



# DRAFT PERMIT

www.azdeq.gov

ADEQ Inventory No. 101703  
LTF No. 62720

Permit No. AZ0020389  
Place ID No. 7820

## AUTHORIZATION TO DISCHARGE UNDER THE ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Article 3.1; the Federal Water Pollution Control Act, (33 USC §1251 et. seq., as amended), and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 9 and 10, and amendments thereto,

Resolution Copper Mining, LLC  
Superior Operations  
P.O. Box 1944  
Superior, AZ 85173-1944

is authorized to discharge mine site stormwater runoff from Outfall 001 and treated mine water, industrial water and seepage pumping from Outfall 002 from the Superior Operations in Pinal County, Arizona to an unnamed wash, tributary to Queen Creek in the Middle Gila River Basin at:

Outfall No.	Latitude	Longitude	Legal
001	33° 17' 02" N	111° 07' 06" W	Township 2 S, Range 12 E, Section 4
002	33° 17' 02" N	111° 07' 06" W	Township 2 S, Range 12 E, Section 4

in accordance with discharge limitations, monitoring requirements and other conditions set forth herein, and in the attached "Standard AZPDES Permit Conditions."

Annual Registration Fee [A.R.S. 49-255.01 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. For the purposes of the annual fees, this permit is a Major permit. If the facility is not yet constructed or is incapable of discharge at this time, the permittee may be eligible for reduced fees under rule. Send all correspondence requesting reduced fees to the Water Quality Division of ADEQ. Please reference the permit number, LTF number and why reduced fees are requested under rule.

This permit shall become effective on \_\_\_\_\_, 2016.

This permit and the authorization to discharge shall expire at midnight, \_\_\_\_\_, 2021.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
Trevor Baggiore, Director  
Water Quality Division  
Arizona Department of Environmental Quality

**TABLE OF CONTENTS**

**EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS..... 4**

- Discharge Limitations and Monitoring Requirements..... 4
- Trace Substance Monitoring Requirements ..... 6
- Trace Substance Monitoring Requirements ..... 6
- WET Testing ..... 7
- Narrative Standards ..... 8
- Sampling Location(s) ..... 9

**MONITORING AND REPORTING ..... 9**

- Sample Collection and Analysis ..... 9
- QA Manual ..... 9
- Use of Approved Methods ..... 10
- LOQs ..... 11
- Reporting of Monitoring Results ..... 11
- Twenty-four Hour Reporting of Noncompliance ..... 13
- Monitoring Records ..... 14

**WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS ..... 14**

- General Conditions ..... 14
- Acute Toxicity ..... 15
- Chronic Toxicity ..... 15
- Quality Assurance: ..... 16
- Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE) Processes ..... 17
- WET Reporting ..... 18

**SPECIAL CONDITIONS ..... 18**

- Best Management Practices ..... 19
- Ambient Monitoring Plan ..... 22
- Receiving Water Bioassessment ..... 24
- Annual Report Submittal ..... 25
- Reopener** ..... 26

**APPENDIX A ..... 27**

- PART A: ACRONYMS ..... 27
- PART B: DEFINITIONS ..... 27

**APPENDIX B ..... 30**

- AZPDES Discharge Flow Record ..... 30

**APPENDIX C ..... ATTACHED**

- Location Map and Process Flow Diagram

APPENDIX D .....ATTACHED

Standard Conditions

DRAFT

**PART I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

**A. Discharge Limitations and Monitoring Requirements**

The permittee shall limit and monitor discharges from Outfall 001 as specified in Table 1.a, which follows. Discharges resulting from less than a 100-year, 24-hour storm event are prohibited.

**TABLE 1.a: Discharge Limitations and Monitoring Requirements for Outfall 001**

Parameter	Maximum Allowable Discharge Limitations (6)		Monitoring Requirement (1)	
	Concentration Limits (µg/L)			
	Monthly Average	Daily Maximum	Monitoring Frequency (5)	Sample Type
Discharge Flow (MGD) (2)	Report	Report	Continuous	Metered
Arsenic	80	120	1x/day	Discrete
Cadmium (3)	2.2	4.4	1x/day	Discrete
Copper (3)	8.5	17	1x/day	Discrete
Iron	820	1640	1x/day	Discrete
Lead (3)	2.7	5.4	1x/day	Discrete
Mercury	0.01	0.02	1x/day	Discrete
Nickel (3)	52.5	105	1x/day	Discrete
Hardness(CaCO <sub>3</sub> ) Discharge	Report (mg/L)	Report (mg/L)	1x/day	Discrete
Hardness(CaCO <sub>3</sub> ) Receiving Water	Report (mg/L)	Report (mg/L)	1x/day	Discrete
pH (4)	Not less than 6.5 standard units nor greater than 9.0 standard units.		1x/day	Discrete

**Footnotes:**

- (1) Testing shall coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3a of the permit. See Part III of the permit.
- (2) Monitoring and reporting required. No limit set at this time. In addition to the average and maximum flows reported on the Discharge Monitoring forms, daily discharge flow shall be recorded on the **Discharge Flow Record** provided in Appendix B. See Part II.B for reporting requirements.
- (3) Limits listed are based on the average receiving water hardness of 128 mg/L as CaCO<sub>3</sub>. The receiving water shall be tested for hardness at the same time that these metal samples are taken. If no receiving water is present at the time of sampling, the discharge shall be tested for hardness instead. Please see the hardness definition in Appendix A, Part B. Note: When reporting the hardness on the Discharge Monitoring report, enter Code "9" (Conditional Monitoring) for either the discharge or receiving water hardness that was not tested.
- (4) pH shall be measured at the time of sampling and does not require use of a certified laboratory. Measurements shall be obtained in accordance with the applicable method and shall meet all method quality assurance/quality control requirements to be considered valid data.
- (5) Monitoring frequency is set at 1x/day per stormwater discharge event.
- (6) All metals limits are for total recoverable metals.

The permittee shall limit and monitor treated mine water, industrial water and seepage pumping from Outfall 002 as specified in Table 1.b which follows.

**TABLE 1.b: Discharge Limitations and Monitoring Requirements for Outfall 002**

Parameter	Maximum Allowable Discharge Limitations (6)		Monitoring Requirement (1)	
	Concentration Limits (µg/L)			
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type (5)
Discharge Flow (MGD) (2)	Report	Report	Continuous	Metered
Cadmium (3)	50	100	1x/month	24-hr Composite
Copper (3)	8.5	17	1x/month	24-hr Composite
Iron	820	1640	1x/month	24-hr Composite
Lead (3)	2.7	5.4	1x/month	24-hr Composite
Mercury	1	2	1x/month	24-hr Composite
Selenium	2	3	1x/month	24-hr Composite
Zinc (3)	72.0	144	1x/month	24-hr Composite
Hardness(CaCO <sub>3</sub> ) Discharge	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Hardness(CaCO <sub>3</sub> ) Receiving Water	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Total Suspended Solids (TSS)	20 mg/L	30 mg/L	1x/month	24-hr Composite
pH (4)	Not less than 6.5 standard units nor greater than 9.0 standard units.		1x/month	24-hr Composite

**Footnotes:**

- (1) Testing shall coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3b of the permit. See Part III of the permit.
- (2) Monitoring and reporting required. No limit set at this time. In addition to the average and maximum flows reported on the Discharge Monitoring forms, daily discharge flow shall be recorded on the **Discharge Flow Record** provided in Appendix B. See Part II.B for reporting requirements.
- (3) Limits listed are based on the average receiving water hardness of 128 mg/L as CaCO<sub>3</sub>. The receiving water shall be tested for hardness at the same time that these metal samples are taken. If no receiving water is present at the time of sampling, the discharge shall be tested for hardness instead. Please see the hardness definition in Appendix A, Part B. Note: When reporting the hardness on the Discharge Monitoring report, enter Code "9" (Conditional Monitoring) for either the discharge or receiving water hardness that was not tested.
- (4) pH shall be measured at the time of sampling and does not require use of a certified laboratory. Measurements shall be obtained in accordance with the applicable method and shall meet all method quality assurance/quality control requirements to be considered valid data.
- (5) 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 during a 24-hour period. The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.
- (6) All metals limits are for total recoverable metals.

