

TECHNICAL SUPPORT DOCUMENT (TSD)

June 17, 2022

I. GENERAL COMMENTS:

A. Company Information

Business Name: Wedgetail Operations, LLC (Formerly Oracle Ridge Mining, LLC)

Facility Address: 12151 Old Mt. Lemmon Highway
Pima County, Arizona

Mailing Address: 10861 Mavinee Drive, Suite 141, Oro Valley, AZ 85737

B. Background

This is the second renewal of the initial permit issued to Oracle Ridge Mining, LLC, on July 3, 2012, for a mine that is located on the north side of the Catalina Mountains, in the Old Hat Mining District at Marble Mountain in Northern Pima County. The facility is required to maintain an air quality permit because the facility is subject to New Source Performance Standards (NSPS) for Metallic Mineral Processing Plants (Part 60 Subpart LL) and Title 17 of the Pima County Code. Wedgetail Operations, LLC has not begun the installation or operations of the mine.

Wedgetail Operations, LLC did not propose any revisions or changes to the permit application, dated October 14, 2011, submitted by Oracle Ridge Mining, LLC for the initial permit.

C. Attainment Classification

This facility is located in a region that is designated as attainment for all criteria pollutants.

II. FACILITY DESCRIPTION

This air quality permit is issued to Wedgetail Operations, LLC, for an inactive existing mine which is located approximately six to seven miles north of the Summerhaven Community of Mt. Lemmon. Other communities in close proximity to the mine, approximately seven to nine miles, are Catalina, Saddlebrooke, Oracle and San Manuel. Wedgetail Operations, LLC is the legal entity that owns the mineral rights, holds the lease and will be operating the mine. The specific location of the facility is Township 11 South, Range 16 East and latitude and longitude of approximately 32.47566°N and 110.70509°W. The physical address is 12151 Old Mt. Lemmon Highway, Pima County, AZ. Wedgetail Operations, LLC plans to operate an underground copper mine to include mining, drilling, blasting and milling processes. There is an estimated potential of eight to ten million tons of ore yet to be mined.

Wedgetail Operations, LLC proposes an annual “average” ore crushing rate of 2,000 short tons per day (STPD). The Concentrator Plant circulating load is calculated at approximately 250% of the new ore feed, at 3,000 STPD. The circulating load estimate is based on passing 50% of the ore through the Ball Mill more than once to achieve the desired size reduction that cannot be achieved from a single pass through the Ball Mill. The mine contains copper present as chalcopyrite, bornite, and chalcocite. The copper ore consists of gold and silver mineralization as well as magnetite. Wedgetail Operations, LLC will perform metallurgical testing in order to determine if the magnetite will be economically feasible for recovery. The copper ore will be processed through crushing (underground), grinding, flotation and filtration to produce a concentrate product that will be hauled by trucks to the market.

Emissions from the facility will consist primarily of fugitive and non-fugitive particulate matter (PM) from processing, unpaved roads and tailings storage operations, nitrogen oxide and carbon monoxide from portable and stationary combustion sources and volatile organic compounds from organic liquid storage activities. The facility plans to control fugitive emissions using a dust control program that will control emissions by a combination of methods including, but not limited to, retention of native vegetation, application of dust and erosion chemical suppressants, road watering etc.

Non-fugitive emissions will be controlled through the use of fabric filter dust collectors. Specific equipment used to control emissions is outlined in the specific conditions found in Part B of the permit and the equipment list. Wedgetail Operations, LLC's maximum processing rate has a potential to emit below major source levels for all pollutants.

The facility plans to operate 24 hours per day, 365 days per year except during routine maintenance, shutdown or repair of equipment.

A. Process Description and Operating Hours

Coarse Ore Storage & SAG Mill Crushing

All underground processes, including crushing operations, are not subject to air quality permitting. Only above ground emissions are considered in evaluating the permit application. Crushed ore is conveyed to the surface from the underground Jaw Crushing system and transferred to the Crushed Ore Bin Feed/Tripper Conveyor. Ore is then transferred to three Crushed Ore Storage Bins. There are several copper ore formations at the mine that will be mined, crushed, and transported to one of three ore storage bins for blending of ores to be processed in the concentrator. Wedgetail Operations, LLC will operate a Dust Suppression System for use underground on the conveyor to surface to reduce dust particles to the atmosphere.

