ADEQ Arizona Department of Environmental Quality

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ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is a mining operation and is considered to be a major facility under the NPDES program. The discharge 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.

I. PERMITTEE INFORMATION	
Permittee's Name:	Resolution Copper Mining LLC. (RCML)
Permittee's Mailing Address:	P. O. Box 1944 Superior, AZ 85173 -1944
Facility Name:	Resolution Copper Mining LLC, Superior Mine
Facility Address or Location:	102 Magma Heights Superior, AZ 85173
County:	Pinal County
Contact Person(s): Phone/e-mail address	Ms. Darla Gage, Environmental Superintendent (520) 689-3293 / Darla.Gage@riotinto.com
AZPDES Permit Number:	AZ0020389
Inventory Number:	101703
LTF Number:	90471

II. STATUS OF PERMIT(s)	
AZPDES permit applied for:	Renewal
Date application received:	July 23, 2021
Date application was determined administratively complete:	September 14, 2021
Previous permit number (if different):	None
Previous permit expiration date:	January 22, 2022

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RCML has the following permits issued by ADEQ applicable to the Superior Mine:		
Type of Permits		
Aquifer Protection Permit (APP)	P - 105823 and P - 101703	Regulates discharges to the local aquifer
General permit – Type 2.02 Aquifer Protection Permit	P - 511171	Regulates the discharge practice from which there is, or with reasonable probability may be, a discharge at mine site. (Intermediate Rock Stockpile at East Plant Site)
General permits – Type 3.03 - Aquifer Protection Permit	106373 and 511171	Regulates the discharge practice of Vehicle and Equipment Washes at East Plant site washbay.
Reuse Permit	R - 511181	Regulates the practice of reusing treated wastewater for beneficial purposes. (Blended with CAP water for irrigation)
Multi-Sector General Permit (MSGP)	AZMSG 2019-002	Regulates stormwater discharge
RCRA (Hazardous Wastes)	AZD001886654	Regulates Hazardous waste management

III. GENERAL FACILITY INFORMATION	
Type of Facility:	Copper Mining Operations
Facility Location Description:	RCML – Superior Mine is located along the northern boundary of the Town of Superior in Pinal County, Arizona. Surface facilities are located 0.22 miles north of Queen Creek in two non-contiguous areas identified as the West and East Plant sites. The West Plant site is located immediately northwest of the Town of Superior. The East Plant site is located two miles east of the Town of Superior near the Intersection of Highway 177 and U.S. Highway 60.
Nature of Facility Discharge	Outfall 001: Discharge storm water collected in CP-105 (formerly known as Indian Ponds). RCM also has the option of treating CP-105 storm water at the MWTP and discharge the treated stormwater through Outfall 002. Outfall 002: Discharge treated water from the MWTP. The main source of water treated at the MWTP is dewatering water from the underground mine. Active mining of ore is not occurring.
Discharge Flow:	No discharge has occurred during this current permit term.

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Applicable Treatment Processes:	The industrial Mine Water Treatment Plant (MWTP) at the facility uses chemical precipitation and a high-density sludge process with hydrated lime and soda ash to remove dissolved metals and sand filtration to remove suspended solids.
Reuse / irrigation or other disposal method(s):	Currently all mine water and stormwater treated at the MWTP is sent to the New Magma Irrigation and Drainage District (NMIDD) for reuse. The treated mine water is blended with Central Arizona Project (CAP) water for crop irrigation. This reuse is permitted through ADEQs Individual Industrial Reclaimed Water Permit R -511181. When irrigation is not an available option, the treated water can be discharged through Outfall 002. There has been no discharge from Outfall 001 or Outfall 002 during the current permit term. Currently, stormwater held in the CP-105 is either evaporated in CP-105 or treated in the mine water treatment plant (MWTP) for use in irrigation by the NMIDD.

Facility Information: RCML - Superior Mine has been shut down since 1998. Originally, this site was operated by BHP Copper Inc (BHP) as an underground mine with an onsite smelter. The smelter was shut down in 1971, though mining continued. BHP continued to operate the crusher/concentrator and hauled the concentrate to BHP San Manuel mine until the mine closed in 1998. Active ore mining is not occurring. The original Superior mine contained six stormwater containment ponds. Only the west CP-105 Pond (formerly known as Indian Pond) remain for the purpose of stormwater containment.

There are two permitted outfalls at the facility. Outfall 001 receives mine site stormwater collected from the West Plant site. The stormwater is stored in CP-105 Pond, which has a storage capacity of 90 acre-feet. CP-105 Pond is equipped with pumps capable of pumping 2,000 – 5,000 gallons per minute (gpm). The stormwater from CP-105 Pond can be pumped to the MWTP for treatment and reuse. Discharges resulting from less than a 10-year, 24-hour storm event are prohibited through Outfall 001.

Outfall 002 is for the discharge of treated water from the MWTP. The main source of the water sent to MWTP is from dewatering operations from the underground mine. Small volumes of industrial water and seepage pumping are also sent to MWTP. The mine water is conveyed through a pipeline in the Never Sweat Tunnel to the MWTP. The MWTP is designed with a high density sludge (HDS) process utilizing hydrated lime and soda ash to remove dissolved metals and sand filters to remove suspended solids. The discharge from the MWTP can be sent to either the NMIDD or to Outfall 002 for discharge to Queen Creek. RCML noted the estimated maximum discharge capacity to Outfall 002 is 3.28 million gallons per day (MGD).

