

Cooperating Agency Meeting Agenda

Rosemont EIS / Aquifer Protection Permit Meeting

Date: Monday 04/26/2010

Time: 11:30 AM - 04:00 PM

Location: ADEQ Phoenix Office room 3175

Purpose: Discuss APP permitting and program strategies in relation to the Coronado NF's EIS:

- Timing of permit issuance as it relates to draft EIS issuance.
- Consequences that result from an APP being issued before the draft EIS and potential resolutions.
- Significance of the hydraulic sink and the role it plays in the APP and the EIS.
- Other related issues, if deemed necessary.

Rosemont Copper Project

Cooperating Agency Special Topic Meeting- ADEQ Permitting Process

04/26/2010
11:00 PM to 3:00 PM
ADEQ Office
Phoenix, Arizona

Meeting Notes

Discussion:

Participants:

- ⇒ USFS Coronado National Forest
- Arizona Department of Environmental Quality

Handouts:

- ⇒ Letter from ADEQ to Rosemont Copper Company dated April 14, 2010; subject: Comprehensive Request for Additional Information (Aquifer Protection Permit Application)
- Article by Dick Kamp (Wick News Service and Green Valley News) published April 20, 2010

Discussion Topics:

- Overview of NEPA process including current status
- Background information about alternative concepts generated by the interdisciplinary team
 - BADCT is not dependent upon alternative concept
 - Direct contact with groundwater is the challenge to groundwater protection
 - Changing footprint from proposed action (Mine Plan of Operations) would likely result in change to the Aquifer Protection Permit application
- Implications of interruption of groundwater movement towards pit
- Backfill material would likely be composed of waste rock (a low acid-generating material)
- Permeability of waste material with and without use of a synthetic liner to address conductivity to groundwater
- Challenge of maintaining passive containment into perpetuity
- Regional dewatering potential
- ⇒ Pit wall containment from acid contact
 - Concern expressed regarding whether buffering capacity is available
 - Lining pit is not a reasonable option due to pit size
 - Lining material could not be made impermeable
- Backfill material must maintain an anaerobic state
- A pit with a hydrologic sink is not, by definition, a “discharge facility” pursuant to ADEQ regulations
- Ability to demonstrate “inert” is viewed as a huge hurdle by ADEQ
- Davidson Canyon watershed modeling (in progress)
- Adaptive management options and opportunities
- Aquifer Protection Permit Application
 - Clock stopped by ADEQ at ~60 days to obtain additional information from Rosemont Copper Company
 - Rosemont Copper Company has 120 days to respond to ADEQ deficiency letter
 - ADEQ regulations require holding a public hearing on the permitting process

Action Items:

- ⇒ Dennis Turner will provide Forest with the Arizona State Statute definition of “inert”
- Dennis Turner will provide Forest with Arizona State Statute licensing requirement time limitations

Follow up:

- ⇒ Responses received via e-mails from Dennis Turner dated May 6, 2010

APRIL 26, 2010

ROSEMONT EIS

COOPERATING AGENCIES

APP / EIS ISSUES

<u>NAME</u>	<u>AFFILIATION</u>
Brennis Turner	ADEQ, Surface Water Section
Kulolip Kunklin	ADA & GWS-TSU
Jeff Emde	ADEQ GWS-TSU
Steve Veving	ADEQ GWS-APP & Drywell Unit
Carrollette Winstead	ADEQ GWS-APP & Drywell
Maribeth Greenslade	ADEQ GWS- APP TSU
Michele Robertson	ADEQ GWS
Reta Laford	FS-Coronado
Teresa Ann Ciapasci	FS-CORONADO COOPERATING AGENCY LIAISON
SALEK SHAFIQUZZAH	FS-CORONADO HYDROLOGIST
Mike Prigge	ADEQ Solid Waste Plan Review Unit
Denise McLonaghy	ADEQ SW Plan Review Unit

Rosemont Copper Project EIS
Cooperating Agency Coordination Meeting 04/26/2010
Arizona Department of Environmental Quality Aquifer Protection Permit Review
Participant List

Name	Affiliation
Dennis Turner	ADEQ – Surface Water Section
Kuldijo Khunklun	ADEQ – GWS-TSU
Jeff Emde	ADEQ – GWS-TSU
Steve Vevang	ADEQ – GWS-APP and Drywell Unit
Carrolette Winstead	ADEQ – GWS-APP and Drywell Unit
Maribeth Greenslade	ADEQ – GWS-TSU
Michele Robertson	ADEQ – GWS
Reta Laford	FS-Coronado
Teresa Ann Ciapucci	FS- Coronado; Cooperating Agency Liaison
Salek Shafiqullah	FS-Coronado; Hydrologist
Mike Prigge	ADEQ – Solid Waste Plan Review Unit
Denise McConaghy	ADEQ – SW Plan Review Unit



Janice K. Brewer
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Benjamin H. Grumbles
Director

Comprehensive Request for Additional Information

April 14, 2010

Rosemont Copper Co.
Attn: Katherine Arnold
4500 Cherry Creek South Dr. Ste 1040
Denver, Colorado 80246

Re: Rosemont Copper Company, Rosemont Copper Operations

Inventory Number: 106100 LTF ID: 49639
USAS Number: 509976-00 Place ID: 135845

Dear Ms. Arnold:

The Arizona Department of Environmental Quality (ADEQ) received the above-referenced application titled Aquifer Protection Permit Application, Rosemont Copper Company dated February 2009, and was received by the ADEQ Groundwater Section (GWS) on March 3, 2009. It was prepared for Rosemont Copper (Rosemont) by Tetra Tech. A Notice of Administrative Deficiencies was issued on April 8, 2009. A response to that notice was received from Rosemont on May 8, 2009. ADEQ's review of this application is subject to the requirements of the licensing time frames ("LTF") statute under Arizona Revised Statutes ("A.R.S.") § 41-1072 through § 41-1079 and the LTF rules under Arizona Administrative Code ("A.A.C.") R18-1-501 through R18-1-525. ADEQ is reviewing this application within the Substantive Review time frame and makes this Comprehensive Request for Additional Information under A.R.S. § 41-1075(A). This Request suspends the time frame for your application as of the date of this Request. To complete this application and resume the time frame you must provide the following missing information.

