

# Long-Range Water Conservation Plan

As Required By: Arizona Department of Water  
Resources' Mineral Extraction Permit  
No. 59-215979.0000

June 2018

**Prepared by:**

Rosemont Copper Company

**HDBAY**

Arizona Business Unit  
5255 E. Williams Circle, Suite 1065  
Tucson, Arizona 85711-7407  
tel 520-495-3500  
[Hudbayminerals.com](http://Hudbayminerals.com)

## Monitoring and Reporting Schedule

Task Schedule	Purpose/Description/ Timing	Baseline Period		Pre-Mining Period/ Construction Phase		Operations Phase		Closure Phase <sup>1</sup>		
		Q	A	AN	Q	A	Q	A	Q	A
Install at least one ADWR-approved measuring device on each production well	To record volume of groundwater pumped and energy used			X						
Monitor and measure pumping volume from each production well	To calculate annual groundwater withdrawal volume	X			X		X		X	
Reporting to ADWR	Submittal due by March 31 <sup>st</sup>		X			X		X		X
Submit a Long-Range Water Conservation Plan	3 months prior to Operations			X						
Prepare Water Conservation Plan (see Section 4.3)	Within 180 days after the end of the first calendar year in which the facility first uses more than 100 acre-feet of water			X						

A = Annually; AN = As Needed; Q = Quarterly; <sup>1</sup> = Monitoring in closure period to be determined

## Revision Log

<i>Revision Number</i>	<i>Revision Lead</i>	<i>Purpose of Revision</i>	<i>Revision Date</i>
1	Rosemont	Updated plan date from original June 2017 MPO submittal, added revision number.	March 2018
2	Rosemont	Minor format standardization text edits.	June 2018

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# Appendix

Appendix A Copy of Groundwater Withdrawal Permit

# 1.0 PLAN OBJECTIVES AND DESCRIPTION

Rosemont Copper Company (Rosemont) has prepared this *Long-Range Water Conservation Plan* (Plan) as a requirement of the Arizona Department of Water Resources' (ADWR's) Mineral Extraction and Metallurgical Processing Permit (No. 59-215979.0000; Groundwater Withdrawal Permit) and Section 6.9 of the Fourth Management Plan (FMP). This Plan will also include the Water Conservation Plan, when developed, as noted in Section 6.14 of the FMP.

The Groundwater Withdrawal Permit was issued by ADWR to Rosemont on January 18, 2008 for the Rosemont Copper Project (Project). The permit authorizes Rosemont to pump up to 6,000 acre-feet of groundwater per year from the Upper Santa Cruz groundwater sub-basin of the Tucson Active Management Area (AMA). A copy of the Groundwater Withdrawal Permit is provided in Appendix A of this Plan.

Rosemont currently has one (1) well that is permitted under the Groundwater Withdrawal Permit. The Project's water supply will be from wells located on private land(s) in the Santa Cruz Valley near the town of Sahuarita.

As a permittee, an industrial water user, and a metal mine operator, Rosemont is required to comply with the conservation requirements stated in Sections 6.6, 6.9, 6.14, 6.15, and 6.18 of the ADWR FMP.

## 1.1 PLAN OBJECTIVES

Pursuant to Section 6-18, Subsection 6-1806 of the ADWR FMP, industrial water users must prepare and submit to ADWR, Long-Range Conservation Plan by January 1, 2019 or three (3) months prior to commencement of operations whichever is later. The Long-Range Water Conservation Plan must include a description of the planned design, construction, and operation of the Project; the ore type, method of mining, and method of metal extraction; and an evaluation of the use of the latest commercially available technology consistent with reasonable economic return.

The primary objective of this Plan is to comply with Section 6-1806 of the FMP. Additional objectives of this Plan include:

- Pointing out the various water conservation requirements specific to the Groundwater Withdrawal Permit and ADWR TMP;
- Describing the planned design, construction, and operation of the Project, including a description of the ore type, method of mining, and method of metal extraction;
- Identifying the various water sources for the Project;
- Identifying feasible long-range water conservation measures for the Project; and
- Describing an on-going water conservation education and training program for Rosemont employees.

## 1.2 PLAN DESCRIPTION

The remainder of this Plan includes the following sections:

- Section 2.0: Project Description;
- Section 3.0: Groundwater Withdrawal Permit Conditions;
- Section 4.0: Fourth Management Plan Requirements;
- Section 5.0: Planned Water Conservation Measures;

- Section 6.0: Monitoring and Reporting;
- Section 7.0: Adaptive Management;
- Section 8.0: Data Management; and
- Section 9.0: References.

## 2.0 PROJECT DESCRIPTION

The Project consists of a proposed new copper production facility, located in the Santa Rita Mountains, approximately 30 miles southeast of Tucson, in Pima County. In geographical terms, the Project is located at approximate coordinates 31° 50' North and 110° 45' West.

Open pit mining will be used to excavate ore to recover copper, molybdenum, silver, and gold. Rock material in the pit will be blasted and separated into two categories: sulfide ore or waste rock. The copper mineralization of the Rosemont deposit is primarily sulfide with an overlying cap of oxide mineralization. No ore leaching will be conducted.

The Project is anticipated of having an operating life of about 20 years. The sulfide ore will be hauled to the primary crusher to be crushed then conveyed to the mill where it will go through a flotation process. The flotation process produces a copper and a molybdenum concentrate. The copper and molybdenum concentrate from the milling operations will be sent to slurry thickeners, dewatered, and then shipped off site via trucks for smelting and/or further processing.

Tailings, produced from the sulfide ore processing operation, will be managed using the "dry stack" method. This method results in approximately a 50 to 60 percent reduction in water losses to tailings entrainment than conventional tailings disposal methods. The overall tailings moisture content is restricted to 18 percent by dry weight exiting the tailings filtration plant in Rosemont's Aquifer Protection Permit (APP). Filtered tailings will be transported from the filtration plant on a series of conveyors and placed within the Dry Stack Tailings Facility (DSTF). Waste rock will be used to build buttresses along the outer perimeter of the DSTF.

Other facilities anticipated at the Project include a Waste Rock Storage Facility, temporary ore stockpiles, on-site septic systems, and a waste management area (non-municipal solid waste landfill). Buildings and structures necessary to support the mining and ore processing operations include the administrative offices, change house, warehouse with laydown yards, analytical laboratory, light vehicle and process maintenance building, mine truck shop, vehicle wash and lube facilities, explosives storage, and fuel and lubricant storage and dispensing facilities.

The Project consists of a group of patented mining claims, unpatented mining claims, and fee land that covers most of the historical Rosemont and Helvetia Mining Districts. The Project will be bounded by a Security Fence that encompasses approximately 4,300 acres, encircling the open pit, tailings and waste rock deposition areas, ore processing facilities, stormwater ponds, non-municipal solid waste landfill, and support buildings.

The Project will require a between 5,000 and 6,000 acre-feet of fresh water per year with a peak delivery requirement of 5,000 gallons per minute (gpm). The primary water use will be ore processing. Other water uses include dust control, fire protection, potable water, and other miscellaneous uses. The source of the water supply identified for the Project is groundwater in the basin-fill deposits of the Upper Santa Cruz groundwater sub-basin of the Tucson AMA. Water will be supplied by wells completed in the Santa Cruz aquifer and located 15 to 20 miles to the west of the Santa Rita Mountains. The ADWR Groundwater Withdrawal Permit authorizes Rosemont to pump up to 6,000 acre-feet per year for 20 years.

Water from water supply wells will be transported to the Project site via a pipeline located within an approximate 13-mile long utility corridor. The utility corridor will begin near the town of Sahuarita, on the west side of the Santa Rita Mountains, and traverse eastward for approximately 13 miles to the Rosemont Copper Project, on the east side of the Santa Rita Mountains. A switchyard/ substation and four water supply pump stations will be constructed and maintained within the corridor.

The well fields and water supply pipeline have been designed for the peak demand. Water will be pumped from the well fields to a 1-million gallon steel tank located at the Project site. The lower portion of the tank, with an approximate capacity of 300,000 gallons, will be reserve capacity for the fire water system.

To offset the effects of the withdrawals in the Santa Cruz aquifer, Rosemont has committed to replace, via recharge of Central Arizona Project (CAP) water, 105% of the water used by the Project. This water recharge program began in 2009. To date, 45,000 acre-feet (equivalent to approximately 9 years of average Project water use) have been purchased and recharged within the Tucson AMA.

Recycled water will come from the tailings dewatering process. An estimated 90,000 tons per day of tailings at 65 percent solids by weight will be dewatered to 18 percent moisture by dry weight. The dewatering process will net over 50 million gallons of reclaim water per day.