IV. 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:	An Unnamed wash tributary to Queen Creek (Headwaters to Town of Superior Wastewater Treatment Plant Outfall)
River Basin:	Middle Gila River Basin

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Outfall Location(s):	Outfall 001: Township 2 S, Range 12 E, Section 4 Latitude 33° 17' 02" N, Longitude 111° 07' 06" W Outfall 002: Township 2 S, Range 12 E, Section 4 Latitude 33° 17' 02" N, Longitude 111° 07' 06" 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 and referenced in 40 CFR 131.31 (b).	
Designated uses for the receiving water listed above:	Aquatic and Wildlife warm water (A&Ww) Partial Body Contact (PBC) 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 Copper (dissolved) (2002), lead (total) (2010), selenium (total) (2012). The TMDL has not yet been completed. The facility is an existing discharger and as such, the AZPDES copper permit limits will be evaluated and incorporated into the TMDL calculations.
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.	

V. DESCRIPTION OF PERMITTED DISCHARGE

No discharges were reported during the 2017 permit term. Testing of treated water from MWTP are used to represent the permitted discharge quality from Outfall 002 and also are used for Reasonable Potential (RP) determination. In 2021, two water samples were collected and tested from water impounded at CP-105 during precipitation events less than a 10-year 24-hour event. Because of the increased flow during any discharge event, the data listed below likely overstate the solids that would be contained in any actual discharge. The following is the measured quality reported in the application.

CP – 105 Impounded Water - Outfall 001		
Parameters	**Units**	**Maximum Measured Concentration**
Total Dissolved Solids (TDS)	mg/L	824
Total Suspended Solids (TSS)	mg/L	12
Treated MWTP Water - Outfall 002		
Total Dissolved Solids (TDS)	mg/L	2,320
Total Suspended Solids (TSS)	mg/L	< 4.7

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VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT	
Date of most recent inspection:	June 10, 2021; no potential violations were noted as a result of this inspection.
DMR files reviewed:	February, 2017 through October, 2021
Lab reports reviewed:	September 2018 through October 2021
DMR Exceedances:	Not applicable since no discharge was reported during the 2017 permit term.
NOVs issued:	None
NOVs closed:	N/A
Compliance orders:	None

VII. PROPOSED PERMIT CHANGES

The following table lists the major changes from the previous permit in this draft permit.

Parameter	Existing Permit	Proposed permit	Reason for change
Reporting Location	Mail in hard copies of DMRs and other attachments	DMRs and other reports to be submitted electronically through myDEQ portal	Language added to support the NPDES electronic DMR reporting rule that became effective on December 21, 2015.
Cadmium, Mercury (outfall 002)	Limited based on TBEL	Limited based on WQBEL	Data submitted indicated reasonable potential (RP) for an exceedance of a standard.
Chromium (Total) & Chromium VI (outfall 001 & 002)	Assessment Level	Discharge Characterization	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Iron (outfall 001 & 002)	Limited	Discharge Characterization	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Table 4 - Discharge characterization Testing to Outfall 001 & 002	No Monitoring	Discharge Characterization (DC) monitoring required	In the event the facility does not discharge to a water of the U.S. during the life of the permit, DC sampling will provide data for ADEQ to analyze potential impacts from the discharges to applicable surface water quality standards.

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Anti-backsliding considerations – "Anti-backsliding" refers to statutory (Section 402(o) of the Clean Water Act) and regulatory (40 CFR 122.44(l)) requirements that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit. The rules and statutes do identify exceptions to these circumstances where backsliding is acceptable. This permit has been reviewed and drafted with consideration of anti-backsliding concerns.

Limit for the following parameter have been removed from the permit because evaluation of current data allows the conclusion that no reasonable potential (RP) for an exceedance of a standard exists:

• Iron (Outfall 001 and 002)

This is considered allowable backsliding under 303(d)(4). The discharge limitations in the current permit for this parameter were based on state standards, the respective receiving waters are in attainment for these parameters, and the revisions are consistent with antidegradation requirements. See Section XII for information regarding antidegradation requirements.

Limits are retained in the draft permit for parameters where reasonable potential (RP) for an exceedance of a standard continues to exist or is indeterminate. In these cases, limits will be recalculated using the most current Arizona Water Quality Standards (WQS). If less stringent limits result due to a change in the WQS then backsliding is allowed in accordance with 303(d)(4) if the new limits are consistent with antidegradation requirements and the receiving water is in attainment of the new standard; see Section XII for information regarding antidegradation requirements.

No limits are less stringent due to a change in the WQS in this permit.

VIII. 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: As outlined in 40 CFR Part 440:
The discharge from the RCML - Superior Mine is subject to best-available technology economically achievable (BAT) and best practicable control technology currently available (BPT) limitations under 40 CFR Part 440 Subpart J, Ore Mining and Dressing Point Source Category. Subpart J, the Copper Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory, applies to mines that produce copper, lead, zinc, gold, silver, or molybdenum bearing ores, or any combination of these ores from open-pit or underground operations other than placer deposits.

The RCML – Superior Mine is an existing source and thus not subject to the New Source performance Standards. This conclusion is consistent with ADEQ's permit decision issued to the Resolution Copper Mine on January 23, 2017 and with the agency's February 15, 2019 "New Source Analysis – Resolution Copper Mine – AZ0020389" memorandum submitted to the Arizona Water Quality Appeals Board as part of the 2017 remanded permit. See Appendix A for more detail.

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

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Parameter	30-day Average (mg/L)	Daily Maximum (mg/L)
Cadmium (Cd)	0.05	0.10
Copper (Cu)	0.15	0.30
Mercury (Hg)	0.001	0.002
Lead (Pb)	0.3	0.6
Zinc (Zn)	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 (mg/L)	Daily Maximum (mg/L)
Total Suspended Solids (TSS)	20	30
pH	Within the range 6.0 standard units (S.U.) to 9.0 standard units.	

