

**STATE OF ARIZONA
SIGNIFICANT AMENDMENT TO
AQUIFER PROTECTION PERMIT NO. P-100534
PLACE ID 5425, LTF 47813**

1.0 AUTHORIZATION

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2 and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A. A. C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, Phelps Dodge Safford, Inc is hereby authorized to operate the Phelps Dodge Dos Pobres San Juan Project, located north of Safford in Graham County, Arizona, over groundwater of the Gila River Basin, in Sections 27-29 and 32-35, Township 5 South, Range 26 East: and Sections 1-5, 7-11, and 14, Township 6 South, Range 26 East of the Gila and Salt River Base Line and Meridian.

This permit replaces the original permit listed in Section 5 of the Water Quality Division Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods), unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below, or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant, and as determined at the applicable POC, occurs as a result of the discharge from the facility.

1.1 PERMITTEE INFORMATION

Facility Name: Freeport McMoRan Dos Pobres San Juan Project

Permittee:	Mailing Address:	Facility's Street Address:
Freeport McMoRan Safford, Inc	P.O. Box 1019 Safford, Arizona 85548	8500 N. Phelps Dodge Road Safford, Arizona 85546

Facility Contact: John Korolsky Senior Environmental Engineer (928) 792-5825

Emergency Telephone Number: (928) 792-5801

Latitude: 32° 57' 00" N **Longitude:** 109° 40' 00" W

Legal Description: Sections 27-29 and 32-35, Township 5 South, Range 26 East: and Sections 1-5, 7-11, and 14, Township 6 South, Range 26 East of the Gila and Salt River Base Line and Meridian

1.2 AUTHORIZING SIGNATURE

Henry R. Darwin, Acting Director
Water Quality Division
Arizona Department of Environmental Quality
Signed this ____ day of _____, 2009

THIS AMENDMENT SUPERCEDES ALL PREVIOUS PERMITS

2.0 SPECIFIC CONDITIONS [A.R.S. §§ 49-203(4), 49-241(A)]

2.1 Facility / Site Description[A.R.S. § 49-243(K)(8)]

The Dos Pobres/San Juan Project area is located in Graham County, Arizona, approximately eight miles north of the City of Safford, in the foothills of the Gila Mountains. The project is located on Phelps Dodge patented land. The plans for this site involve open-pit copper mining on the Dos Pobres and San Juan properties and leaching of the ore on a lined leach pad. The resulting pregnant leach solution will be processed at an on-site solvent extraction/electrowinning (SX/EW) plant. The project will consist of the development of two open pits, one heap leach pad, one process solution pond, one non-stormwater pond, one evaporation pond, a SX/EW process plant, and infrastructure and support facilities associated with copper mining. Domestic wastewater discharges will be authorized separately under Type 4 general aquifer protection permits. This permit authorizes the operation of the discharging facilities described below:

2.1.1 Heap Leach Pad (PAD)

This facility will be utilized for the storage and leaching of copper ore and other solid, copper-bearing materials, sediment and wash water generated from the mine vehicle wash facilities, and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. The pad will have an area of approximately 748 acres, with an ultimate height of the ore pile of up to 600 feet above the liner surface. It will be lined by a Linear Low Density Polyethylene (LLDPE) geomembrane liner, constructed over a prepared subgrade of compacted low permeability soil. The LLDPE geomembrane will vary in thickness with an 80-mil-thick liner material within the center area of the pad. A 60-mil thick (minimum) liner material shall underlie the slopes of the stockpile. Raffinate will be applied to the ore pile, with the resulting leachate being collected in a series of leachate collection pipes installed on top of the geomembrane liner. The collection pipes will be protected by approximately 24 inches of 1.5-inch crushed aggregate material. Pregnant leach solution (PLS) will be routed through the collection pipe system into a stainless steel PLS tank at the downgradient edge of the pad, and from there to the SX/EW process plant.

2.1.2 Excess Process Solution Impoundment (EPSI)

This impoundment is designed to capture excess solution and stormwater from the PLS tank and from the Heap Leach Pad. It has a design capacity of 15 million gallons. It will be double-lined, with a leakage collection and recovery system. The primary liner is a minimum 80-mil high density polyethylene (HDPE). The secondary (bottom) liner is a 60-mil HDPE composite liner. Collected fluid will be pumped to the PLS tank, SX/EW Plant, or back into the operations cycle. Overflow will pass through an HDPE lined channel into the Non-stormwater Impoundment (NSI).

2.1.3 Non-stormwater Impoundment (NSI)

This impoundment will receive overflow through the spillway from the Excess Process Solution Impoundment. It will have a composite liner consisting of a minimum 60-mil HDPE liner in the general impoundment area overlying a minimum 6 inches of 3/8 inch minus bedding soil compacted to 95 percent maximum dry density and a 100-mil HDPE liner in the area of pump operation. The total storage capacity at the emergency spillway elevation will be 430 acre-feet, with a maximum depth below the spillway of 47.5 feet. Accumulated fluid will be pumped back into the operations cycle. Potential discharges from the Non-Stormwater Impoundment to nearby receiving waters named Talley Wash are addressed under the terms and provisions of an individual Arizona Pollutant Discharge Elimination System (AZPDES) permit (Permit No. AZ0024309).

2.1.4 San Juan Non-stormwater Evaporation Impoundment (SJNEI)

This impoundment captures stormwater and seepage from the historic San Juan leach stockpiles. The impoundment is an existing unlined facility that will be upgraded with a composite liner system consisting of a 60-mil HDPE liner over 6 inches minimum thickness of compacted low permeability

clay. The maximum storage capacity of the impoundment will be 7.7 acre-feet at the crest elevation. Seepage is collected in a lined intercept trench equipped with 6 reclaim wells located downgradient of the stockpiles and upgradient of the impoundment, from which water is pumped into the impoundment. Accumulated fluid in the impoundment is evaporated.

The site includes the following permitted discharging facilities:

Facility	Latitude	Longitude
Heap Leach Pad (PAD)	32° 56' 45" N	109° 41' 00" W
Excess Process Solution Impoundment (EPSI)	32° 56' 15" N	109° 41' 15" W
Non-stormwater Impoundment (NSI)	32° 56' 00" N	109° 41' 30" W
San Juan Non-stormwater Evaporation Impoundment / (SJNEI)	32° 56' 30" N	109° 39' 15" W

Annual Registration Fee [A.R.S. § 49-242]

The annual registration fee for this permit is established by A.R.S. § 49-242 and is payable to ADEQ each year. The design flow is over 10 million gallons per day.

Financial Capability [A.R.S. § 49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203 and as amended. The permittee shall maintain financial capability throughout the life of the facility. The estimated closure and post-closure costs are \$1,065,900 and \$240,875 per year, respectively. The financial capability was demonstrated through A.A.C. R18-9-A203(C)(8).

2.2 Best Available Demonstrated Control Technology [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The permittee is authorized to operate the permitted facilities listed in Section 4, Table 4.1.1. The facility shall be constructed, operated, and maintained in accordance with the construction details in the application, dated October 2, 1998, and supplemental documents. Provision shall be made in all Best Available Demonstrated Control Technology (BADCT) designs for surface water control (run-on and runoff) for a minimum of the 100-year, 24-hour storm event.

2.2.1 Engineering Design

The list of permitted facilities and a description of BADCT is included in Section 4, Table 4.1.1.

2.2.2 Site-specific Characteristics

Not applicable

2.2.3 Pre-operational Requirements

During construction, the following requirements shall be recorded in a logbook as required in Section 2.7.2. The results of all Minimum Testing Frequency, Construction Quality Assurance (CQA) observations and testing (field and laboratory) must be presented in a certification report to the Arizona Department of Environmental Quality (ADEQ). Fill materials with a high percentage of particles in excess of 3/4-inch nominal size, which in the opinion of the Certifying Engineer are not

practical to be tested for moisture density control with ASTM D-1557 procedures, shall be placed and compacted according to a method specification to be determined and approved by the Certifying Engineer, and documentation for achieving this shall be placed in the logbook in the form of a certified report. Testing frequency for geomembrane peel and shear may be reduced to 1 per 1000 linear feet of seam if no failed seams are detected for the first 1.0 million square feet of installed liner, upon approval of the Certifying Engineer, and a certified report for seam testing results shall be placed in the logbook. Results of this testing shall be submitted for the review and approval of the Groundwater Section, Technical Support Unit (GWS/TSU). The permittee shall comply with the pre-operational requirements in Section 4, Table 4.2.2.