HYDROGEOLOGIC DEFICIENCIES

- (1) The application and supporting documents identify a number of reports that are either pending or completed, but that do not appear to have been submitted for review. The following documents are necessary to continue the review of the application. They are identified by title, with the location of the reference indicated in parentheses:

Northern Regional Office
1801 W. Route 66 • Suite 117 • Flagstaff, AZ
86001
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ
85701
(520) 628-6733

Update for 2007 Site Water Management Plan, Tetra Tech (Application, Volume 1, Page 31)

Groundwater Flow Model (Application, Table 7.41 and Analysis of Long-Term, Multi-Well Aquifer Test, Errol Montgomery & Associates, May 2009, Page 1)

Pit Lake Geochemical Model (Application, Table 7.41)

Fate and Transport Analysis (Application, Table 7.41)

Infiltration, Seepage, and Fate and Transport Modeling for the Heap Leach Pad, including the Waste Rock Storage Facility (Rosemont Heap Leach Facility Permit Design Report May 2009)

Ancillary Surface Water Management Facilities (Dry Stack Tailings Storage Facility, Final Design Report, AMEC, April 2009, Volume 1, Page 1).

Design Storm and Precipitation Technical Memorandum, Tetra Tech, April 2009 (Dry Stack Tailings Storage Facility, Final Design Report, AMEC, April 2009, Volume 1, Page 3).

Tailings Geochemistry Technical Memorandum, Tetra Tech, March 2009 (Dry Stack Tailings Storage Facility, Final Design Report, AMEC, April 2009, Volume 1, Page 3).

- (2) Although the open pit passive containment is considered during Best Available Demonstrated Control Technology (BADCT) analysis and mine closure requirements, the open pit itself is not generally considered by ADEQ to be an APP-regulated facility, unless it is used to store impacted stormwater, or process solutions. Please indicate if water will be stored in the open pit (Facility AR-OP-01).

- (3) Figure 23 of the application documents the proposed pollutant management area (PMA). Please note that the PMA is the "limit projected in the horizontal plane of the area on which pollutants are or will be placed." (A.R.S. §49-244(1)). The proposed PMA in the location of POC 1 extends beyond the edge of the Dry Stack Tailings Impoundment all the way to Compliance Point Dam. Proposed POC 1 is more than 750 feet from the edge of the Dry Stack Tailings Impoundment, and will therefore not be suitable for use as a POC location.

Please resubmit the PMA so that it complies with the requirements of A.R.S. §49-244. It is particularly important that the downgradient edge of the PMA be located at the eastern edges of the proposed Dry Stack Tailings Impoundment and Waste Rock Storage Area (final configurations). The revised PMA should be drawn to circumscribe only the facilities proposed for inclusion in the APP (i.e. – do not include general permit facilities, including stormwater general permit facilities).

- (4) Please resubmit the location of POC 1 (see Comment #3 above) so that it is on the downgradient edge of the PMA, upgradient of the currently proposed location, in McCleary Canyon.

- (5) Figure 23, and the related hydrologic supporting data, indicate that the groundwater flow direction moves to the southeast from the southern portion of the site, which is overlain by the Waste Rock Storage Area. POC location #4 is the southernmost POC location proposed at this time, and it will not provide coverage for the above-referenced flow direction. Please propose one additional POC location on the southeast edge of the PMA, and one additional POC location on the southern edge of the PMA, to allow for monitoring of groundwater quality exiting the site in those areas.
- (6) The TSU has reviewed the proposed groundwater monitoring tables included in Section 9 of the application, and agrees with the proposed constituent lists, with the following changes:

Table 9.03 Potential Ambient Groundwater Monitoring Parameters for POC Wells:

This table should be used to guide the ambient sampling for the eight, ambient, sample rounds to be completed in all POC wells. The pH should include both field and lab pH.

Table 9.04 Proposed Ambient Groundwater Monitoring Requirements for the Rosemont POC Locations:

This table should be used for the quarterly monitoring requirements at all POC wells after the conclusion of the ambient sampling and calculation of appropriate alert levels (ALs) and aquifer quality limits (AQLs). Water level elevation, cobalt, fluoride, sulfate, beryllium, antimony, and chromium should be added to the list. Hydrogen and oxygen (isotopes) are not necessary for APP purposes.

Table 9.05 Proposed Biennial Groundwater Monitoring Requirements for the Rosemont POC Locations:

This table should be used for the biennial monitoring requirements at all POC wells after the conclusion of the ambient sampling and the calculation of appropriate ALs and AQLs. Sodium, potassium, barium, iron, free cyanide, carbon disulfide, benzene, toluene, ethylbenzene, and xylenes should be added to the list. Please note that uranium should be analyzed as milligrams/liter. (Uranium Isotopes should be analyzed as picocuries/liter, as indicated on Table 9.05).

- (7) Section 5.3.1 of the Application indicates that the inventory of wells located within a 2-mile radius of the facility is included in Appendix G, and their locations are shown on Figure 24. The cited Appendix appears to contain in excess of 900 wells, but the cited figure does not have all the well locations on it. Please indicate the rationale directing which of the wells were to be included on the Figure. In addition, to comply with Arizona Administrative Code R18-9-A202(A)(1), **all** known water well locations within one-half mile of the facility must be included on the submitted map. This may require the map to be re-sized and resubmitted.
- (8) Section 9.2 of the Application indicates that a quantitative groundwater flow model and fate and transport modeling are currently in progress. Section 1.0 of the application indicates that a detailed groundwater flow model, a pit lake geochemical model, and updated facility infiltration and seepage models will be submitted. Section 4.1.3 of the Application indicates

that studies regarding quantities of groundwater withdrawal from the pit are also underway. Please submit the results of these studies and modeling efforts to address the following components of the hydrologic study required in rule:

R18-9-A202(A)(8)(b)(iv)

The rate, volume, and direction of surface water and groundwater flow, including hydrographs, if available, and equipotential maps (Update/revision only).

R18-9-A202(A)(8)(b)(viii)

An assessment of the potential of the discharge to cause the leaching of pollutants from surface soils or vadose materials.

R18-9-A202(A)(8)(b)(x)

Any changes in the water quality expected because of the discharge.

R18-9-A202(A)(8)(b)(xi)

A description of any expected changes in the elevation or flow directions of the groundwater expected to be caused by the facility.

R18-9-A202(A)(8)(b)(xii)

A map of the facilities discharge impact area (Refinement of current delineation, as necessary).

R18-9-A202(A)(8)(b)(xiii)

The criteria and methodologies used to determine the discharge impact area.

- (9) Table 6 of the submittal *Results of Phase 2 Hydrogeologic Investigations and Monitoring Program* (Errol Montgomery & Associates, February 2009) indicates samples taken in Cienega Creek and Upper Cienega Creek. Page 34 of the submittal indicates that samples were also taken at Lower Cienega Creek and in Davidson Canyon Wash. Please clarify the sample locations on a general regional map.
- (10) Review of Appendix A of the submittal *Results of Phase 2 Hydrogeologic Investigations and Monitoring Program* (Errol Montgomery & Associates, February 2009) indicates that the water levels are above the screened intervals in many of the monitoring wells. Please evaluate the impact on the analytical results documented in the submittal that were obtained from sampling the groundwater quality in these wells.