Crushed ore from the bins is discharged by an apron feeder onto the Reclaim Tunnel Conveyor that will then transport the ore to the SAG Mill Feed Conveyor. The SAG Mill conveyor then feeds into the Semi-Autogenous (SAG) Mill for further processing. Ore feed from the storage bins will be regulated with variable speed drives on each apron feeder. These drives will enable Wedgetail Operations, LLC to form blended ores to be delivered to the SAG Mill Feed Conveyor.

The SAG Mill Crushing system will be a continuous operation to provide ½" ground ore to the Primary Ball Mill and flotation circuitry. The SAG Mill will operate at an initial feed rate of 90.6 STPH (2,000 STPD) of crushed ore. The SAG Mill is equipped with a belt scale to monitor the weight of ore and a variable frequency drive that allows the mill to operate at a reduced tonnage throughput when required. Once the required size is achieved, the ground ore is sent to the Primary Ball Mill.

Copper Concentrate Thickening & Filtration

The Ball Mill produces slurry that is pumped to the froth flotation process. Froth flotation is a mineral separation process that takes place in conditioned slurry composed of the ground ore mixed with water, reagents and air. The reagents are fed from the Hydrated Lime and Reagent Distribution Systems. Reagents are used to assist the copper particles to float in the flotation circuit. Hydrated Lime is used to adjust the pH for the slurry to enable flotation of the copper, gold and silver particles.

Any oversize ore or regrinding of the flotation concentrate particles necessary takes place in the Re-Grind Ball Mill which has its own circuit to produce a finer particle size for flotation.

Further processing thickens the concentrate which is then dewatered. During the copper concentrate dewatering, water is removed by filters. The filtered cake is transported to the copper concentrate storage where it is placed in trucks for shipment to the market.

Tailings Thickening & Filtration

The tailings slurry is received from the settled product at the bottom of the tanks during the copper concentrate flotation process. The slurry is pumped to the tailings thickening process for further dewatering and filter press. This results in a filter cake that contains 10% to 20% moisture by weight and discharges the dry tailings into the Tailings Storage Bin or into trucks.

B. Air Pollution Control Equipment

The following sections are identified within the air quality permit as including air pollution control equipment:

Section 3 Hydrated Lime & Reagent Distribution Systems

These systems contain two separate fabric filter housings that achieve at least a 99% control efficiency for dust control.

III. REGULATORY HISTORY

A. Testing & Inspections

Testing will be performed on affected equipment if necessary within 180 days of initial start-up of the Wedgetail Operations, LLC. As currently drafted, opacity tests to comply with the NSPS are the only identified performance tests.

B. Permit Deviation Reports

None because Wedgetail Operations, LLC has not begun installation or operation of the mine.

IV. EMISSION ESTIMATES

A. Facility Wide Estimates

The following table of emission estimates has been reviewed and approved by PDEQ. It is important to be aware that these emissions exclude any underground processes since PDEQ’s jurisdiction under air quality is for above ground emissions.

The emission factors used to calculate the PTE estimates are based on voluntarily accepted synthetic emission limitations (SEL) and AP-42. Testing to be completed upon start-up will verify these estimates. PDEQ will adjust the PTE if necessary depending on the test results.

Table I – Potential to Emit

Pollutant	Potential To Emit (Including Fugitives) (Tons per Year)	Potential To Emit (Non-Fugitive Emissions Only) (Tons per Year)
Particulate Matter (as PM)	12.91	7.40
Particulate Matter (as PM ₁₀)	12.91	7.40
Nitrogen Oxides (NO _x)	N/A	2.74
Sulfur Oxides (SO _x)	N/A	0.06
Carbon Monoxide (CO)	N/A	0.62
Volatile Organic Compounds (VOCs)	33.94	0.08
Hydrogen Sulfide (H ₂ S)	9.6	N/A
Hazardous Air Pollutants (HAPs)	0.0211	0.0034

Based on the facility PTE emission estimates, the Wedgetail Operations, LLC facility is a **Class II; True Minor** for all regulated pollutants.