2.2.4 Operational Requirements

A description of required inspections and operational monitoring is included in Section 4, Table 4.2.1.

If damage is identified during an inspection that could cause or contribute to an unauthorized discharge, proper repairs shall be promptly performed.

The Action Leakage Rate and Rapid and Large Leakage Rate have been established for the Excess Process Solution Impoundment. Data is summarized below in Table 2.2.4 and included in Tables 4.1.1, and 4.2.1. If these rates are exceeded, the permittee shall implement the provisions of Sections 2.6.2.4 or 2.6.2.5.

Table 2.2.4 Leakage Rates for Leakage Collection Recovery System Facilities		
Facility Name	Action Leakage Rate (GPD)	Rapid and Large Leakage Rate (GPD)
Excess Process Solution Impoundment	1,800	15,000

GPD = gallons per day

2.3 Discharge Limitations [A.R.S. §§ 49-201(12), 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The permittee shall operate and maintain all permitted facilities listed below to prevent unauthorized discharges pursuant to A.R.S. § 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure¹, uncontrollable leakage, overtopping (e.g., exceeding the maximum storage capacity, defined as a fluid level exceeding the crest elevation of a permitted impoundment), berm breaches that result in an unexpected loss of fluid, accidental spills, or other unauthorized discharges. The discharge limitations in this section are not applicable to any discharge in excess of the 100-year, 24 hour storm event or process overflow during a power outage exceeding 24 hours in duration.

2.3.1 Heap Leach Pad

The Pad is designed and authorized for use in storage and leaching of copper ore and other solid, copper-bearing materials from the facility covered under the permit, including sediment and wash water generated from the mine vehicle wash facilities and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. Pursuant to Table 4.1.1, the Pad shall have a maximum capacity of 618 million tons of (oxide and sulfide) copper ore, and the ultimate height of the ore pile shall not exceed a maximum of 600 feet above the leach pad liner surface elevation.

2.3.2 Excess Process Solution Impoundment

The EPSI is designed and authorized for the storage of process solutions and stormwater. Flows

1. Liner failure in a single-lined impoundment (Non-Stormwater Impoundment and San Juan Non-Stormwater Evaporation Impoundment) is any condition that would result in leakage exceeding 550 gallons per acre per day.

through the spillway of the Excess Process Solution Impoundment into the NSI are not considered to be a discharge limitation violation.

2.3.3 Non-stormwater Impoundment

The NSI is designed and authorized to receive stormwater and process solutions as a result of storm events or process upset events. Flow through the spillway consistent with AZPDES Permit AZ0024309 is not considered to be a discharge limitation violation.

2.3.4 San Juan Non-stormwater Evaporation Impoundment

The SJNEI is designed and authorized to receive stormwater and seepage from the closed San Juan leach stockpiles.

2.4 Point(s) of Compliance [A.R.S. § 49-244]

The POCs are established by the following monitoring location(s):

POC Locations	Latitude	Longitude
POC No. 1	32° 56' 33" N	100° 40' 32" W
POC No. 2	32° 56' 11" N	100° 41' 02" W
POC No. 3	32° 55' 48" N	100° 41' 23" W
POC No. 4	32° 55' 26" N	109° 41' 50" W
POC No. 5	32° 55' 34" N	109° 42' 03" W
POC No. 6	32° 55' 58" N	109° 42' 09" W
POC No. 7	32° 56' 19" N	109° 42' 18" W
POC No. 8	32° 56' 51" N	109° 41' 55" W
POC No. 9	32° 57' 09" N	109° 41' 27" W
POC No. 10	32° 56' 15" N	109° 39' 15" W

Monitoring requirements for each POC are listed in Section 4.2, Tables 4.2.4 and 4.2.5.

The Director may amend this permit to designate additional POCs, if information on groundwater gradients or groundwater usage indicates the need.

2.5 Monitoring Requirements [A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

All monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and chain of custody procedures shall be followed, in accordance with currently accepted standards of professional practice. The permittee shall consult the most recent version of the ADEQ Quality Assurance Project Plan (QAPP) and EPA 40 CFR PART 136 for guidance in this regard. Copies of laboratory analyses and chain of custody forms shall be maintained at the permitted facility. Upon request these documents shall be made immediately available for review by ADEQ personnel.

2.5.1 Discharge Monitoring

Not applicable

2.5.2 Facility / Operational Monitoring

The required inspections and operational monitoring shall be performed in accordance with Section 4, Table 4.2.1.

2.5.3 Groundwater Monitoring and Sampling Protocols

2.5.3.1 Groundwater Sampling Protocol

Static water levels shall be measured and recorded prior to sampling. Wells shall be purged of at least three borehole volumes (as calculated using the static water level) or until field parameters (pH, temperature, and conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80 percent of the original borehole volume, or for 24 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as dry for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the Self-monitoring Report Form (SMRF).

2.5.3.2 POC Well Installation

Ten monitor wells designated as POC wells are listed in Section 4, Table 4.1.2. Three of the wells, POC-2 (AP-22), POC-8 (AP-11), and POC-10 (AP-25), are currently installed at the facility. The remaining seven POC wells will require new installation. Wells POC-1, POC-3, POC-4, POC-5, POC-6, POC-7, and POC-9 shall be installed a minimum of 12 months prior to start up of the heap leaching operation. Each POC well shall be constructed to monitor groundwater quality in the uppermost aquifer. Detailed geologic and well construction logs for each well shall be submitted to the ADEQ GWS/TSU within 60 days of well installation. Where identification is possible, the logs should note the depth at which groundwater is first encountered in each well. If a well screen greater than 60 feet in length is installed in a well, the permittee shall obtain ADEQ approval prior to construction.

2.5.3.3 Ambient Groundwater Quality Monitoring for POC Wells

Twelve consecutive months of groundwater sampling must be completed to establish existing ambient groundwater quality conditions for evaluating any short-term or long-term changes in water quality. Each monthly groundwater sample shall be analyzed for the parameters listed in Section 4, Table 4.2.3.

2.5.3.4 Alert Levels for POC Wells

Within 90 days of receipt of the laboratory analyses for the final month of the ambient groundwater monitoring period for each POC well referenced in Section 4, Table 4.1.2, the permittee shall, under an amendment to the APP, submit the ambient groundwater monitoring data in tabulated form to the ADEQ GWS for review. Copies of all laboratory analytical reports, field notes, the Quality Assurance/Quality Control (QA/QC) procedures used in collection and analysis of the samples, and a report including the statistical calculation of the Alert Levels (ALs) and Aquifer Quality Limits (AQLs) for all parameters listed in Section 4, Tables 4.2.4 and 4.2.5, to be established for each of the POC wells, shall be included. The permittee may submit a report with the calculations for each AL and AQL included in the permit for review and approval by ADEQ, or the permittee may defer calculation of the ALs and AQLs by the GWS/TSU. The ALs shall be established and calculated by the following formula, or another valid statistical method submitted to GWS/TSU in writing and approved for this permit by the GWS/TSU.

$$AL = \bar{0} + K\Phi$$

Where $\bar{0}$ = mean, Φ = standard deviation, and K = one-sided normal tolerance interval with a 95 percent confidence level (Lieberman, G.J. (1958) Tables for One-sided Statistical Tolerance Limits: Industrial Quality Control, Vol. XIV, No. 10). Obvious outliers should be

excluded from the data used in the AL calculation.

The following criteria shall be met in establishing ALs in the permit:

1. The AL will be calculated for a parameter using the analyses from a minimum of 12 consecutive monthly sample rounds. The permittee shall not use more than 12 sample rounds in the calculation.
2. Any data where the practical quantification limit (PQL) exceeds 80 percent of the AWQS shall not be included in the AL calculation.
3. If a parameter is below the detection limit, the permittee must report the value as “less than” the numeric value for the PQL or detection limit for the parameter, not just as “non-detect”. For those parameters, the permittee shall use a value of one-half the reported detection limit for the AL calculation.
4. If the analytical results from more than 50 percent of the samples for a specific parameter are non-detect, then the AL shall be set at 80 percent of the AWQS.
5. If the calculated AL for a specific constituent and well is less than 80 percent of the AWQS, the AL shall be set at 80 percent of the AWQS for that constituent in that well.

