ADEQ Arizona Department of Environmental Quality

FACT SHEET

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the issuance of the AZPDES permit listed below. This facility is an industrial waste water treatment plant treating mine drainage and tailings seepage and is considered to be a major facility under the NPDES program. The effluent limitations contained in this permit will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 et. seq. This permit is proposed to be issued for a period of 5 years.

Permittee's Name:	Arizona Minerals Inc.
Permittee's Mailing Address:	3845 N. Business Center Drive, Suite 115 Tucson, Arizona 85705
Facility Name:	January Mine Water Treatment Facility
Facility Address or Location:	749 Harshaw Road (via Hwy 82 in Patagonia) Harshaw, AZ
Contact Person(s): Phone/e-mail address	Johnny Pappas (520) 485-1304
AZPDES Permit Number:	AZ0026387
Inventory Number:	512453

I. STATUS OF PERMIT(s)	
AZPDES permit applied for:	New
Date application received:	**May 22, 2017**
Date application was determined administratively complete:	May 24, 2017

Arizona Minerals Inc. has the following permits issued by ADEQ applicable to the January Mine Water Treatment Facility:

Type of Permit	**Permit Number**	**Purpose**
Aquifer Protection Permit (APP)	P-512235 (in-process)	Regulates discharges to the local aquifer
Multi-Sector General Permit (MSGP)	AZMSG-88923	Regulates stormwater discharge

Voluntary Remediation Program:
Arizona Minerals Inc. (AMI) made a number of commitments regarding environmental corrective actions needed on the site to address an ADEQ-issued notice of violation dated October 10, 2014 relating to the previous site owner's Multi-Sector General Stormwater Permit for discharges to waters of the United States. In accordance with the VRP Site Code 505143-02, AMI acquired a Multi-Sector General Stormwater Permit and developed a Stormwater Pollution Prevention Plan (SWPPP) to address and manage stormwater discharges

from the Trench Camp Mine Property (January Mine, Norton Mine and Trench Camp Mine Claims) and developed a Remediation Work Plan that will effectively manage and treat the January Adit Mine Water and seepage from the historic tailing storage facilities.

Originally, AMI's remediation approach involved the construction of a passive treatment system for treatment of the January Adit mine water and historic tailing seepage. In 2016, AMI constructed a small scale pilot passive treatment system, which operated for 24 weeks and adjusted accordingly, as analytical testing dictate, to ensure the system effectively treated the impacted inflows. Also, during this time AMI worked to improve the stormwater management system through the construction and reconstruction of the site stormwater diversion network to prevent commingling of impacted stormwater with unimpacted stormwater. AMI also implemented measures to ensure January Adit mine water and historic tailings seepage are not discharged into Alum Gulch. It also placed additional soil cover on and reseeded areas of the historic tailings and waste rock where needed to minimize stormwater contact with exposed tailings or waste rock. On October 19, 2016, AMI submitted a Remediaton Work Plan to VRP based on a passive treatment system that would effectively treat the impacted water from the January Adit and historic tailings. This Work Plan was public noticed on October 21 and 28, 2016 for 45-days.

On January 24, 2017, AMI notified the VRP that it has decided to pursue an active water treatment system instead of a passive water treatment system. The active water treatment plant combined with placing the historic tailings onto a liner system provides for a more robust remediation Work Plan. The previous 2016 Work Plan did not contemplate placing the historic tailings on a liner system. On April 27, 2017 AMI submitted its Work Plan to VRP, which was public noticed on May 5 and 12, 2017 for 45-days.