Please note that POC wells should be screened across the water table, in unconfined aquifers, for use in monitoring compliance under the APP. The APP will direct monitoring efforts at the uppermost aquifer. If applicable, depth specific sampling should be performed in any POC wells that are to be monitored in confined aquifers.

- (11) The Application, Volume 3, Appendix S indicates that the water table is above the screened interval in proposed POC well RP-3A. Please evaluate the effect on the accuracy of the analytical results for groundwater samples taken from this well, and the suitability of using this well, as currently constructed, to monitor compliance under the APP.
- (12) The *Baseline Geochemical Characterization, Volume 1 (Tetra Tech 2007)* indicates on Page 14 that the waste rock characterization was performed using composite samples. Please provide details on the compositing methodology. Were samples composited within the same borehole or lithology, or were they composited across boreholes and lithologies?
- (13) Review of numerous reports regarding groundwater quality monitoring and well installation indicates that many of the groundwater monitoring wells installed at or near the site have screened intervals in excess of 100 feet in length. Please describe how previous sampling efforts were performed, and future ambient monitoring and compliance monitoring will be performed so that the water samples obtained are representative of the groundwater quality in the aquifer in the vicinity of the water table. How will dilution of water quality samples due to the length of the well screens be avoided? For example, will low-flow purging and sampling in the vicinity of the water table be performed, rather than purging of entire well volumes?

ENGINEERING DEFICIENCIES

- (1) It is stated in the facility design report that the geological hazards associated with the Heap Leach Pad, PLS Pond, and Stormwater Pond include areas within the footprint of the facilities where material has been dumped in an uncontrolled manner or where native soils and/or rock had been reworked by human activities. These areas may present a hazard to future construction activities since the placement techniques are undocumented. (Ref. Rosemont Heap Leach Facility, Permit Design Report, Vol. 1, p.8)

Please provide proposed design efforts to address the three areas identified in Geologic Hazards Map, Figure 16, namely: abandoned mine areas such as shaft or adits, rockfall area(s) and area(s) with erosion potential that may present potential hazards to future construction activities associated with the heap leach facilities. ADEQ understands that certain hazards may only be uncovered during the construction phase of the project. Rosemont must document the mitigation efforts employed to address those hazards, notify ADEQ if requiring action beyond normal construction procedures, and submit a copy to ADEQ as part of the as-built design.

HEAP LEACH FACILITIES

(2) Subgrade Material

Rosemont plans to construct a heap leach pad that will meet Prescriptive BADCT and proposes the use of geosynthetic clay liner (GCL) of 6 millimeter (mm) thickness and a permeability of 1×10^{-9} cm/sec as an engineering equivalent. (Ref. Rosemont Heap Leach Facility Permit Design Report Volume 1 p. 28)

As stated in the Arizona Mining BADCT Guidance Manual, Prescriptive BADCT design criteria for a heap leach pad composite liner requires that a geomembrane is underlain by at least 12 inches of native or natural 3/8-inch minus materials compacted in two 6-inch lifts to achieve a saturated hydraulic conductivity no greater than 1×10^{-6} cm/sec.

ADEQ will consider Rosemont's proposed placement of geosynthetic clay liner (GCL) of 6 millimeter (mm) thickness and a permeability of 1×10^{-9} cm/sec as an engineering equivalent provided it is demonstrated that:

- a) Strength properties of compacted subgrade under the liner are suitable for bearing load to prevent significant differential settlement.
- b) Foundation settlement beneath the proposed pad footprint should not adversely affect the integrity of the Linear Low Density Polyethylene (LLDPE) liner.

(3) Leachate Collection Pipes Network

ADEQ will consider the leachate collection and header pipes network layout shown for the Heap Leach Facility Phase 1 and Phase 2 (DWG No. 080-C1-921 and DWG No.080-C1-928) provided the following design criteria are satisfied:

- a) The maximum and average hydraulic head over the leach pad liner must not exceed 5 feet and 2 feet, respectively.
- b) Pipe loading at the ultimate design height of heap does not threaten the structural integrity of the pipe. The collector and header pipes network can provide sufficient capacity for transporting leachate over the operational life of the facility; withstand the stresses caused by the maximum loading height of the ore heap without significant deformation or buckling and with adequate factor of safety. This demonstration should be based on manufacturer's technical data on product specification or case studies for the pipes (ADS N-12 Corrugated High Density Polyethylene pipe) used under similar application.

(4) Overliner Material

Rosemont has proposed the use of 1 ½ -inch minus crushed drainage layer versus ¾-inch minus material as identified in the BADCT Guidance Manual.

Placement of ¾ -inch, well draining material with a minimum thickness of 18 inches is a design requirement to meet prescriptive BADCT for a heap leach pad overliner protective/drainage layer. ADEQ will consider the proposed use of a 36-inch layer of 1 ½ -inch minus crushed material provided the following design criteria are satisfied:

- a) As mentioned above, the maximum and average hydraulic head over the leach pad liner must not exceed 5 feet and 2 feet, respectively.

- b) Particle size compatibility demonstration that material used will not clog the protective drainage layer and impair overliner drainage capacity.
- c) Overliner Material Durability Test to demonstrate that the material used in the protective/drainage layer will not deteriorate when in contact with leachate solution during the service life of the facility.

(5) Geomembrane Protection and Liner Puncture Test

Rosemont has proposed a minimum of 36 inches of overliner drain fill over the Heap Leach Pad as specified in the design criteria (Tetra Tech 2009) for the geomembrane protection. The material will be screened and or crushed, as needed, to produce a gradation with 100 percent of the material passing the 1.5 inch screen and less than five percent passing the No. 200 screen. (Ref. Tetra Tech Technical Memorandum – Rosemont Heap Leach Geomembrane Protection, May 4, 2009).

As stated above, placement of ¾ -inch minus, well draining material with a minimum thickness of 18 inches is a design requirement to meet prescriptive BADCT.

ADEQ will consider the use of 1 ½ -inch minus crushed overliner material if the proposed GCL liner of 6-mm thickness is demonstrated to show no severe indentations when puncture tested under simulated loading conditions by placing the subgrade material, geosynthetic(s), and the overliner material in the test cell. Rosemont has done puncture testing (3 tests) of 60-mil LLDPE with 1.5 inches minus overliner (QMP) drainage layer. However, the test results do not indicate the severity of indentation whether “minor”, “moderate”, or “severe” dimpling of the geomembrane sample has occurred. There is no indication how these indentations or dimpling affects durability of the geomembrane. ADEQ considers three trials of puncture tests inadequate to verify the liner system behavior under simulated field conditions. Please conduct additional tests. If severe dimpling is noticed in higher frequency which causes noticeable decrease in achievable strain, ADEQ recommends that a cushion or bedding layer should be included between the overliner and the geomembrane as an added protective layer.