**B. Trace Substance Monitoring**

The permittee shall monitor discharges from Outfalls 001 and 002 as specified in Table 2.a and 2.b, respectively. Monitoring results above the Assessment Levels (ALs) listed below do not constitute

a permit violation, but may trigger evaluation of Reasonable Potential (RP) by ADEQ. The permittee shall use an approved analytical method with a Limit of Quantitation (LOQ) lower than the AL values as described in Part II.A.4.

**TABLE 2.a: Trace Substance Monitoring Requirements for Outfall 001**

Parameter	Assessment Levels (1)(4)		Monitoring Requirements (2)	
	Concentration (µg/L)			
	Monthly Average	Daily Maximum	Monitoring Frequency (6)	Sample Type
Antimony	25	49	1x/day	Discrete
Beryllium	4.3	8.7	1x/day	Discrete
Chromium, total (5)	Report	Report	1x/day	Discrete
Chromium VI (5)	7.9	16	1x/day	Discrete
Cyanide	7.9	16	1x/day	Discrete
Hydrogen Sulfide (7)	2	3	1x/day	Discrete
Selenium	2	3	1x/day	Discrete
Silver (3)	2.5	4.9	1x/day	Discrete
Sulfides (7)	Report	Report	1x/day	Discrete
Thallium	7.2	11	1x/day	Discrete
Zinc (3)	72	144	1x/day	Discrete
Hardness(CaCO <sub>3</sub> ) Discharge (4)	Report (mg/L)	Report (mg/L)	1x/day	Discrete
Hardness(CaCO <sub>3</sub> ) Receiving Water (4)	Report (mg/L)	Report (mg/L)	1x/day	Discrete

**Footnotes:**

- (1) Concentration values are calculated based on Arizona Water Quality Standards. Monitoring and reporting required.
- (2) At a minimum, one sample shall coincide with one of the WET samples taken each discharge. See Part III of the permit.
- (3) Assessment Levels listed are based on the average receiving water hardness of 128 mg/L as CaCO<sub>3</sub>. The receiving water shall be tested for hardness at the same time that these metal samples are taken. If no receiving water is present at the time of sampling, the discharge shall be tested for hardness instead. Please see the hardness definition in Appendix A, Part B. Note: When reporting the hardness on the Discharge Monitoring report, enter Code "9" (Conditional Monitoring) for either the discharge or receiving water hardness that was not tested.
- (4) All metals Assessment Levels are for total recoverable metals, except for Chromium VI, for which the assessment levels listed are dissolved.
- (5) If total chromium exceeds 8 µg/L, the permittee shall conduct sampling for chromium VI for the remainder of the permit. Otherwise, monitoring for chromium VI is not required.
- (6) Monitoring frequency is set at 1x/day per stormwater discharge event.
- (7) With a detection limit no higher than 100 µg/L, any detection of sulfides shall trigger the required monitoring for hydrogen sulfide for the remainder of the permit term. Monitoring for hydrogen sulfide is only required if sulfide is detected.

**TABLE 2.b: Trace Substance Monitoring Requirements for Outfall 002**

Parameter	Assessment Levels (1) (4)		Monitoring Requirements (2)	
	Concentration (µg/L)			
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type
Chromium, total	Report (5)	Report (5)	1x/month	24-hr Composite
Chromium VI (5)	7.9	16	1x/month	24-hr Composite
Cyanide	7.9	16	1x/month	24-hr Composite
Hydrogen Sulfide (6)	2	3	1x/month	24-hr Composite

Silver (3)	2.5	4.9	1x/month	24-hr Composite
Sulfides (6)	Report	Report	1x/month	24-hr Composite
Hardness(CaCO <sub>3</sub> ) Discharge	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Hardness(CaCO <sub>3</sub> ) Receiving Water	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Temperature	Report (°Celsius)	Report (°Celsius)	1x/month	Discrete
Total Dissolved Solids (TDS)	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite

**Footnotes:**

- (1) Concentration values are calculated based on Arizona Water Quality Standards. Monitoring and reporting required.
- (2) At a minimum, one sample shall coincide with one of the WET samples taken each discharge. See Part III of the permit.
- (3) Assessment Levels listed are based on the average receiving water hardness of 128 mg/L as CaCO<sub>3</sub>. The receiving water shall be tested for hardness at the same time that these metal samples are taken. If no receiving water is present at the time of sampling, the discharge shall be tested for hardness instead. Please see the hardness definition in Appendix A, Part B. Note: When reporting the hardness on the Discharge Monitoring report, enter Code "9" (Conditional Monitoring) for either the discharge or receiving water hardness that was not tested.
- (4) All metals Assessment Levels are for total recoverable metals, except for Chromium VI, for which the assessment levels listed are dissolved.
- (5) If total chromium exceeds 8 ug/L, the permittee shall conduct sampling for chromium VI for the remainder of the permit. Otherwise, monitoring for chromium VI is not required.
- (6) With a detection limit no higher than 100 µg/L, any detection of sulfides shall trigger monthly monitoring for hydrogen sulfide for the remainder of the permit term. Monitoring for hydrogen sulfide is only required if sulfide is detected.

**C. Whole Effluent Toxicity Monitoring**

The permittee shall monitor discharges from Outfalls 001 and 002, respectively, for Whole Effluent Toxicity (WET) as specified in Tables 3.a and 3.b which follows. If toxicity is detected above an Action Level specified as follows, the permittee shall perform follow-up testing and, as applicable, follow the TIE/TRE processes in Part III.E of the permit.

**TABLE 3.a: WET Testing For Outfall 001**

Discharge Characteristic (1)	Action Levels		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency (5)	Sample Type
Acute Toxicity (4) <i>Pimephales promelas</i> (Fathead minnow)	N/A	Fail	1x/discharge	Discrete
Acute Toxicity (4) <i>Ceriodaphnia dubia</i> (Water flea)	N/A	Fail	1x/discharge	Discrete
Chronic Toxicity <i>Pseudokirchneriella subcapitata</i> (Green algae) (5)	1.6 TUc	1.0 TUc	1x/discharge	24-hr Composite
Chronic Toxicity <i>Pimephales promelas</i> (Fathead minnow)	1.6 TUc	1.0 TUc	1x/discharge	24-hr Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> (Water flea)	1.6 TUc	1.0 TUc	1x/discharge	24-hr Composite

**Footnotes:**

- (1) See Part III for additional requirements for testing and reporting Whole Effluent Toxicity (WET).
- (2) Since completion of one chronic WET test takes more than 24 hours, the daily maximum is considered to be the highest allowable test result.
- (3) If chronic toxicity is detected above the Action Levels in this table or an acute test fails, the permittee shall perform follow-up testing. See Part III for details.
- (4) The requirement for an acute test applies when duration of discharge doesn't allow for chronic tests to be conducted. See Part III.
- (5) Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*

**TABLE 3.b: WET Testing For Outfall 002**

Discharge Characteristic (1)	Action Levels		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency (6)	Sample Type
Acute Toxicity (4) <i>Pimephales promelas</i> (Fathead minnow)	N/A	Fail	1x/3 months	Discrete
Acute Toxicity (4) <i>Ceriodaphnia dubia</i> (Water flea)	N/A	Fail	1x/3 months	Discrete
Chronic Toxicity <i>Pseudokirchneriella subcapitata</i> (Green algae) (5)	1.6 TUc	1.0 TUc	1x/3 months	24-hr Composite
Chronic Toxicity <i>Pimephales promelas</i> (Fathead minnow)	1.6 TUc	1.0 TUc	1x/3 months	24-hr Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> (Water flea)	1.6 TUc	1.0 TUc	1x/3 months	24-hr Composite

**Footnotes:**

- (1) See Part III for additional requirements for testing and reporting Whole Effluent Toxicity (WET).
- (2) Since completion of one chronic WET test takes more than 24 hours, the daily maximum is considered to be the highest allowable test result.
- (3) If chronic toxicity is detected above the Action Levels in this table or an acute test fails, the permittee shall perform follow-up testing. See Part III for details.
- (4) The requirement for an acute test applies when duration of discharge doesn't allow for chronic tests to be conducted. See Part III.
- (5) Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*
- (6) Additional WET monitoring is required if the TDS of the discharge is greater than 2140 mg/L. See Part IV(B)

**D. The discharge shall be free from pollutants in amounts or combinations that:**

1. Settle to form bottom deposits that inhibit or prohibit the habitation, growth or propagation of aquatic life;
2. Cause objectionable odor in the area in which the surface water is located;
3. Cause off-flavor in aquatic organisms;
4. Are toxic to humans, animals, plants or other organisms;
5. Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth or propagation of other aquatic life or that impair recreational uses;
6. Change the color of the surface water from natural background levels of color.