II. GENERAL FACILITY INFORMATION	
Type of Facility:	Mine Drainage Water Treatment Plant
Facility Location Description:	2.5 miles South of Patagonia on SR82, then 5 miles East on FR812
Estimated Discharge Flow	0.172 MGD
County:	Santa Cruz
Nature of facility discharge:	Historic tailings from the mine site will be relocated from current areas without a liner to a new lined Tailings Storage Facility (TSF) with an underdrain system. Seepage collected by the underdrain system will be stored in a lined storage pond called the Underdrain Pond (UP), which will be constructed to meet the BADCT requirements specified in §A.R.S. 49-243. The water treatment plant will be used to treat water from the UP and underground mine workings for reuse at the site (exploration, dust control, or mill operations). On occasions when all UP water cannot be reused and pond capacity is exceeded, treated UP water will be discharged to Alum Gulch.
Treatment Processes:	Mine water and UP water are pumped at a combined flow rate of 120 gpm to the 10,000-gallon equalization (EQ) tank. These waters are co-mingled in this tank then routed via gravity through a tank overflow pipe to the reaction tank. Flow rates of mine water and UP water are both measured on the inlet piping to the EQ tank. Water

	from the EQ tank overflow is piped to the 4,500-gallon reaction tank for pH adjustment using hydrated lime supplied from the lime system. This tank utilizes an agitator to ensure adequate lime mixing into solution with the untreated water. The pH is adjusted to a pre-determined set point, which for the purposes of this design is assumed to be 10.5 based on jar testing. pH adjusted water is routed via gravity through a tank overflow pipe to the clarifier. The flocculation system consists of a chemical tote containing a liquid anionic polymer flocculant and two chemical feed pumps. Flocculant is pumped to the clarifier to assist with particle flocculation. Flocculant is also pumped to the thickening tank to assist with thickening the solids in the tank. Water from the reaction tank overflow is fed to the clarifier for liquid/solids separation. Flocculant from the flocculation system is added to the clarifier center well to assist with hydroxide floc formation. As the flocs settle in the water column, an internal impeller circulates the solids within the center well to mix with incoming solids formed in the reaction tank. Solids separate in the water column within the tank and settle in the bottom of the tank. Clarified water overflows the internal weir at the top of the tank and is piped to the pH reaction tank. Sludge is formed in the clarifier as the gypsum and metal hydroxide solids formed in the reaction tank settle in the cone-shaped area of the clarifier bottom. The clarifier utilizes a slow-moving rake to ensure the sludge continuously moves toward the center of the cone at the bottom of the clarifier. The sludge is pumped from the cone bottom to the sludge thickening tank. A portion of the pumped sludge is diverted back to the reaction tank where it mixes with the lime and untreated water. This sludge recycle helps solids formation to occur in the reaction tank as well as utilize un-reacted lime contained in the sludge. Clarifier overflow is routed to pH adjustment tank for pH adjustment to 8.5 using sulfuric acid. The acid will be fed from the acid feed system. A pH probe in the tank will relay a signal to the acid feed pump to regulate the acid feed rate from the chemical feed pump. Overflow from the pH adjustment tank will be routed to the mine supply pump for use at the mine site or discharged to Alum Gulch.
Continuous or intermittent discharge:	Intermittent.
Discharge pattern summary:	The facility will discharge from the outfall only when all water in the collection pond cannot be reused.

The mine workings and historic tailings at the site date back to the first half of the 20th century, and seepage from the mine workings likely predates August 13, 1979. An AZPDES permit was previously issued for this site to ASARCO (AZ0025054) on December 1, 2003, for discharges of treated mine drainage to Alum Gulch from a constructed wetland treatment system at two locations. The wetland treatment system was unable to achieve the applicable water quality standards, and permit AZ0025054 was not renewed. A new active water treatment facility will be constructed as part of AMI's commitment to effectively manage and treat January Adit Mine Water and seepage from the historic tailing storage facilities. For these reasons, ADEQ is considering the discharge from the January Mine WTF to be an existing source rather than a new source or a new discharger under A.A.C. R18-9-A901.24 or R18-9-A901.25.

III. RECEIVING WATER

The State of Arizona has adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.

Receiving Water :	Alum Gulch – Headwaters to 31° 28' 20" N / 110° 43' 51" W
River Basin:	Santa Cruz
Outfall Location(s):	Outfall 001: Township 23S, Range 16E, Section 5 Latitude 31° 28' 15" N , Longitude 110° 43' 43" W

The outfall discharges to, or the discharge may reach, a surface water listed in Appendix B of A.A.C. Title 18, Chapter 11, Article 1.