(6) Anchor Trench

Please submit stability calculations supporting the design for the anchor trench within the perimeter containment berm. This feature is a critical component with respect to pad stability.

(7) Underdrain

Current leach pad layout (DWG. 080-C1-928) shows an underdrain on western perimeter of Phase 2 of the Heap Leach Facility. (Ref. Rosemont Heap Leach Facility, Permit Design Report, Volume 1, May 2009)

Please indicate the design criteria used for the underdrain indicating estimated amount of surface and subsurface flow designed for discharge through the underdrain system.

(8) Heap Leach Pad Design Modifications

In a meeting held on March 17, 2010, between ADEQ Project Team and Rosemont Personnel and Consultants, Rosemont indicated that the Heap Leach Pad originally designed as two-phase construction is being revised as a single phase construction. Please submit the revised final design, including the final foot print, ultimate design height of the pile, approximate tonnage to be piled on the Heap Leach Pad, stability analysis of the final configuration of the ore heap, revised leachate collection pipes network and any other significant changes/modifications made in the final design of the Heap Leach Pad.

DRY STACK TAILINGS IMPOUNDMENT (AR-TF-01)

(9) Tailings Geochemistry

To date, four samples were tested for acid-generating potential and metal release for the tailings material. (Ref. Technical Memorandum – Tailings Geochemistry , March 24, 2009)

Though the test results indicate less than 0.01% sulfide-sulfur and possess a high capacity for acid neutralization, yet, the number of samples tested to establish tailings geochemistry is insufficient and cannot be considered representative of the varying lithology present in the orebody. The sampling program should be designed so that the collected samples are representative of the geochemical behavior of various rock units with respect to acid generation. Please submit a revised sampling plan.

- (10) Rosemont's definition of inert material is based on a draft ADEQ policy from 1998 and is not consistent with the definition of non-acid generating material specified in BADCT manual. The inert material used as buttress for the Dry Stack Tailing Impoundment, Waste Rock Storage Area, and material used as fill for the diversion structures and to construct the Central Drain should be characterized in accordance with the guidelines described under CHARACTERIZATION OF TAILING, SPENT ORE AND WASTE ROCK contained in the Arizona Mining BADCT Guidance Manual. Please acknowledge that the Arizona Mining BADCT Guidance Manual will be used for characterization of this material.

(11) Physical and Mechanical Properties of Tailings Material

To establish design parameters to be used for the seepage and stability analyses, two samples of tailings obtained from pilot plant studies, were tested. (Ref. Dry Stack Tailings Storage Facility Final Design Report by AMEC, April 15, 2009)

ADEQ considers that the assessment of physical and engineering properties of the dry stack tailings based on the two test results is inadequate. Please conduct additional testing to verify the properties of the dry stack tailings. Additionally, please clarify how a representative sample of the tailings that is made up of various rock units in the stratigraphical column of the orebody, was prepared in order to determine material properties to be used in the geotechnical analyses.

(12)Compacted Tailings to be used as Founding Material for Waste Rockfill

It is stated that the zone of compacted tailings will act as the founding material for each successive lift of the waste rockfill buttress (Dwgs. 600-C1-908 and 600-C1-909). It is further stated that no rockfill samples were available for testing. (Ref. Dry Stack Tailings Storage Facility, Final Design Report by AMEC, Appendix G).

Vector Arizona LLC (Vector), in the Technical Memorandum of May 26, 2006, made recommendations for the detailed site investigations along the proposed waste rock buttress alignment to characterize foundation conditions; and laboratory testing on tailings and waste rock material. ADEQ concurs with the Vector's recommendations. These investigations shall consist of the following:

- Geologic mapping of the proposed dry stack area;
- Geologic drilling and seismic surveys along the proposed waste rock buttress alignment to characterize foundation conditions; and
- Laboratory testing on tailings and waste rock to provide engineering parameters for (facility) design.

(13)Dry Stack Tailings Storage Facility Final Design Report

It is stated that the piezometer at borehole TTBH-08-08C located within the center of the North Dry Stack Tailings Facility showed water levels that ranged from 2.5 to 11.4 feet below ground surface (bgs) as recorded between June and October of 2008. Additional water level monitoring is being conducted by Errol L. Montgomery and Associates, Inc. (Ref. Geotechnical Addendum Volume 1 of 3, p. 23)

- a) The central portion of Dry Stack Tailings appears to be situated just above the groundwater level. Please provide the results of the additional water level monitoring and clearly indicate its effect on the structural integrity of the tailings pile.
- b) Please delineate the surface area of the tailings expected to be overlying the near surface groundwater contact and describe measures to mitigate the adverse effects, for example liquefaction and stability, of near surface water below the tailings material.

(14)Underdrains

Rosemont is requested to provide the following information for the underdrains:

- a) Please provide an estimated amount of surface and subsurface flows designed for discharge through the underdrain system.
- b) ADEQ recognizes that the underdrain system is designed to discharge the surface and subsurface flows below the tailings pile. However, please demonstrate that the underdrain system will remain functional to effectively discharge surface and subsurface flows without threatening the integrity of the tailings pile. The flow computations should include sediment load for the underdrain system to determine underdrain stability. Underdrain stability in this context implies that there is no net aggradation or degradation of the underdrain bed or clogging of the CPe pipes used in the underdrain system.

(15)CPe Pipe Deflection – Appendix G-4

Three parallel CPe pipes, each 36-inch diameter, 500 LF (DWG NO. 600-C1-940), are used in the flow-through drain underneath the tailings pile. Please summarize the results of CPe pipe deflection and conclusion as to its effectiveness and suitability in the flow-through drain.

PROCESS WATER POND, TEMPORARY STORAGE POND AND SETTLING BASIN

Comments that follow are based on the contents of the document titled, "Process Water Pond, Temporary Storage Pond, and Settling Basin Design Report, May 2009"

(16)PWTS Dam (p.2-4) – The PWTS Dam which forms the southeastern wall of the PWTS Pond has a maximum embankment height of 85 feet and a total storage capacity of 380 acre-feet.

Pursuant to A.C.C. R-12-15-1206(B)(2)(a), the PWTS Dam, with 85 feet embankment height and a total storage capacity of 380 acre-feet appears to be a jurisdictional dam. Rosemont is advised to obtain ADWR approval for the construction and operation of PWTS Dam.