Any discharge of process water and mine drainage subject to Part 440 Subpart J may qualify for the *Storm exemption for facilities permitted to discharge* as outlined in 40 CFR Part 440.131(b). This storm exemption allows a source, with an allowable discharge under 40 CFR Part 440, to have an overflow as a result of a storm event that does not meet the limitations established in 40 CFR Part 440 if that facility (1) is designed, constructed and maintained to contain the maximum volume of wastewater which would be generated by the facility during a 24-hour period without an increase in volume from precipitation and the maximum volume of wastewater resulting from a 10-year, 24-hour storm event or treat the maximum flow associated with these volumes, (2) has taken all reasonable steps to maintain treatment of the wastewater and minimize the amount of overflow, and (3) provides notification of such discharges. For Outfall 001, the storm exemption is designed to provide an affirmative defense to an enforcement action, and as such, the permittee has the burden of demonstrating to ADEQ and/or EPA that all of the above conditions have been met. The conditions which RCML must meet in order to qualify for the stormwater exemption are listed in the special conditions of the permit. There are no other applicable technology-based effluent limitations for Outfall 001 beyond the prohibition to discharge at flows lower than the 10-year, 24-hour storm event. The proposed permit includes water quality-based requirements in order to ensure that SWQS are achieved in Queen Creek. For Outfall 002, the parameters with technology-based effluent limitations and either indeterminate or no reasonable potential based on WQS were assigned the technology-based limits listed in this section.

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.

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.

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)

Assessment Levels (ALs) are established in the draft permit for Outfall 001: antimony, beryllium, total chromium, chromium VI, cyanide, hydrogen sulfides, selenium, silver, sulfides, thallium and zinc. ALs are established in the draft permit for Outfall 002: Hydrogen sulfide, sulfides, silver, cyanide and TDS. The basis for establishing ALs for each of these parameters is discussed in the table in this section. 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 surface 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).

The following trace substances were not included as limits or assessment levels in the draft permit due to a lack of RP based on best professional judgment (BPJ): barium, nitrates, nitrites, and manganese. The numeric standards for these pollutants are well above what would be expected from a WWTP discharge.

Hardness

The permittee is required to sample hardness as $CaCO_3$ at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. The hardness value of 120 mg/L (the protective default hardness value of the receiving stream) was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, chromium III, copper, lead, nickel, silver and zinc) at Outfalls 001 and 002.

Whole Effluent Toxicity (WET)

WET testing is required in the draft permit (Parts I.C and IV) 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 and/or acute 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.

WET testing for chronic / acute toxicity shall be conducted using the following three (for chronic WET testing)/ two (for acute WET testing) surrogate species:

- *Ceriodaphnia dubia* (water flea) – for evaluating toxicity to invertebrates

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- *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 limitations and/or 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 a limit or action level will trigger follow-up testing to determine if effluent toxicity is persistent. If toxicity above a limit or 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 24-hour composite samples be collected for WET testing. 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.

The required WET monitoring frequency for this facility is consistent with the WET testing frequency required for facilities with a similar design flow. The draft permit requires WET test results to be reported on discharge monitoring reports and submittal of the full WET lab report to ADEQ.

Discharge Characterization (DC)

In addition to monitoring for parameters assigned either a limit or an AL, sampling is required to assess the presence of pollutants in the sources of potential discharge at certain minimum frequencies for additional suites of parameters, whether the facility is discharging or not. This monitoring is specified in Table 4, *Discharge Characterization Testing,* as follows:

- Table 4.a. – Discharge characterization Testing for outfall 001- General Chemistry, Selected Metals, Trace Substances and WET.
- Table 4.b. - Discharge characterization Testing for outfall 002- General Chemistry, Selected Metals, Trace Substances and WET.

NOTE: Some parameters listed in Tables 4 are also listed in Tables 1.a, 1.b or 2.a, 2.b or 3.a, 3.b. In this case, the data from monitoring under Tables 1.a, 1.b or 2.a, 2.b or 3.a, 3.b may be used to satisfy the requirements of Tables 4a. & 4. b, provided the specified sample types are the same. In the event the facility does not discharge to a water of the U.S. during the life of the permit, DC monitoring of representative samples of the sources of potential future discharge is still required, although permit limits are inapplicable if the water is not being discharged through outfalls 001 or 002.

The purpose of DC monitoring is to characterize the discharge and determine if the parameters of concern are present in the discharge and at what levels. If pollutants are noted at levels of concern during the permit term, this permit may also be reopened to add related limits or conditions.

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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*.

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Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Outfall 001						
Flow	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be monitored on a continual basis using a flow meter.
pH	Minimum: 6.5 Maximum: 9.0 A&Ww, PBC and AgL A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR 440.102(a)	No Data	0	N/A	WQBEL or TBEL is always applicable to WWTPs.	pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS)	No applicable standard.	824 mg/L	2	N/A	N/A	No monitoring is required.
Total Suspended Solids (TSS)	No applicable standard.	12 mg/L	2	N/A	N/A	No monitoring is required.
Antimony	30 µg/L / A&Ww chronic	< 3 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Arsenic	80 µg/L / FC	< 25 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and WQBEL remains in the permit.
Beryllium	5.3 µg/L / A&Ww chronic	< 2 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Boron	186,667 µg/L / PBC	No data	0	N/A	N/A	No monitoring is required. The standard is above what would be expected in the discharge.
Cadmium (2)	2.56 µg/L / A&Ww chronic	< 2 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and WQBEL remains in the permit.
Chromium (Total)	1,000 µg/L / AgL	< 6 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L / A&Ww chronic	No data	0	N/A	RP Indeterminate (Based on total chromium data)	Monitoring is required and an assessment level remains in the permit.
Copper (2)	10.5 µg/L / A&Ww chronic	50.2 µg/L	2	141 µg/L	RP Exists	Monitoring is required and WQBEL remains in the permit.
Cyanide (as free cyanide)	9.7 µg/L / A&Ww chronic	No data	0	N/A	RP Indeterminate (No data)	Monitoring required and an assessment level remains in the permit.