Designated uses for the receiving water listed above:	Aquatic and Wildlife ephemeral (A&We) Partial Body Contact (PBC) Agricultural Livestock watering (AgL)

Per A.A.C. R18-11-113(D), the water quality standards that apply to effluent-dependent waters (EDWs) will be applied to derive discharge limitations for any point source discharge of wastewater to an ephemeral water. The draft AZPDES permit includes discharge limitations and monitoring requirements designed to achieve compliance with A&Wedw standards.

Because flow from the outfall will reach a segment of Alum Gulch that is 0.17 miles downstream with different designated uses, the most stringent downstream designated uses will be applied as follows:

- Aquatic and Wildlife warm (A&Ww)
- Full Body Contact (FBC)
- Fish Consumption (FC)
- Agricultural Livestock watering (AgL)

Is the receiving water on the 303(d) list?	Yes, the receiving water is listed as impaired for cadmium, copper, pH and zinc. A TMDL for Alum Gulch was completed and approved in June, 2003.

Given the uses stated above, the applicable narrative water quality standards are described in A.A.C. R18-11-108, and the applicable numeric water quality standards are listed in A.A.C. R18-11-109 and in Appendix A thereof. There are two standards for the Aquatic and Wildlife uses, acute and chronic. In developing AZPDES permits, the standards for all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.

IV. DESCRIPTION OF DISCHARGE

Because this is a new facility and no discharges have yet occurred, effluent monitoring data are not available. The following is the effluent quality based on the treatment processes designed and water treatability jar tests of the site waters, as outlined in the application.

Parameters	Units	Effluent (Discharge) Maximum
Total Suspended Solids (TSS)	mg/L	<20
Cadmium	µg/L	3.5
Copper	µg/L	4.5
Lead	µg/L	0.9
Mercury	µg/L	<0.094
Zinc	µg/L	600
pH	SU	8.5

V. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT

This section is not applicable because this is a new permit.

VI. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

When determining what parameters need monitoring and/or limits included in the draft permit, both technology-based and water quality-based criteria were compared and the more stringent criteria applied.

Technology-based Limitations:

The regulations found at 40 CFR, Part 440, require that mines that produce copper, lead, zinc, gold, silver, or molybdenum bearing ores, or any combination of these ores from open-pit or underground operations achieve specified treatment standards for Total Suspended Solids (TSS), pH, cadmium, copper, lead, mercury, and zinc based on the type of treatment technology available. These parameters will be monitored with technology-based effluent limitations (TBELs) as applicable at the outfall. These provisions have been applied based on Best Practicable Control Technology (BPT) currently available and Best Available Technology (BAT) economically achievable.

The following mine drainage limitations are listed in 40 CFR 440.103(a) representing the degree of discharge reduction available by the application of the best available technology economically achievable (BAT).

Parameter	30-day Average (mg/L)	Daily Maximum (mg/L)
Cadmium	0.05	0.10
Copper	0.15	0.30
Mercury	0.001	0.002
Lead	0.30	0.6
Zinc	0.75	1.5

The following limitation is listed in Section 440.102(a) and represents the degree of discharge reduction attainable by the application of the best practicable control technology currently available (BPT).

Parameter	30-day Average	Daily Maximum
Total Suspended Solids (TSS)	20 mg/L	30 mg/L
pH	Within the range 6.0 standard units (S.U.) to 9.0 standard units	

There are no other applicable technology-based effluent limitations for Outfall 001 beyond the prohibition to discharge process wastewater. The proposed permit includes water quality-based requirements in order to ensure that SWQS for Alum Gulch are achieved.

Numeric Water Quality Standards: As outlined in A.A.C. R18-11-109 and Appendix A:
Per 40 CFR 122.44(d)(1)(ii), (iii) and (iv), discharge limits must be included in the permit for parameters with "reasonable potential" (RP), that is, those known to be or expected to be present in the effluent at a level that could potentially cause any applicable numeric water quality standard to be exceeded. RP refers to the possibility, based on the statistical calculations using the data submitted, or consideration of other factors to determine whether the discharge may exceed the Water Quality Standards. The procedures used to determine RP are outlined in the *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001). In most cases, the highest reported value for a parameter is multiplied by a factor (determined from the variability of the data and number of samples) to determine a "highest estimated value". This value is then compared to the lowest applicable Water Quality Standard for the receiving water. If the value is greater than the standard, RP exists and a water quality-based effluent limitation (WQBEL) is required in the permit for that parameter. RP may also be determined from BPJ based on knowledge of the treatment facilities and other factors. The basis for the RP determination for each parameter with a WQBEL is shown in the table below.