Groundwater from pit dewatering, along with some retained stormwater, will also be utilized in the operation. It is estimated that up to 18,500 acre-feet of groundwater will be obtained from pit dewatering over the life of the mine.

The Project potable water system will consist of a potable water treatment package, a 6,000 to 10,000-gallon potable water tank, and a distribution network delivering potable water by gravity to all ancillary buildings, process facilities, restrooms, eyewashes, and safety showers. Potable water consumption is estimated to be approximately 3,000 to 5,000 gallons per day.

The water supply wells will be installed under the ADWR permitting process.

### 3.0 GROUNDWATER WITHDRAWAL PERMIT CONDITIONS

The authorized places of use for groundwater, i.e. the Project site, consist of:

- Township 18 South, Range 15 East      Sections 1-2, 10-15, 22-26, 35-36
- Township 18 South, Range 16 East      Sections 5-9, 16-25, 28-33, 36
- Township 19 South, Range 15 East      Sections 1-2
- Township 19 South, Range 16 East      Sections 4-9

Currently, the only authorized point of groundwater withdrawal under the ADWR Groundwater Withdrawal Permit is:

- Well E-1      ADWR Registration No.55-214277      Cadastral location: (D-17-14) 17BDD

Well E-1 is a test well that is 1,300 feet deep and was constructed with 8-inch diameter steel casing. The well is screened from 360 feet below ground surface (bgs) to 1,300 feet bgs. Based on a 24-hour pump test conducted in March 2007, Well E-1 had an average pumping rate of 312 gpm. This well will not be used as a water supply well for the Project.

Based on the depth of Well E-1 and its screened interval, the water produced is from the Tertiary-age Tinaja beds, not “surface water” or “subflow from Holocene alluvium”. Hence, no surface water rights issued are anticipated during the life of the Project. All of the planned production wells will be at least 1,000 feet deep and therefore, will be producing from the deeper basin-fill aquifer, not from the Holocene alluvium.

## **4.0 FOURTH MANAGEMENT PLAN REQUIREMENTS**

Groundwater Withdrawal Permit No. 59-215979.0000 requires that Rosemont comply with all conservation requirements and monitoring and reporting requirements stated in Section 6.6 (All Industrial Users Conservation Program Description), Section 6.9 (Metal Mining Facilities), and Section 6.18 (Industrial Conservation Requirements for Metal Mining Facilities) of the ADWR FMP. The specific requirements are listed in the following sub-sections.

### **4.1 REQUIREMENTS FOR ALL INDUSTRIAL WATER USERS**

Water conservation requirements and monitoring for all industrial water users are defined and described in Section 6.6.3 of the FMP. Water conservation requirements are specified in Section 6-1502 and are as follows:

- Avoid waste; use only the amount of water from any source, including effluent, reasonably required for each industrial use; and make diligent efforts to recycle water.
- Do not use water for non-residential single-pass cooling or heating purposes unless the water is reused for other purposes.
- Use low-flow plumbing fixtures as required by Title 45, Chapter 1, Article 12, Arizona Revised Statutes, or any applicable county or city code, whichever is more restrictive.
- Use plants listed in ADWR's Low Water Use/Drought Tolerant Plant List (ADWR 2007) or any modifications to the list, for landscaping to the maximum extent feasible, and water with a water-efficient irrigation system. An industrial water user regulated as a turf-related facility under sections 6-1601, et seq., or as a new large landscape user under section 6-2201, et seq., is exempt from this requirement.
- Do not serve or use groundwater for the purpose of watering landscaping plants planted on or after January 1, 2002 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb, or shoulder that is used for travel in any ordinary mode, including pedestrian travel, unless the plants are listed in Appendix 5B, Low Water Use/Drought Tolerant Plant List or any modifications to the list. The director may waive this requirement upon request from the industrial user if a waiver is in the public interest.
- Do not serve or use groundwater for the purpose of maintaining water features, including fountains, waterfalls, ponds, water courses, and other artificial water structures, installed after January 1, 2002 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb, or shoulder that is used for travel in any ordinary mode, including pedestrian travel. The director may waive this requirement upon request from the industrial user if a waiver is in the public interest.

#### **4.1.1 Water Measuring Devices**

Pursuant to A.A.C. R12-15-902, owners of non-exempt wells located in an AMA are required to equip each well with a measuring device approved by the Department. The approved methods for measuring groundwater pumpage are specified in A.A.C. R12-15-903(C) and include: 1) installation of an in-line or "totalizing" meter; 2) a minimum of two well discharge rate measurements per year to be used in conjunction with energy consumption measurements; and 3) a minimum of two discharge rate measurements per year to be used in conjunction with an approved hour meter.

Each device must be installed and maintained to insure measurement errors do not exceed 10 percent. The pump and discharge system on the well must be constructed to allow ADWR, with its own devices, to check the accuracy of the installed device.

## 4.2 REQUIREMENTS FOR METAL MINING FACILITIES

Additional water conservation requirements were established by ADWR for metal mines. These requirements are described in Section 6.9, Subsection 6.9.4 – Mining Conservation Program of the FMP. Conservation requirements for metal mining facilities are listed in Section 6.9.4 and are as follows:

- Transport tailings at an average annual density of 50 percent solids by weight at facilities built on or after 1985.
- Reduce water loss from tailings impoundments by depositing tailings up slope from the free water surface in impoundments to reduce seepage or by installing interceptor wells down gradient of impoundments to intercept seepage at pre-1985 mines.
- Manage tailings impoundments to minimize the free water surface of stilling basins and recover decant water.
- Recover and recycle tailings impoundment water.
- Cap abandoned tailings impoundments to minimize water used for dust control.
- Minimize water use in leaching process.
- Implement three of eight specified additional conservation techniques.
- Comply with monitoring and reporting requirements.

During the fourth management period, mines are required to evaluate water conservation practices and technologies that may be implemented at their facility and submit these evaluations to ADWR in the long-range conservation plan.

Additional specific water conservation requirements for post-1984 mines are described in Section 6-1803 of the FMP and consist of:

- A. *Management of Tailings Impoundments – The industrial user shall design and construct any post-1984 tailings impoundments to maximize recovery of water from the stilling basins and to minimize seepage water. Any interceptor wells down gradient of tailings impoundments shall be constructed to maximize recovery of seepage water.*
- B. *Management of Tailings Density – The industrial user shall design, construct, and operate any post-1984 mill concentrators and their associated tailings transport systems to achieve the maximum tailings densities possible consistent with reasonable economic return, but the average annual density of tailings during transport shall not be less than 50 percent solids by weight.*
- C. *Management of In Situ Leaching – The industrial user shall utilize water for in situ leaching in a manner that minimizes water use to the extent practicable, consistent with reasonable economic return.*

Pursuant to Section 6-1806 of the FMP, metal mining facilities must prepare and submit to ADWR a Long-Range Water Conservation Plan three (3) months prior to commencement of operations. The Long-Range Water Conservation Plan must include a description of each of the following:

1. *The planned design of the Project;*
2. *The construction, and operation of the Project;*
3. *The ore type;*

4. *The method of mining; and*
5. *The method of metal extraction.*

Section 6-1806 of the FMP also requires an evaluation be conducted prior to submitting the Long-Range Water Conservation Plan to analyze the feasibility of applying the following conservation practices or technologies at the mine.

1. Using alternative water sources for mining and metallurgical needs, including determining the source and volume of the alternative water sources being analyzed.
2. Reducing tailing impoundment evaporation through the application of the latest commercially available technologies for minimizing evaporation from the impoundments and through the application of improved tailing management.
3. Minimizing water use for dust suppression through the use of road binders, conveyors, paved haul roads, and other available dust control measures.
4. Increasing tailings densities to 55 percent solids or greater by weight.

Additional conservation techniques or technologies may be included in the plan and the plan must include a schedule for the dates of implementation of any of the conservation practices. The results of the evaluation must be presented in the Long-Range Water Conservation Plan.

### **4.3 REQUIREMENTS FOR NEW LARGE INDUSTRIAL USERS**

Pursuant to Section 6.14, sub-section 6.14.2 – New Large Industrial User Conservation Program of the FMP, “new large industrial users” must prepare and submit to ADWR a water conservation plan “to improve the efficiency of water use by the facility.” New large industrial users are industrial water users that use in excess of 100 acre-feet of water per year and commence use after January 1, 2019 (Section 6.14.1 of the FMP.) Section 6-2302 requires that the plan, also referred to as the Water Conservation Plan, shall:

- Specify the level of water conservation that can be achieved assuming the use of the latest commercially available technology consistent with reasonable economic return;
- Identify water used and conservation opportunities within the facility, addressing water used for the following categories as appropriate: landscaping; space cooling; process-related water use, including recycling; and sanitary and kitchen uses;
- Describe an on-going water conservation education program for employees; and
- Include an implementation schedule.