**E. The discharge shall be free from oil, grease and other pollutants that float as debris, foam, or scum; or that cause a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank or aquatic vegetation.**

**F. The discharge shall not cause an increase in the ambient water temperature of more than 3.0 degrees Celsius.**



- G.** The discharge shall not cause the dissolved oxygen concentration in the receiving water to fall below 6 mg/l, unless the percent saturation of oxygen remains equal to or greater than 90%.
- H.** The discharge shall not cause the receiving water to exceed 80 mg/L for suspended sediment concentration.
- I.** Samples taken for the monitoring requirements specified in Part I shall be collected at the following locations:
1. Outfall 001 - Prior to mixing with receiving waters
  2. Outfall 002 - Downstream from the last treatment process and prior to mixing with the receiving waters.

## **PART II. MONITORING AND REPORTING**

### **A. Sample Collection and Analysis**

1. The permittee is responsible for the quality and accuracy of all data required under this permit.
2. Quality Assurance (QA) Manual

The permittee shall keep a QA Manual on site that describes the sample collection and analyses processes. If the permittee collects samples or conducts sample analyses in house, the permittee shall develop a QA Manual that addresses these activities. If a third party collects and/or analyzes samples on behalf of the permittee, the permittee shall obtain a copy of the applicable QA procedures. The QA Manual shall be available for review by ADEQ upon request. The QA Manual shall be updated as necessary to reflect current conditions, and shall describe the following:

- a. Project Management, including:
  - Purpose of sample collection and sample frequency;
  - When and where samples will be collected;
  - How samples will be collected;
  - Who will collect samples and their qualifications;
  - Laboratory(s) that will perform analyses;
  - Any field tests to be conducted (detail methods and specify equipment, including a description of any needed calibrations); and
  - Pollutants or analytes being measured and for each, the permit-specific limits, Assessment Levels, or thresholds, (e.g. the associated detection limits needed.)
- b. Sample collection procedures including
  - Equipment to be used;
  - Type and number of samples to be collected including QA/QC samples (i.e., background samples, duplicates, and equipment or field blanks);
  - Types, sizes, and number of sample bottles needed;

- Preservatives and holding times for the samples (see methods under 40 CFR 136 or 9 A.A.C. 14, Article 6 or any condition within this permit that specifies a particular test method); and
  - Chain of custody procedures.
- c. Specify approved analytical method(s) to be used and include;
- Limits of Detection (LOD) and Limits of Quantitation (LOQs);
  - Required quality control (QC) results to be reported (e.g., matrix spike recoveries, duplicate relative percent differences, blank contamination, laboratory control sample recoveries, surrogate spike recoveries, etc.) and acceptance criteria; and
  - Corrective actions to be taken by the permittee or the laboratory as a result of problems identified during QC checks.
- d. How the permittee will perform data review; complete DMRs and records used to report results to ADEQ; resolve data quality issues; and identify limitations on the use of the data.
3. Sample collection, preservation and handling shall be performed as described in 40 CFR 136 including the referenced Edition of *Standard Methods for the Examination of Water and Wastewater*, or by procedures referenced in A.R.S Title 9, Chapter 14 of the Arizona Department of Health Services (ADHS) Laboratory Licensure rules. The permittee shall outline the proper procedures in the QA Manual, and samples taken for this permit shall conform with these procedures whether collection and handling is performed directly by the permittee or contracted to a third-party.
4. Analytical requirements
- a. The permittee shall use a laboratory licensed by the ADHS Office of Laboratory Licensure and Certification that has demonstrated proficiency within the last 12 months under R9-14-609, for each parameter to be sampled under this permit. However, this requirement does not apply to parameters which require analysis at the time of sample collection as long as the testing methods used are approved by ADHS or ADEQ in accordance with A.R.S. 36-495.02(A)(3). (These parameters may include flow, dissolved oxygen, pH, temperature, and total residual chlorine.)
  - b. The permittee shall utilize analytical methods specified in this permit. If no test procedure is specified, the permittee shall analyze the pollutant using:
    - i. A test procedure listed in 40 CFR 136 which is also approved under A.A.C. R9-14-610;
    - ii. An alternative test procedure approved by EPA as provided in 40 CFR 136 and which is also approved under A.A.C. R9-14-610;
    - iii. A test procedure listed in 40 CFR 136, with modifications allowed by EPA or approved as a method alteration by ADHS under A.A.C. R9-14-610(C); or
    - iv. If no test procedure for a pollutant is available under (3)(b)(i) through (3)(b)(iii) above, any Method approved under A.A.C. R9-14-610(B) for wastewater may be

used, except the use of field kits is not allowed unless otherwise specified in this permit. If there is no approved wastewater method for a parameter, any other method identified in 9 A.A.C. 14, Article 6 that will achieve appropriate detection and reporting limits may be used for analyses.

- c. For results to be considered valid, all analytical work, including those tests conducted by the permittee at the time of sampling (see Part II.A.4.a), shall meet quality control standards specified in the approved methods.
  - d. The permittee shall use analytical methods with a Limit of Quantitation (LOQ) that is lower than the effluent limitations, Assessment Levels, Action Levels, or other water quality criteria, if any, specified in this permit. If all methods have LOQs higher than the applicable water quality criteria, the Permittee shall use the approved analytical method with the lowest LOQ.
  - e. The permittee shall use a standard calibration curve when applicable to the method, where the lowest standard point is equal to or less than the LOQ.
  - f. If requested, the permittee shall participate in the annual NPDES DMR/QA study and submit the results of this study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit.
5. Mercury Monitoring

The permittee shall use an ADHS-certified low-level mercury analytical method such as EPA method 245.7 or 1631E to achieve a reporting limit at or below the discharge limitations or assessment levels for mercury as specified in this permit. The permittee shall also use a “clean hands/dirty hands” sampling technique such as EPA Method 1669 if necessary to achieve these reporting limits.

6. Metals Analyses

In accordance with 40 CFR 122.45(c), all effluent metals concentrations, with the exception of chromium VI, shall be measured as “total recoverable metals”. Discharge Limits and Assessment Levels in this permit, if any, are for total metals, except for chromium VI for which the levels listed are dissolved.

**B. Reporting of Monitoring Results**

1. The permittee shall report monitoring results on Discharge Monitoring Report (DMR) forms supplied by ADEQ, to the extent that the results may be entered on the forms. The permittee shall submit results of all monitoring required by this permit in a format that will allow direct comparison with the limitations and requirements of this permit. If no discharge occurs during a reporting period, the permittee shall specify “No discharge” on the DMR. The results of all discharge analyses conducted during the monitoring period shall be included in determinations of the monthly average and daily maximums reported on the DMRs if the analyses were by methods specified in Part II.A above, as applicable.