However, since this is a new treatment system and effluent (discharge) data are not yet available, RP could not be calculated for other potential pollutants that are subject to numeric water quality standards. Instead of WQBELs, assessment levels (ALs) were established for Trace Substances (Table 2 in the permit). ALs and relatively frequent monitoring are established for these parameters because they are commonly present in effluents at variable concentrations. (See discussion under "Assessment Levels" below for further details.)

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the "two-

value steady state wasteload allocation" described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at the level of the applicable standard and a daily maximum limit was determined as specified in Section 5.4.4 of the TSD.

Discharge Limits in Tables 1.a and 1.b were calculated for chronic and acute water quality standards respectively. The frequency and duration of discharges from the WTP will determine which standards are applicable for each monitoring period. Discharge from the January Mine WTP is expected to be sporadic and therefore monitoring requirements in Tables 1.a and 1.b are contingent upon the frequency or duration of discharges. Chronic surface water standards shall apply when discharge occurs 7 or more consecutive days or with less than 30 days between discharges. This criteria was chosen to be consistent with the approved toxicity testing methodology that determines chronic growth and survival rates based on a 7-day test.

TMDL:

Waste Load Allocations (WLAs) for Cadmium, Copper, and Zinc established for the January Adit at a baseflow discharge of 0.04 cfs, as specified in the Alum Gulch TMDL, were compared with effluent limitations/MDLs to ensure that the most stringent standard is applied, thus protecting for all applicable designated uses.
The permit limits for each of the listed pollutants has been set so that the most stringent water quality standard for the applicable designated uses can be supported. The following mass limits were calculated based on the applicable water quality standards for the 2003 Alum Gulch TMDL:

Parameter	TMDL (kg/day)
Cadmium (dissolved)	0.00061
Cadmium (total)	0.0049
Copper (dissolved)	0.0029
Copper (total)	0.021
Zinc (dissolved)	0.037
Zinc (total)	2.4
H+ (pH)	0.000002

Generally, permit limits should be based on the WLA prescribed in the TMDL, however, the 2003 TMDL was developed considering only passive seepage from January Adit as the source of base flow. The new activities covered under this permit involve active pumping and treatment of water from the underground workings previously considered under the TMDL, resulting in a higher discharge volume, the TMDL may need to be revised to reflect the new flow volume of the January Mine Water Treatment Plant. However, since the permit is applying the most stringent standard to protect the applicable designated uses, it is consistent with the Alum Gulch TMDL.

Mixing Zone: The limits in this permit were determined without the use of a mixing zone. Arizona state water quality rules require that water quality standards be achieved without mixing zones unless the permittee applies for and is approved for a mixing zone. Since a mixing zone was not applied for or granted, all water quality criteria are applied at end-of-pipe.

Assessment Levels (ALs): ALs are listed in Part I.B of the permit. An AL differs from a discharge limit in that an exceedance of an AL is not a permit violation. Instead, ALs serve as triggers, alerting the permitting authority when there is cause for re-evaluation of RP for exceeding a water quality standard, which may result in new permit limitations. The AL numeric values also serve to advise the permittee of the analytical sensitivity needed for meaningful data collection. Trace substance monitoring is required when there is uncertain RP (based on

non-detect values or limited datasets) or a need to collect additional data or monitor treatment efficacy on some minimal basis. A reopener clause is included in the draft permit should future monitoring data indicate water quality standards are being exceeded.

The requirement to monitor for these parameters is included in the draft permit according to A.A.C. R18-11-104(C) and Appendix A. ALs listed for each parameter were calculated in the same manner that a limit would have been calculated (see Numeric Water Quality Standards Section above).