The Water Conservation Plan is due within 180 days after the end of the first calendar year in which the mine uses more than 100 acre-feet of water for industrial purposes (Section 6-2302 [A]). This and other conservation plans can be combined and submitted as a single conservation plan.

## 5.0 PLANNED WATER CONSERVATION MEASURES

This section provides a description of the planned design and operation of the Project as they relate to the conservation requirements described in Section 4.0.

### 5.1 CONSERVATION MEASURES TO ADDRESS SECTION 6-1502 OF THE FMP

The points below are arranged in direct response to the requirements listed above in Section 4.1 (water conservation requirements for all industrial water users).

1. One of the primary water conservation design components of the Project is the selection of the dry stacked “filtered” tailings disposal method. Water from the tailings filtering process will be reclaimed and recycled. More discussion of the dry stack tailings process is provided below in Section 5.2. Groundwater from pit dewatering and stormwater will also be reused in the mineral processing circuit.
2. No water will be used for non-residential single-pass cooling or heating purposes.
3. Low-flow plumbing fixtures (toilets and shower heads) will be incorporated into the design and construction of all Project bathrooms.
4. Plants used for landscaping at the Project will be minimal and will only consist of low water use plants listed in the *Low Water Use Drought Tolerant Plant List* (ADWR, 2007).
5. Groundwater pumped from the Upper Santa Cruz sub-basin will not be used for the purpose of watering landscaping plants, regardless of where the plants are located.
6. No fountains, waterfalls, ponds, watercourses, or other artificial water structures will be constructed or included in the Project facilities.

All water production wells used in the operation of the mine, including dewatering wells, will be equipped with approved water measuring devices. Physical inspection of water meters, hour meters, and other equipment will occur on a regular schedule, at least quarterly. Daily inspections and electronic monitoring on a continual basis will ensure proper operation of the wells and water system.

### 5.2 CONSERVATION MEASURES TO ADDRESS SECTION 6.9.4 OF THE FMP

This sub-section addresses the water conservation measures required for metal mines, as described in Section 6.9.4, Section 6-1803 – Metal Mine Conservation Program.

From its inception, the Rosemont Project design process has focused on incorporating environmental goals into facility siting, water supply, water conservation, and concurrent reclamation. Tailings at the planned Project will be dewatered using thickeners and filters. Typically, tailings slurries are dewatered using only thickeners, resulting in a slurry that contains 40 to 50 percent water reporting to a tailings impoundment. For the Rosemont Project, a filtration process similar to that used for the concentrate will further dewater the tailings. The material coming out of the Tailings Filter Plant will have a moisture content of 18 percent (by dry weight). The filtered dry stack method is more process-intensive than using traditional tailings ponds to settle solids. However, it was selected as a very effective water conservation strategy, as an important element for water quality protection, and to facilitate concurrent reclamation. The filtration process will eliminate water losses from the tailings facilities to the greatest extent practicable by removing free liquid from the tailings before they are placed in the Dry Stack Tailings Facility.

As a result of the dewatering and filtration processing of the tailings material, there will be no need for stilling basins or decant towers associated with the Dry Stack Tailings Facility.

The incorporation of dry stack tailings into the Project design addresses four of the eight conservation requirements listed in Section 6-1803 (see Section 4.2 above). Because there will be no leaching process at the Project, the fifth conservation requirement is not applicable to Rosemont. The sixth conservation requirement listed in Section 6-1803 (“Implement three of the eight specified additional conservation techniques) is also addressed by the incorporation of the dry stack tailings design and no leaching at the Project. Water conservation monitoring and reporting requirements are addressed in Section 6.0 of this Plan.

### **5.3 CONSERVATION MEASURES TO ADDRESS SECTION 6-14 OF THE FMP**

As stated above in Section 4.3, Section 6-2302 requires that “new large industrial users” prepare a Water Conservation Plan within 180 days after the end of the first calendar year in which the facility first uses more than 100 acre-feet of water. Within that timeframe, Rosemont will prepare the Water Conservation Plan. When developed, the Water Conservation Plan will be included as an appendix to this *Long-Range Water Conservation Plan*.

### **5.4 ADDITIONAL WATER CONSERVATION MEASURES**

Additional water conservation measures incorporated into the Project design include:

1. Re-routing of unimpacted stormwater around the Project and diverting it into Lower Barrel Canyon Wash to continue flowing to Davidson Canyon Wash;
2. Containment of impacted stormwater (stormwater that has come into contact with mine process facilities) for re-use in the process;
3. Use of groundwater pumped from pit de-watering for metal processing operations and other on-site uses, including haul road watering;
4. Landscaping with xeriscape plants; and
5. Conserving water in offices and other buildings.

## **6.0 MONITORING AND REPORTING**

### **6.1 REQUIRED WATER CONSERVATION MONITORING**

As stated in Section 4.1.1, and pursuant to A.A.C. R12-15-902, owners of non-exempt wells located in an AMA are required to equip each well with a measuring device approved by the Department.

All water production wells used in the operation of the mine, including dewatering wells, will be equipped with approved water measuring devices.

All water meters will be read at least quarterly and the water measurements recorded in logbooks.

Water meters will be inspected at least quarterly to inspect for damage or deterioration, which would produce inaccurate readings.

In accordance with A.A.C. R12-15-906, if a device malfunctions for a period of more than 72 hours, Rosemont will report the malfunction to ADWR within seven (7) days of discovery of the malfunction. Repair or replacement of the device will be made within 30 days or as soon as practicable.

Each water meter will be installed and maintained to insure measurement errors do not exceed 10 percent. The pump and discharge system on the well will be constructed to allow ADWR, with its own devices, to check the accuracy of the installed device.

### **6.2 REQUIRED WATER CONSERVATION REPORTING**

Arizona Revised Statutes (A.R.S.) § 45-632 and Section 6-1503 of the FMP require that all industrial water users prepare an annual report that includes the following information:

- 1. The total quantity of water by source, including effluent, withdrawn, diverted, or received during the reporting year for industrial process purposes, as measured with a measuring device in accordance with ADWR's measuring device rules (Arizona Administrative Code [A.A.C.] R-12-15-901, et seq.)*
- 2. The total quantity of water by source, including effluent, withdrawn, diverted, or received during the reporting year for purposes other than industrial process purposes, listed in paragraph 1 (above), as measured with a measuring device in accordance with ADWR's measuring device rules (A.A.C. R-12-15-901, et seq.)*
- 3. An estimate of the quantity of wastewater generated during the reporting year.*
- 4. An estimate of the quantity of wastewater recycled during the reporting year.*
- 5. A description of the primary purposes for which water from any source, including effluent, is used.*
- 6. The number of acres of land that were planted with low water use plants during the calendar year as a result of removal of plants not on the Low Water Use/Drought Tolerant Plant List for the Tucson AMA or any modifications to the list, if more than one acre, and the method of irrigation for those acres.*

In addition, the annual report will include the following information as required pursuant to Section 6-1807 (metal mining facilities):

1. *The quantity of water from any source used during each calendar year for dust control, tailings revegetation, domestic use, and transportation of tailings to tailings impoundments must be included in the annual report.*
2. *The quantity of make-up water from any source used during each calendar year for equipment washing, leaching operations, and milling operations. Each of these facilities must be measured separately with a measuring device in accordance with ADWR's measuring device rules ([A.A.C. R-12-15-901, et seq.).*
3. *The quantity of water from any source reclaimed during the calendar year from each of the following: tailings impoundments and pit dewatering. Each of these facilities/activities must be measured separately with a measuring device in accordance with ADWR's measuring device rules (Arizona Administrative Code [A.A.C.] R-12-15-901, et seq.).*
4. *The tons of ore milled during the calendar year.*
5. *The tons of ore stacked to heap and/or dump leach during the calendar year.*
6. *The tons of ore vat leached during the calendar year.*
7. *The tons of material mined during the calendar year.*
8. *The tons of mineral produced from mill circuits and from leach circuits during the calendar year.*
9. *The average gallons of water consumed per ton of mineral produced during the calendar year.*
10. *The average percentage of solids by weight in tailings transported to the tailings impoundments during the calendar year and in each of the previous two (2) years.*
11. *The average annual depth of water at the deepest portion of the stilling basin(s).*
12. *Copies of aerial photos of tailings impoundments, with scale indicated, for use by the Department in determining the wetted surface area of the tailings impoundments.*
13. *A description of the additional conservation measures applied at the mine as prescribed in Section 6-1802, subsection F. Because Section 6-1802 is specific to Pre-1985 Metal Mining Facilities, Rosemont is not required to implement additional conservation measures.*

Section 6.14 of the FMP does not contain monitoring and reporting requirements other than the preparation and submittal of the Water Conservation Plan discussed above in Section 4.3.