2. DMRs and attachments are to be submitted by the 28th day of the month following the end of a monitoring period. For example, if the monitoring period ends January 31<sup>st</sup>, the permittee shall submit the DMR by February 28<sup>th</sup>. The permittee shall electronically submit all compliance monitoring data and reports using the myDEQ electronic portal provided by ADEQ. The reports required to be electronically submitted include, but are not limited to, the following:

- Discharge Monitoring Reports (DMR)
- Whole Effluent Toxicity (WET) reports
- Original copies of laboratory results
- Ammonia data logs (if applicable)
- AZPDES discharge flow records (if applicable)
- Method detection limit studies (if applicable)
- Bench sheets or similar documentation for field testing parameters (if applicable)

3. If requested to participate, the permittee shall submit the results of the annual NPDES DMR/QA Study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit by December 31<sup>st</sup> of each year. The permittee shall also conduct any proficiency testing required by the NPDES DMR-QA Study for those parameters listed in the study that the permittee analyzes in house or tests in the field at the time of sampling (these parameters may include pH and total residual chlorine). All results of the NPDES DMR-QA Study shall be submitted to by email to address listed below:

Arizona Department of Environmental Quality  
Email: AZPDES@azdeq.gov

Arizona Department of Health Services  
Attn: Office of Laboratory Licensure and  
Certification  
250 N 17th Avenue  
Phoenix, AZ 85007

4. For the purposes of reporting, the permittee shall use the Limit of Quantitation.
5. For parameters with Daily Maximum Limits or Daily Maximum Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report as follows:

For Daily Maximum Limits/Assessment Levels	The Permittee shall Report on the DMR
When the maximum value of any analytical result is greater than or equal to the LOQ	The maximum value of all analytical results
When the maximum value detected is greater than or equal to the laboratory's LOD but less than the LOQ (1)	NODI (Q)
When the maximum value is less than the laboratory's LOD (2)	NODI (B)

**Footnotes:**

- (1) Not Quantifiable  
(2) Below Detection

7. For parameters with Monthly Average Limits or Monthly Average Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report:

For Monthly Average Limits/Assessment Levels		The Permittee shall Report on the DMR
If only one sample is collected during the reporting period (monthly, quarterly, annually, etc.)  (In this case, the sample result is the monthly average.)	When the value detected is greater than or equal to the LOQ	The analytical result
	When the value detected is greater than or equal to the laboratory's LOD, but less than the LOQ	NODI (Q)
	When the value is less than the laboratory's LOD	NODI (B)
If more than one sample is collected during the reporting period	All samples collected in the same calendar month shall be averaged. <ul style="list-style-type: none"> <li>• When all results are greater than or equal to the LOQ, all values are averaged</li> <li>• If some results are less than the LOQ, use the LOD value in the averaging</li> <li>• Use '0' for values less than the LOD</li> </ul>	The highest monthly average which occurred during the reporting period

8. For all field testing, or if the information below is not included on the laboratory reports required by Part II.B.2, the permittee shall attach a bench sheet or similar documentation to each DMR that includes, for all analytical results during the reporting period:
- a. the analytical result,
  - b. the number or title of the approved analytical method, preparation and analytical procedure utilized by the field personnel or laboratory, and the LOD and LOQ for the analytical method for the parameter, and
  - c. any applicable data qualifiers using the most current revision of the Arizona Data Qualifiers (available on line at <http://www.azdhs.gov/lab/license/resources/resources.htm>).

**C. Twenty-four Hour Reporting of Noncompliance**

The permittee shall orally report any noncompliance which may endanger the environment or human health within 24 hours from the time the permittee becomes aware of the event to:

ADEQ 24 hour hotline at (602) 771-2330

The permittee shall also notify the ADEQ Individual Permit Unit in writing within 5 days of the noncompliance event. The permittee shall include in the written notification: a description of the noncompliance and its cause; the period of noncompliance, including dates and times, and, if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

#### D. Monitoring Records

The permittee shall retain records of the following monitoring information:

1. Date, exact location and time of sampling or measurements performed, preservatives used;
2. Individual(s) who performed the sampling or measurements;
3. Date(s) the analyses were performed;
4. Laboratory(s) which performed the analyses;
5. Analytical techniques or methods used;
6. Chain of custody forms;
7. Any comments, case narrative or summary of results produced by the laboratory. These comments should identify and discuss QA/QC analyses performed concurrently during sample analyses and should specify whether analyses met project requirements and 40 CFR 136. If results include information on initial and continuing calibration, surrogate analyses, blanks, duplicates, laboratory control samples, matrix spike and matrix spike duplicate results, sample receipt condition, or holding times and preservation, these records shall also be retained.
8. Summary of data interpretation and any corrective action taken by the permittee.

### PART III. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

#### A. General Conditions

1. The permittee shall conduct acute and/or chronic toxicity tests on 24-hour composite samples of the discharge at the frequencies specified in Part I. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. See Part III.C.1 below for details. If chronic testing is conducted a separate acute test is not required. However, the acute endpoint shall be reported from the chronic test.
2. Final effluent samples shall be taken following all treatment processes, including chlorination and dechlorination, and prior to mixing with the receiving water. The required WET tests shall be performed on unmodified samples of final effluent. **WET tests conducted on samples that are dechlorinated after collection are not acceptable for compliance with this permit.**
3. Chemical testing for all the parameters listed in Parts I.A and B of this permit whose required sample type is a composite shall be performed on a split of one composite sample taken for an acute WET test or a split of at least one of the three composite samples taken for one chronic WET test. For those parameters listed in Parts I.A and B of this permit whose required sample type is discrete, the testing shall be performed on a discrete sample collected concurrently with one sample, discrete or composite, collected for an acute or chronic WET test.

4. Definitions related to toxicity are found in Appendix A.

## **B. Acute Toxicity**

1. If chronic toxicity testing is not required per Part III.C.1, the permittee shall conduct 96-hour acute toxicity tests with renewal at 48 hours on two species; *Ceriodaphnia dubia* and *Pimephales promelas* using 100% effluent and a control. The acute test may be completed as a non-renewal 48-hour acute test when a second sample for renewal at 48 hours cannot be taken due to a cessation of the discharge after an acute test has been initiated.
2. The permittee shall follow the USEPA 5th edition manual, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012) for all acute toxicity testing. The presence of chronic toxicity shall be estimated as specified in the method for each species tested.
3. The acute toxicity action level is any failing test result. The test fails if survival in 100% effluent is less than 90%, and is significantly different from control survival (which shall be 90% or greater), as determined by hypothesis testing. Section 11.3 of the acute manual referenced above shall be followed to determine Pass or Fail. Any result of Fail requires follow-up testing per Part III, Section E.
4. The permittee shall report results as Pass or Fail.

## **C. Chronic Toxicity**

1. The permittee shall conduct short-term chronic toxicity tests on three species: the waterflea, *Ceriodaphnia dubia* (survival and reproduction test); the fathead minnow, *Pimephales promelas* (larval survival and growth test); and the green alga, *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*) (growth test). Since completion of the chronic WET test for *Ceriodaphnia dubia* and *Pimephales promelas* requires a minimum of three samples be taken for renewals, the chronic WET test will not be required during any given monitoring period in which the discharge(s) does not occur over seven consecutive calendar days and is(are) not repeated more frequently than every thirty days, except as specified in Part I.D (chronic WET testing for effluent characterization is required whether discharging or not). The discharge does not have to be continuous to fall under this requirement.
2. The permittee shall follow the USEPA 4th edition manual, "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (EPA/821-R-02-013) for all chronic compliance toxicity testing.
3. The chronic toxicity action levels are any one test result greater than 1.6 TUc or any calculated monthly median value greater than 1.0 TUc. If chronic toxicity is detected above these values, follow-up testing is required per Part III, Section E. A chronic toxicity unit (TUc) shall be calculated as  $TUc = 100/NOEC$ .

4. The chronic WET test shall be conducted using a series of five dilutions and a control. The following dilution series shall be used: 12.5, 25, 50, 75, and 100% effluent.