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Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	459 mg/L	2	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on a protective default receiving water hardness value of 120 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Hydrogen Sulfide	2 µg/L / A&Ww chronic	No data	0	N/A	N/A	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.
Iron	1,000 ug/L / A&Ww chronic	39.5 µg/L	2	292 µg/L	No RP	Monitoring is required for discharge characterization
Lead (2)	3.07 µg/L / A&Ww chronic	53.5 µg/L	2	396 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Mercury	0.01 µg/L / A&Ww chronic	0.006 µg/L	2	0.0171 µg/L	RP Indeterminate (Limited Data)	Monitoring is required and a WQBEL remains in the permit.
Nickel (2)	60.7 µg/L / A&Ww chronic	< 10 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and a WQBEL remains in the permit.
Selenium	2 µg/L/ A&Wedw chronic	< 1 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Silver (2)	4.4 µg/L/ A&Ww acute	< 1 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Sulfides	No applicable standard	< 0.05 µg/L	2	N/A	N/A	Indicator parameter for hydrogen sulfide. Monitoring required. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.
Thallium	7.2 µg/L/ FC	< 1 µg/L	2	N/A	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Zinc (2)	137 µg/L/ A&Ww acute and chronic	14.4 µg/L	2	107 µg/L	RP Indeterminate (Limited Data)	Monitoring is required and an assessment level remains in the permit.
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A)(6) *Pseudo-kirchneriella subcapitata (3)*; *Pimephales promelas*; *Ceriodaphnia dubia*	No Data	0	N/A	RP Indeterminate (No Data)	Monitoring is required and an action level is set in the permit.

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Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Outfall 002						
Flow	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be monitored on a continual basis using a flow meter.
pH	Minimum: 6.5 Maximum: 9.0 A&Ww, PBC and AgL A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR 440.102(a)	Minimum – 7.7 Maximum – 9.2	12	N/A	WQBEL or TBEL is always applicable.	pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS)	No applicable standard	2,320 mg/L	4	N/A	N/A	Monitoring required and an assessment level remains in the permit.
Total Suspended Solids (TSS)	20 mg/L / 30-day average 30 mg/L / Daily maximum / Technology Based effluent limitations 40 CFR 440.102(a)	< 4.7	36	N/A	N/A	Technology based standard under limitations established in 40 CFR Part 440 Subpart J for Copper Mines. TBEL remains in the permit.
Antimony	30 µg/L / A&Ww chronic	< 3 µg/L	12	N/A	No RP	No monitoring is required
Arsenic	80 µg/L / FC	< 25 µg/L	12	N/A	No RP	No monitoring is required
Beryllium	5.3 µg/L/ A&Ww chronic	< 2 µg/L	12	N/A	No RP	No monitoring is required
Boron	186,777 µg/L / PBC	No data	0	N/A	N/A	No monitoring is required. The standard is above what would be expected in the discharge.
Barium	98,000 µg/L / PBC	19.7 µg/	12	55.2 µg/	No RP	No monitoring is required
Cadmium (2)	2.56 µg/L / A&Ww chronic 50 ug/L / 30-day average 100 ug/L / Daily maximum / Technology Based Effluent Limitations 40 CFR 440.103(a)	< 2 µg/L	12	N/A	RP Exists	Monitoring required and a WQBEL is set in the permit

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Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Chromium (Total)	1,000 µg/L / AgL	< 6 µg/L	12	N/A	No RP	No RP based on BPJ. Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L / A&Ww chronic	No data	0	N/A	RP Indeterminate (Based on total chromium data)	Monitoring required for discharge characterization
Copper (2)	10.5 µg/L / A&Ww chronic 150 µg/L / 30-day average 300 µg/L / Daily maximum / Technology Based Effluent Limitations 40 CFR 440.103(a)	5.94 µg/L	12	16.6 µg/L	RP Exists	Monitoring required and a WQBEL remains in the permit.
Cyanide (as free cyanide)	9.7 µg/L / A&Ww chronic	No data	0	N/A	RP Indeterminate (No data)	Monitoring required and an assessment level remains in the permit.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	177 mg/L	6	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on a protective default hardness value of 120 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Hydrogen Sulfide	2 µg/L / A&Ww chronic	No Data	0	N/A	RP Indeterminate (No Data)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.
Iron	1,000 ug/L / A&Ww chronic	100 µg/L	4	470 µg/L	No RP	Monitoring is required for discharge characterization
Lead (2)	3.07 µg/L / A&Ww chronic 300 µg/L / 30-day average 600 µg/L / Daily maximum / Technology Based Effluent Limitations 40 CFR 440.103(a)	7.5 µg/L	12	21 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.