2.5.3.5 Aquifer Quality Limits for POC Wells

For each of the monitored analytes for which a numeric AWQS has been adopted, the AQL shall be established as follows:

1. If the calculated AL is less than the AWQS, then the AQL shall be set equal to the AWQS.
2. If the calculated AL is greater than the AWQS, then the AQL shall be set equal to the calculated AL value, and no AL shall be set for that constituent at that monitoring point.

2.5.3.6 Compliance Groundwater Quality Monitoring for POC Wells

Quarterly compliance groundwater monitoring in each POC well shall commence within the first calendar quarter after completion of the ambient groundwater sampling period. For quarterly compliance monitoring, the permittee shall analyze groundwater samples for the parameters listed in Section 4 Table 4.2.4. In addition to quarterly compliance groundwater monitoring, every two years (biennial) the permittee shall analyze samples from the POC wells for an expanded list of parameters. For the biennial monitoring events, the parameters listed in Section 4, Table 4.2.5 shall be analyzed. The biennial sampling event shall replace the regularly scheduled quarterly sampling event.

The permittee may submit a written request to the GWS/TSU to modify, reduce or delete a monitoring parameter in the quarterly or biennial compliance groundwater monitoring tables (Tables 4.2.4, and 4.2.5) in accordance with the following criteria:

1. The parameter in question has not been detected for at least two consecutive biennial or four consecutive quarterly monitoring events in the well. The PQL reported by the laboratory shall be less than 80 percent of the established numeric AWQS, and shall not be greater than three times the laboratory method detection limit for that parameter.
2. The permittee shall submit a written report indicating the parameter(s) proposed for modification, accompanied by supporting data, including laboratory analytical reports and quality assurance/quality control data, to the ADEQ GWS/TSU for review.
3. Upon review, the GWS/TSU will determine if the modification(s) requested is justified and approved. The respective changes, if approved, will require an amendment to the permit.

2.5.3.7 POC Well Replacement

In the event that one or more of the designated POC wells should become unusable or

inaccessible due to damage, a decrease in water levels, or any other event, a replacement POC well shall be constructed and installed within 90 days upon approval by ADEQ.

2.5.4 Surface Water Monitoring and Sampling Protocols

None required

2.5.5 Analytical Methodology

All samples collected for compliance monitoring shall be analyzed using Arizona state approved methods. If no state approved method exists, then any appropriate EPA approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state certified laboratories can be obtained at the address below:

Arizona Department of Health Services
Office of Laboratory Licensure and Certification
250 North 17th Avenue
Phoenix, AZ 85007
Phone: (602) 364-0720

2.5.6 Installation and Maintenance of Monitoring Equipment

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the ADEQ Groundwater Section for approval prior to installation and the permit shall be amended to include any new points.

2.6 Contingency Plan Requirements

[A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

2.6.1 General Contingency Plan Requirements

At least one copy of the approved contingency and emergency response plan(s) submitted in response to the compliance schedule, Section 3, Paragraph 2, shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL that is exceeded or any violation of an AQL, or other permit condition shall be reported to the ADEQ following the reporting requirements in Section 2.7.3.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

2.6.2 Exceeding of Alert Levels

2.6.2.1 Exceeding of Alert Levels Set for Operational Conditions

1. Performance Levels Set for Freeboard

In the event that freeboard performance levels in a surface impoundment are not maintained, the permittee shall:

- a. As soon as practicable, cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the impoundment until the water level is restored at or below the permitted freeboard limit.
- b. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions as necessary to avoid future occurrences.
- c. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log shall be maintained according to Section 2.7.2 (Operational Inspection / Log Book Recordkeeping). Records documenting each freeboard incident and actions taken to correct the problem shall be included in the current report, as required in Section 2.7.1 (Self Monitoring Report Forms).
- d. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

2. Performance Levels, Other Than Freeboard

- a. If an operational AL listed in Section 4, Table 4.2.1 has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
 - i. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
 - ii. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.
- b. The AL exceedance, results of the investigation, and any corrective action taken shall be reported to the Water Quality Compliance Section, Enforcement Unit (WQCS/EU), within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
- c. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 3 and any specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL being exceeded. To implement any other corrective action the permittee shall obtain prior approval from the ADEQ according to Section 2.6.6.

2.6.2.2 Exceeding of Alert Levels Set for Discharge Monitoring

Not applicable

2.6.2.3 Exceeding of Alert Levels in Groundwater Monitoring

2.6.2.3.1 Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. If an AL for a pollutant set in Section 4, Tables 4.2.4 or 4.2.5 has been exceeded, the permittee may conduct verification sampling within 5 days of becoming aware of an AL being exceeded. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms the AL being exceeded or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately initiate an investigation of the cause of the AL being exceeded, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, and hydrologic review of groundwater conditions including upgradient water quality.
3. The permittee shall initiate actions identified in the approved contingency plan and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL being exceeded. To implement any other corrective action the permittee shall obtain prior approval from the ADEQ according to Section 2.6.6. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Groundwater Section, that although an AL is exceeded, pollutants are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Groundwater Section.
4. Within 30 days after confirmation of an AL being exceeded, the permittee shall submit the laboratory results to the Water Quality Compliance Section, Data Unit along with a summary of the findings of the investigation, the cause of the AL being exceeded, and actions taken to resolve the problem.
5. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
6. The increased monitoring required as a result of an AL being exceeded may be reduced to the regularly scheduled frequency, if the results of three consecutive monthly sequential sampling events demonstrate that no parameters exceed the AL.
7. If the increased monitoring required as a result of an AL exceedance continues for more than six sequential sampling events, the permittee shall submit a second report documenting an investigation of the continued AL exceedance within 30 days of the receipt of laboratory results of the sixth sampling event.

2.6.2.4 Exceedance of Action Leakage Rate for Excess Process Solution Impoundment

At a minimum, the permittee shall initiate the following actions within 3 days of becoming aware of an exceedance of the action leakage rate (ALR) of 1,800 gallons per day (gpd) for the Excess Process Solution Impoundment. All information shall be recorded in a log book as described in Section 2.7.2. The permittee shall:

1. Drain and/or pump out all fluid collected in the leak collection and recovery system (LCRS) to reduce head on the liner system;
2. Quantify and record the amount of fluid pumped from the leak collection and recovery system on a weekly basis until the leakage rate is no longer exceeded;
3. Assess the potential for migration of liquids out of the containment system; and,
4. Assess the current condition of the liner system.
5. Submit the results of the assessment, the cause of the exceedance and actions taken to resolve the problem in the report under Section 2.7.3.

2.6.2.5 Rapid and Large Leakage Exceedance in the Excess Process Solution Impoundment

Additional response actions based on rapid and large leakage rate (RLL) in excess of 15,000 gpd for the Excess Process Solution Impoundment shall include the following:

1. Notify the ADEQ Water Quality Compliance Section, Enforcement Unit within 24 hours of becoming aware of the exceedance,
2. Reduce the hydraulic head on the liner including emptying of the portion of the impoundment over the affected liner,
3. Conduct visual inspection to identify areas of leakage,
4. Repair all identified areas of leakage within 90 days of discovery,
5. Initiate closure or partial closure of the impoundment if identified areas of leakage cannot be repaired within 90 days of discovery,
6. After repairs have been made, monitor the leakage rate on a weekly basis while the impoundment is being filled, and for a period of 3 months after filling.

Within 30 days of a confirmed RLL exceedance, the permittee shall submit a written report to Compliance. The written report shall include a description of the exceedance and its potential causes, the period of exceedance and the anticipated time period during which the exceedance is expected to continue, and a description of any actions taken or planned to be taken to eliminate or prevent recurrence of the exceedance and to mitigate the impacts of the exceedance. Upon approval of the ADEQ, GWS the permittee shall initiate the actions necessary to mitigate the impacts of the exceedance.

2.6.3 Discharge Limitations Violations

2.6.3.1 Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid

In the event of liner failure, containment structure failure, or unexpected loss of fluid as described in Section 2.3, the permittee shall take the following actions:

1. As soon as practicable, cease all discharges to the surface impoundment as necessary to prevent any further releases to the environment.
2. Within 24 hours of discovery, notify the ADEQ Water Quality Compliance Section, Enforcement Unit.
3. Within 5 days of discovery of a failure that resulted in a release to the subsurface, collect representative samples of the fluid remaining in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4, Table 4.2.3. Within 30 days of the incident, submit a copy of the analytical results to the ADEQ Water Quality

Compliance Section, Enforcement Unit.