Hardness: The permittee is required to sample hardness as $CaCO_3$ at the same time the effluent limitation and trace substance monitoring is conducted because the water quality standards for some metals for the aquatic and wildlife designated use are calculated using the water hardness values. The hardness of the water sources that will be treated by the January Mine treatment system is very high (over 2000 mg/L). However, a hardness value of 400 mg/L (the maximum allowable hardness value that can be used to calculate standards, per Title 18, Chapter 11, Article 1, Appendix B, footnote d(ii)) was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, copper, lead, nickel, silver and zinc) to protect the aquatic and wildlife designated use.

Whole Effluent Toxicity (WET): WET testing is required in the draft permit (Parts I.C and III) to evaluate the discharge according to the narrative toxic standard in A.A.C. R18-11-108(A)(5), as well as whether the discharge has RP for WET per 40 CFR 122.44(d)(iv).
WET testing for chronic toxicity is required. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. Since completion of the chronic WET test requires a minimum of three samples be taken for renewals, the chronic WET test is not required during any given monitoring period in which the discharge does not occur over seven consecutive calendar days and is not repeated more frequently than every thirty days. If the frequency of discharge does not allow for chronic toxicity to be conducted, acute toxicity testing shall instead be conducted.

WET testing for toxicity shall be conducted using the following three surrogate species:

- *Ceriodaphnia dubia* (water flea) – for evaluating toxicity to invertebrates
- *Pimephales promelas* (fathead minnow) – for evaluating toxicity to vertebrates
- *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum or Raphidocelis subcapitata)* (a green alga) – for evaluating toxicity to plant life

ADEQ does not have a numeric standard for Whole Effluent Toxicity. However, ADEQ adopted the EPA recommended chronic toxicity benchmark of 1.0 TUc for a four day exposure period. Using this benchmark, the action levels for WET included in the draft permit were calculated in accordance with the methods specified in the *TSD*. The species chosen for WET testing are as recommended in the *TSD* and in *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*.

An exceedance of an action level will trigger follow-up testing to determine if effluent toxicity is persistent. If toxicity above an action level is found in a follow-up test, the permittee will be required to conduct a Toxicity Reduction Evaluation (TRE) and possibly a Toxicity Identification Evaluation (TIE) to identify the source of toxicity and reduce toxicity. These conditions are required to ensure that toxicants are not discharged in amounts that are toxic to organisms [A.A.C. R18-11-108(A)(5)]. A reopener clause is included in accordance with 40 CFR Parts 122 and 124 and AAC R18-9-B906.

The draft permit requires 8-hour composite samples be collected for WET testing. An 8-hour composite sample type was chosen for WET testing in order to have consistency with the type of sample required for other parameters requiring monitoring in this permit. WET sampling must coincide with testing for all the parameters in Parts I.A and B of the draft permit, when testing of those parameters is required, to aid in the determination of the cause of toxicity if toxicity is detected. Additional procedural requirements for the WET test are included in the proposed permit.

Permit Limitations and Monitoring Requirements:

The table that follows summarizes the parameters that are limited in the permit and the rationale for that decision. Also included are the parameters that require monitoring without any limitations or that have not been included in the permit at all and the basis for those decisions. The corresponding monitoring requirements are shown for each parameter. In general, the regulatory basis for monitoring requirements is per 40 CFR §122.44(i) *Monitoring requirements,* and 40 CFR §122.48(b), *Required monitoring*; all of which have been adopted by reference in A.A.C. R18-9-A905, *AZPDES Program Standards*.