#### **D. Quality Assurance**

1. Effluent samples shall be maintained between 0 and 6°C from collection until utilized in the toxicity testing procedure. When a composite sample is required, each aliquot making up the composite shall be chilled after collection and throughout the compositing period. The single allowable exception is when a grab sample is delivered to the performing laboratory for test initiation no later than 4 hours following the time of collection.
2. Control and dilution water should be receiving water or lab water as appropriate, as described in the 40 CFR Part 136.3 approved method. If the dilution water used is different from the culture water, a second control, using culture water shall also be used.
3. Reference toxicity tests, (a check of the laboratory and test organisms' performance), shall be conducted at least 1 time in a calendar month for each toxicity test method conducted in the laboratory during that month. Additionally, any time the laboratory changes its source of test organisms, a reference toxicity test shall be conducted before or in conjunction with the first WET test performed using the organisms from the newer source. Reference toxicant testing shall be conducted using the same test conditions as the effluent toxicity tests (ie., same test duration, etc.).
4. If either the reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the 40 CFR Part 136.3 approved WET methods, then the permittee shall re-sample and re-test within 14 days of receipt of the test results. The re-sampling and re-testing requirements include laboratory induced error in performing the test method.
5. The chronic reference toxicant and effluent tests shall meet the upper and lower bounds on test sensitivity as determined by calculating the percent minimum significant difference (PMSD) for each test result. The test sensitivity bound is specified for each test method (see Section 10, Table 6 in EPA/821-R-02-013). There are five possible outcomes based on the PMSD result.
  - a. *Unqualified Pass*- The test's PMSD is within bounds and there is no significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is no toxicity.
  - b. *Unqualified Fail*- The test's PMSD is larger than the lower bound (but not greater than the upper bound) in Table 6 and there is a significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is toxicity.
  - c. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is no significant difference between the means for the control and the effluent. The test is considered invalid. An effluent sample shall be collected and another toxicity test shall be conducted within 14 days of receipt of the test results.



- d. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is a significant difference between the means for the control and the effluent. The test is considered valid. The regulatory authority will conclude that there is toxicity.
- e. *Very Small but Significant Difference*- The relative difference between the means for the control and effluent is smaller than the lower bound in Table 6 and this difference is statistically significant. The test is acceptable and the NOEC should be determined.

**E. Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE) Processes**

1. If acute and/or chronic toxicity is detected above a WET action level or Limit specified in this permit and the source of toxicity is known (for instance, a temporary plant upset), the permittee shall conduct one follow-up test within two weeks of receipt of the sample results that exceeded the action level. The permittee shall use the same test and species as the failed toxicity test. For intermittent discharges, the follow-up test shall be conducted whether discharging or not. If toxicity is detected in the follow-up, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in paragraph 3 below. The permittee shall implement the TRE plan as approved and directed by ADEQ.
2. If acute and/or chronic toxicity is detected above an action level or Limit specified in this permit and the source of toxicity is unknown, the permittee shall begin additional toxicity monitoring within two weeks of receipt of the sample results that exceeded the action level. The permittee shall conduct one WET test approximately every other week until either a test exceeds an action level (or limit) or four tests have been completed. The follow-up tests shall use the same test and species as the failed toxicity test. For intermittent discharges, the first follow-up test shall be conducted whether discharging or not; the subsequent three follow-up tests shall be conducted during the next three discharge events.
  - a. If none of the four tests exceed a WET action level or limit, then the permittee may return to the routine WET testing frequency specified in this permit.
  - b. If a WET action level or limit is exceeded in any of the additional tests, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in subsection 3, below. The permittee shall implement the TRE plan as approved and directed by ADEQ.
3. The permittee shall use the EPA guidance manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, 1999 (EPA/833/B-99/002) in preparing a TRE plan. The TRE plan shall include, at a minimum, the following:
  - a. Further actions to investigate and identify the causes of toxicity, if unknown. The permittee may initiate a TIE as part of the TRE process using the following EPA manuals as guidance: *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, 1992 (EPA/600/6-91/005F); *Methods for Aquatic Toxicity Identification Evaluations: Phase I, Toxicity Characterization Procedures*, 2<sup>nd</sup>

Edition, 1991 (EPA/600/6-91/003); *Methods for Aquatic Toxicity Identification Evaluations: Phase II, Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity*, 1993 (EPA/600/R-92/080); and *Methods for Aquatic Toxicity Identification Evaluations: Phase III, Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, 1993 (EPA/600/R-92/081).

- b. Action the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and
- c. A schedule for implementing these actions.

#### **F. WET Reporting**

1. The permittee shall report chronic toxicity results on DMRs in Chronic Toxicity Units (TUC). The TUC for DMR reporting shall be calculated as  $TUC = 100/NOEC$ .
2. In addition to reporting WET results on DMRs, the permittee shall submit a copy of the full lab report(s) for all WET testing conducted during the monitoring period covered by the DMR. The lab report should report TUC as  $100/NOEC$  **and** as  $100/IC_{25}$ . If the lab report does not contain any of the following items, then these shall also be supplied in a separate attachment to the report: 1) sample collection and test initiation dates, 2) the results of the effluent analyses for all parameters required to be tested concurrently with WET testing as defined in Part I.A and B, Tables 1.a, 1.b, 2.a and 2.b, and Part III.A.3 of this permit, and 3) copies of completed "AZPDES Discharge Flow Records" for the months in the WET monitoring period.
3. WET lab reports and any required additional attachments shall be submitted to ADEQ by the 28th day of the month following the end of the WET monitoring period, or upon request.

### **PART IV. SPECIAL CONDITIONS**

#### **A. STORM WATER EXEMPTION**

1. If Outfall 001 has an overflow as a result of precipitation, a discharge shall be allowed if the following conditions are met:
  - a. 40 CFR 440.131(b)(1) states 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. The stormwater containment pond at RCML is the CP-105 Pond. RCML has stated 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; pump excess stormwater from CP-105 Pond to Tailings Pond # 6 for extra storage capacity; and/or pump excess

stormwater to the Mine Water Treatment Plant for treatment and discharge to the either the New Magma Irrigation and Drainage District or through Outfall 002.

- c. Resolution Copper Mining provides notification of such discharges within 30 days to ADEQ at the address listed under Part III.F.3 of this permit. The notification shall contain a report documenting the reasonable steps Resolution Copper Mining 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.

## **B. CONDITIONAL WET MONITORING**

1. The permittee is required to perform monthly TDS monitoring for Outfall 002 in Table 2b. If the TDS concentration is greater than 2140 mg/L during that monthly monitoring, the permittee shall perform the WET monitoring as required in Table 3b during that month. 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.

The WET results shall be submitted electronically using the myDEQ portal. If multiple WET samples occurred during the monitoring period, the additional WET reports can be submitted as attachments to the DMR for that month.

## **C. BEST MANAGEMENT PRACTICES**

1. The permittee shall maintain and update, when necessary, the existing Best Management Practices Plan (submitted July 9, 2015 to ADEQ) for the Resolution Copper Mining – Superior Operations, to ensure that it fully and accurately addresses all required provisions of this permit.
  - a. The BMP plan shall include the name and location of the facility and a statement of the BMP policy and objective.
  - b. A current list of personnel responsible for implementing the BMP plan, their job descriptions, assigned duties and work phone numbers.
  - c. The most recent emergency response procedures for tailings dam failure.
  - d. Employee training for emergency spill response related to AZPDES facilities or Spill Prevention Control and Countermeasure (SPCC) Plans.
  - e. The BMP plan shall include a detailed site map or maps including
    - i. Facility plants locations
    - ii. Locations of AZPDES permitted discharge outfalls

- iii. Stormwater channel system and diversion channel(s)
- iv. Mine dewatering discharge delivery tunnel
- v. Mine dewatering discharge treatment plant
- vi. Containment impoundments
- vii. Stormwater seepage pumpback systems and stations
- viii. Any newly identified process-related seeps, if applicable

2. Implementation of Best Management Practices:

Records of activities undertaken and observations made shall continue to be maintained in a hardbound field notebook on a monthly basis during months in which measurable rainfall occurs. The notebook shall be available at the site.

Annually, by March 31, the permittee shall review the existing Best Management Practices Plan and update the plan as necessary. Updates to the Best Management Practices Plan shall be submitted in the subsequent annual report

3. Available surge capacity and freeboard for storage/containment ponds located up gradient of Outfall 001:

The permittee shall continue to monitor the available surge capacity and freeboard for storage/containment ponds located upgradient of Outfall 001 after significant rainfall events and document the available freeboard quarterly. Monthly observations shall be recorded in a field notebook. After storm events, the permittee shall take measures as soon as practicable to restore containment pond freeboard necessary to contain the design storm event. Such measures shall be continued by the permittee until adequate freeboard is restored.

4. Assessment of siltation of retention/containment impoundments upgradient of Outfall 001:

The permittee shall continue to assess the siltation of retention/containment impoundments upgradient of Outfall 001 annually and after rainfall events of over 3 inches in 24 hours. The permittee shall take action to remove solids when liquid storage capacity is less than 80 percent of the required design volume.