4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the surface impoundment and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the surface impoundment. The permittee shall not resume discharging to the surface impoundment until repairs of any failed liner or structure are performed. Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and available for ADEQ review.
5. As soon as practicable, remove fluid remaining in the surface impoundment as necessary to prevent further releases to the subsurface and/or to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed, a description of the removal method, and other disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2.
6. Within 30 days of discovery of the incident, submit a report to ADEQ as specified in Section 2.7.3.2 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 5, listed above. Upon review of the report, the ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to the ADEQ, for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of the ADEQ, the permittee shall implement the approved plan.
8. Within 30 days of completion of corrective actions, submit to the ADEQ, a written report as specified in section 2.6.6 (Corrective Actions). Upon review of the report, the ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.3.2 Overtopping of a Surface Impoundment

If overtopping of fluid from a permitted surface impoundment occurs, and results in a discharge pursuant to A.R.S. § 49-201(12), the permittee shall:

1. As soon as practicable, cease all discharges to the surface impoundment to prevent any further releases to the environment.
2. Within 24 hours of discovery, notify the ADEQ Water Quality Compliance Section, Enforcement Unit.
3. Within 5 days, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4, Table 4.2.3. Within 30 days of the incident, submit a copy of the analytical results to the ADEQ Water Quality Compliance Section, Enforcement Unit.
4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Table 4.1.1. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust

operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.

6. Within 30 days of discovery of overtopping, submit a report to the ADEQ as specified in section 2.7.3.2 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, the ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, and based on sampling in Subsection 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to the ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of the ADEQ, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to the ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.3.3 Inflows of Unexpected Materials to a Surface Impoundment

The types of materials that are expected to be placed in the permitted surface impoundments are specified in Section 2.3 (Discharge Limitations). If any unexpected materials flow to a permitted surface impoundment, the permittee shall:

1. As soon as practicable, cease all unexpected inflows to the surface impoundment(s).
2. Within 24 hours of discovery, notify the ADEQ Water Quality Compliance Section, Enforcement Unit.
3. Within 5 days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.
4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in section 2.7.3.2 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 3 listed above. Upon review of the report, the ADEQ may request additional monitoring or remedial actions.
5. Upon review of the report, the ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.4 Aquifer Quality Limit Violation

1. If an AQL set in Section 4, Tables 4.2.4 or 4.2.5 has been exceeded, the permittee may conduct verification sampling within 5 days of becoming aware of an AQL being exceeded. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms that the AQL is violated for any parameter or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and the ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.

3. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
4. The permittee shall notify any downstream or downgradient users who may be directly affected by the discharge.
5. The permittee shall continue monitoring at the increased frequency until the contaminant(s) is below the AQL and AL for three consecutive months.

2.6.5 Emergency Response and Contingency Requirements for Unauthorized Discharges pursuant to A.R.S. §49-201(12) and pursuant to A.R.S. § 49-241

2.6.5.1 Duty to Respond

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

2.6.5.2 Discharge of Hazardous Substances or Toxic Pollutants

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. § 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the ADEQ Water Quality Compliance Section at (602) 771-4620 within 24-hours upon discovering the discharge of hazardous material which: a) has the potential to cause an AWQS or AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

2.6.5.3 Discharge of Non-hazardous Materials

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the ADEQ Water Quality Compliance Section at (602) 771-4620 within 24-hours upon discovering the discharge of non-hazardous material which: a) has the potential to cause an AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

2.6.5.4 Reporting Requirements

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to the ADEQ Water Compliance Section, Enforcement Unit within thirty days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and

and include all information specified in Section 2.7.3. If a notice is issued by the ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in that notice. Upon review of the submitted report, the ADEQ may require additional monitoring or corrective actions.

2.6.6 Corrective Actions

Specific contingency measures identified in Section 2.6 have already been approved by the ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Groundwater Section prior to implementing a corrective action to accomplish any of the following goals in response to exceeding an AL or violation of an AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer; and/or
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the ADEQ Water Quality Compliance Section, a written report describing the causes, impacts, and actions taken to resolve the problem.

2.7 Reporting and Recordkeeping Requirements

[A.R.S. § 49-243(K)(2) and A.A.C. R18-9-A206(B) and R18-9-A207]

2.7.1 Self-monitoring Report Form

1. The permittee shall complete the SMRF provided by the ADEQ, and submit them to the Water Quality Compliance Section, Data Unit.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a quarter, the permittee shall enter "not required" on the SMRF and submit the report to the ADEQ. The permittee shall use the format devised by the ADEQ.
3. The tables contained in Section 4.0 list the parameters to be monitored and the frequency for reporting results for groundwater compliance monitoring. Analytical methods shall be recorded on the SMRF.
4. In addition to the SMRF, the information contained in A.A.C. R18-9-A206(B)(1) shall be included for exceeding an AL or violation of an AQL, DL, or any other permit condition being reported in the current reporting period.

2.7.2 Operation Inspection / Log Book Recordkeeping

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;

5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book, and
7. Monitoring records for each measurement shall comply with R18-9-A206(B)(2).

2.7.3 Permit Violation and Alert Level Status Reporting

1. The permittee shall notify the Water Quality Compliance Section in writing within five days (except as provided in Section 2.6.5) of becoming aware of a violation of any permit condition, discharge limitation or of an Alert Level being exceeded.
2. The permittee shall submit a written report to the Water Quality Compliance Section within 30 days of becoming aware of the violation of any permit condition or discharge limitation. The report shall document all of the following:
 - a. Identification and description of the permit condition for which there has been a violation and a description of its cause.
 - b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue.
 - c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation.
 - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an Aquifer Water Quality Standard.
 - e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring.
 - f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

2.7.4 Operational, Other or Miscellaneous Reporting

The permittee shall, upon completion of the biennial sampling described in Table 4.2.5, submit a monitoring summary report to the Groundwater Section. This report shall be due at the same time as the SMRF form for the biennial sampling event. The report shall include, but not be limited to the following:

1. A description of any deviations from standard sampling protocols during the reporting period.
2. A summary of all exceedances of ALs, AQLs, Action Levels, or operational limits that occurred during the reporting period.
3. Graphical time versus concentration plots of field pH, sulfate, total dissolved solids, and any parameter which exceeded an applicable AL or AQL in the past eight quarters at each POC well, and tabulated sampling data for all wells required to be sampled by this permit during the last eight quarters.
4. An updated table of all monitor wells and piezometers in the Discharge Impact Area including, but not limited to, location of well, depth of well, depth to water.
5. A summary of any groundwater monitor wells replaced in the reporting period including, but not limited to, location of well, depth of well, depth to water, and screened interval.
6. A list of any new sumps, impoundments, or vehicle washes constructed within the passive containment to be accompanied by an APP amendment application, unless exempt or covered by a General APP.

2.7.5 Reporting Location

All SMRFs shall be submitted to:
Arizona Department of Environmental Quality
Water Quality Compliance Section, Data Unit
Mail Code: 5415B-1
1110 W. Washington Street
Phoenix, AZ 85007

Phone (602) 771-4513

All documents required by this permit to be submitted to the Water Quality Compliance Section shall be directed to:

Arizona Department of Environmental Quality
Water Quality Compliance Section
Mail Code: 5415B-1
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4614

All documents required by this permit to be submitted to the Groundwater Section shall be directed to:

Arizona Department of Environmental Quality
Groundwater Section
Mail Code: 5415B-3
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4428

2.7.6 Reporting Deadline

The following table lists the quarterly report due dates:

Monitoring conducted during quarter:	Quarterly Report due by:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

2.7.7 Changes to Facility Information in Section 1.0

The Groundwater Section and Water Quality Compliance Section shall be notified within 10 days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person or Emergency Telephone Number.

2.8 Temporary Cessation [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Water Quality Compliance Section before ceasing operation of the facility for a period of 60 days or greater.

At the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ's approval, the permittee shall implement the approved plan. If necessary, the ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Water Quality Compliance Section of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

2.9 Closure [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the Water Quality Compliance Section of the permittee's intent to cease operation without resuming activity for which the facility was designed or operated.

2.9.1 Closure Plan

Within 90 days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3).

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

2.9.2 Closure Completion

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Section indicating that the approved Closure Plan has been implemented fully and providing supporting documentation to demonstrate that clean closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean closure has been achieved, the ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of post-closure stated in this permit:

1. Clean closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with aquifer water quality standards at the applicable point of compliance;
3. Continued action is required to verify that the closure design has eliminated discharge to the extent intended;
4. Remedial or mitigative measures are necessary to achieve compliance with Title 49, Ch. 2;
5. Further action is necessary to meet property use restrictions.