Parameter	Lowest Standard/ Designated Use(6)	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2)
Flow	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be monitored using a flow meter.
Antimony	30 µg/L/ A&Ww chronic	N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Arsenic	30 µg/L/ FBC	< 0.5 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
Barium	98,000 µg/L/ FBC	N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Beryllium	5.3 µg/L/ A&Ww chronic	<5 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
Boron	186,667 µg/L/ FBC	N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Cadmium (3)	6.22 µg/L/ A&Ww chronic 50 ug/L/Technology Based Effluent Limitations 40 CFR 440.103(a)	3.5 ug/L	1	N/A	RP Indeterminate (Limited data)	Monitoring with limitations (WQBEL) is required for consistency with the Alum Gulch TMDL.
Chromium VI	11 µg/L/ A&Ww chronic	<N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Chromium, Total	No applicable standard.	<10 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
Copper (3)	29.2 µg/L/ A&Ww chronic 150 µg/L//Technology Based Effluent Limitations 40 CFR 440.103(a)	4.5 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring with limitations (WQBEL) is required for consistency with the Alum Gulch TMDL.
Cyanide	9.7 µg/L/ A&Ww chronic	N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Hardness (as $CaCO_3$)	No Applicable Standard. Hardness is used to determine standards for specific metal parameters.	N/A	0	N/A	N/A	A&W standards for cadmium, copper, lead, nickel, silver and zinc used for RP determinations were based on the hardness value of 400 mg/L which is the maximum value that can be used. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Iron	1,000 ug/L / A&Ww chronic	4.4 ug/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
Lead (3)	10.9 µg/L / A&Ww chronic 300 ug/L/Technology Based Effluent Limitations 40 CFR 440.103(a)	<1 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring required with a TBEL.

Parameter	Lowest Standard/ Designated Use(6)		Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2)
Manganese	130,667 µg/L/ FBC		4500 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is not required. Discharge is not expected to contain manganese in concentrations that exceed the standard.
Mercury	0.01 µg/L/ A&Ww chronic 1.00 µg/L Technology Based Effluent Limitations 40 CFR 440.103(a)		<0.094 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring required with a TBEL.
Nickel (3)	168 µg/L/ A&Ww chronic		53 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
pH	Minimum: 6.5 S.U. Maximum: 9.0 S.U. A&Wedw and PBC A.A.C. R18-11-109(B) --- Minimum: 6.0 S.U. Maximum: 9.0 S.U. Technology-based standards 40 CFR 440 .102		8.5	2	N/A	pH is always included with limitations.	Monitoring with limitations (WQBEL) is required. Limits are based on WQBEL since it is more stringent than TBEL.
Selenium	2 µg/L/ A&Ww chronic		1.1 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required with an Assessment Level.
Silver (3)	35 µg/L/ A&Ww chronic		N/A	0	N/A	RP Indeterminate (No data)	Monitoring is required with an Assessment Level.
Suspended Solids, Total (TSS)	Monthly Average: 20 mg/L Daily Maximum: 30 mg/L Technology-based standards 40 CFR 440.102		<20 mg/L	1	N/A	Technology- based limit is always included.	Monitoring required with a TBEL.
Temperature	Maximum allowable increase in ambient water temperature due to a thermal discharge = 3°C / A&Ww A.A.C. R18-11-109(C)		No Data	0	N/A	RP Indeterminate (No data)	Monitoring is required for discharge characterization.
Thallium	7.2 µg/L/ FC		<0.5 µg/L	1	N/A	RP Indeterminate (Limited data)	Monitoring is required for discharge characterization.
Zinc (3)	379 µg/L/ A&Ww acute 750 ug/L/Technology Based Effluent Limitations 40 CFR 440.103(a)		600 µg/L	1	N/A	RP exists	Monitoring with limitations (WQBEL) is required for consistency with the Alum Gulch TMDL.
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A)(6)	*Pseudokirchneriella subcapitata (4)*	N/A	0	N/A	Indeterminate (5)	Monitoring with action levels is required.
		Pimephales promelas	N/A	0	N/A	Indeterminate (5)	Monitoring with action levels is required.
		Ceriodaphnia dubia	N/A	0	N/A	Indeterminate (5)	Monitoring with action levels is required.

Footnotes:

(1) Testing must coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3 of the permit. See Part III of the permit.
(2) The monitoring frequencies above are required when the facility is discharging to the receiving water. If there is no discharge, no monitoring is required during that monitoring period.
(3) The standard for this parameter is based on the maximum allowable hardness value of 400 mg/ L.
(4) Formerly known as *Selenastrum capricornutum or Raphidocelis subcapitata*.
(5) Monitoring with ALs or Action Levels always required for these parameters unless RP exists and limits are set.
(6) The lowest applicable standard is based on the duration and frequency of discharge from the facility. The A&W w chronic standards apply if the discharge occurs 7 or more consecutive days or with less than 30 days between discharges. See Tables 1.a and 1.b for applicable effluent limits.