V. APPLICABLE REQUIREMENTS

A. Code of Federal Regulations (CFR):

40 CFR 60 Subpart LL New Source Performance Standards for Metallic Mineral Processing plants.
40 CFR 60 Subpart IIII New Source Performance Standards for Stationary Internal Combustion Engines.

40 CFR 63 Subpart CCCCCC
National Emission Standards for Hazardous Air Pollutants for Source Categories: Gasoline Dispensing Facilities

B. Pima County Code (PCC) Title 17, Chapter 17.16:

The Wedgetail Operations, LLC is also subject to local (Pima County) air pollution emission standards. The specific Pima County conditions applicable to the Wedgetail Operations, LLC ore processing facility and tailings facilities are identified below:

- 17.16.010 Local Rules and Standards – Applicability of More than One Standard
- 17.16.020 Noncompliance with Applicable Standards
- 17.16.040 Visible Emission Standards: Standards and applicability (Include NESHAP)
- 17.16.050 Visibility Limiting Standards

17.16.060	Fugitive Dust Producing Activities
17.16.090	Roads and Streets
17.16.100	Particulate Materials
17.16.110	Storage Piles
17.16.120	Mineral Tailings
17.16.165	Standards of Performance for Fossil-Fuel Fired Industrial and Commercial Equipment
17.16.230.B	Standards of Performance for Storage Vessels for Petroleum Liquids
17.16.430	Standards of Performance for Unclassified Sources
17.16.450	Off-Road Machinery
17.16.470	Roadway and Site Cleaning Machinery
17.16.490	Standards of Performance for New Stationary Sources

VI. PERMIT CONTENTS

The following section of the TSD refers to the specific conditions of the permit and explains in detail the written permit.

A. Applicability:

The Wedgetail Operations, LLC is subject to Federal New Source Performance Standards (NSPS) namely Title 40, Code of Federal Regulations (CFR), Part 60, Subpart LL (Standards of Performance for Metallic Mineral Processing plants), Subpart IIII (Standards of Performance for Stationary Internal Combustion Engines). The standards of performance are promulgated for the control of particulate matter (Subpart LL) and control of NMHC + NO_x, CO & PM from stationary engines (Subpart IIII). The mine is also subject to Part 63 Subpart CCCCCC (National Emission Standards for Hazardous Air Pollutants for Source Categories: Gasoline Dispensing Facilities). These standards apply to new, modified or reconstructed facilities.

The provisions of Subpart LL apply to the following affected facilities at the Wedgetail Operations, LLC: Each conveyor belt transfer point, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, at the mill or concentrator.

The NSPS Subpart LL identifies emission limits for fugitive dust emissions by limiting the opacity of fugitive dust emissions. The rule also requires periodic monitoring for water spray equipment that is used to control fugitive PM emissions.

EPA exempts wet material processing operations from the requirements of this standard. These processes as defined have no potential for PM emissions. Affected facilities under NSPS Subpart LL are those that commence construction or modification after August 24, 1982.

The provisions of Subpart IIII apply to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that:

1. Commence construction or modify or reconstruct their engines after July 11, 2005 where the engines are:
 - a. Manufactured after April 1, 2006 and are not fire pump engines, or
 - b. Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

2. The provisions of this subpart are not applicable to engines being tested at an engine test cell/stand.

The NSPS for Subpart IIII prescribes limits that have to be certified by the manufacturer for a specific period of time. After this period, Wedgetail Operations, LLC is required to assure compliance with those limits. Wedgetail Operations, LLC is required to purchase engines certified to these limits and maintain the engines as required by the manufacturer.

The provisions of Subpart CCCCCC apply to owners and operators of fuel dispensing facilities that have a monthly throughput of less than 10,000 gallons per month that commenced construction after January 10, 2008. Wedgetail Operations, LLC will have a 10,000 gallon gasoline storage tank onsite for dispensing fuel to vehicles. Wedgetail Operations, LLC has stated that the tank will have a throughput of 30,000 gallons/ year or 2,500 gallons/ month.