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Parameter	Lowest Standard / Designated Use		Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Mercury	0.01 µg/L / A&Ww chronic 1 µg/L / 30-day average 2 µg/L / Daily maximum / Technology Based Effluent Limitations 40 CFR 440.103(a)		< 0.2 µg/L	12	N/A	RP Exists	Monitoring required and a WQBEL is set in the permit.
Nickel (2)	60.7 µg/L / A&Ww chronic		< 10 µg/L	12	N/A	No RP	Monitoring required for discharge characterization.
Selenium	2 µg/L/ A&Wedw chronic		< 40 µg/L	12	N/A	RP Indeterminate (High LOQ)	Monitoring required and a WQBEL remains in the permit.
Silver (2)	4.4 µg/L/ A&Ww acute		No data	0	N/A	RP Indeterminate (No data)	Monitoring required and an assessment level remains in the permit.
Sulfides	No applicable standard		No data	0	N/A	N/A	Indicator parameter for hydrogen sulfide. Monitoring required. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.
Thallium	7.2 µg/L/ FC		< 1 µg/L	12	N/A	No RP	Monitoring required for discharge characterization.
Zinc (2)	137 µg/L/ A&Ww acute and chronic 1500 µg/L / 30-day average 750 µg/L / Daily maximum / Technology Based Effluent Limitations 40 CFR 440.103(a)		10 µg/L	12	86.7 µg/L	No RP	Monitoring required and a TBEL is set as per 40 CFR 440.103 (a).
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A)(6)	*Pseudo-kirchneriella subcapitata (3)*	No data	0	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		Pimephales promelas	No data	0	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		Ceriodaphnia dubia	No data	0	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.

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Footnotes:

(1) The monitoring frequencies are as specified in the permit.
(2) Hardness-dependent metal - the standard for this parameter is based on a protective default hardness value of 120 mg/L as indicated above.
(3) Formerly known as *Selenastrum capricornutum or Raphidocelis subcapitata.*
(4) Monitoring with ALs or Action Levels always required for these parameters unless RP exists and limits are set.

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VIII. 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, Section E of the draft permit.

IX. 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 subsequent 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, a "24-hour composite" sample has been defined as a flow-proportioned mixture of not less than three discrete samples (aliquots) obtained at equal time intervals over a 24-hour period. The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.

These criteria for composite sampling are included in order to obtain samples that are representative of the discharge given the potential variability in the duration, frequency and magnitude of discharges from this facility.

Discrete (i.e., grab) samples are specified in the permit for parameters that for varying reasons are not amenable to compositing.

Monitoring locations are specified in the permit (Part II.A.1) in order to ensure that representative samples of the influent and 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.3) 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, Section B 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.

Electronic reporting

The US EPA has published a final regulation that requires electronic reporting and sharing of Clean Water Act National Pollutant Discharge Elimination System (NPDES) program information instead of the current paper-based reporting (Federal Register, Vol. 80, No. 204, October 22, 2015). Beginning December 21, 2016 (one year after the effective date of the regulation), the Federal rule required permittees to make electronic submittals of any monitoring reports and forms called for in their permits. ADEQ has created an online portal called myDEQ that allows users to submit their discharge monitoring reports and other applicable reports required in the permit.

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Requirements for retention of monitoring records are detailed in Part II.C.3 of the permit.

X. BIOSOLIDS REQUIREMENTS (Part III in Permit)

Not Applicable.

XI. SPECIAL CONDITIONS (Part IV in Permit)

Stormwater exception

1. If accordance with 40 CFR 440.131(b)(1), if Outfall 001, as a result of precipitation or snowmelt has an overflow or excess discharge of storm water which does not meet limitations of 40 CFR part 440, the source may qualify for an exemption from such limitations with respect to the discharge if the following conditions are met:
    a. The containment pond at the facility must be designed, constructed and maintained to contain the maximum volume of wastewater resulting from a 10-year, 24-hour storm event or treat the maximum flow associated with these volumes. In computing the maximum volume of wastewater which would result from a 10-year, 24-hour precipitation event, the facility must include the volume which would result from all areas contributing runoff to the individual treatment facility i.e, all runoff that is not diverted from the active mining area and runoff which is not diverted from the mill area. The stormwater containment pond at RCML is the CP-105 Pond. RCML has stated the CP-105 Pond is designed, constructed and maintained to contain the volume associated with a 100-year, 24-hour storm event and therefore meets this condition.
    b. Resolution Copper Mining takes all reasonable steps to maintain treatment of the wastewater and minimize the amount of overflow. The reasonable steps include, but are not limited to, the following: contain the maximum volume of mine site stormwater generated by a 100 year, 24 hour storm event in CP-105 Pond; and pump excess stormwater to the MWTP for treatment and discharge to the either the NMIDD or through Outfall 002.
    c. Resolution Copper mining provides notification of such discharges within 30 days to ADEQ at the address listed under Part IV.F.5 of this permit. The notification shall contain a report documenting the reasonable steps RCML made to minimize the amount of overflow.

2. The storm exemption is designed to provide an affirmative defense to an enforcement action, and as such, the permittee has the burden of demonstrating to ADEQ and/or EPA that all of the above conditions have been met. The discharge limits in Table 1a. shall be met if a discharge were to occur through Outfall 001.

Conditional WET Monitoring

The permittee submitted ten WET testing results and corresponding TDS concentrations from the MWTP effluent taken over a 17-month period (from 2013 -2015). These WET results passed all acute and chronic toxicity testing criteria. The TDS concentrations of the passing WET tests ranged from 1500 mg/l to 2140 mg/l. As noted, the TDS of the highest passing WET test was 2140 mg/L. If the TDS concentration is greater than 2140 mg/L during monthly monitoring, the permittee shall perform the WET monitoring as required in Table 3b during that month to determine compliance with the toxicity criteria. The permittee shall follow all the WET testing and follow-up testing procedures as described in Part III of the permit. The results from any conditional WET tests as required by this special condition can be used to satisfy the quarterly monitoring if not already reported.