(17)Site Characterization (p. 2-3) – The PWTS Pond is located within the Wasp Canyon drainage area. Groundwater elevations within the area range from approximately 4,850 to 4,900 feet amsl. The lowest floor elevation of the PWTS Pond is about 4,892 feet amsl. Therefore, groundwater may be encountered during construction excavation.

Please provide an estimated amount of groundwater expected during construction of the PWTS Pond. Please also describe provisions made to avoid accumulation and upward thrust of groundwater flow beneath the pond liner.

(18)Stability (P. 9) Appendix B - it is stated that the groundwater elevations in the well HC-3B, located approximately 1,000 feet from the PWTS Ponds, range from approximately 4,785 to 4,815 feet amsl. Therefore, the groundwater elevation is below the modeling boundaries such that the stability of the facility is not affected.

Please clarify the discrepancies between the groundwater elevations ranging from 4,850 to 4,900 feet amsl indicated on P. 2-3 of the submittal and the reasons for using the lower elevations for the groundwater in the stability analysis.

(19)Site Water Management Report (p. 2-7) – It is stated that that Table 2.3 demonstrates that the proposed facilities are adequate to contain the Probable Maximum Flood (PMF). Supporting documentation in greater detail will be provided in a revised Site Water Management Report to be prepared by and submitted by others.

Please provide the revised Site Water Management Report with documentation to demonstrate that the proposed facilities have sufficient capacity to contain the PMF as stated under Capacity and Storage Design.

- (20)PW Pond Leak Detection System (p. 2-9) - A fate and transport analysis is not required for the PWTS Pond because the facility has been designed to be non-discharging. Pursuant to A.R.S. 49-241, PWTS will be treated as a discharging facility under the Aquifer Protection Program (APP). Therefore, please submit a fate and transport analysis for the facility.

- (21)PW Pond - Technical Memorandum - Rosemont Copper BADCT Analysis for the PWTS Ponds

Alert Level Calculations, AL1 and AL2 for the PW Pond are calculated to be 9,686 gpd and 308,813 gpd, respectively.

Rosemont's proposed alert levels AL1 and AL2 appear to be excessively high and shall be revised. Please submit new proposed alert levels. Analytical calculations should be based on system components, taking into account geomembrane defects, transmissivity of the drainage medium, design capacity of the leak collection and removal system (LCRS) rather than discharging capability of the pumping system alone at the LCRS.

- (22)TS Pond

The TS Pond is designed for temporary and emergency storage only and will be dry during normal operations. Additionally, a temporary or permanent pumping system will be utilized in the TS Pond to remove impounded water within 90 days and recycle the water into the reclaim water system.

To minimize discharge into the groundwater, ADEQ recommends that the provision should be made to remove the impounded water within 60 days.

- (23)Settling Basin (p. 3-5) - It is stated that a fate and transport analysis is not required for the Settling Basin because the facility will only be used on a temporary basis during process upset conditions.

Pursuant to A.R.S. 49-241, Settling Basin will be treated as a discharging facility under the Aquifer Protection Program (APP). Therefore, please submit a fate and transport analysis for the facility.

- (24)Table 3.1 (p.3-3). shows that the Settling Basin Total Volume Required is 190 acre-feet and the Total Volume Provided 188.3 acre-feet.

Please revise the capacity requirements for the Settling Basin so that the facility's designed storage capacity is equal to or greater than the storage capacity required.

- (25)Technical Memorandum - Rosemont Copper BADCT Analysis for the Settling Basin, May 4, 2009 (p.1) - The Settling Basin will receive process upset materials comprised of non-filtered tailings. Tailings could be stored in the Settling Basin for a period not to exceed 90 days.

To minimize discharge into the groundwater, ADEQ recommends that the provision should be made to remove the impounded water within 60 days.

(26)(p.4) - The Settling Basin Embankment has a maximum height of 65 feet and a total storage capacity of 180 acre-feet.

Pursuant to A.C.C. R-12-15-1206(B)(2)(a), the Settling Basin, with 65 feet embankment height and a total storage capacity of 180 acre-feet appears to be a jurisdictional dam. The applicant is advised to obtain ADWR approval for the construction and operation of Settling Basin Embankment.

Additionally, please provide the following information concerning facility design and estimated performance (aquifer loading calculation):

- maximum operating depth and design freeboard
- design capacity of the Settling Basin (maximum tonnage of tailings - solids that can be stored in the basin;
- longitudinal cross-section of the Settling Basin showing anchor trench or alternative method to secure GCL;
- demonstration that the downward thrust of stored tailings will not cause damage or puncture the GCL at the interface of 1.5-inch minus protective layer of rock material;
- aquifer loading calculation for the preferred BADCT alternative and comparison with other feasible alternatives for cost vs. discharge reduction.

(27)Technical Memorandum, Rosemont Heap leach Facilities – Liner Leakage Calculations
April 27, 2009

The alert level AL2 (Rapid and Large Leakage) for each of the Raffinate Pond and the PLS Pond is calculated at 15,272 gpd and 46,812 gpd, respectively.

Rosemont's proposed alert level for each of the Raffinate Pond and the PLS Pond appears to be excessively high and shall be revised. Analytical calculations shall be based on system components, taking into account geomembrane defects, transmissivity of the drainage medium, design capacity of the leak collection and removal system (LCRS) rather than discharging capability of the pumping system alone at the LCRS. Please provide revised calculations.

(28)APP Volume 1, Table 7.16 – Raffinate Pond Volume Requirements

There is a discrepancy in the Raffinate Pond Volume Requirements and the Total Volume Required. Please reconcile the volumes (Minimum Pool Volume, Design Operating Volume and Freeboard Volume) to reflect the correct volume of raffinate required in the Raffinate Pond.

(29) Diversion Channels

There are two permanent diversion channels: Channel No. 1 and Channel No. 2 shown in the Dwg. 600-C1-901) to intercept and divert storm events ranging between the 100-year/24-hour and the probable maximum flood. A series of detention basins, flow-through drains and channels will be used to intercept and divert the collected stormwater which will discharge to the Barrel Canyon Wash northeast of the Dry Stack TSF.

Please provide design details (plan and cross-section) of the permanent channels: Channel No. 1 and Channel No. 2 discharging the collected stormwater to the Barrel Canyon Wash.

WASTE ROCK STORAGE AREA (Waste Rock Dump)(AR-WR-01)

(30) Application Vol. 1, February 2009, states: "Waste rock will be managed by monitoring potentially acid generating (PAG) and non-acid generating (NAG) materials and placing material in designated areas." It further states, "Because waste rock will be placed by segregating materials based on acid generating potential and testing results by source type and the Waste Rock Storage Area will achieve greater engineering control potential compared to a typical unsegregated waste rock pile."

