden Queen shall conduct testing semi-annually, in accordance with the methodology contained in EPA Method 22 for all point sources. This testing

will be the basis for determining compliance with the visible emission standard in District Rule 401. If no emissions are observed utilizing Method 22, the point source shall be deemed to be in compliance with the visible emission standard. If emissions are observed from any point source and that point source is not operating under breakdown condition as defined in and allowed for in District Rule 111, Golden Queen shall conduct testing on that point source:

a. Within 24 hours of the Method 22 testing in accordance with EPA Method 9 to verify compliance with the visible emission standard. If compliance is not documented:
b. Within 30 days of the Method 9 testing in accordance with EPA Method 5 or 5D to verify compliance with the requirements of District Rules 404.1, 405, 406 and/or 210.1.

3. <u>Additional Monitoring</u>

Diesel standby and emergency piston engines do not require opacity monitoring if utilizing California diesel or other low-sulfur, low aromatic fuel. Fuel records shall be kept for verification purposes and an operational log for hours of operation.

All control equipment shall be inspected annually for proper operation. Golden Queen shall maintain all records of control equipment maintenance for a period of five years.

Monitoring shall be the responsibility of the source; however, a visible emissions inspection or Method 9 conducted by a District inspector may be counted as meeting the requirement for the source to conduct same if the information and records generated by the inspector meets the requirements of the permit and a copy of the records are maintained by the source for a period of five years.

Recordkeeping provisions associated with all monitoring requirements shall include the following information:

a. Identification of stack or emission point being monitored;

b. Operational conditions at the time of monitoring;

c. Records of any monitoring conducted, including records of emission or operational parameter values and the date, place and time of sampling or measurement; and

d. Where corrective action is triggered, description of the corrective action and the date, time and results of any corrective action.

Scrubbers: Weekly records of pressure drop and scrubber liquid flowrate shall be kept.

4. <u>Gasoline Storage - Phase I</u> (Permit 1223010)

All data necessary to demonstrate qualifications for the exemptions allowed in District Rule 412 shall be maintained on the premise at all times and shall be submitted for District review upon request. Such records shall include exemption status and volume delivered to each stationary storage container serviced:

a. Compliance with the vapor recovery requirements of District Rule 412 shall be demonstrated using California Air Resources Board (CARB) Method 202;

b. True vapor pressure shall be determined using Reid vapor pressure ASTM Method No. D-323-82 at storage temperature; and

c. The test method to determine vapor tightness of delivery vessels shall be EPA Method 27.

5. <u>Gasoline Storage - Phase II</u> (Permit 1223010)

Verification that each CARB-certified Phase II Vapor Recovery System meets or exceeds the requirements of tests specified in District Rule 412.1, Subsection V.C. shall be maintained. These test results shall be dated and shall contain the names, addresses, and telephone numbers of person(s) responsible for system installation and testing.

Facility shall be pressure tested to determine proper installation and function before startup, and thereafter as directed by the Control Officer if not consistently operated leak-free or a major modification is implemented.

Tests shall be conducted in accordance with test procedures found in CARB's "Test Procedures for Determination of the Efficiency of Gasoline Vapor Recovery Systems at Service Stations".

B. <u>Recordkeeping Requirements</u>

1. Recording of maintenance of all monitoring and support information associated with all permit streamlining requirements imposed in accordance with Rule 201.1, Subsection V.J., all District-only rules which apply in accordance with Rule 201.1, Subsection V.K.1., and all applicable federal requirement not submitted by such permit streamlining requirement(s) or District-only rules, including:

a. Date, place, and time of sampling;
b. Operating conditions at time of sampling;
c. Date, place, and method of analysis; and
d. Results of analysis;

2. Retention of records of all required monitoring data and support information for a period of at least five years from the date of sample collection, measurement, report, or application; and

3. Any other recordkeeping deemed necessary by the APCO to ensure compliance with all permit streamlining requirements imposed in accordance with Rule 201.1, Subsection V.J., all District-only rules which apply in accordance with Rule 201.1, Subsection V.K.1., and all applicable federal requirements not subsumed by such permit streamlining requirement(s) or District-only rules.

XI. REPORTING REQUIREMENTS

A. Any non-conformance with permit requirements, including any attributable to emergency conditions (as defined in Rule 201.1) shall be promptly reported to the APCO and in accordance with Rule 111;

B. Monitoring report shall be submitted at least every six months identifying any non-conformance with permit requirements, including any previously reported to the APCO;

C. All reports of non-conformance with permit requirements shall include probable cause of non-conformance and any preventative or corrective action taken;

D. Progress report shall be made on a compliance schedule at least semi-annually and including:

1. Date when compliance will be achieved,

2. Explanation of why compliance was not, or will not be achieved by the scheduled date, and

3. Log of any preventative or corrective action taken; and

E. Each monitoring report shall be accompanied by a written statement from the responsible official certifying the truth, accuracy, and completeness of the report.