5. Containment Liner Integrity:

The permittee shall continue to take measures to maintain the integrity of containment liners in facilities located upgradient of Outfall 001.

6. Specific Emergency Plans:

The permittee's Emergency Response Plan shall continue to cover discharges from Outfall 001. Resolution's Emergency Response Plan shall at a minimum address containment and/or treatment, if necessary to prevent violations of surface water quality standards due to an unauthorized discharge of process solutions from the Resolution Copper Mining - Superior facility to Waters of the U.S.

7. Emergency access to vulnerable unauthorized discharge areas:

The permittee shall continue to make areas identified as vulnerable to unauthorized discharges of pollutants to Waters of the U.S. accessible by emergency equipment in the event of a spill. Accesses are to be maintained as necessary to ensure emergency equipment access.

8. Pump Station Best Management Practice:

The permittee's Pump Station BMP shall continue to include a maintenance program for pump stations, spare pumps, pipelines, containment structures and standby electrical generators. This BMP shall also include a records system for pump station testing and equipment inspections. The permittee shall conduct regular site and equipment inspections.

9. Routine Inspection and Maintenance:

The permittee shall continue routine inspection and maintenance procedures after significant storm events for process and stormwater facilities located upgradient of Outfall 001 and within drainages tributary to Waters of the U.S. At a minimum, these procedures shall include:

- a. Structural repair of berms, ditches, dikes, and dams;
- b. Maintenance of ponds, containment structures, pipelines, and pump stations; and
- c. Inspection procedures for storage/containment ponds to assess available freeboard and surge capacity.

10. Resolution Copper Mining - Superior Operations Seep Identification BMP:

The permittee shall continue to identify any process-related seeps located on mine property that would have the potential to discharge to Waters of the U.S. Containment related seeps are defined as meeting the following criteria:

- a. Discharges as defined by the Clean Water Act to Waters of the U.S.
- b. Has an observable and measurable flow of at least one gallon per minute upon discharge to Waters of the U.S.; and
- c. Has continuous flow unrelated to storm events defined as being found to flow continuously 72 hours after a storm event.

The permittee shall take an initial discrete sample of any process-related seep and analyze the sample for the parameters listed in the ambient monitoring program in Part IV.C.1.b. If the seep meets Arizona Surface Water Quality Standards (SWQS), the permittee shall sample the seep every two years.

If water flowing from the seep does not meet Arizona SWQS, the permittee shall report the seep together with information listed in Part IV.C.1.b of this permit and a response plan and compliance schedule.

## 11. BMP Recordkeeping Requirements

The permittee shall retain a copy of the current BMP on site at the facility or locally available for use by regulating authorities at the time of an inspection. A record of BMP revisions, including dates, authorizing personnel, and summaries of major changes to each revision, shall be maintained with the current BMP. A copy of the BMP and record of revisions shall be provided to ADEQ upon request.

The permittee shall maintain all logs, inspection and maintenance reports, and other records required by the BMP or this permit on file at the facility for three years where they shall be available for inspection by ADEQ.

### D. AMBIENT MONITORING PLAN

1. The permittee shall continue monitoring and reporting of the receiving water quality based on the following requirements:

a. Open water, consisting of pools located upgradient and downgradient of the discharge point exist year-round, but open stream flow only occurs during or after wet weather. Therefore, the permittee shall take discrete samples at the listed upstream and downstream ambient monitoring points, once shortly after flow begins in Queen Creek at QCAMP1 through QCAMP2:

i. **Upstream**

QCAMP1 – Mary Drive at the crossing of Queen Creek; sample location established on the south side of Queen Creek and the west side of Mary Drive, approximately 370 feet upstream of the confluence of the unnamed wash and Queen Creek.

Latitude: 33° 17' 02" N  
Longitude: 111° 06' 59" W

ii. **Downstream**

QCAMP2 – North side of Queen Creek approximately 335 feet downstream of the confluence of the unnamed wash and Queen Creek.

Latitude: 33° 17' 00" N  
Longitude: 111° 07' 7.5" W

b. Monitoring Parameters

The following parameters shall be included in ambient monitoring:

Alkalinity Arsenic (T&D) Cadmium (T&D) Copper (T&D) Hardness Iron (T&D) Lead (T&D) Manganese (T&D) Mercury	Selenium (T&D) Sulfate Total dissolved solids (TDS) Zinc (T&D) Field pH Field Temperature Field Specific Electrical Conductivity Flow Rate
--	---

- c. Monitoring and reporting requirements shall be done in accordance with Part II of the permit.
2. Arizona SWQS for the designated uses of Aquatic and Wildlife – warm water(A&Ww), Partial Body Contact, and Agricultural Livestock watering apply to Queen Creek at the point of discharge. For each sampling event, the SWQS for the acute A&Ww use for hardness-dependent metals are to be calculated using ambient hardness and the tables in Appendix A of A.A.C. Title 18, Chapter 11, Article 1. The calculation of acute A&Ww standards are to be submitted with the total and dissolved metals results in the annual report.
3. Ambient Monitoring Reporting
- a. The permittee shall record all field sampling activities in a hardbound field notebook. Entries shall be updated, legible, written in permanent ink, and contain accurate information. Entries shall include the following information in addition to that required by the AZPDES Standard Reporting Conditions:
- i. weather conditions,
  - ii. date and time of sampling,
  - iii. sampling point identification,
  - iv. type of blank collected and method of collection,
  - v. field measurements,
  - vi. condition/color/characteristics of water and sediments in the stream bed and banks,
  - vii. names of sampling personnel.
- b. The permittee shall submit all ambient monitoring data in the annual report.
4. Ambient Monitoring Quality Assurance
- a. The permittee shall submit to their lab on a bi-annual basis a “blind” field duplicate of the downstream monitoring sample. Results shall be included with annual report.
- b. The permittee shall submit to their lab on a bi-annual basis a “blind” field blank. The field blank is to be collected by pouring filtered, distilled water directly into one of the clean sample bottles used for field sampling. Results shall be included with annual report.

- c. The permittee shall submit to their lab for every sampling run a double volume laboratory Quality Control sample. The laboratory QC samples will be labeled “lab QC” on the sample labels and are to be analyzed for all parameters. Results shall be included with annual report.

## **E. RECEIVING WATER BIOASSESSMENT**

The permittee shall conduct an annual bioassessment of Queen Creek (both upstream and downstream). The purpose of the bioassessment is to assess the effectiveness of pollution control measures and the operation of the mine dewatering treatment system as implemented by the permittee. The bioassessment shall be conducted as follows:

1. Bioassessment is to be continued beginning the first wet season following the issuance of this permit;
2. Bioassessment is to occur concurrently with required ambient monitoring;
3. Bioassessment sampling is to occur at the upstream and downstream monitoring points designated in the ambient monitoring plan. The permittee may propose an alternative sampling location to the upstream monitoring point designated in the ambient monitoring plan. This location shall be described in the bioassessment survey plan to be submitted to ADEQ pursuant to Part IV.D.6 of this permit;
4. The permittee may request to forego the bioassessment in the annual survey plan for that year provided annual flow data is included in the submission.
5. The permittee shall use the specific protocols found in the document “Biocriteria Program Quality Assurance Program Plan, (ADEQ, 2005) Revision D” to complete the following for each bioassessment:
  - a. ADEQ Stream Ecosystem Monitoring Field Form which is updated on an annual basis and to be filled out for each sampling event, and
  - b. Macroinvertebrate Sampling and Analysis.
6. The permittee shall submit an annual bioassessment survey plan to ADEQ by January 31<sup>st</sup> each year. The final survey plan will include an update of the following information:
  - a. proposed bioassessment sample dates or justification for foregoing assessment per Part IV.D.4,
  - b. sampling personnel and qualifications,
  - c. name and location of contract laboratory,
  - d. sampling protocols based on the document “Biocriteria Program Quality Assurance Program Plan, (ADEQ, 2005) Revision D”, and



- e. Methods for analyzing sample results shall generally follow the “Procedures for Data Analysis and Calculation of the Warmwater Index of Biological Integrity found in Attachment A of the Biocriteria Program Quality Assurance Program Plan, (ADEQ, 2005) Revision D” recognizing the receiving water is designated an A&Ww.
7. The bioassessment for each year shall be submitted as an attachment to the annual report submitted to ADEQ. A copy of the Bioassessment Report shall be sent to the address specified in Part IV.E.
8. Bioassessments conducted under the bioassessment plan shall be subject to a quality assurance review to be conducted by ADEQ. After collection and taxonomic identification, any new voucher specimens from the permittee’s contract laboratory are to be submitted to the taxonomist for ADEQ. An independent taxonomic verification shall be conducted on the voucher specimens by a laboratory contracted by ADEQ. The quality assurance review shall include a comparison of taxa listed by each laboratory and an estimate of the taxonomic error rate. ADEQ will provide a copy of the quality assurance report to the permittee, and the permittee will include a copy of this report in the subsequent annual report.