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Best Management Practices

The permit requires the permittee to update and continue implementation of the Best Management Practices (BMP) Plan (submitted July, 2021 to ADEQ) for RCML – Superior Operations. In addition, Resolution is to submit, on an annual basis (as of the effective date of the permit), a report detailing compliance with the described BMPs and any changes to the BMP Plan.

Ambient Surface Water Monitoring

The regulations under 40 CFR 122.43(a) state that:

"(a) In addition to conditions required in all permits (122.41 and 122.42), the Director shall establish conditions, as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of CWA and regulations."

The permit requires the permittee to continue monitoring of the receiving water quality and reporting based on the existing requirements. Resolution shall take discrete samples at the specified upstream and downstream ambient monitoring points, QCAMP1 and QCAMP2, located on Queen Creek shortly after flow begins at QCAMP1 downstream through QCAMP2. The parameters to be included in ambient monitoring are arsenic, cadmium, copper, iron, lead, manganese, mercury, selenium, zinc, hardness, field pH, field temperature, field specific conductivity, flow rate, alkalinity, sulfate, and TDS. All ambient metals monitoring results shall be reported as dissolved and total recoverable fractions. All field sampling activities are to be recorded in a hardbound field notebook by the permittee. All ambient monitoring data and lab Quality Control (QC) samples shall be submitted in the annual report.

Receiving Water Bioassessment

The permit requires the permittee to continue an annual bioassessment of Queen Creek. The purpose of the bioassessment is to assess the effectiveness of stormwater and the mine dewatering treatment system pollution control measures implemented by the RCML - Superior Mine. Bioassessments are to be continued at a fixed annual date in April during each year of the permit. Bioassessments are to occur concurrently with required ambient monitoring at the upstream and downstream monitoring points designated in the ambient monitoring plan. The bioassessment for each year shall be submitted as an attachment to the annual report submitted to ADEQ. Bioassessment requirements in this permit may be reopened and modified to reflect changes in Arizona's SWQS regarding biological monitoring of receiving waters or formal adoption by rule of state bioassessment methodologies.

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)].

XII. ANTIDEGRADATION

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the RCML – Superior Mine is to an intermittent water where Tier 1 antidegradation protection applies. Discharge limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. 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.

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XIII. STANDARD CONDITIONS

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

XIV. 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.

XV. ADDITIONAL INFORMATION

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

Arizona Department of Environmental Quality
Water Quality Division – Surface Water Permits Unit
Attn: Swathi Kasanneni
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Swathi Kasanneni at (602) 771 – 4577 or by e-mail at kasanneni.swathi@azdeq.gov.

XVI. INFORMATION SOURCES

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

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1. AZPDES Permit Application Form(s) Form 1, Form 2C and Form 2F, received July 23, 2021, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.

2. Supplemental information to the application received by ADEQ on November 12, 2021, November 29, 2021, and December 1, 2021.

3. ADEQ files on Resolution Copper Mining, LLC.

4. ADEQ Geographic Information System (GIS) Web site

5. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters,* adopted December 31, 2016.

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

7. 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 133. *Secondary Treatment Regulation.*
   Part 503. *Standards for the Use or Disposal of Sewage Sludge*.

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

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

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

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

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Appendix A – New Source Analysis

ADEQ concludes that the Resolution Copper Mine, LLC is an existing source and thus not subject to the New Source Performance Standards. This conclusion is consistent with ADEQ's 2017 permit decision and associate 2019 Memorandum "New Source Analysis – Resolution Copper Mine – AZ0020389" and, with no changes or modifications to the mine subsequent to that analysis, the conclusion remains the same.

Background of Clean Water Act Performance Standards

EPA has promulgated regulations under the Clean Water Act (CWA) that establish effluent limitations guidelines for existing sources and standards of performance for new sources. EPA has codified these regulations in Title 40 of the Code of Federal Regulations (CFR) Subchapter N, which are incorporated by reference in Arizona Administrative Code (A.A.C) R18-9-A905(A)(9). EPA published effluent guidelines for 56 major industrial categories (over 450 subcategories) since the passage of the 1972 CWA. Those regulations limit the discharge of pollutants to surface waters from point source dischargers. The CWA and EPA regulations define when a source is a new source.

The classification of a facility as a new or existing source is important because under the CWA existing sources are subject to best available technology (BAT) and best conventional technology (BCT) requirements, while new sources are subject to the generally more stringent new source performance standards (NSPS).

To perform a new source analysis it is first important to understand definitions applicable to sources, which are defined below.

Source - 40 CFR 122.29(a)(2): means any building, structure, facility, or installation from which there is or may be a discharge of pollutants."

New Source - 40 CFR 122.2 and 122.29 (a)(1): means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:
(a) After promulgation of standards of performance under section 306 of CWA[1] which are applicable to such source, or
(b) After proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

Existing Source – 40 CFR 122.29(a)(3): means any source which is not a new source or a new discharger.

New Discharger – 40 CFR 122.2: New discharger means any building, structure, facility, or installation:
(a) From which there is or may be a "discharge of pollutants;"
(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;
(c) Which is not a "new source;" and
(d) Which has never received a finally effective NDPES permit for discharges at that "site."

Ore Mining and Dressing Point Source Category

The applicable effluent limitation guidelines for a copper mine are listed in the Ore Mining and Dressing major industrial category (40 CFR 440), with the sub category defined in Subpart J - Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory.