2.10 Post-closure [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Section.

In the event clean closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the Groundwater Section a Post-closure Plan that addresses post-closure maintenance and monitoring actions at the facility. The Post-closure Plan shall meet all requirements of A.R.S. §§ 49-201(30) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the Post-closure Plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the Post-closure Plan.

2.10.1 Post-closure Plan

Reserved

2.10.2 Post-closure Completion

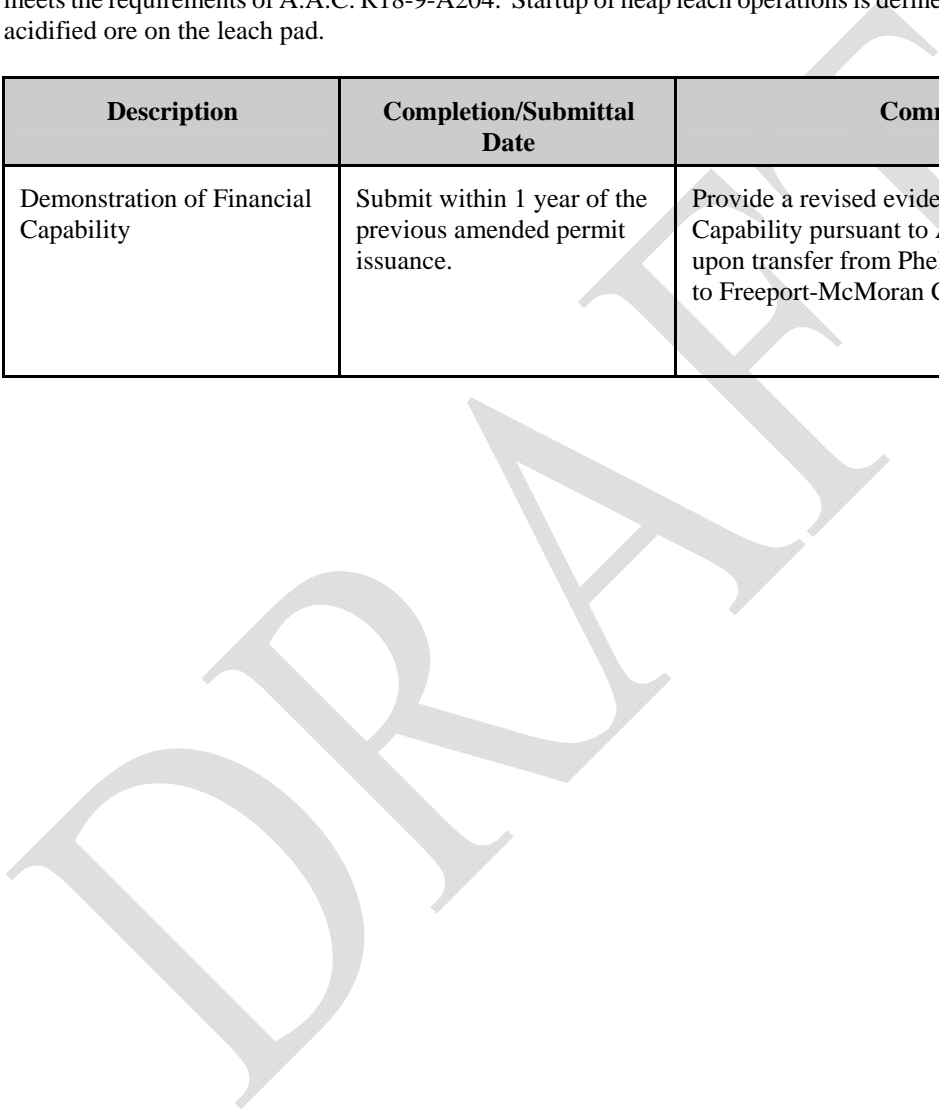
Reserved

3.0 COMPLIANCE SCHEDULE [A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

See compliance schedule Table 4.4.1. For each compliance schedule item listed in table 4.4.1, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items, to the Groundwater Section. A copy of the cover letter must also be submitted to the Water Quality Compliance Section, Data Unit.

Prior to startup of heap leach operations, the applicant shall submit for ADEQ approval, a contingency plan that meets the requirements of A.A.C. R18-9-A204. Startup of heap leach operations is defined as the first placement of acidified ore on the leach pad.

Description	Completion/Submittal Date	Comments
Demonstration of Financial Capability	Submit within 1 year of the previous amended permit issuance.	Provide a revised evidence of Financial Capability pursuant to A.A.C. R18-9-A203 upon transfer from Phelps Dodge Safford, Inc. to Freeport-McMoran Copper and Gold Inc.



4.0 TABLES AND FIGURES

4.1 FACILITY AND POC TABLES

Table 4.1.1 Permitted Facilities and BADCT

Table 4.1.2 Point of Compliance Locations

4.2 COMPLIANCE AND OPERATIONAL MONITORING TABLES

Table 4.2.1 Required Inspections and Operational Monitoring

Table 4.2.2 Pre-operational Requirements

Table 4.2.3 List of Parameters for Quarterly Ambient Groundwater Monitoring for All POC Wells

Table 4.2.4 Quarterly Compliance Groundwater Monitoring Requirements

Table 4.2.5 Biennial Compliance Groundwater Monitoring Requirements

4.3 CONTINGENCY MONITORING TABLE

Table 4.3.1 Groundwater Contingency Monitoring (**Reserved**).

4.4 COMPLIANCE SCHEDULE TABLE

Table 4.4.1 Compliance Schedule

4.5 SITE MAP

Attachment 1 Point of Compliance Well Locations

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

FACILITY NAME	LATITUDE / LONGITUDE	PERMIT TYPE	DESCRIPTION OF BADCT
Heap Leach Pad (PAD)	32° 56' 45" N / 109° 41' 00" W	Individual	<p>Prescriptive BADCT¹: The Leach Pad shall be constructed using a composite liner system over a prepared subgrade. The composite liner system design shall consist of a 60-mil and 80-mil Linear Low Density Polyethylene (LLDPE) geo-membrane underlain by a minimum of 12 inches of compacted 3/8-inch minus, low permeability soil (hydraulic conductivity no greater than 10⁻⁶ cm/sec). The LLDPE geomembrane shall vary in thickness with an 80-mil-thick liner material within the center area of the pad. A 60-mil thick (minimum) liner material shall underlie the slopes of the stockpile. The geo-membrane shall be covered by approximately 24 inches of nominal 1.5-inch crushed material, overlying a network of leachate collection pipes laid on top of the geo-membrane. The geo-membrane shall be secured by an engineered trench. The Pad footprint consists mainly of slopes ranging from less than 10:1 to 3:1 (H:V). Surface water run-on from the 100-year, 24-hr storm event shall be diverted around the operational phase of the facility. The design and construction details of the Leach Pad and heap, approved by ADEQ, are contained in the APP Amendment Application, dated March 2007. Specific construction and operational activities of the Leach Pad shall consist of the following:</p> <ol style="list-style-type: none"> 1. The Leach Pad shall have a maximum capacity of 618 million tons of (oxide and sulfide) copper ore. 2. The ultimate height of the ore pile shall not exceed a maximum of 600 feet above the leach pad liner surface elevation. 3. Maximum areal extent of the Leach Pad shall not exceed the foot print shown in the approved design plans provided in the APP Amendment Application, dated March 2007. 4. The Leach Pad shall be loaded primarily with agglomerated ore using a conveyor/stacking system, with supplemental run-of-mine ore transported to the pad via trucks. The Leach Pad shall be loaded in accordance with the construction plans presented in the amendment application. <p>The overall external slope of the ore heap shall vary from approximately 2.00(H):1(V) on the north, east, and west slopes to 2.25(H):1(V) on the south slope.</p>