#### **F. SUBMITTAL OF ANNUAL REPORT**

The permittee shall submit an annual report to ADEQ by September 30 of each year that includes the following information:

1. Ambient surface water monitoring data collected during each discharge event from the monitoring sites and parameters specified in Part IV.C.1.b. Copies of all laboratory reports and field sampling records, and the QA/QC sampling results shall be included.
2. Seep discharge monitoring results and applicable calculations for the parameters listed in Part IV.C.1.b, if samples were collected from observable and measurable flow identified as process-related seeps defined in Part IV B.10. Copies of all laboratory reports and the QA/QC sampling results shall be included.
3. Annual bioassessment report for Queen Creek, if required, including all information described in Part IV.D.
4. A summary of the BMPP implementation and updates if necessary, and monitoring that covers activities in the stormwater diversion channels, mine water discharge delivery tunnel, and operation/ maintenance of the water treatment plant and containment impoundments.
5. The annual report shall be submitted to the following address or by an alternative mode as specified by ADEQ:

Arizona Department of Environmental Quality  
AZPDES Individual Permits Unit  
1110 W. Washington St.  
Phoenix, AZ 85007

**G. REOPENER**

This permit may be modified per the provisions of A.A.C. R18-9-B906, and R18-9-A905 which incorporates 40 CFR Part 122. This permit may be reopened 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.

DRAFT

## APPENDIX A PART A: ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
AZPDES	Arizona Pollutant Discharge Elimination System
A.R.S.	Arizona Revised Statutes
CFR	Code of Federal Regulations
Director	The Director of ADEQ or any authorized representative thereof
DMR	Discharge Monitoring Report
EPA	The U.S. Environmental Protection Agency
kg/day	kilograms per day
MGD	Million Gallons per Day
mg/L	milligrams per Liter, also equal to parts per million (ppm)
NPDES	National Pollutant Discharge Elimination System
QA	Quality Assurance
TBEL	Technology-based effluent limitation
µg/L	micrograms per Liter, also equal to parts per billion (ppb)
WQBEL	Water quality-based effluent limitation

## APPENDIX A PART B: DEFINITIONS

*ACUTE TOXICITY TEST* is a test used to determine the concentration of effluent or ambient waters that produces an adverse effect (lethality) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). Acute toxicity is measured using statistical procedures (e.g., point estimate techniques or hypothesis testing) and is reported as PASS/FAIL or in TUs, where  $TU_a = 100/LC_{50}$ .

*ACUTE-to-CHRONIC RATIO (ACR)* is the ratio of the acute toxicity of an effluent or a toxicant to its chronic toxicity. It is used as a factor for estimating chronic toxicity on the basis of acute toxicity data, or for estimating acute toxicity on the basis of chronic toxicity data.

*BASE FLOOD* means a flood that has a one percent chance of occurring in any given year (or a flood that is likely to occur once in 100 years).

*CHRONIC TOXICITY TEST* is a test in which sublethal effects (e.g., reduced growth or reproduction) are measured in addition to lethality. Chronic toxicity is measured as  $TU_c = 100/NOEC$  or  $TU_c = 100/E_{cp}$  or  $100/IC_p$ . The  $IC_p$  and  $E_{cp}$  value should be the approximate equivalent of the NOEC calculated by hypothesis testing for each test method.

*COMPOSITE SAMPLE* means a sample that is formed by combining a series of individual, discrete samples of specific volumes at specified intervals. Composite samples characterize the quality of a discharge over a given period of time. Although, composite samples can be time-weighted or flow-weighted, this permit requires the collection of flow-proportional composite samples. This means that samples are collected and combined using aliquots in proportion to flow rather than time. Also see Flow-Proportional Composite.

*DAILY MAXIMUM CONCENTRATION LIMIT* means the maximum allowable discharge of a pollutant in a calendar day as measured on any single discrete sample or composite sample.

*DISCRETE or GRAB SAMPLE* means an individual **sample of at least 100 mL** collected from a single location, or over a period of time not exceeding 15 minutes.

*EFFECT CONCENTRATION POINT (ECP)* is a point estimate of the toxicant (or effluent) concentration that would cause an observable adverse effect (e.g., survival or fertilization) in a given percent of the test organisms, calculated from a continuous model (e.g., USEPA Probit Model).

*FLOW PROPORTIONAL COMPOSITE SAMPLE* means a sample that combines discrete samples collected over time, based on the flow of the discharge being sampled. There are two methods used to collect this type of sample. One collects a constant sample volume at time intervals that vary based on stream flow. The other collects discrete samples that are proportioned into aliquots of varying volumes based on stream flow, at constant time intervals (i.e. flow-weighted composite sample).

*HARDNESS* means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate ( $\text{CaCO}_3$ ) in milligrams per liter.

*HYPOTHESIS TESTING* is a statistical technique (e.g., Dunnetts test) that determines what concentration is statistically different from the control. Endpoints determined from hypothesis testing are NOEC and LOEC. The two hypotheses commonly tested in WET are:

- Null hypothesis ( $H_0$ ): The effluent is not toxic.
- Alternative hypothesis ( $H_a$ ): The effluent is toxic.

*INHIBITION CONCENTRATION (IC)* is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., USEPA Interpolation Method). IC25 is a point estimate of the toxicant concentration that would cause a 25% reduction in a non-lethal biological measurement.

*LC50* is the toxicant (or effluent) concentration that would cause death in 50 percent of the test organisms.

*LIMIT OF QUANTITATION (LOQ)* means the minimum levels, concentrations, or quantities of a target variable such as an analyte that can be reported with a specific degree of confidence. The calibration point shall be at or below the LOQ. The LOQ is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all of the method-specified sample weights, volumes, and processing steps have been followed.

*LIMIT OF DETECTION (LOD)* means an analyte and matrix-specific estimate of the minimum amount of a substance that the analytical process can reliably detect with a 99% confidence level. This may be laboratory dependent and is developed according to R9014-615(C)(7).

*METHOD DETECTION LIMIT (MDL)* - See LOD.

*MIXING ZONE* is an area where an effluent discharge undergoes initial dilution and may be extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.

*MONTHLY OR WEEKLY AVERAGE CONCENTRATION LIMIT*, other than for bacteriological testing, means the highest allowable average calculated as an arithmetic mean of consecutive measurements made during calendar month or week, respectively. The "monthly or weekly average concentration limit" for *E. coli* bacteria means the highest allowable average calculated as the geometric mean of a minimum of four (4) measurements made during a calendar month or week, respectively. The geometric mean is the  $n$ th root of the product of  $n$  numbers. For either method (CFU or MPN), when data are reported as "0" or non-detect then input a "1" into the calculation for the geometric mean.

*NO OBSERVED EFFECT CONCENTRATION (NOEC)* is the highest tested concentration of effluent or toxicant, that causes no observable adverse effect on the test organisms (i.e., the highest concentration of toxicant at which the values for the observed responses are not statistically significant different from the controls).

*POINT ESTIMATE TECHNIQUES* such as Probit, Interpolation Method, Spearman-Karber are used to determine the effluent concentration at which adverse effects (e.g., fertilization, growth or survival) occurred. For example, concentration at which a 25 percent reduction in fertilization occurred.