Please provide the following information:

- a) A detailed work plan for segregating potentially acid generating materials, including method of sampling, frequency of testing, and what triggers or activates segregation and testing procedures;
(For characterizing waste rock to determine if the material is non-acid generating, Rosemont is referred to the guidelines specified under CHARACTERIZATION OF TAILING, SPENT ORE AND WASTE ROCK contained in the Arizona Mining BADCT Guidance Manual)
- b) Final design configuration (plan and section) of the Waste Rock Dump, including:
 - ultimate height for the embankment;
 - spacing and width of stability benches;
 - buttress dimensions;
 - maximum anticipated phreatic surface in the embankment and foundation;
- c) Stability analysis (dynamic and pseudo static) along critical section(s) of the Waste Rock Dump.
- d) The Application, Volume 1 (p.165) states, "Results from the 2008 investigation which will be submitted to ADEQ based on the schedule presented in Table 7.13 in Section 7.12." The foregoing reference to the Table 7.13 in Section 7.12 appears to be in error. Please provide the correct reference and the results from the 2008 investigation.

CLOSURE AND POST-CLOSURE COSTS (A.A.C. R-9-A203(B)), and FINANCIAL ASSURANCE DEMONSTRATION (A.A.C. 18-9-A201(B)(5))

- (31) Rosemont's estimated closure and post-closure costs of the APP facilities, shown in Table 13.04 of the APP Application, amount to a total of \$1,175,000.

Cost details, for example, quantities, unit cost and the basis how the unit cost is calculated for each major task/activity involved, are not included.

Rosemont, in determining post-closure costs, has allowed post-closure period of 3 years. Please re-evaluate the post-closure costs based on a detailed post-closure plan for the APP facilities. The plan, shall include, at a minimum, a description of the activities/tasks, methods, procedures, and processes necessary to ensure continued effectiveness of compliance with applicable performance standards under the Aquifer Protection Program.

Additionally, the costs estimates shall be performed under the assumption that closure and post-closure activities are performed by a third-party under contract to the regulatory agency. Indirect cost, such as mobilization/demobilization, engineering redesign, procurement, construction management, contractor overhead and profit, administration, regulatory oversight and contingency shall be accounted for as part of the total costs to be used for evaluating financial assurance demonstration.

Additional Engineering Deficiencies

- 32) APP Regulated Facility Locations Map, Figure No. 04L – please show map coordinates (Northings and Eastings) and contour intervals (elevations).
- 33) Facilities' Final Configuration – If modifications or changes are made to the facility design and configuration, please clearly mark these changes on the facility drawing (plan and cross-section) or produce an overlay and describe in the text if different from the documents submitted to-date.
- 34) Please develop a table of groundwater elevation and elevation (bottom) of the above-lying APP facility indicating estimated depth to groundwater at or in the vicinity of the facility footprint.

ENGINEERING / SOLID WASTE DEFICIENCIES

- (1) Updated Aquifer Protection Permit Application Required – The Augusta Resource Corporation's Waste Management Plan, Rosemont Copper, dated June 2007, prepared by Tetra Tech, including the Non-Municipal Solid Waste Landfill Application contained in Appendix A of the Waste Management Plan, are nearly three (3) years old, and are missing several key items:

- a. Studies for threatened and endangered species which may be affected by landfill construction must be submitted.
- b. A drawing(s) must be submitted that shows the landfill facility's location in relation to the 100-year floodplain.
- c. Drainage features affecting the facility must be provided in much greater detail than the blue arrows provided in Figure 5, Waste Management Plan, Drainage Around Landfill.
- d. The copy of the certificate of disclosure, as required by A.R.S. § 49-109, must be provided as part of the non-municipal landfill application.
- e. Copies of any other federal or state environmental permits must be submitted.
- f. A draft restrictive covenant must be submitted pursuant to A.R.S. § 49-771.
- g. A map of the Quaternary-active faults provided in Table 2 of Appendix A must be submitted that clearly shows the landfill facility location in relation to the 27 different faults that are within a 200-kilometer radius.
- h. The facility design provided in Figure 7, Waste Management Plan, Solid Waste Facility Details, must be revised to incorporate more design details. Several additional engineering drawings may be required. The landfill design, as submitted, is not shown in relation to other facility features, most importantly, the storm water management structures. Elevation contours must be provided that relate to the existing topography. Overall, the engineering design of the landfill that was provided is conceptual—full engineering design details are required for approval of the landfill.

Please submit the above items in a new, updated application.

- (2) The description of the best available demonstrated control technology (BADCT) is not acceptable. Stating that the technical advantages of constructing a landfill without a liner are that there is no potential for liner leaks/tears, no "water pool to cause leachates to form", no "water pool leachate that may migrate", that expected constituents in the landfill will not seep, and there is little opportunity for operator error does not suffice as a BADCT demonstration.

Based on the wastes that will be disposed of, including some putrescible (leachate producing) wastes, the amount of precipitation the location receives, the erroneous modeling results provided (see item #3), and the requirement to protect human health and the environment, ADEQ requires a lined landfill facility with a leachate collection and removal system (LCRS). The application states on page A-9 of Appendix A that a landfill designed with a liner provides the "greatest amount of discharge reduction possible without analysis." Please submit a landfill design with a liner and LCRS (preferably a composite system with a GCL

and HDPE liner), or provide new modeling results (via HELP or UnSatH modeling). Based on the proposed landfill size of 1.5 acres, installing a liner is not cost-prohibitive in any way.

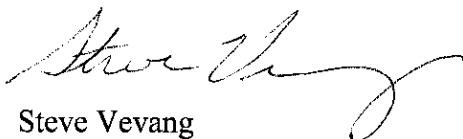
- (3) ADEQ is unfamiliar with the EPA Industrial Waste Management Evaluation software, and is not aware of utilizing the results of the software for any landfill liner demonstrations in the past. Based on test pit borings TTTP-07-19, TTTP-07-20 and TTTP-07-21 to a depth of only fourteen (14) or fifteen (15) feet, the geology beneath the surficial topsoil contained no clay, and was mostly sandstone or conglomerate (Willow Canyon Formation). This appears to be relatively permeable, and causes concern for a proposed unlined landfill. ADEQ requires the submittal of Hydrologic Evaluation of Landfill Performance (HELP) or UnSatH modeling results using site-specific soil permeabilities/characteristics. In addition, nearly all of the items required in the hydrogeologic study either still need to be submitted, or require technical justification through calculations, modeling, mapping, etc.:
- a. A description of the surface and subsurface geology, including a description of all borings [geology of the test pit borings and underlying soils must be described in greater detail],
 - b. The location of any perennial, intermittent or ephemeral surface water bodies [expected surface water flows need to be explained in greater detail],
 - c. The characteristics of the aquifer and geologic units with limited permeability, including depth, hydraulic conductivity and transmissivity [need to be submitted],
 - d. The rate, volume and direction of surface water and groundwater flow, including hydrographs, if available, and equipotential maps [need to be submitted],
 - e. The precise location of the 100-year floodplain and an assessment of the 100-year flood surface flow and potential impacts on the facility (see item #1(b) above) [requires further documentation],
 - f. Documentation of the existing quality of the water in the aquifers underlying the site, including, where available, the method of analysis, quality assurance, and quality control procedures associated with the documentation [needs to be submitted],
 - g. Documentation of the extent and degree of any known soil contamination at the site [needs supporting documentation],
 - h. An assessment of the potential of any discharges to cause the leaching of pollutants from surficial soils or vadose zone materials [needs supporting technical justification],
 - i. Any anticipated changes in water quality expected because of discharges [needs supporting technical justification],