The annual report must be submitted to ADWR no later than March 31<sup>st</sup> of each year for the preceding calendar year. Rosemont has prepared and submitted an annual report to ADWR since 2009, the first year following receipt of the Groundwater Withdrawal Permit. Rosemont will continue to prepare and submit annual reports, which will include all of the information specified above, for the duration of the permit life.

## 7.0 ADAPTIVE MANAGEMENT

Rosemont will incorporate appropriate adaptive management measures as acceptable to ADWR. This process will ensure that the initial intent of the Rosemont Long Range Water Conservation Plan is being implemented appropriately. The three key components of adaptive management are:

- Testing assumptions – collecting and using monitoring data to determine if current assumptions are valid;
- Adaptation – making changes to assumptions and monitoring program to respond to new or different information obtained through the monitoring data and project experience; and
- Learning – documenting the planning and implementation processes and its successes and failures for internal learning.

Elements in the Plan that may be modified as part of the adaptive management process include, but are not exclusive of, the following:

- Metering devices;
- Locations of wells; or
- Addition of new technologies for metering or data management.

## **8.0 DATA MANAGEMENT**

Rosemont maintains data in various formats currently including logbooks, electronic logbooks, spreadsheets, hardcopy and database formats. It is Rosemont's intent that ultimately a robust database will be used to house all data collected for the various monitoring programs. Numeric data ultimately will be stored in a database and spatial data will be maintained in an ESRI database.

Depending upon the type of data to be reported, Rosemont will develop custom reports displaying required information in table or figure format. Electronic submittals will be provided in pdf format to provide a permanent record of the submittal and "raw" data will be maintained onsite for review by the Forest Service. If the Forest Service requests numeric data, it may include information such as cumulative results documenting the monitoring history and include baseline data for the resource.

Electronic submittals will be made on the reporting period specified. Reports will be submitted in hardcopy form with a duplicate electronic pdf file. Delivery of the electronic files will depend upon the size of the file and will either be made via email, via a CD/DVD or thumb drive, or via a website set up and maintained for delivery of files to the Forest Service. Details regarding access will need to be worked out so transmittals can take place seamlessly.

## 9.0 REFERENCES

ADWR, 2007. *Low Water Use Drought Tolerant Plant List – Official Regulatory List for the Arizona Department of Water Resources, Tucson Active Management Area*. Arizona Department of Water Resources. March 2007.

2008. Mineral Extraction and Metallurgical Processing Permit No. 59-215979.0000. January 18, 2008.

2016. *Fourth Management Plan – Tucson Active Management Area*. Arizona Department of Water Resources. May 2016.

## **APPENDIX A**

Copy of Groundwater Withdrawal Permit

**ARIZONA DEPARTMENT OF WATER RESOURCES  
WATER MANAGEMENT DIVISION**

3550 North Central Avenue, Phoenix, Arizona 85012  
Telephone 602 771-8586  
Fax 602 771-8688



Janet Napolitano  
Governor

Herbert R. Guenther  
Director

January 18, 2008

**VIA CERTIFIED MAIL 7006 2760 0002 4885 1268**

Rosemont Copper Company  
Attn: James A. Sturgess  
4500 Cherry Creek South Dr. Suite 1040  
Denver, CO 80246

Re: Permit to Withdraw Groundwater for Mineral Extraction and Metallurgical Processing  
Permit No. 59-215979.0000

Dear Permit Holder:

Enclosed is your permit for your records. The permit specifies the annual amount of groundwater that may be withdrawn pursuant to your permit and the location of the well or wells from which you are authorized to withdraw groundwater.

This is also an Official Notice of conservation requirements and monitoring and reporting requirements that apply to your industrial use. These requirements are contained in the Third Management Plan (TMP) for the Tucson Active Management Area, and became effective January 1, 2002.

As a person who uses water not supplied by a city, town or private water company for a non-irrigation use, you are considered an industrial user. You are required to comply with the conservation requirements and monitoring and reporting requirements for all industrial users in sections 6.2.5 of the TMP. Those requirements are set forth in the enclosed *Attachment TMP-All Industrial Users*.

Additional specific requirements have been established in the TMP for the following industrial users: turf-related facilities, metal mines, sand and gravel facilities, power plants, dairy operations and cattle feedlot operations, large-scale cooling facilities and new large landscape users. If any additional specific requirements apply to your facility, the corresponding attachment is enclosed (*Attachment TMP-Turf-Related Facilities; Attachment TMP-Sand and Gravel Facilities; Attachment TMP-Large-Scale Power Plants; Attachment TMP-Large-Scale Cooling Facilities; Attachment TMP-Dairy Operations; Attachment TMP-Metal Mining*

*Facilities; Attachment TMP-Cattle Feedlot Operations; Attachment TMP-New Large Landscape Users).*

If you begin using more than 100 acre-feet of water per year for industrial purposes after January 1, 2000, then you must submit a plan to improve the efficiency of water use by the facility not later than January 1, 2002, or within 180 days after the end of the first calendar year in which the facility uses more than 100 acre-feet of water for industrial purposes, whichever is later, pursuant to section 6.10.5 of the TMP (see enclosed *Attachment TMP-New Large Industrial Users*).

Please note that the conservation requirements in this notice apply to your facility operation as a whole, rather than to rights or permits individually.

### Administrative Relief from Conservation Requirements

The Department has found the conservation requirements in the SMP and TMP to be equitable for most water users. However, there are two separate methods for seeking administrative relief from the conservation requirements if you believe you will be unable to comply with the requirements. You may request a VARIANCE or, in some limited cases, an ADMINISTRATIVE REVIEW.

#### 1. VARIANCE

A person who requires additional time to comply with a conservation requirement may apply to the director for a VARIANCE from the requirement pursuant to A.R.S. § 45-574. The director may grant a variance for up to five years upon a showing of "compelling economic circumstances." An application for a variance must be filed within 90 days after the date you receive this notice.

#### 2. ADMINISTRATIVE REVIEW

If you feel that a conservation requirement is unreasonable as applied to you, you may apply for an ADMINISTRATIVE REVIEW of the requirement pursuant to A.R.S. § 45-575(A). An application for administrative review under A.R.S. § 45-575(A) must be filed within 90 days after the date you receive this notice.

An administrative review may also be applied for at any time during the third management period if extraordinary circumstances not in existence as of the date of this notice make it unreasonable to require your compliance with a conservation requirement. If these circumstances should arise during the third management period, please contact the Tucson Active Management Area (AMA) for information and application procedures.

Pursuant to the provisions of A.R.S. § 45-604, any person withdrawing groundwater from a well pursuant to one or more type 2 non-irrigation rights or groundwater withdrawal permits in the aggregate amount of more than ten acre-feet per year is required to use a water measuring device to record rates of withdrawal in order to provide or allow the computation of an annual volume of pumpage from the well. The total volume of pumpage shall be reported on an annual report. The annual report shall be submitted no later than March 31 following the end of each completed annual reporting period.



The Department has issued this mineral extraction permit pursuant to A.R.S. § 45-514 of the Groundwater Code. The legal nature of the water withdrawn from your wells may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your wells, you will be notified and be given the opportunity to participate.

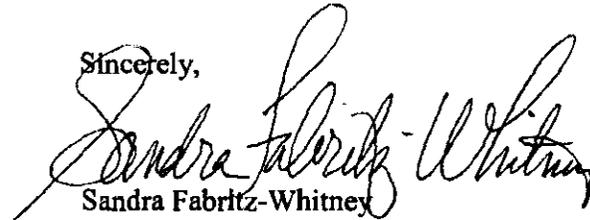
In accordance with A.R.S. § 45-520, your groundwater withdrawal permit may be conveyed only for the same use, subject to the approval of the director. Enclosed is a Notification of Change of Ownership of Groundwater Withdrawal Permit form for any change in ownership of the permit.

Under A.R.S. § 45-593, the person to whom a well is registered must notify the Department of a change in ownership, physical characteristics or any other data about the well in order to keep the well registration records current and accurate. For future changes, a Request to Change Well Information form is enclosed.

Pursuant to A.R.S. § 45-527, a permittee may seek modification of a groundwater withdrawal permit prior to its expiration and may seek renewal of a permit within six months prior to the date of the expiration of the permit. All permit modifications or renewal applications shall be subject to the same criteria used in issuing the initial permit.