This NESHAP prescribes “housekeeping” requirements for affected operators to ensure that spills are cleaned up as soon as possible, containers are closed when not in use and minimization of gasoline spills. The federal regulation does not require any other type of emission controls or reductions.

B. Emission Limitations and Standards:

The specific emission limits and standards applicable to the Wedgetail Operations, LLC have been grouped by operation type and titled Sections. Each Section represents a particular process(es) or operation at the facility. The Control Officer has (where possible) organized the specific conditions identified in each Section parallel to where the process/operation starts and ends.

Section 1: Coarse Ore Storage & SAG Mill Crushing System

Emission Group A

The equipment identified within this group is stationary process equipment. Emissions from this group are subject to a fugitive standard identified in the NSPS Subpart LL. All fugitive and process fugitive emissions from the underground conveyor belt to the storage bins and from the storage bins to the SAG Mill Crushing System are controlled by the Dust Suppression System pollution control devices. Permit Conditions are directly from the NSPS. Where the NSPS lacks the appropriate conditions, additional monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Emission Group B

There are no emissions from this equipment group. This group is a pollution control device and a permit condition requiring the Permittee to install and maintain this equipment is included. This condition is a federally enforceable condition as it controls emissions from the conveyor belts which could lead to emissions above 100 TPY if uncontrolled.

The emission points (stacks) of APC equipment subject to the NSPS Subpart LL particulate matter and opacity limitations are identified within each emission group. Non NSPS equipment/processes are subject to local standards identified in Title 17 of the Pima County Code (PCC).

Emission Group C

The predominant source of fugitive emissions is from material handling operations. An opacity standard associated with process fugitive and fugitive sources is common to all new sources subject to NSPS Subpart LL. This opacity standard is 10%. Where the NSPS lacks the appropriate conditions, monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Section 2: Copper Concentrate Thickening & Filtration

The emissions from this equipment group are not collected by a capture system. The predominant source of such fugitive emissions is from material handling operations. An opacity standard associated with process fugitive and fugitive sources is common to all new sources subject to NSPS Subpart LL. This opacity standard is 10%. Where the NSPS lacks the appropriate conditions, monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Section 3: Hydrated Lime & Reagent Distribution Systems

The equipment identified within this group is stationary process equipment used to add lime and other reagents during the copper producing process. Emissions from this process will be mostly particulate matter fugitive emissions and are controlled by vents on the bins and silos. Both Emission groups are subject to PCC 17.16.430 ‘Standards of Performance for Unclassified Sources’.

Section 4: Mining Operations

The Permittee is required to submit a Dry Stack Tailings Management Plan (DSTMP) and a Fugitive Dust Management Plan (FDMP) no later than 180 days (6 months) after issuance of the final permit. This will allow PDEQ to review the plan and correspond with Wedgetail Operations, LLC and finalize management plans that assure compliance with Pima County Code fugitive dust regulations, property boundary lines and opacity limitations. The Permittee will be required to review and evaluate the DSTMP annually to determine the effectiveness in controlling dust from the dry stack tailings. Should the annual review show that the DSTMP is ineffective in controlling dust, Wedgetail Operations, LLC is required to submit revisions to the plan outlining changes to be implemented that show improved compliance over the previous year. The Wedgetail Operations, LLC may employ methods above what is required by Pima County Code or accepted management practices for controlling dust.

General Fugitive Standards

The emissions from equipment identified within this section are not collected by a capture system. The predominant sources of such emissions are fugitive that arise from material handling operations, wind erosion and maintenance operations (demolition/renovation).

The general fugitive standards applicable to Wedgetail Operations, LLC are identified with reference to Pima County Code.

Dry Stack Tailings

The potential fugitive emissions from the dry stack tailings are required to be controlled to prevent excessive amounts of particulate matter from becoming airborne. Wedgetail Operations, LLC is required to follow a DSTMP approved by the Control Officer to provide adequate air pollution control.