1 The standards of performance promulgated under Section 306 of the Clean Water Act are found in 40 CFR Subchapter N.

The existing source effluent limitation guidelines for copper mines were originally promulgated in 1978 under the Base and Precious Metals Subcategory *(see 43 Federal Register 29771).* In 1982, the EPA reorganized and renamed some subcategories and added BAT and NSPS requirements *(see 47 Federal Register 54602).* There have been no subsequent promulgation of NSPS specific to copper mines in subpart J, thus December 1982 constitutes the new construction threshold date as it relates to the new source analysis for copper mines. In other words, if a source with a performance standard was constructed after December 1982, the applicable effluent limitation guidelines would be the NSPS. On the contrary, a source with a performance standard constructed before December 1982, the applicable effluent limitation guidelines would be those for existing sources.

Copper Mine Sources

The sources that have applicable performance standards (meaning the only sources that could be considered new sources) for a copper mine discharge are included in the applicability section of 40 CFR 440.100, detailed below:

(a) The provisions of this subpart J are ***applicable to discharges from*** *-*
(1) ***Mines*** *that produce copper, lead, zinc, gold, silver, or molybdenum bearing ores, or any combination of these ores from open-pit or underground operations other than placer deposits;*
(2) ***Mills*** *that use the froth-flotation process alone or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores, or any combination of these ores;*
(3) ***Mines and mills*** *that use dump, heap, in-situ leach, or vat-leach processes to extract copper from ores or ore waste materials.* (Emphasis added.)

The applicability rules detail what sources ADEQ needs to consider when performing a new source analysis at a copper mine. To do so, ADEQ must first determine what a "mine" is. A mine is defined in 40 CFR 440.132(g) as an *"active mining* ***area****, including* ***all land and property*** *placed under, or above the surface of such land, used in or resulting from the work of* ***extracting metal ore or minerals*** *from their natural deposits by* ***any means or method****, including secondary recovery of metal ore from refuse or other storage piles, wastes, or rock dumps and mill tailings derived from the mining, cleaning, or concentration of metal ores."* (Emphasis added.)

It is clear in the definition that a "mine" is ultimately defined as an **area** in the regulations. This is an important distinction when performing a new source analysis at a mine site.

New Source Analysis – 40 CFR 122.2

A new source analysis starts with consideration of 40 CFR 122.2. ADEQ determines the applicable sources at the Resolution Mine for which a new source analysis needs to be conducted to be either a mine or a mill. A breakdown of the new source analysis as defined by 40 CFR 122.2 can be found in the table below. ADEQ has also attached a flow chart which graphically represents the new source analysis process.

Applicable Definition Subpart	Analysis
40 CFR 122.2 - New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced: (a) After promulgation of standards of performance under section 306 of CWA which are applicable to such source.	The analysis of this definition starts at the end. What is the applicable source containing a performance standard as prescribed in section 306 of the CWA? Section 306 of the CWA contains the effluent limitation guidelines for the major industrial categories. The Resolution Mine falls under Subpart J of the Ore Mining and Dressing point source category. The applicable source with effluent limitation guidelines regulated under this

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Applicable Definition Subpart	Analysis
	subcategory are mines and mills (there is currently no mill at the Resolution mine.) Therefore, the applicable construction date used in this analysis is when the mine originally began operations, which in this case is in the early 1900's with the onset of the Magma Mine. The Magma Mine has always been an underground mine where shafts are drilled to extract ore from new ore bodies. When Resolution acquired the Magma Mine, shaft 10 was deepened and other features were constructed after 1982. December 1982 is the promulgation date of the new source performance standards applicable to the mine. However, each new shaft or new feature e.g. new cooling system or expanded wash bay, constructed in the mining area or site are not new mines. Therefore, ADEQ concludes no new sources (i.e., no new mines) have been added to this permit.[2]

40 CFR 122.2 Conclusion
Because there are no source performance standards for features of a mine other than those applicable to a whole mine, the features added to the Resolution Mine are not new sources as defined in 40 CFR 122.2.

New Source Analysis – 40 CFR 122.29 (b)
ADEQ then analyzed whether the new features of the Resolution Mine qualified as new sources under 40 CFR 122.29(b). In doing so, ADEQ relied upon several EPA documents clarifying how this analysis is to be performed. In a final rule promulgated in September, 1984 *(see 48 Federal Register 38043)* the EPA established a "substantially independent" test to ascertain whether construction at the site of an existing source, which does not involve total replacement of process or production equipment, would result in a new source. EPA clarified this test by adding factors which should be considered in making the determination of whether construction at an existing facility results in processes that are substantially independent and therefore qualify as a new source. They are: (1) The extent to which the new facility is integrated with the existing plant; and (2) the extent to which the new facility is engaged in the same general type of activity as the existing source.

The following analysis in the table below constitutes a new source analysis as defined in 40 CFR 122.29(b).

Applicable Definition Subpart	Analysis
122.29(b) Criteria for new source determination. (1) Except as otherwise provided in an applicable new source performance standard, a source is a "new source" if it meets the definition of "new source" in § 122.2, and	ADEQ considers this definition as a threshold definition. If the source is not a "new source" as defined in 122.2 then that source is not a new source under 122.29(b)(1) and no more analysis needs to be conducted. As discussed previously, ADEQ does not consider this a new source under 40 CFR 122.2. However, for the purpose of this analysis, ADEQ has continued its new source analysis of the

2 Had the effluent limitation guidelines clearly identified a mine shaft as a source required to meet a source performance standard, shaft 10 would have been considered a new source because it was constructed after 1982. That is not the case, and shaft 10 and other new features of the mine are not new sources as defined in 122.2. Moreover, had Resolution constructed a new mill on the site, that mill would be considered a new source and the 40 CFR 440.100 effluent limitation guidelines would prohibit any discharge from that mill.