If you have any questions about the terms and conditions of the permit or require any administrative corrections to this permit, please contact the Tucson Active Management Area office at 520-770-3800.

Sincerely,



Sandra Fabritz-Whitney  
Assistant Director

Enclosures

cc: Tucson AMA – Water Rights Program





**ARIZONA DEPARTMENT OF WATER RESOURCES**  
**PERMIT TO WITHDRAW GROUNDWATER FOR**  
**MINERAL EXTRACTION AND METALLURGICAL PROCESSING**  
**PURSUANT TO A.R.S. § 45-514**

PERMIT NO. 59-215979.0000

STATE OF ARIZONA                    )  
  ) ss.  
COUNTY OF MARICOPA            )

This is to certify that Application No. 59-215979.0000 meets the requirements of Title 45, Chapter 2, Article 7, Arizona Revised Statutes, for a Mineral Extraction and Metallurgical Processing Groundwater Withdrawal Permit. The Director hereby grants authority to withdraw groundwater for mineral extraction and metallurgical processing pursuant to A.R.S. § 45-514, subject to the following limitations and conditions:

**Permit Limitations**

Permittee:	Rosemont Copper Company, an Arizona Corporation 4500 Cherry Creek South Drive, Suite 1040 Denver, CO 80246
Active Management Area:	Tucson
Sub-basin:	Upper Santa Cruz

PERMIT NO. 59-215979.0000

Maximum Amount of Groundwater  
to be Withdrawn: 6,000 acre feet per annum

Authorized Use of Groundwater: Extraction, concentration, and processing of ore

Authorized Places of Use for Groundwater Withdrawn:

Township/Range	Sections
T 18 South, R 15 East	1-2, 10-15, 22-26, 35-36
T 18 South, R 16 East	5-9, 16-25, 28-33, 36
T 19 South, R 15 East	1-2
T 19 South, R 16 East	4-9

Authorized Points of Withdrawal:

Authorized Well Registration Numbers:	File Numbers:	Depth of Well	Casing Diameter	Casing Material
55-214277	D (17-14) 17 BDD	1,300 feet	8 inches	Steel

Effective Date of Permit: January 18, 2008

Expiration Date: January 17, 2028

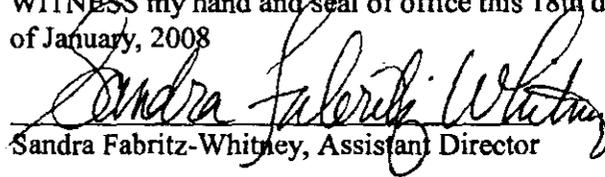
**Permit Conditions**

1. If during the life of the permit, the Director determines that uncommitted municipal and industrial Central Arizona Project water is available or other surface water or effluent of adequate quality is available at a cost as specified by A.R.S. § 45-514, the Director may require the permittee to use such water in lieu of groundwater.
2. Groundwater withdrawals under this permit are subject to the Third Management Plan (TMP) or modifications to the TMP and any applicable requirements upon the first compliance date of the Fourth Management Plan (FMP) for the designated active management area. The Director may modify the permit conditions as needed to conform to the conservation requirements of the Fourth Management Plan.
3. This permit is issued pursuant to A.R.S. § 45-514 and authorizes the permittee to operate an existing well for the purpose of withdrawing groundwater for the use or uses set forth in the permit. This permit does not authorize the permittee to withdraw surface water from the well. If the permittee withdraws surface water from the well in any year, the permittee shall do so only pursuant to a decreed or appropriative surface water right and shall separately report in the annual report filed pursuant to A.R.S. § 45-632 the amount of groundwater and surface water withdrawn from the well.

PERMIT NO. 59-215979.0000

4. The permittee shall monitor and measure withdrawals of groundwater and shall report the total amount of groundwater withdrawn on an Annual Water Withdrawal and Use Report. The first annual reporting period shall be from the date of issuance of this permit through December 31, 2008. Subsequent annual reporting periods shall be January 1 through December 31.
5. The issuance of the permit does not waive any federal, state, county or local government ordinances, regulations or permits for which the facility may have to comply.

WITNESS my hand and seal of office this 18th day  
of January, 2008

  
Sandra Fabritz-Whitney, Assistant Director

**Attachment TMP-All Industrial Users**

**ARIZONA DEPARTMENT OF WATER RESOURCES  
TUCSON ACTIVE MANAGEMENT AREA**

**OFFICIAL NOTICE OF INDUSTRIAL CONSERVATION REQUIREMENTS AND  
MONITORING AND REPORTING REQUIREMENTS AS ESTABLISHED IN  
THE MANAGEMENT PLAN FOR THE TUCSON ACTIVE MANAGEMENT  
AREA FOR THE THIRD MANAGEMENT PERIOD 2000-2010  
ALL INDUSTRIAL USERS**

**Industrial Conservation Requirements and Monitoring and Reporting Requirements  
for All Industrial Users**

**6-201. Definitions**

In addition to the definitions set forth in Chapters 1 and 2 of Title 45 of the Arizona Revised Statutes, unless the context otherwise requires, the following words and phrases used in sections 6-202 through 6-203 of this chapter shall have the following meanings:

1. "Industrial process purposes" means water that is used by an industrial user directly in the creation or manufacture of a product.
2. "Industrial use" means a non-irrigation use of water not supplied by a city, town, or private water company, including animal industry use and expanded animal industry use.
3. "Industrial user" means a person who uses water for industrial uses.
4. "Low-flow plumbing fixture" means a lavatory faucet, lavatory faucet replacement aerator, kitchen faucet, kitchen faucet replacement aerator, shower head, urinal, water closet, or evaporative cooler designed to meet the use rates specified in A.R.S. § 45-312 and -313 or the applicable county or city code, whichever is more restrictive.
5. "Single-pass cooling and heating" means the use of water without recirculation to increase or decrease the temperature of equipment, a stored liquid or a confined air space.
6. "Wastewater" means water that is discharged after an industrial or municipal use, excluding effluent.

**6-202. Conservation Requirements**

Beginning on January 1, 2002 or upon commencement of water use, whichever is later, and continuing thereafter until the first compliance date for any substitute conservation requirement in the Fourth Management Plan, an industrial user shall comply with the following requirements:

1. Avoid waste; use only the amount of water from any source, including effluent, reasonably required for each industrial use; and make diligent efforts to recycle water.
2. Do not use water for non-residential single-pass cooling or heating purposes unless the water is reused for other purposes.
3. Use low-flow plumbing fixtures as required by Title 45, Chapter 1, Article 12, Arizona Revised Statutes, or any applicable county or city code, whichever is more restrictive.
4. Use plants listed in Appendix 5B, Low Water Use/Drought Tolerant Plant List or any modifications to the list, for landscaping to the maximum extent feasible, and water with a water-efficient irrigation system. An industrial user regulated as a turf-related facility under sections 6-301, et seq., or as a new large landscape user under section 6-901, et seq., is exempt from this requirement.
5. Do not serve or use groundwater for the purpose of watering landscaping plants planted on or after January 1, 2002 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb, or shoulder that is used for travel in any ordinary mode, including pedestrian travel, unless the plants are listed in Appendix 5B, Low Water Use/Drought Tolerant Plant List or any modifications to the list. The director may waive this requirement upon request from the industrial user if a waiver is in the public interest. This requirement does not apply to any portion of a residential lot that extends into a publicly owned right-of-way.
6. Do not serve or use groundwater for the purpose of maintaining water features, including fountains, waterfalls, ponds, water courses, and other artificial water structures, installed after January 1, 2002 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb, or shoulder that is used for travel in any ordinary mode, including pedestrian travel. The director may waive this requirement upon request from the industrial user if a waiver is in the public interest. This requirement does not apply to any portion of a residential lot that extends into a publicly owned right-of-way.

#### **6-203. Monitoring and Reporting Requirements**

##### **A. Requirements**

For calendar year 2002 or the calendar year in which the facility first begins to use water, whichever is later, and for each calendar year thereafter until the first compliance date for any substitute monitoring and reporting requirement in the Fourth Management Plan, an industrial user shall, except as provided for in subsection B of this section, include the following information in its annual report required by A.R.S. § 45-632:

1. The total quantity of water by source, including effluent, withdrawn, diverted, or received during the reporting year for industrial process purposes, as measured with a measuring device in accordance with the Department's measuring device rules, A.A.C. R12-15-901, et. seq.