VII. NARRATIVE WATER QUALITY STANDARDS

All narrative limitations in A.A.C. R18-11-108 that are applicable to the receiving water are included in Part I, Sections D and E of the draft permit.

VIII. MONITORING AND REPORTING REQUIREMENTS (Part II of Permit)

Section 308 of the Clean Water Act and 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Monitoring frequencies for some parameters may be reduced in second term permits if all monitoring requirements have been met and the limits or ALs for those parameters have not been exceeded during the first permit term.

For the purposes of this permit, an "8-hour composite" sample has been defined as a flow-proportioned mixture of two or more discrete samples (aliquots) obtained at equal time intervals over an 8-hour period (if only two samples are collected, they should be taken approximately 8 hours apart). The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.

Monitoring locations are specified in the permit (Part I.A and Part I.I) in order to ensure that representative samples of the effluent are consistently obtained.

The requirements in the permit pertaining to Part II, Monitoring and Reporting, are included to ensure that the monitoring data submitted under this permit is accurate in accordance with 40 CFR 122.41(e). The permittee has the responsibility to determine that all data collected for purposes of this permit meet the requirements specified in this permit and is collected, analyzed, and properly reported to ADEQ.

The permit (Part II.A.2) requires the permittee to keep a Quality Assurance (QA) manual at the facility, describing sample collection and analysis processes; the required elements of the QA manual are outlined.

Reporting requirements for monitoring results are detailed in Part II, Sections B.1 and 2 of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs) and AZPDES Flow Record forms. The permittee is responsible for conducting all required monitoring and reporting the results to ADEQ on DMRs or as otherwise specified in the permit.

Requirements for retention of monitoring records are detailed in Part II.D of the permit.

IX. SPECIAL CONDITIONS (Part V in Permit)

Permit Reopener

This permit may be modified based on newly available information; to add conditions or limits to address demonstrated effluent toxicity; to implement any EPA-approved new Arizona water quality standard; or to re-evaluate reasonable potential (RP), if assessment levels in this permit are exceeded [A.A.C. R18-9-B906 and 40 CFR Part 122.62 (a) and (b)].

X. ANTIDEGRADATION

Antidegradation rules have been established under A.A.C. R18-11-107 & R18-11-107.01 to ensure that existing surface water quality is maintained and protected. The discharge from the January Mine Water Treatment Plant will be to an ephemeral wash, which receives Tier 1 antidegradation protection. Except for flows resulting from rain events, the only water in the wash will be the effluent. Therefore, the discharge and the receiving water will normally be one and the same.

Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards in the receiving water and in the downstream portion of Alum Gulch (which has different designated uses), and be consistent with WLAs in the TMDL. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.01(A) (antidegradation criteria for Tier 1 waters).

XI. STANDARD CONDITIONS

Conditions applicable to all NPDES permits in accordance with 40 CFR, Part 122 are attached as an appendix to this permit.

XII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-A907)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-A908)

Rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-A908(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

EPA Review (A.A.C. R18-9-A908(C))

A copy of this draft permit and any revisions made to this draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

XIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – AZPDES Individual Permits Unit
Attn: Richard Mendolia
1110 West Washington Street – Mail Code 5415B-3
Phoenix, Arizona 85007

Or by contacting Richard Mendolia at (602) 771 – 4374 or by e-mail at rjm@azdeq.gov.

XIV. INFORMATION SOURCES

While developing effluent limitations, monitoring requirements, and special conditions for the draft permit, the following information sources were used:

1. AZPDES Permit Application Forms 1 and 2D, received May 22, 2017, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.

2. ADEQ Geographic Information System (GIS) Web site.

3. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters,* adopted January 31, 2009.

4. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.

5. Code of Federal Regulations (CFR) Title 40:
   Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.*
   Part 124, *Procedures for Decision Making.*
   Part 440, Subpart J - *Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory (§§ 440.100 - 440.105)*

6. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.

7. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.

8. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).

9. U.S. EPA NPDES Permit Writers' Manual, September 2010.