Applicable Definition Subpart	Analysis
	new features of the Resolution Mine to ensure that there is no confusion regarding the status of these features.
(i) It is constructed at a site at which no other source is located; or	The existing source at this site is the mine. Moreover, the term "site" is also defined in 40 CFR 122.2 and means *"the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity."* It is clear that the term "site" encompasses not only the pre-existing mine, but also any adjacent land upon or under which mining activity will take place. Because the mine is the existing source at the site, it is not constructed at a site where no other source is located and therefore not a new source.
(ii)It totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or	The existing source at this site is the mine. A mine is an active mining area where ore is extracted by using any means or methods (40 CFR 440-132(a)). Mining is an extraction process. Resolution Mine is an underground mine where the extraction of ore involves drilling shafts to access, extract and bring ore to the surface for processing and concentrating. This process has not changed from the original process used when the site was called the Magma Mine. Therefore, the process of extracting ore is not being "totally replaced." The permitted discharge at this site with an effluent limitation guideline is mine drainage. Mine drainage is a defined term which means, *"any water drained, pumped or siphoned from a mine"* 40 CFR 440.141. Dewatering operations occur at underground mines in order to get access to the ore. At the Resolution Mine, the production equipment dewatering the mine consists of pumps, pipes and conveyances. The mine drainage is conveyed from shaft 10 through the Never Sweat Tunnel. The Never Sweat Tunnel was constructed at the site in the early 1970's with the purpose of connecting the east plant to the west plant. The Never Sweat Tunnel has been used to convey mine drainage since it was built in the 1970's, and the new features will still utilize the tunnel to convey mine drainage. After the mine drainage leaves the Never Sweat Tunnel, it is treated and either sent to Queen Creek or to the New Magma Irrigation District for irrigation water. Resolution has not reported any discharges to Queen Creek because all mine drainage has been sent to the irrigation district. Resolution has increased mine drainage pumping capacity with the addition and deepening of shaft 10. However, in the ore mining and dressing subcategory, there are no source performance standards specific to pumps, tunnels or shafts. Therefore, there is no production equipment to "totally replace" in this definition subpart.

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Applicable Definition Subpart	Analysis
(iii) Its processes are substantially independent of an existing source at the same site. In determining whether these processes are substantially independent, the Director shall consider such factors as the extent to which the new facility is integrated with the existing plant; and the extent to which the new facility is engaged in the same general type of activity as the existing source.	The existing source at this site is the mine. The processes employed by the mine are those of extracting ore from ore bodies. The new features, such as the development of shaft 10, the cooling tower and the wash bays, are all features included within the same site or mine area. These features are fully integrated into the existing site, with mine drainage being conveyed through the Never Sweat Tunnel from the east plant to the west plant. From the west plant the drainage is treated with the outfall to Queen Creek. The new features added to the mine are supporting the same process that has always existed at the site, which is extracting ore by any means or methods. Therefore, there are no processes that are substantially independent of the existing process to extract ore.
(2) A source meeting the requirements of paragraphs (b)(1) (i), (ii), or (iii) of this section is a new source only if a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger. See § 122.2.	The source in question (the mine) does not meet the requirements of (b)(1)(i), (ii), or (iii) of this section. If a source does not have an applicable performance standard then it can't be considered a new source. See 40 CFR 122.29(b)(2): *"[A] source…is a new source only if a new source performance standard is independently applicable to it."* The new source performance standards applicable to the Ore Mining and Dressing Category were promulgated in 1982. The applicable source regulated at this site is the mine, which existed as the Magma Mine prior to 1982. The source is not a new discharger because it is a site that has already received an effective NPDES permit.
(3) Construction on a site at which an existing source is located results in a modification subject to § 122.62 rather than a new source (or a new discharger) if the construction does not create a new building, structure, facility, or installation meeting the criteria of paragraph (b)(1) (ii) or (iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.	The construction at this site does not create a new building, structure, facility, or installation meeting the criteria of paragraph (b)(1) (ii) or (iii) of this section because there are no source performance standards independently applicable to the features of the mine. Consistent with this subpart and with 40 CFR 122.41(a): "Duty to Reapply", ADEQ received a renewal permit application where ADEQ updated the permit and factsheet to incorporate updated site information submitted in Resolution Copper's renewal application. Therefore, ADEQ has considered this permit modified

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	to reflect the most current site conditions that have either altered, replaced, or added to the existing process.
(4) Construction of a new source as defined under § 122.2 has commenced if the owner or operator has: (i) Begun, or caused to begin as part of a continuous on-site construction program: (A) Any placement, assembly, or installation of facilities or equipment; or (B) Significant site preparation work including clearing, excavation or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or (ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation with a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility engineering, and design studies do not constitute a contractual obligation under the paragraph.	As described in the above analysis, the construction date applicable to the promulgation of the new source performance standard is December, 1982. The source being permitted is the existing mine. Therefore, based on this definition of construction, the mine commenced construction prior to the promulgation of the NSPS.

40 CFR 122.29(b) Conclusion

A mine is defined as an area, which includes all land and property where the work of extracting ore is done by any means or method. A mine is constantly expanding to extract new ore. ADEQ considers features that have been recently constructed at the Resolution Mine, such as shaft 10, a cooling tower blowdown, or vehicle wash bay, as new features added to the mine area that are both fully integrated with existing process and fully engaged in the same general type of activity. They are also new features that do not have independent performance standards applicable to them.

In summary, the new features added to the Resolution Copper Mine do not quality as new sources under the CWA because they are constructed at a site where existing sources are located, they do not totally replace the process or production equipment at the site, nor are they substantially independent of an existing source at the site.

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