2. The total quantity of water by source, including effluent, withdrawn, diverted, or received during the reporting year for purposes other than industrial process purposes, listed in paragraph 1 of this subsection, as measured with a measuring device in accordance with the Department's measuring device rules, A.A.C. R12-15-901, et. seq.
3. An estimate of the quantity of wastewater generated during the reporting year.
4. An estimate of the quantity of wastewater recycled during the reporting year.
5. A description of the primary purposes for which water from any source, including effluent, is used.
6. The number of acres of land that were planted with low water use plants during the calendar year as a result of removal of plants not on the Low Water Use/Drought Tolerant Plant List for the Tucson AMA or any modifications to the list, if more than one acre, and the method of irrigation for those acres. An industrial user regulated as a turf-related facility under sections 6-301, et seq., or as a new large landscape user under section 6-901, et seq., is exempt from this requirement.

**B. Exemption**

An industrial user who holds a Type 1 or Type 2 non-irrigation grandfathered right or a groundwater withdrawal permit in the amount of 10 or fewer acre-feet per year is exempt from the requirements set forth in subsection A of this section, unless the industrial user holds more than one such right or permit in the aggregate amount of more than 10 acre-feet per year and withdraws more than 10 acre-feet of water during the calendar year pursuant to those rights or permits.

**6-204. Remediated Groundwater Accounting for Conservation Requirements**

**A. Accounting**

Groundwater withdrawn pursuant to an approved remedial action project under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or Title 49, Arizona Revised Statutes, and used by a person subject to a conservation requirement established under this chapter, shall be accounted for consistent with the accounting for surface water for purposes of determining the person's compliance with the conservation requirement, subject to the provisions of subsections B through D of this section.

**B. Amount of Groundwater Eligible for Accounting**

For each approved remedial action project, the annual amount of groundwater that is eligible for the remediated groundwater accounting provided in subsection A of this section is the project's annual authorized volume. The annual authorized volume for a remedial action project approved on or after June 15, 1999 is the maximum annual volume of groundwater that may be withdrawn pursuant to the project, as specified in

a consent decree or other document approved by the United States Environmental Protection Agency (EPA) or the Arizona Department of Environmental Quality (ADEQ). The annual authorized volume for a project approved prior to June 15, 1999 is the highest annual use of groundwater withdrawn pursuant to the project prior to January 1, 1999, except that if a consent decree or other document approved by the EPA or ADEQ specifies the maximum annual volume of groundwater that may be withdrawn pursuant to the project, the project's annual authorized volume is the maximum annual volume of groundwater specified in that document. The director may modify the annual authorized volume for a remedial action project as follows:

1. For an approved remedial action project associated with a treatment plant that was in operation prior to June 15, 1999, a person may request an increase in the annual authorized volume at the same time the notice is submitted pursuant to subsection C of this section. The director shall increase the annual authorized volume up to the maximum treatment capacity of the treatment plant if adequate documentation is submitted to the director demonstrating that an increase is necessary to further the purpose of the remedial action project and the increase is not in violation of the consent decree or other document approved by the EPA or ADEQ.
2. A person may request an increase in the annual authorized volume of an approved remedial action project at any time if it is necessary to withdraw groundwater in excess of the annual authorized volume to further the purpose of the project. The director shall increase the annual authorized volume up to the maximum volume needed to further the purpose of the project if adequate documentation justifying the increase is submitted to the director and the increase is not in violation of the consent decree or other document approved by the EPA or ADEQ.
3. The director shall modify the annual authorized volume of an approved remedial action project to conform to any change in the consent decree or other document approved by the EPA or ADEQ if the person desiring the modification gives the director written notice of the change within thirty days after the change. The notice shall include a copy of the legally binding agreement changing the consent decree or other document approved by the EPA or ADEQ.

**C. Notification**

To qualify for the remediated groundwater accounting provided in subsection A of this section, the person desiring the accounting must notify the director in writing of the anticipated withdrawal of groundwater pursuant to an approved remedial action project under CERCLA or Title 49, Arizona Revised Statutes, prior to the withdrawal. At the time the notice is given, the person desiring the accounting must be using remediated groundwater pursuant to the approved remedial action project or must have agreed to do so through a consent decree or other document approved by the EPA or ADEQ. The notice required by this subsection shall include all of the following:

1. A copy of a document approved by ADEQ or the EPA, such as the Remedial Action Plan (RAP), Record of Decision (ROD) or consent decree, authorizing the remediated groundwater project. Unless expressly specified in the document, the

person shall include in the notice the volume of groundwater that will be pumped annually pursuant to the project, the time period to which the document applies, and the annual authorized volume of groundwater that may be withdrawn pursuant to the project.

2. The purpose for which the remediated groundwater will be used.
3. The name and telephone number of a contact person.
4. Any other information required by the director.

**D. Monitoring and Reporting Requirements**

To qualify for the remediated groundwater accounting for conservation requirements as provided in subsection A of this section, groundwater withdrawn pursuant to the approved remedial action project must be metered separately from groundwater withdrawn in association with another groundwater withdrawal authority for the same or other end use. A person desiring the remediated groundwater accounting for conservation requirements shall indicate in its annual report under A.R.S. § 45-632 the volume of water withdrawn and used during the previous calendar year that qualifies for the accounting.

**Attachment TMP-New Large Industrial Users**

**ARIZONA DEPARTMENT OF WATER RESOURCES  
TUCSON ACTIVE MANAGEMENT AREA**

**OFFICIAL NOTICE OF INDUSTRIAL CONSERVATION REQUIREMENTS AND  
MONITORING AND REPORTING REQUIREMENTS AS ESTABLISHED IN  
THE MANAGEMENT PLAN FOR THE TUCSON ACTIVE MANAGEMENT  
AREA FOR THE THIRD MANAGEMENT PERIOD 2000-2010  
NEW LARGE INDUSTRIAL USERS**

**Industrial Conservation Requirements and Monitoring and Reporting Requirements  
for New Large Industrial Users**

**6-1001. Definitions**

In addition to the definitions set forth in Chapters 1 and 2 of Title 45 of the Arizona Revised Statutes and section 6-201 of this chapter, "new large industrial user" means an industrial user that begins using more than 100 acre-feet of water per year for industrial purposes after January 1, 2000.

**6-1002. Conservation Requirements**

- A.** Not later than January 1, 2002 or within 180 days after the end of the first calendar year in which the facility first uses more than 100 acre-feet of water for industrial purposes, whichever is later, a new large industrial user shall submit to the director a plan to improve the efficiency of water use by the facility. The plan shall:
1. Specify the level of water conservation that can be achieved assuming the use of the latest commercially available technology consistent with reasonable economic return;
  2. Identify water uses and conservation opportunities within the facility, addressing water used for the following categories as appropriate: landscaping; space cooling; process-related water use, including recycling; and sanitary and kitchen uses;
  3. Describe an ongoing water conservation education program for employees; and
  4. Include an implementation schedule.
- B.** If a person required to submit a plan under subsection A of this section is required to submit a conservation plan under another section of this chapter, the person may combine the plans into a single conservation plan.

**Attachment TMP-Metal Mining Facilities**

**ARIZONA DEPARTMENT OF WATER RESOURCES  
TUCSON ACTIVE MANAGEMENT AREA**

**OFFICIAL NOTICE OF INDUSTRIAL CONSERVATION REQUIREMENTS AND  
MONITORING AND REPORTING REQUIREMENTS AS ESTABLISHED IN  
THE MANAGEMENT PLAN FOR THE TUCSON ACTIVE MANAGEMENT  
AREA FOR THE THIRD MANAGEMENT PERIOD 2000-2010  
METAL MINING FACILITIES**

**Industrial Conservation Requirements and Monitoring and Reporting Requirements  
for Metal Mining Facilities**

**6-501. Definitions**

In addition to the definitions set forth in Chapters 1 and 2 of Title 45 of the Arizona Revised Statutes, unless the context otherwise requires, the following words and phrases shall have the following meanings:

1. "Abandoned tailings impoundment" means a tailings impoundment that the owner/operator of a metal mining facility does not plan to use for additional disposal of tailings.
2. "Alternative water supply" means a water source other than groundwater of drinking water quality.
3. "Decant water" means water removed from the stilling basin of a tailings impoundment either by gravity flow into a decant tower or by pumping.
4. "Heap and dump leaching" means the extraction of minerals using acid solutions applied to metallic ores that have been removed from their original location and heaped or dumped in a new location.
5. "In situ leaching" means the extraction of metallic ores using acid leaching of ores that are not moved from their original natural location.
6. "In situ leaching sites" mean those portions of metal mining facilities at which in situ leaching and associated copper recovery operations occur, including surface applications of acid leaching solutions and deep well injection of acid leaching solutions.
7. "Large-scale metal mining and processing facility" means an industrial facility at which mining and processing of metallic ores is conducted and that uses or has the potential to use more than 500 acre-feet of water per reporting year. For the purposes of this definition, the annual water use or potential annual water use includes all water from any source, including effluent, used or projected to be used within or by the facility, regardless of the nature of the use.