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

FACILITY NAME	LATITUDE / LONGITUDE	PERMIT TYPE	DESCRIPTION OF BADCT
Excess Process Solution Impoundment (EPSI)	32° 56' 15" N / 109° 41' 15" W	Individual	<p>Prescriptive BADCT¹: The impoundment shall be constructed using a double liner incorporating a LCRS. The primary liner shall be a minimum 80-mil thick high density polyethylene (HDPE) which shall overlie a geo-net for the rapid collection of leakage through the primary liner. The geo-net and LCRS shall be underlain by a 60-mil thick HDPE secondary liner. The secondary liner shall be a composite liner placed directly over a minimum 12-inch layer of compacted 3/8-inch minus soil underliner with a saturated hydraulic conductivity no greater than 10⁻⁶ cm/sec. The design and construction details of the Excess Process Solution Impoundment, approved by ADEQ, are contained in the APP Amendment Application, dated March 2007. Specific construction and operational activities of the impoundment shall consist of the following:</p> <ol style="list-style-type: none"> 1. The impoundment shall have a maximum design capacity of 15.6 million gallons of process solution and stormwater. 2. Maximum areal extent of the impoundment shall not exceed the footprint shown in the approved design plans provided in the APP Amendment Application, dated March 2007. 3. The total storage capacity of approximately 15.6 million gallons of process solution and stormwater corresponds to a spillway elevation of approximately 3484.7 feet amsl. The impoundment shall have a minimum of 2 feet of embankment above the spillway elevation. 4. The Action Leakage Rate (ALR) and Rapid and Large Leakage Rate (RLL) for the LCRS shall be 1,800 gallons per day (gpd) and 15,000 gpd, respectively (see operational requirement in Table 4.2.1). 5. The spillway for the impoundment shall be designed to pass the peak flow from the 100-year, 24-hour storm event, plus operational flow at 960 cubic feet per second, with a minimum of 12 inches of freeboard. Overflow from the impoundment shall be conveyed through the HDPE lined channel to the Non-stormwater Impoundment. 6. The maximum depth of the impoundment below the spillway shall be approximately 25 feet.

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

FACILITY NAME	LATITUDE / LONGITUDE	PERMIT TYPE	DESCRIPTION OF BADCT
Non-stormwater Impoundment (NSI)	32° 56' 00" N / 109° 41' 30" W	Individual	<p>Prescriptive BADCT¹: The impoundment is designed with a composite liner system that consists of a single 60-mil thick (minimum) HDPE geo-membrane in the general impoundment area overlying a minimum of 6 inches of 3/8-inch minus bedding soil compacted to 95 percent maximum dry density and a 100-mil HDPE liner in the area of pump operation. The impoundment receives fluid overflow from the spillway of the Excess Process Solution Impoundment through an HDPE-lined channel and concrete inlet structure. The design and construction details of the Non-stormwater Impoundment, including the overflow channel and inlet structure, approved by ADEQ, are contained in the APP Amendment Application, dated March 2007. Specific construction and operational details of the facility shall consist of the following:</p> <ol style="list-style-type: none"> 1. Maximum areal extent of the impoundment shall not exceed the footprint shown on the approved design plans provided in the APP Amendment Application, dated March 2007. 2. Total storage capacity of the impoundment shall be approximately 390 acre-feet (ac-ft) at an elevation 2 feet below the emergency spillway, and shall be 430 ac-ft at the emergency spillway elevation. The impoundment shall be designed to accommodate the 100-year, 24-hour storm event plus process upset flows during a 24-hour power outage, with a minimum of 2 feet of freeboard. 3. The maximum depth of the impoundment below the emergency spillway shall be approximately 47.5 feet. The stormwater from the impoundment shall report to the raffinate tanks through an outlet (HDPE) pipe via pumping.

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

FACILITY NAME	LATITUDE / LONGITUDE	PERMIT TYPE	DESCRIPTION OF BADCT
San Juan Non-stormwater Evaporation Impoundment (SJNEI)	32° 56' 30" N / 109° 39' 15" W	Individual	<p>Individual BADCT²: The impoundment was an unlined existing facility that was upgraded with a composite liner system consisting of 60-mil HDPE geo-membrane over 6 inches minimum thickness of compacted low permeability soil (clay). The impoundment liner shall be extended into the upgradient gravel-filled trench to capture any shallow, subsurface seepage from the closed San Juan leach stockpiles. The intercept trench, excavated into competent bedrock, shall be lined on the down-gradient face with 60-mil HDPE geo-membrane, with a 10-oz geo-textile placed above and underneath the geo-membrane. Seepage collected from the intercept trench by six up-gradient reclaim wells shall be pumped into the impoundment and allowed to evaporate. Each well shall be equipped with an automatic pump to discharge a maximum of 3 gpm into the impoundment. The impoundment shall be designed to contain the surface water run-on generated from the 100-yr, 24-hr storm event. A “witness” drain shall be installed underneath the geo-membrane liner to detect leakage through the liner. To capture any seepage from the evaporation impoundment, the seepage collection system shall be installed downgradient of the impoundment. The seepage collection system shall consist of a concrete intercept curb and an HDPE lined concrete sump placed in bedrock. The sump shall be equipped with an automatic pump to transfer solution from the sump to the San Juan Evaporation Impoundment (see Compliance Schedule). The design and construction details of the facility upgrades, approved by ADEQ, are contained in the APP Application, dated October 1998. Specific construction and operational details of the facility will consist of the following:</p> <p>The impoundment shall have a storage capacity of 5.4 ac-ft, with a minimum of 2 feet of freeboard. The maximum storage capacity of the impoundment at the crest elevation shall be 7.7 ac-ft.</p>
Dam DP1		General	A.R.S. § 49-245.01 General Permit
Dam DP2		General	A.R.S. § 49-245.01 General Permit
Dam DP3		General	A.R.S. § 49-245.01 General Permit
Dam DP4		General	A.R.S. § 49-245.01 General Permit
Dam SJ1		General	A.R.S. § 49-245.01 General Permit

TABLE 4.1.1 PERMITTED FACILITIES AND BADCT			
FACILITY NAME	LATITUDE / LONGITUDE	PERMIT TYPE	DESCRIPTION OF BADCT
Dam SJ2		General	A.R.S. § 49-245.01 General Permit
Dam SJ3		General	A.R.S. § 49-245.01 General Permit
Dam SJ4		General	A.R.S. § 49-245.01 General Permit

¹ Prescriptive BADCT design involves a prescribed engineering approach that utilizes pre-approved discharge control technologies or engineering equivalents to meet the requirements of A.R.S. § 49-243(B)(1).

² Individual BADCT design involves general principles of engineering design, and is based upon alternative discharge control measures considered, the technical and economic advantages and disadvantages of each alternative, and the justification for the selection of the best alternative to meet the requirements of A.R.S. § 49-243(B)(1).

<p style="text-align: center;">TABLE 4.1.2 POINT OF COMPLIANCE LOCATIONS</p>					
WELL ID NUMBER	TYPE	ADWR ¹ REGISTRATION NUMBER	CADASTRAL LOCATION	LATITUDE	LONGITUDE
POC No. 1 ²	Hazardous and non-hazardous	³	D(6-26)3bdb	32° 56' 33" N	109° 40' 32" W
POC No. 2 (AP-22)	Hazardous and non-hazardous	55-556053	D(6-26)4dac	32° 56' 11" N	109° 41' 02" W
POC No. 3	Hazardous and non-hazardous	³	D(6-26)9abc	32° 55' 48" N	109° 41' 23" W
POC No. 4	Hazardous and non-hazardous	³	D(6-26)9cbb	32° 55' 26" N	109° 41' 50" W
POC No. 5	Hazardous and non-hazardous	³	D(6-26)8add	32° 55' 34" N	109° 42' 03" W
POC No. 6	Hazardous and non-hazardous	³	D(6-26)5ddc	32° 55' 58" N	109° 42' 09" W
POC No. 7	Hazardous and non-hazardous	³	D(6-26)5dba	32° 56' 19" N	109° 42' 18" W
POC No. 8 (AP-11)	Hazardous and non-hazardous	55-556049	D(5-26)32dcc	32° 56' 51" N	109° 41' 55" W
POC No. 9	Hazardous and non-hazardous	³	D(5-26)33cbb	32° 57' 09" N	109° 41' 27" W
POC No. 10 (AP-25)	Hazardous and non-hazardous	55-556055	D(6-26)2dbb	32° 56' 15" N	109° 39' 15" W

1. ADWR = Arizona Department of Water Resources
2. POC = Point of Compliance monitoring well
3. Proposed POC monitoring well; not yet located or installed.