- j. A description of any expected changes in the groundwater elevation or flow direction caused by the facility,
 - k. A map of the facility's discharge impact area [needs supporting technical justification],
 - l. The criteria and methodologies used to determine the discharge impact area [need to be submitted], and
 - m. The proposed location of each point of compliance [needs to be submitted—appears to missing from Figure 3].
- (4) A methane monitoring plan must be submitted for the facility to satisfy the requirements of 40 CFR 257.3-8(a). In general, ADEQ requires methane gas monitoring probes to be installed to the depth of refuse around the perimeter of the landfill, with at least quarterly monitoring to ensure that the concentration of methane gas does not exceed 5 percent (%) by volume, or lower explosive limit (LEL), at the facility boundary or 25% of the LEL in facility structures.
- (5) The financial assurance cost estimates are inadequate. Revised cost estimates, sealed by an Arizona registered professional engineer, that reflect the actual costs of a third-party having to haul in capping material, apply the cover, perform CQA/CQC tasks, seed the cover, and perform 30 years of post-closure maintenance and methane monitoring for the landfill must be submitted. The cost estimates must show each line-item (preferably in a spreadsheet format with item/unit cost/number of units/total cost) with sufficient supporting justification or short explanations for each line-item.

If you fail to provide the additional information within 120 days of this Request, ADEQ may proceed to a final decision on your application without further notice. As an alternative to providing ADEQ with all of the additional information identified above, you may respond to this Request within 120 days with a Notice of Intent to Rely on the Application Components as Submitted in accordance with A.A.C. R18-1-205(B) and R18-1-520.

Please contact Steve Vevang at (602)771-4621 if you have questions regarding this Notice or the status of your application.

Sincerely,



Steve Vevang
APP & Drywell Unit
Groundwater Section
Water Quality Division

Ms. Arnold
April 14, 2010
Page 18 of 18

cc: Jamie Joggerst, Geotechnical Engineer, Tetra Tech
Teresa Ann Ciapusci, Staff Officer, Coronado National Forest
Dennis Turner, SWS, WQD, ADEQ
Mark Krieski, Pima County Regional Flood Control District
Carrolette Winstead, Manager, APP & Drywell Unit, GWS, WQD, ADEQ
Maribeth Greenslade, Manager, TSU, GWS, WQD, ADEQ
Kuldip Khunkhun, TSU, GWS, WQD, ADEQ
Michael Prigge P.E., Waste Programs, SWPRU, Waste Programs, ADEQ
Jeff Emde, TSU, GWS, WQD, ADEQ
Lynne Dekarske, EPS/Billing, GWS, WQD, ADEQ

IDU10:0127

15. Consultants dispute Rosemont studies

Dick Kamp, Wick News Service and Green Valley News
April 20, 2010

Two studies conducted on behalf of a Canadian company that wants to mine in the Santa Rita Mountains indicate a pit lake will form in the aftermath, but say it will be non-acidic and non-polluting. Two consultants hired by the Pima County Board of Supervisors, which opposes the mine, disagree.

Augusta Resources commissioned the studies as part of a plan of operations for its proposed Rosemont open-pit copper mine.

The plan was submitted to the Coronado National Forest and will be evaluated under the National Environmental Policy Act (NEPA) as the U.S. Forest Service decides whether to approve the project.

In November, Augusta released a report titled "Hydrogeology of the Santa Rita Rosemont Site," analyzing water behavior in the area around the proposed site.

The study, conducted by Montgomery and Associates (M&A), concluded that mining at the site would produce a lake 819 feet deep, and that "dewatering," or pumping out the pit during operations, would drop the water table around it by about 2,020 feet.

The pit lake will not drain water from the Sonoita Creek watershed, the study said. Instead, it will act as a sink for the surrounding area, catching water and filling up faster than it evaporates.

However, the study's 100-year projections suggest that surface streams close to the pit — and within the Barrel and Davidson canyons' watersheds — could dry out.

In a second February report, consultant Tetra Tech studied rocks around the pit and concluded that the lake would not be acidic, despite the mining of sulfide ore.

It predicted that calcium carbonate or limestone would buffer potential leaching.

Bounds of analysis

In December, Pima County hired geohydrologist Tom Myers to analyze the M&A study and conduct further evaluations.

In a letter sent Feb. 1 to Coronado National Forest Superintendent Jeanine Derby, County Administrator Chuck Huckelberry cited Myers' report in saying that Augusta "artificially and unfairly" limited the bounds of analysis.

Myers, author of a Pima County analysis of a 2007 Rosemont analysis of an earlier pit projection, criticized the 100-year limit of the study, saying predictive models must look “many centuries” into the future.

“Our descendants will find that how we care to present our opinions today is irrelevant thousands of years from now,” he said.

But Augusta Vice President Jamie Sturgess wrote in an e-mail that 100 years is a “reasonable length of time for determining the extent and nature of effects on the local area,” and said University of Arizona experts consider a 40-year model to be a “stretch.”

Myers says the pit, following closure, will likely create a hydraulic sink - unless it intersects a fault system or fracture zone. “The geology is faulted and unpredictable,” he said, noting that if a pit intersects a fault system or fracture, the fault could provide a conduit for water in the pit to flow into the groundwater.

“There is no proof that this won’t occur and it is one of the uncertainties that is not addressed by Augusta,” Myers said.

Sturgess said M&A’s well tests and examination of flow rates have been extensive. He questioned Myers’ methodology and theoretical speculation.

“Myers did his studies with no site visit, no understanding of local geography or geology, no discussion with experts in local hydrology, and no access to the extensive test drilling, test pumping, and water-level monitoring,” Sturgess wrote.