8. "Mill concentrator" means the structure at open-pit metal mines within which metallic ore is crushed and the flotation process is used to remove minerals.
9. "Mill circuit" means the flow of water used in the process of crushing ore, recovering copper at the mill concentrator, and transporting and disposing of tailings, and includes recovery of water at the tailings impoundments for reuse in the mill concentrator.
10. "Post-1984 metal mining facility" means either:
  - a. A large-scale metal mining and processing facility that does not qualify as a pre-1985 metal mining facility, including any expanded or modified portion of the facility, or
  - b. Any expanded or modified portion of a pre-1985 metal mining facility if the expansion or modification includes one or more new tailings impoundments, new mill circuits, or new leaching facilities, and was not substantially commenced as of December 31, 1984.
11. "Pre-1985 metal mining facility" means a large-scale metal mining and processing facility at which the mining and processing of metallic ores was occurring as of December 31, 1984, or that was substantially commenced as of December 31, 1984, and includes any expanded or modified portion of such a facility if the expansion or modification includes one or more new tailings impoundments, new mill concentrator circuits, or new wells, and was substantially commenced as of December 31, 1984.
12. "Seepage water" means water that has infiltrated from tailings impoundments into the material underlying the tailings impoundments.
13. "Substantially commenced as of December 31, 1984" means, with regard to the construction, expansion, or modification of a large-scale metal mining and processing facility, that the owner or operator of the facility had obtained all pre-construction permits and approvals required by federal, state, or local governments for the construction, expansion, or modification of the facility by December 31, 1984, or had made a substantial capital investment in the physical on-site construction of the project in the 12 months prior to December 31, 1984.
14. "Tailings" mean the slurry of water and fine-grained waste rock material remaining after minerals have been removed in the mill concentrator and excess water has been recovered and returned to the mill concentrator.
15. "Tailings impoundment" means the final disposal site for tailings generated in the milling circuit.

**6-502. Conservation Requirements for Pre-1985 Metal Mining Facilities**

Beginning on January 1, 2002 and continuing thereafter until the first compliance date for any substitute conservation requirement in the Fourth Management Plan, an industrial user who uses water at a pre-1985 metal mining facility shall comply with the following requirements:

**A. Management of Tailings Density**

The industrial user shall transport tailings to the tailings impoundment area at the maximum density possible consistent with reasonable economic return; but, beginning with calendar year 2002, the average density of the tailings during transport shall be 48 percent solids by weight or greater during the period consisting of the reporting year and the previous two years. The director may reduce the density required for a period of time determined by the director if the industrial user demonstrates that, due to the shut down of ore processing or tailings transport equipment or due to the density of ore being mined, a three-year average density of 48 percent or greater cannot be achieved.

**B. Management of Presliming/Interceptor Wells**

The industrial user shall comply with one of the following:

1. Deposit a layer of tailings immediately up-slope from the free water level in each tailings impoundment. The tailings layer shall be 12 inches or more in thickness and shall minimize soil surface permeability.
2. Drill interceptor wells down-gradient from each tailings impoundment. The interceptor wells shall be designed, located and operated in such a manner as to intercept the maximum amount of seepage water possible from each tailings impoundment. Water recovered from the interceptor wells shall be reused at the mining facility.

**C. Management of Water in Tailings Impoundments**

The industrial user shall minimize the free water surface area in each tailings impoundment by complying with all of the following:

1. Manipulate tailings that have been disposed of in a tailings impoundment, and manage new disposal of tailings in an impoundment, to create stilling basins that increase the rate of recovery of decant water from the stilling basins, and to minimize the free water surface area of stilling basins.
2. Use decant towers, barge pumps, or sump pumps to recycle water from each tailings impoundment back to the mill concentrator.
3. Expand decant tower barge pumping capacity where necessary to increase the capacity to recycle water from each tailings impoundment back to the mill concentrator.
4. Use, to the maximum extent possible, tailings impoundment water, rather than pumping additional groundwater.

**D. Capping Abandoned Tailings Impoundments**

The industrial user shall cap each abandoned tailings impoundment in a manner that minimizes the quantity of water used for dust control purposes and/or revegetation.

**E. Heap and Dump Leaching**

The industrial user shall apply water to heap and dump leaching operations in a manner that minimizes water use to the extent practicable, consistent with reasonable economic return.

**F. Additional Conservation Measures**

An industrial user who uses water at a metal mining facility shall comply with three of the following eight conservation measures at those portions of the facility that do not qualify as in situ leaching sites:

1. When revegetating abandoned mine-related areas, utilize drought-tolerant vegetation.
2. Utilize multiple decant towers in single impoundments to increase decant rate.
3. Convert piping to high-density polyethylene piping to increase density of transported tailings.
4. Harvest and reuse storm water runoff on site.
5. Reuse pit-dewatering water.
6. Reduce evaporation from free-standing water surfaces in addition to evaporation reduction from stilling basins.
7. Reduce water used for dust control by reducing the number and extent of haul trips, using road binders, converting to conveyors for material transport, or using another dust control measure that reduces water use.
8. Reduce water used for delivery of acid/water solution for heap or dump leaching operations by using delivery methods that use less water than sprinkler delivery.

**6-503. Conservation Requirements for Post-1984 Metal Mining Facilities**

Beginning on January 1, 2002 or upon commencement of operations at the facility, whichever is later, and continuing thereafter until the first compliance date for any substitute conservation requirement in the Fourth Management Plan, an industrial user who uses water at a post-1984 metal mining facility shall comply with conservation requirements applicable to pre-1985 metal mining facilities as prescribed in section 6-502, subsections C through F, and the following additional requirements:

**A. Management of Tailings Impoundments**

The industrial user shall design and construct any post-1984 tailings impoundments to maximize recovery of water from the stilling basins and to minimize seepage

water. Any interceptor wells down gradient of tailings impoundments shall be constructed to maximize recovery of seepage water.

**B. Management of Tailings Density**

The industrial user shall design, construct, and operate any post-1984 mill concentrators and their associated tailings transport systems to achieve the maximum tailings densities possible consistent with reasonable economic return, but the average annual density of tailings during transport shall not be less than 50 percent solids by weight.

**C. Management of In Situ Leaching**

The industrial user shall utilize water for in situ leaching in a manner that minimizes water use to the extent practicable, consistent with reasonable economic return.

**6-504. Alternative Conservation Program**

An industrial user who uses water at a metal mining facility may apply to the director to use conservation technologies other than the technologies prescribed in sections 6-502 and 6-503, whichever is applicable. The director may approve the use of alternative conservation technologies if the director determines that both of the following apply:

1. The industrial user has filed a detailed description of the proposed alternative technologies and the water savings that can be achieved by the use of these technologies with the director.
2. The industrial user has demonstrated to the satisfaction of the director that the latest commercially available conservation technology consistent with reasonable economic return will be used.

**6-505. Modification of Conservation Requirements for Metal Mining Facilities**

**A.** An industrial user who uses water at a metal mining facility may apply to the director to modify conservation requirements prescribed in sections 6-502 and 6-503, whichever is applicable, for any year in which compliance with the conservation requirements would likely result in violation of any federal, state, or local environmental standards or regulations. To apply for a modification of conservation requirements, an industrial user shall submit a request in writing to the director that includes the following information:

1. Documentation describing the conservation requirement(s) for which compliance with this requirement is likely to result in violation of environmental standards, and the environmental standards that are likely to be violated.
2. The proposed modification to the conservation requirements.

**B.** The director shall grant a request for modification of conservation requirements if the director determines that compliance with the conservation requirements prescribed in

sections 6-502 and 6-503, whichever is applicable, would likely result in a violation of any federal, state, or local environmental standards or regulations.

**6-506. Preparation of a Long-Range Conservation Plan for Metal Mining Facilities**

By January 1, 2002 or three months prior to commencement of operations at the facility, whichever is later, an industrial user who uses water at a metal mining facility shall submit to the director a long-range water conservation plan that describes the existing or planned design, construction and operation of the facility, including a description of the ore type, method of mining, and method of metal extraction. The plan shall include an evaluation of the use of the latest commercially available conservation technology consistent with reasonable economic return. Prior to submitting the plan, the industrial user shall analyze the feasibility of applying the following conservation practices or technologies at the mine and shall report the results in the plan:

1. Using alternative water sources for mining and metallurgical needs, including determining the source and volume of the alternative water sources being analyzed.
2. Reducing tailings impoundment evaporation through the application of the latest commercially available technologies for minimizing evaporation from the impoundments and through the application of improved tailings management.
3. Minimizing water use for dust suppression through the use of road binders, conveyors, paved haul roads, and other available dust control mechanisms.
4. Increasing tailings densities to 55 percent solids or greater by weight.