**TABLE 4.2.1
REQUIRED INSPECTIONS AND OPERATIONAL MONITORING**

Facility	Operational Requirements	Frequency
Heap Leach Pad (PAD)	Visually inspect and take appropriate action if evidence of: <ul style="list-style-type: none"> - heap deformations, including surface cracks, slides, sloughs or unusual differential settlement affecting slope stability; - seepage along perimeter berm; - visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; - impairment of access; - excessive erosion or accumulation of debris in conveyances and diversions; - accumulation of debris in leach pad solution conveyance channels causing flow restriction. 	Quarterly
Excess Process Solution Impoundment (EPSI)	Visually inspect and take appropriate action if evidence of: <ul style="list-style-type: none"> - seepage along perimeter or embankment; - visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; - impairment of access; - excessive erosion in conveyances and diversions; - accumulation of debris in overflow conveyance channel causing flow restriction. 	Weekly during start-up for 4 weeks; then Monthly
Non-stormwater Impoundment (NSI)	Visually inspect and take appropriate action if evidence of: <ul style="list-style-type: none"> - visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; - impairment of access; - excessive erosion or accumulation of debris in conveyances and diversions. Check that fluid level is at least 2 feet below the spillway elevation. Remove accumulated fluid – the process solution or impacted stormwater due to process upsets and/or storm event, from the impoundment as soon as practical, but no later than 60 days after cessation of the upset or storm event.	Monthly

**TABLE 4.2.1
REQUIRED INSPECTIONS AND OPERATIONAL MONITORING**

Facility	Operational Requirements	Frequency
San Juan Non-stormwater Evaporation Impoundment (SJNEI)	Visually inspect and take appropriate action if evidence of: <ul style="list-style-type: none"> - visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; - impairment of access; - excessive erosion or accumulation of debris in conveyances and diversions; - seepage at the extremities of the concrete curb; - seepage at the “witness” drain. Check that pump at the concrete sump is functioning properly. Check that the reclaim well pumps are functioning properly. Check that fluid level is at least two feet below the lowest crest elevation.	Monthly
Leak Collection Recovery System (LCRS)	Check for the presence of fluid. Measure rate of inflow: confirm that it is less than 1,800 gallons per day (gpd) for Action Leakage Rate (see Section 2.6.2.4), and less than 15,000 gpd for Rapid and Large Leakage Rate (see Section 2.6.2.5). Implement contingency and response actions as appropriate in case of exceedances.	Weekly

**TABLE 4.2.2
PRE-OPERATIONAL REQUIREMENTS**

ITEM	TEST METHOD	MINIMUM TESTING FREQUENCY
Earthworks		
Drainage Material (Fine Overliner Fill)	Particle Size Analysis: ASTM D-422	1 / 5,000 cubic yards
	Permeability: ASTM D-2434	1 / 4,000 cubic yards
	Observation of placement	As needed
Foundation Grading Fill and Embankments (Common Fill)	Observation of compaction equipment and methods, lift thickness per method specification Field Density: ASTM D2922, D1156 or D2167 Laboratory Sieve Analysis: ASTM D422 Laboratory Atterberg Limit: ASTM D4318 Lab Moisture-Density Relation: ASTM D1557	Test Fill A minimum of 1 test per major rock type 1 / 5,000 cubic yards 1 / 20,000 cubic yards 1 / 20,000 cubic yards 1 / 50,000 cubic yards
Structural Soil Fill (Native Subgrade, Berms)	Observation	As needed
	Field Density: ASTM D-2922, or D2167 ASTM D-3017	1 / 30,000 square feet
	Moisture Content: ASTM D-2216	1 / 100,000 square feet
	Compaction - Lab Moisture-Density Relation: ASTM D-1557	1 / 100,000 square feet with a minimum of 1 test per material type

**TABLE 4.2.2
PRE-OPERATIONAL REQUIREMENTS**

ITEM	TEST METHOD	MINIMUM TESTING FREQUENCY
Leach Pad Underliner Fill and Pond Liner Bedding Fill	Field Density: ASTM D2922, D1156 or D2167 Laboratory Sieve Analysis: ASTM D422 Laboratory Atterberg Limit: ASTM D4318 Lab Moisture-Density Relation: ASTM D1557 Lab Hydraulic Conductivity: ASTM D5084	1 / 2,000 cubic yards 1 / 10,000 cubic yards 1 / 10,000 cubic yards 1 / 20,000 cubic yards 1 / 50,000 cubic yards
Anchor Trench Fill and Pipe Bedding Fill	Field Density: ASTM D2922, D1156 or D2167 Laboratory Sieve Analysis: ASTM D422 Laboratory Atterberg Limit: ASTM D4318 Lab Moisture-Density Relation: ASTM D1557	1 / 2,000 cubic yards 1 / 10,000 cubic yards 1 / 10,000 cubic yards 1 / 20,000 cubic yards
Pipe Zone Fill	Field Density: ASTM D2922, D1156 or D2167 Laboratory Sieve Analysis: ASTM D422 Laboratory Atterberg Limit: ASTM D4318	1 / 2,000 cubic yards 1 / 5,000 cubic yards 1 / 5,000 cubic yards
Pipe Zone Fill (LCRS)	Laboratory Sieve Analysis: ASTM D422 Laboratory Atterberg Limit: ASTM D4318	1 per sump 1 per sump
Geo-synthetics		
Geo-membrane - Destructive	Peel and Shear: ASTM D-6392	1 / 500 linear feet of seam

**TABLE 4.2.2
PRE-OPERATIONAL REQUIREMENTS**

ITEM	TEST METHOD	MINIMUM TESTING FREQUENCY
Geo-membrane - Conformance	Thickness: ASTM D5199 (smoothness) ASTM D5994 (texture)	1 / 200,000 square feet or 1 / lot whichever is less
	Tensile Properties: ASTM D-6693	1 / 200,000 square feet or 1 / lot whichever is less
	Carbon Black Content: ASTM D-1603	1 / 200,000 square feet or 1 / lot whichever is less

DRAFT

TABLE 4.2.3

**LIST OF PARAMETERS FOR
AMBIENT GROUND WATER MONITORING
FOR ALL POINT OF COMPLIANCE (POC) WELLS**

(in mg/L unless otherwise noted) ²

Depth to Water Level (ft.)	Magnesium	Mercury ³
Water Level Elevation (ft amsl)	Potassium	Nickel ³
Temperature - field (°F)	Sodium	Selenium ³
pH - field & lab (SU)	Iron	Thallium ³
Specific Conductance - field and lab	Aluminum	Zinc
Total Dissolved Solids - field and lab	Antimony ³	Total Cyanide ³
Total Alkalinity	Arsenic ³	Gross Alpha Particle Activity ^{1,3} (pCi/L)
Carbonate	Barium ³	Radium 226 ³
Bicarbonate	Beryllium ³	Radium 228 ³
Hydroxide	Cadmium ³	Uranium
Sulfate	Chromium ³	Hydrocarbons C _{10-C32}
Chloride	Cobalt	Benzene ³
Fluoride ³	Copper	Toluene ³
Nitrate-Nitrite as N ³	Lead ³	Ethylbenzene ³
Calcium	Manganese	Total Xylenes ³

1. If Gross Alpha Particle Activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha activity, including radium 226, minus radon and total uranium (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).
2. Metals shall be analyzed as dissolved metals.
3. Parameter has an established AWQS.

**TABLE 4.2.4
QUARTERLY COMPLIANCE GROUNDWATER
MONITORING REQUIREMENTS (1) (2) (3)**

PARAMETER	POC-1		POC-2		POC-3		POC-4	
	AQL	AL	AQL	AL	AQL	AL	AQL	AL
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Specific Conductance Field (umhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Beryllium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Cadmium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Fluoride	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis is required but no AQL or AL is established in permit.

AQL = Aquifer Quality Limit

AL = Alert Level

<p align="center">TABLE 4.2.4 QUARTERLY COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS (1) (2) (3)</p>								
PARAMETER	POC-5		POC-6		POC-7		POC-8	
	AQL	AL	AQL	AL	AQL	AL	AQL	AL
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Specific Conductance Field (umhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Beryllium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Cadmium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Fluoride	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis is required but no AQL or AL is established in the permit.

AQL = Aquifer Quality Limit

AL = Alert Limit

**TABLE 4.2.4
QUARTERLY COMPLIANCE GROUNDWATER
MONITORING REQUIREMENTS (1) (2) (3)**

PARAMETER	POC-9		POC-10	
	AQL	AL	AQL	AL
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor
Specific Conductance Field (umhos/cm)	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor
Beryllium	Res.	Res.	Res.	Res.
Cadmium	Res.	Res.	Res.	Res.
Cobalt	Monitor	Monitor	Monitor	Monitor
Nickel	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.
Fluoride	Res.	Res.	Res.	Res.
Magnesium	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	Res.	Res.	Res.	Res.
Sulfate	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis is required but no AQL or AL is established in the permit.