Vehicles on Unpaved Surfaces

Wedgetail Operations, LLC is required to control the potential fugitive emissions from vehicles on unpaved roads to the extent that the emissions do not diffuse beyond the property boundary. The FDMP addresses dust control in these areas. Effective control measures include but are not limited to: limiting vehicular speeds, maintaining the road surface and if possible covering stock loads in open bodied trucks (where practicable).

Other Fugitive Dust Sources

Wedgetail Operations, LLC is required to include in the FDMP control of fugitive dust from all other fugitive dust producing sources. These sources include but are not limited to drilling, blasting, truck dumping, grading and other activities.

Demolition and Renovation

Wedgetail Operations, LLC shall comply with all the requirements of 40 CFR 61, Subpart M (National Emission Standards for Hazardous Air Pollutants) – Asbestos. The asbestos regulation covers many sources of asbestos including demolition and renovation of structures.

Section 5: Combustion Processes

The combustion equipment identified within this section has the potential to emit significant quantities of regulated air pollutants. However since this equipment are diesel fired emergency generators or fire pump engines subject to NSPS Subpart IIII, operation is limited to emergency use only and a 100 hour per year limitation on maintenance and testing. The EPA has established conditions that apply to these engines. PDEQ has extracted those conditions that apply to the Wedgetail Operations, LLC and included those in the permit.

Operational Limitation:

Prohibition from operating affected stationary rotating machinery in excess of the allowable hours of operation in any 12-consecutive month period.

Opacity:

The Permittee cannot allow any equipment under his control to emit effluents (such as exhaust from a generator) that exceed specific values of opacity (the degree to which light cannot pass through the plume of effluent/exhaust.) The Permittee demonstrates compliance with this regulation by checking the exhaust from the emergency generator under his control quarterly, and keeping complete records of these checks.

Fuel Limitation:

The Permittee is prohibited from firing fuels other that those allowed by the permit. This is a material permit condition as alternate fuels may result in as increase in emissions for this group of equipment to above major source thresholds.

Section 6: Storage Tanks

The Permittee has two storage tanks onsite that store gasoline and diesel fuel used onsite. The gasoline tank is subject to NESHAP subpart CCCCC and the diesel fuel tank is subject to PCC 17.16.430 ‘Standards of Performance for Unclassified Sources’

Section 7: Mobile Sources

The Permittee has various mobile sources onsite that are subject to Pima County Code. The Permittee is required to show compliance with local regulations limiting emissions from these operations as prescribed in section 9 of the permit.

C. Monitoring Requirements:

The specific monitoring requirements identified within the permit are presented in Table II below.

Table II – Monitoring Requirements

Part B Section	Emission Group	Specific Condition	Description of Permit Content
1	A	II.A	<p><u>Opacity Checks and Measurements incl. Fugitive Dust</u></p> <p>Requirement to demonstrate compliance with the federal and local opacity standards by periodically monitoring the emissions from the equipment group every two weeks. The frequency of monitoring is to assure that Wedgetail Operations, LLC is complying with the opacity standards. When operating as required there should be minimal emissions from these processes. As a result only checks and not Method 9 opacity observations will currently be required. Opacity measurements will be required when there seems to be a violation of an opacity standard. The Permittee is required to monitor emissions only when equipment or the process is in normal operating mode. This prevents the Permittee from monitoring emissions when equipment and processes are not running and recording that as fulfilling a monitoring requirement.</p>
1	C	II.C.1-4	
2		II.A.2-6	
3	A & B	II.A.1-5	
4	A	II.A & B	
5	A	II.A.2.c	<p><u>Opacity Standard</u></p> <p>The Permittee demonstrates compliance with this regulation by checking the exhaust from the emergency generator quarterly, and keeping complete records of these checks. This monitoring condition is not a federally enforceable condition.</p>
5	A	III.A.2	<p><u>Fuel Limitation</u></p> <p>Each type of fuel burned in equipment powered by combustion has a unique blend of constituents. When burned, each fuel results in the release of regulated pollutants to the atmosphere at characteristic levels. This permit is written to account for only the fuel specified in Section 5 of the permit. Use of fuels other than those specified would result in different rates of pollutant emission. Therefore, the Permittee must only burn the designated fuel specified in Section 5 of the permit to remain in compliance with the conditions of this permit. This monitoring/recordkeeping condition is a federally enforceable condition to comply with I.A.4.</p>