The industrial user may include any additional conservation techniques or technologies in the plan. The plan shall include a schedule of the approximate dates for implementation of any conservation practices or technologies that the industrial user intends to implement.

**6-507. Monitoring and Reporting Requirements for Metal Mining Facilities**

**A. Water Measurement and Reporting**

For calendar year 2002 or the calendar year in which the facility commences operation, whichever is later, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, an industrial user who uses water at a metal mining facility shall include in its annual report required by A.R.S. § 45-632 the following information:

1. The quantity of water from any source, including effluent, used during the calendar year for each of the following purposes: dust control, tailings revegetation, domestic use, and transportation of tailings to tailings impoundments. The quantity of water used for dust control and tailings revegetation shall be separately measured with a measuring device in accordance with the Department's measuring device rules, A.A.C. R12-15-901, et seq. The

quantity of water used for domestic use and transportation of tailings to tailings impoundments may be estimated.

2. The quantity of make-up water from any source, including effluent, used during the calendar year for each of the following purposes: equipment washing, leaching operations, and milling operations, as separately measured with a measuring device in accordance with the Department's measuring device rules, A.A.C. R12-15-901, et seq.
3. The quantity of water from any source, including effluent, reclaimed during the calendar year from each of the following: tailings impoundments and pit dewatering. These quantities shall be separately measured with a measuring device in accordance with the Department's measuring device rules, A.A.C. R-12-15-901, et seq.
4. The tons of ore milled during the calendar year.
5. The tons of ore stacked to heap and/or dump leach during the calendar year.
6. The tons of ore vat leached during the calendar year.
7. The tons of material mined during the calendar year.
8. The tons of mineral produced from mill circuits and from leach circuits during the calendar year.
9. The average gallons of water consumed per ton of mineral produced during the calendar year.
10. The average percentage of solids by weight in tailings transported to the tailings impoundments during the calendar year and in each of the previous two years.
11. The average annual depth of water at the deepest portion of the stilling basin(s).
12. Copies of aerial photos of tailings impoundments, with scale indicated, for use by the Department in determining the wetted surface area of the tailings impoundments.
13. A description of the additional conservation measures applied at the metal mining facility as prescribed in section 6-502, subsection F.

**B. Contiguous Facilities**

A single annual report may be filed for a pre-1985 metal mining facility and a post-1984 metal mining facility that are contiguous and owned by the same owner. The combined operations of the metal mining facilities shall be described pursuant to reporting requirements specified in subsection A of this section.

## ANNUAL REPORT INSERT

Persons holding groundwater rights in Active Management Areas as of December 31 of each year are required to file an annual water withdrawal and use report (annual report) for that calendar year. This annual report must be filed no later than March 31 of the following year, and must account for water withdrawn and used for the entire calendar year. Persons with more than one right must file a separate annual report for each right. Annual report forms are mailed in early January. Failure to receive the proper forms does not relieve a person from the requirement to file.

If you own an Irrigation Grandfathered Right which obtains all water from an Irrigation district, that district may file an annual report on your behalf. Check with your irrigation district to determine whether they intend to file on your behalf.

### MEASURING DEVICES

All water pumped from non-exempt wells in Active Management Areas must be measured with a device approved by the Department. In general, the methods include: 1) installation of an in-line or "totalizing" meter (two discharge measurements must be taken annually but results need not be submitted unless the meter malfunctions); 2) a minimum of two well discharge rate measurements per year to be used in conjunction with energy consumption measurements (this method may not be used if the energy meter serves uses other than the well); and 3) a minimum of two discharge rate measurements per year to be used in conjunction with an approved hour meter. A copy of the measuring rules may be obtained upon request from the AMA offices listed below.

Devices must be installed and maintained to insure that measurement error does not exceed 10%. The pump and discharge system on a well must be so constructed to allow the Department, with its own devices, to check the accuracy of the installed device.

Persons withdrawing groundwater pursuant to an Irrigation Grandfathered Right and one or more Non-Irrigation Rights or Withdrawal Permits must use a sufficient number of devices to allow for the separate measurement of the amount withdrawn pursuant to the Irrigation Grandfathered Right.

If a device malfunctions for a period of more than 72 hours, the malfunction must be reported to the Department within seven days of discovery of the malfunction. Repair or replacement of the device must be made within 30 days or as soon as practicable. Measuring device malfunction reports may be obtained from your Active Management Area office.

Exceptions to the measurement requirement are made only for persons holding Type 2 Non-Irrigation Grandfathered Rights or General Industrial Use Permits with aggregate allotments of ten acre-feet or less. Persons with such rights may estimate annual withdrawals.

### RECORD KEEPING

Records of annual water withdrawal, delivery and use calculations must be maintained for at least three years. In the event that you are selected for a records audit, you will be asked to provide this information.

### FEEES

Withdrawal fees are assessed for each acre foot of water annually withdrawn from wells associated with groundwater rights. This fee is annually set by the Director of the Department each October for the following calendar year. These fees must be included with annual report filings.

Annual reports not filed by the March 31 deadline are subject to late filing penalties of \$25.00 for each month or portion of a month that the annual report has not been filed up to a maximum of \$150.00. In addition, late payment fees of 10% per month to a maximum of 60% are assessed for any withdrawal fees not paid by March 31.

### CHANGES IN OWNERSHIP

The Department must be notified if the person named in the Certificate changes his or her mailing address, conveys ownership of all or a part of the land to another person or wishes to convert the irrigation right to a non-irrigation right. Forms and information relative to these matters are available upon request or on our website at [www.water.az.gov](http://www.water.az.gov).

### ASSISTANCE

For further information, contact your local Active Management Area office: Phoenix 602-771-8585; Prescott 928-778-7202; Pinal 520-838-4857; Tucson 520-770-3800; Santa Cruz 520-761-1814.

## NOTIFICATION OF CHANGE OF OWNERSHIP OF A GROUNDWATER WITHDRAWAL PERMIT

### INSTRUCTIONS

- BOTH THE PRIOR AND NEW PERMIT HOLDERS MUST SIGN THIS FORM.
- NOTE THAT THE FOLLOWING TYPES OF WITHDRAWAL PERMITS MAY NOT BE CONVEYED TO A NEW OWNER:
  - TEMPORARY AND EMERGENCY DEWATERING PERMITS, PURSUANT TO A.R.S. § 45-517 AND 45-518;
  - HYDROLOGIC TESTING PERMIT, PURSUANT TO A.R.S. § 45-519.01.
- PURSUANT TO A.R.S. § 45-113, THE FEE FOR CONVEYING A WITHDRAWAL PERMIT IS \$35.00. PLEASE INCLUDE A CHECK PAYABLE TO A.D.W.R.

In accordance with A.R.S. § 45-520(B), the undersigned parties hereby notify the Arizona Department of Water Resources of the conveyance of the following groundwater withdrawal permit:

1. Groundwater Withdrawal Permit number: 59-\_\_\_\_\_.
2. Type of Permit: \_\_\_\_\_.
3. Amount of permit: \_\_\_\_\_ acre feet per annum.
4. Expiration date of permit \_\_\_\_/\_\_\_\_/\_\_\_\_.
5. Please specify the effective date of this conveyance \_\_\_\_/\_\_\_\_/\_\_\_\_.
6. Indicate the registration numbers of all wells that will be operated pursuant to this permit. Attach a separate sheet if necessary.  
     55-\_\_\_\_\_      55-\_\_\_\_\_      55-\_\_\_\_\_      55-\_\_\_\_\_
7. Indicate the intended place of use of water withdrawn pursuant to this permit:
8. Indicate the intended non-irrigation use(s):

PREVIOUS PERMIT HOLDER (Print or Type)	NEW PERMIT HOLDER (Print or Type)
NAME _____	NAME _____
ADDRESS _____	ADDRESS _____
PHONE _____	PHONE _____

SIGNATURE OF PREV. PERMIT HOLDER _____	DATE _____	SIGNATURE OF NEW PERMIT HOLDER _____	DATE _____
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If you have questions regarding this matter, please phone the appropriate Active Management Area office:  
 Phoenix 602-771-8585; Prescott 928-778-7202; Pinal 520-836-4857; Tucson 520-770-3800; Santa Cruz  
 520-761-1814.