*REFERENCE TOXICANT TEST* is a toxicity test conducted with the addition of a known toxicant to indicate the sensitivity of the organisms being used and demonstrate a laboratory's ability to obtain consistent results with the test method. Reference toxicant data are part of the routine QA/QC program to evaluate the performance of laboratory personnel

and test organisms.

*RUNOFF* means rainwater, leachate, or other liquid that drains over any part of a land surface and runs off of the land surface.

*SIGNIFICANT DIFFERENCE* is defined as statistically significant difference (e.g., 95% confidence level) in the means of two distributions of sampling results.

*SINGLE CONCENTRATION ACUTE TEST* is a statistical analysis comparing only two sets of replicate observations. In the case of WET, comparing only two test concentrations (e.g., a control and 100% effluent). The purpose of this test is to determine if the 100% effluent concentration differs from the control (i.e., the test passes or fails).

*SUBMIT*, as used in this permit, means post-marked, documented by other mailing receipt, or hand-delivered to ADEQ.

*TEST ACCEPTABILITY CRITERIA (TAC)* are specific criteria for determining whether toxicity tests results are acceptable. The effluent and reference toxicant shall meet specific criteria as defined in the test method.

*TOXIC UNIT (TU)* is a measure of toxicity in an effluent as determined by the acute toxicity units or chronic toxicity units measured. Higher the TUs indicate greater toxicity.

*TOXIC UNIT ACUTE (TU<sub>a</sub>)* is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end of an acute toxicity test (i.e.,  $TU_a = 100/LC50$ ).

*TOXIC UNIT CHRONIC (TU<sub>c</sub>)* is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of a chronic toxicity test (i.e.,  $TU_c = 100/NOEC$ ).

*TOXICITY IDENTIFICATION EVALUATION (TIE)* is a set of procedures used to identify the specific chemical(s) causing effluent toxicity.

*TOXICITY REDUCTION EVALUATION (TRE)* is a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

*TOXICITY TEST* is a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect of a specific chemical or effluent on exposed test organisms.

*TEN(10)-YEAR, 24-HOUR PRECIPITATION EVENT* is the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years as established by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, or equivalent regional or rainfall probability information.

*WHOLE EFFLUENT TOXICITY* is the total toxic effect of an effluent measured directly with a toxicity test.

**APPENDIX B**

AZPDES Discharge Flow Record		
Resolution Copper Mining LLC – Superior Operations AZ0020389		
Discharge to Queen Creek in the Middle Gila River Basin At:		
Outfall No.: 001		
Location: Latitude 33° 17' 15" N / Longitude 111° 06' 54" W		
Month:	Year:	
DATE	Flow Duration <sup>(1)</sup> (Total hours per day)	Flow Rate <sup>(2)</sup> (Total MGD per day)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
Comment:		

footnotes:

(1) Total time of discharge in hours per day. If actual time is not available, use an estimate of flow duration.

(2) Report flow discharged in MGD. If no discharge occurs on any given day, report 'ND' for the flow for that day

Signature of Authorized Representative: \_\_\_\_\_

<b>APPENDIX B</b>		
<b>AZPDES Discharge Flow Record</b>		
<b>Resolution Copper Mining LLC – Superior Operations AZ0020389</b>		
<b>Discharge to Queen Creek in the Middle Gila River Basin At:</b>		
<b>Outfall No.: 002</b>		
<b>Location:</b>		
<b>Latitude 33° 17' 15" N / Longitude 111° 06' 54" W</b>		
<b>Month:</b>	<b>Year:</b>	
<b>DATE</b>	<b>Flow Duration <sup>(1)</sup> (Total hours per day)</b>	<b>Flow Rate<sup>(2)</sup> (Total MGD per day)</b>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
<b>Comment:</b>		

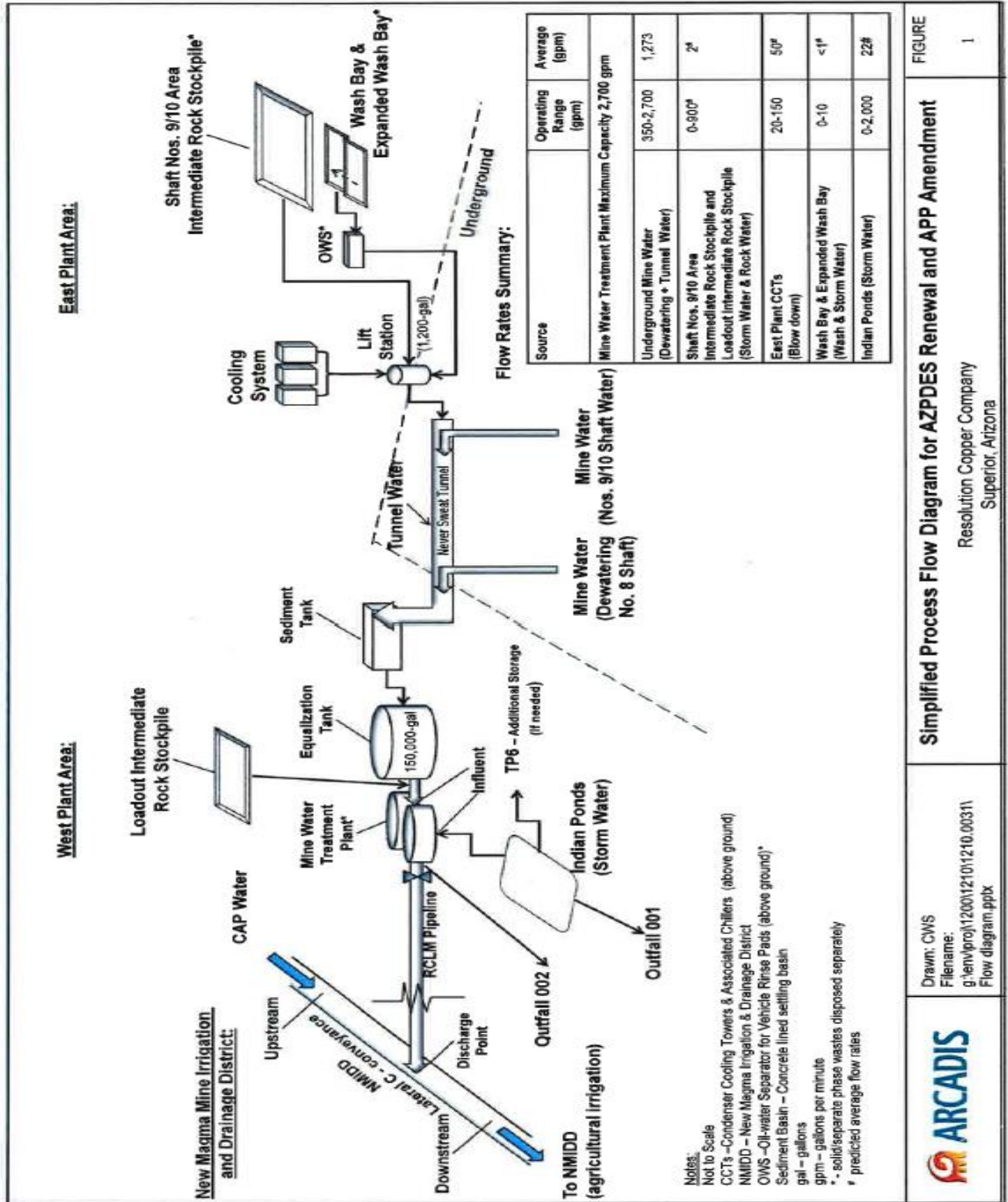
footnotes:

(1) Total time of discharge in hours per day. If actual time is not available, use an estimate of flow duration.

(2) Report flow discharged in MGD. If no discharge occurs on any given day, report 'ND' for the flow for that day

Signature of Authorized Representative: \_\_\_\_\_

APPENDIX C



**Simplified Process Flow Diagram for AZPDES Renewal and APP Amendment**

Drawn: CWS  
 Filename: g:\env\proj\1200012\101210.00311  
 Flow diagram.ppx

Resolution Copper Company  
 Superior, Arizona

FIGURE 1





APPENDIX C

Form 1 Attachment 2: Location Map