Part B Section	Emission Group	Specific Condition	Description of Permit Content
5	A	II.A.1	Requirement for Wedgetail Operations, LLC to follow an approved DSTMP & FDMP. As discussed previously, the DSTMP & FDMP are required to contain monitoring methods, measures and dust reducing activities that the Wedgetail Operations, LLC will employ to reduce or prevent excessive dust from becoming airborne and if airborne to ensure that either the opacity standard is not exceeded or the emissions do not cross property boundary lines. Emissions that cross property boundary lines are a violation whether or not the opacity limit is exceeded.
5	A	II.A.2	In addition, PDEQ is requiring a yearly review of the DSTMP by Wedgetail Operations, LLC in order to determine its effectiveness in controlling dust. The annual review shall take into account past dry stack tailings compliance issues, resolved or unresolved including complaints reported to PDEQ and propose how those issues can be avoided in the future. Recommendations or stricter requirements will be prescribed by PDEQ should Wedgetail Operations, LLC's annual review show that changes are required but not proposed by Wedgetail Operations, LLC.

D. Facility Changes:

The Permittee retains the ability to modify operations at the facility. However, the permit covering the facility must reflect the current state of operations *at all times*. Therefore, provisions have been made in the Pima County Code to allow changes in permits to reflect new facility conditions. The proper procedure must be followed when making certain modifications to the facility, and the permit. See the rules referenced in the permit for enumeration of these requirements.

E. Alternate Operating Scenarios:

As part of the normal operations, the Wedgetail Operations, LLC facility has proposed to have alternate operating scenarios when an alternate reagent is used. When writing permits PDEQ only includes alternate operating scenarios if operation under that method would trigger a different set of applicable requirements. In using the alternate product, Wedgetail Operations, LLC will not trigger another set of applicable requirements therefore the product has been included as part of normal operations and Wedgetail Operations, LLC may change reagents as needed without triggering a permit revision or notification. Records are required to be maintained showing reagent use.

F. Miscellaneous Comments

None

VII. IMPACTS TO AMBIENT AIR QUALITY

None required as the source is not subject to PSD or NSR as it is not a major source.

VIII. CONTROL TECHNOLOGY DETERMINATION

No control technologies needed to be determined. This facility is in an area of attainment and is not a new source.

IX. PREVIOUS PERMIT PROVISIONS AND CONDITIONS

Pima County Code (PCC) references were updated to reflect the reorganization of PCC in 2016.

Part A: General Provisions

The General Conditions were revised and reorganized to represent the most recent template language.

Permit Deviation reporting was removed and definitions for excess emissions and emissions standard were added to align with PCC Title 17.

Part B: Specific Conditions

The term “deviation” was removed from the reporting conditions in each section of the permit.

Permit Condition II, Facility Wide Opacity Monitoring Requirements was added to the permit. The conditions under this paragraph added an option to perform EPA approved Alternate Method ALT-82 instead of EPA Reference Method 9, Appendix A, 40 CFR Part 60 where specified in the permit.

Also included in this paragraph is a condition requiring the Permittee to have onsite or on call a person certified in EPA Reference Method 9 unless all six-minute observations required by the permit are conducted by Alternative Method ALT-082.

X. INSIGNIFICANT ACTIVITIES

Wedgetail Operations, LLC submitted an insignificant activities list in the application. PDEQ has incorporated portions of the list that may seem to contribute to air pollution but are deemed insignificant by PCC. PDEQ has excluded activities submitted in the application that are part of normal employee operations or are highly unlikely to be considered a source of pollution. These include activities such as kitchen use, smoking areas and rest-room related activities. Finally PDEQ has excluded those operations that have an applicable requirement in either PCC or are subject to a federal regulation.