AQL = Aquifer Quality limit

AL = Alert Level

1. All concentrations in milligrams per liter (mg/L) unless otherwise noted.
2. Metals will be analyzed as dissolved metals.
3. Use Table 4.2.5 parameter list for biennial sampling events.

**TABLE 4.2.5
BIENNIAL COMPLIANCE
GROUNDWATER MONITORING REQUIREMENTS (1) (2) (3) (4)**

PARAMETER	POC-1		POC-2		POC-3		POC-4	
	AQL	AL	AQL	AL	AQL	AL	AQL	AL
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Nickel	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Thallium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle Activity (pCi/L)	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Radium 226 + Radium 228 (pCi/L)	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Toluene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Ethylbenzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Total Xylenes	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis required but an AQL and/or AL is not established in the permit

AQL = Aquifer Quality Limit

AL = Alert Limit

**TABLE 4.2.5
BIENNIAL COMPLIANCE
GROUNDWATER MONITORING REQUIREMENTS (1) (2) (3) (4)**

PARAMETER	POC-5		POC-6		POC-7		POC-8	
	AQL	AL	AQL	AL	AQL	AL	AQL	AL
Chromium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Nickel	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Thallium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle activity (pCi/L)	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Radium 226 + Radium 228 (pCi/L)	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Toluene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Ethylbenzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Total Xylenes	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis required but an AQL and/or AL is not established in permit.

AQL = Aquifer Quality Limit

AL = Alert Limit

TABLE 4.2.5 BIENNIAL COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS (1) (2) (3) (4)				
PARAMETER	POC-9		POC-10	
	AQL	AL	AQL	AL
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor
Specific Conductance Field (umhos/cm)	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor
Total Alkalinity	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor
Potassium	Monitor	Monitor	Monitor	Monitor
Calcium	Monitor	Monitor	Monitor	Monitor
Magnesium	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	Res.	Res.	Res.	Res.
Fluoride	Res.	Res.	Res.	Res.
Aluminum	Monitor	Monitor	Monitor	Monitor
Antimony	Res.	Res.	Res.	Res.
Arsenic	Res.	Res.	Res.	Res.
Beryllium	Res.	Res.	Res.	Res.
Barium	Res.	Res.	Res.	Res.
Cadmium	Res.	Res.	Res.	Res.
Chromium	Res.	Res.	Res.	Res.

TABLE 4.2.5 BIENNIAL COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS (1) (2) (3) (4)				
PARAMETER	POC-9		POC-10	
	AQL	AL	AQL	AL
Iron	Monitor	Monitor	Monitor	Monitor
Lead	Res.	Res.	Res.	Res.
Nickel	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.
Thallium	Res.	Res.	Res.	Res.
Copper	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle Activity (pCi/L)	Res.	Res.	Res.	Res.
Radium 226 + Radium 228 (pCi/L)	Res.	Res.	Res.	Res.
Uranium	Monitor	Monitor	Monitor	Monitor
Benzene	Res.	Res.	Res.	Res.
Toluene	Res.	Res.	Res.	Res.
Ethylbenzene	Res.	Res.	Res.	Res.
Total Xylenes	Res.	Res.	Res.	Res.
TPH	Monitor	Monitor	Monitor	Monitor

Res. = Reserved means that the ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.4.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.

AQL = Aquifer Quality Limit

AL = Alert Level

1. All concentrations in milligrams per liter (mg/L) except where otherwise noted.
2. Metals shall be analyzed as dissolved metals
3. If the gross alpha particle activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha particle activity including radium 226, minus radon and total uranium (the sum of the uranium 238, 235 and 234 isotopes).
4. Use Table 4.2.4 parameters for quarterly sampling events between biennial events.

**TABLE 4.4.1
COMPLIANCE SCHEDULE
[A.R.S. § 49-243(K) and A.A.C. R18-9(A)(208)]**

ITEM DESCRIPTION	TIME TO COMPLETE	REMARKS
POINT OF COMPLIANCE WELLS		
Installation of POC Wells Wells POC-1, POC-3, POC-4, POC-5, POC-6, POC-7, and POC-9	12 months prior to startup of heap leach operations	Wells shall be installed in accordance with all ADWR requirements. Geologic and well construction logs shall be submitted to ADEQ within 60 days of well installation. The log shall include the ADWR well registration number, and the as built cadastral and lat and long coordinates for the well. Each well shall be screened in the uppermost aquifer. The well screen shall extend a maximum of 10 feet above and 50 feet below the top of the aquifer. If a well screen greater than 60 feet in length is installed in a well, the permittee shall obtain ADEQ approval prior to construction.
Ambient Water Quality Monitoring	14 Months from installation of wells	Each well shall be sampled for ambient water quality for 12 consecutive months. The first sample event shall be completed within 60 days of well installation. Sample each well for all parameters listed in Table 4.2.3.
Alert Levels (ALs) and Aquifer Quality Limits (AQLs) for POC Wells	17 Months from installation of well(s)	Submit within 90 days following completion of the ambient sampling period, copies of all laboratory analytical reports, field notes, the QA/QC procedures used in collection and analysis of the samples, and a report including the statistical calculations of the ALs and AQLs to the ADEQ GWS/TSU. Incorporation of these data to the permit will constitute an amendment to the permit.
POC Well Compliance Monitoring	18 Months after well installation (initial sampling) Quarterly thereafter	Compliance monitoring shall commence within the first calendar quarter following completion of the ambient sampling period. Begin compliance monitoring approximately 120 days following completion of the ambient sampling period. Sample for parameters listed in Section 4, Table 4.2.4 for quarterly sampling events. Sample for parameters listed in Section 4, Table 4.2.5 for biennial events in place of Table 4.2.4 parameters. Following completion of each compliance monitoring event, submit copies of all laboratory analytical reports, field notes, and the QA/QC procedures used in collection and analysis of the samples according to the schedule in Section 2.7.6.
CONSTRUCTION REQUIREMENTS		
San Juan Non-Stormwater Evaporation Impoundment	Within six months after permit issuance	Complete construction of the ADEQ approved design upgrade and notify ADEQ GWS/TSU upon completion
Construction Quality Assurance/Quality Control (QA/QC) Reporting Requirements	Within 3 months after initial start-up of the leaching operation	Submit to the ADEQ GWS/TSU, a copy of the QA/QC report verifying that the construction QA/QC was performed in accordance with the APP Application, dated October 1998, and requirements presented in Table 4.2.2 of this permit. Results of the QA/QC shall be sealed by a Professional Engineer (P.E.) registered in the State of Arizona.

5.0 REFERENCES AND PERTINENT INFORMATION

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

1. Notice of Disposal dated January 21, 1985
2. APP Application dated October 2, 1998
3. APP Issued May 18, 2006
4. APP Other Amendment Application dated March 2, 2007
5. Public Notice not applicable.
6. Public Hearing not applicable.
7. Responsiveness Summary not applicable
8. APP Other Amendment Issued October 23, 2007

DRAFT

6.0 NOTIFICATION PROVISIONS

6.1 Annual Registration Fees

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based upon the amount of daily influent or discharge of pollutants in gallons per day as established by A.R.S. § 49-242.

6.2 Duty to Comply [A.R.S. §§ 49-221 through 49-263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

6.3 Duty to Provide Information [A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

6.4 Compliance with Aquifer Water Quality Standards [A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an aquifer water quality standard at the applicable point of compliance for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an aquifer water quality standard for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

6.5 Technical and Financial Capability

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(D), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

6.6 Reporting of Bankruptcy or Environmental Enforcement [A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. The filing of bankruptcy by the permittee.
2. The entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

6.7 Monitoring and Records [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

6.8 Inspection and Entry [A.R.S. §§ 41-1009, 49-203(B) and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

6.9 Duty to Modify [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices specified by this permit.

6.10 Permit Action: Amendment, Transfer, Suspension & Revocation

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, renewed, or revoked for cause, under the rules of the Department.

The permittee shall notify the Groundwater Section in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

DRAFT

7.0 ADDITIONAL PERMIT CONDITIONS

7.1 **Other Information** [A.R.S. § 49-243(K)(8)]

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

7.2 **Severability**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

7.3 **Permit Transfer**

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).