Potential for acidity

Geochemist Ann Maest, an expert on water, rocks and pollution, works for Pima County to evaluate portions of the Rosemont site. Maest has not conducted a detailed analysis of the Tetra Tech study, but said she noticed problems in its data and methodology.

“If a ‘closed-system’ lake that has nowhere to go forms in a pit with acid-generating rock, at least the upper part of the lake could become acidic and increase in acidity over time,” Maest said.

If a flow-through lake forms, its water can also become acidic “by interacting with acid-generating material on the pit walls and in the rubble that exist behind the pit walls,” she said.

Maest questions Tetra Tech’s conclusions as to what will leach from the pit walls.

“Pit blasting leaves rock highly fractured for tens of feet behind the walls,” she said. “Tetra Tech assumes that all of the fractured material in and behind the pit walls would have no ore left. There usually is some ore-like material with abundant sulfides in and behind the pit walls.”

Sturgess says blasting is carefully controlled to minimize fracturing into the pit walls.

Tetra Tech's reliance on a geochemical test known as the SPLP is also problematic, Maest says, because with that test, material that leaches out of a sample is immediately diluted by 20 times.

The SPLP is the test required by the **Arizona Department of Environmental Quality (ADEQ)**, Sturgess said.

Weathered samples

Maest also says Tetra Tech's protocols don't indicate whether it used weathered samples in its leaching tests.

Rocks must be weathered for at least a year in order to accurately represent conditions at the mine, she said, since it takes time for the sulfides to weather and form dissolvable metals that can seep into groundwater.

According to Sturgess, Tetra Tech's tests averaged 35 weeks and were stopped after researchers determined the leach rates had leveled off.

"Because of the underlying geology of the ore body, there was no acid generation and therefore no reason to continue the leach tests," he said. "The fundamental limestone and sedimentary geology, and the extremely low levels of trace metals or pyrites in the Rosemont deposit (are) favorable for exposure to weathering."

But Maest says that carbonates such as limestone dissolve more rapidly than pyrites, which are the main source of acid drainage. And that can cause problems in the long run.

William Shafer, a geochemical mining consultant who has worked on the Rosemont project, said in an e-mail that he couldn't discuss specifics of the mine due to a potential conflict of interest.

But he said he believes the carbonate in the area could buffer the pit lake against acidity.

Even so, Shafer shared Maest's concern over the methodology of the Tetra Tech study, questioning the reliability of the SPLP method, and any tests of un-weathered samples.

[Back to the Table of Contents](#)

"Dennis L. Turner" <Turner.Dennis@azdeq.gov>

05/06/2010 11:42 AM

To" Teresa Ann Ciapusci" <tciapusci@fs.fed.us>

cc

bcc

Subject: RE: Requested state statutes in the Aquifer Protection Program -- 1

· Inert Materials (Title 49, Ch.2, Art. 1 of Arizona Revised Statutes; ARS § 49-201(20)

49-201. Definitions

In this chapter, unless the context otherwise requires:

20. "Inert material" means broken concrete, asphaltic pavement, manufactured asbestos-containing products, brick, rock, gravel, sand and soil. Inert material also includes material that when subjected to a water leach test that is designed to approximate natural infiltrating waters will not leach substances in concentrations that exceed numeric aquifer water quality standards established pursuant to section 49-223, including overburden and wall rock that is not acid generating, taking into consideration acid neutralization potential, and that has not and will not be subject to mine leaching operations.

.....

Dennis L. Turner, R.G.

Arizona Department of Environmental Quality

Surface Water Section

1110 W. Washington St. MC 5415 A-1

Phoenix, AZ 85007

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"Dennis L. Turner" <Turner.Dennis@azdeq.gov>

05/06/2010 11:45 AM To

"Teresa Ann Ciapusci" <tciapusci@fs.fed.us>

cc

bcc

Subject: RE: Requested state statutes in the Aquifer Protection Program -- 2

· Passive Containment (a.k.a. hydrologic sink)(Title 49, Ch.2, Art. 1 of Arizona Revised Statutes; ARS § 49-243(G)

49-243. Information and criteria for issuing individual permit; definition

G. A discharging facility at an open pit mining operation shall be deemed to satisfy the requirements of subsection B, paragraph 1 of this section if the director determines that both of the following conditions are satisfied:

1. The mine pit creates a passive containment that is sufficient to capture the pollutants discharged and that is hydrologically isolated to the extent that it does not allow pollutant migration from the capture zone. For purposes of this paragraph, "passive containment" means natural or engineered topographical, geological or hydrological control measures that can operate without continuous maintenance. Monitoring and inspections to confirm performance of the passive containment do not constitute maintenance.
2. 2. The discharging facility employs additional processes, operating methods or other alternatives to minimize discharge.

.....

Dennis L. Turner, R.G.

Arizona Department of Environmental Quality

Surface Water Section

1110 W. Washington St. MC 5415 A-1

Phoenix, AZ 85007

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"Dennis L. Turner" <Turner.Dennis@azdeq.gov>

05/06/2010 11:47 AM To

"Teresa Ann Ciapusci" <tciapusci@fs.fed.us>

cc

bcc

Subject

RE: Requested state statutes in the Aquifer Protection Program -- 3

· Pollutant Management Area and Point of Compliance (Title 49, Ch. 2, Art. 3 of Arizona Revised Statutes; ARS § 49-244)

49-244. Point of compliance

The director shall designate a point or points of compliance for each facility receiving a permit under this article. The point of compliance is the point at which compliance with aquifer water quality standards shall be determined. The point of compliance shall be a vertical plane downgradient of the facility that extends through the uppermost aquifers underlying that facility. For an aquifer which has no existing or reasonably foreseeable drinking water beneficial use, the director may establish monitoring for compliance in another aquifer in lieu of monitoring in the uppermost aquifer. The point of compliance shall be determined as follows:

1. Except as provided in paragraph 2, for a pollutant that is a hazardous substance the point of compliance is the limit of the pollutant management area. The pollutant management area is the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The pollutant management area includes horizontal space taken up by any liner, dike or other barrier designed to contain pollutants in the facility. If the facility contains more than one discharging activity, the pollutant management area is described by an imaginary line circumscribing the several discharging activities.
2. A point of compliance for hazardous substances other than that identified in paragraph 1 may be approved by the director if the facility owner or operator can demonstrate either:
 - (a) That it is technically impracticable or inappropriate considering the likely fate or transport of a pollutant in an aquifer to monitor at the boundary specified in paragraph 1.
 - (b) The alternative point of compliance will allow installation and operation of the monitoring facilities that are substantially less costly. Such a request by a facility owner or operator under this paragraph must be supported by an analysis of the volume and characteristics of the pollutants that may be discharged and the ability of the vadose zone to attenuate the particular pollutants that may be discharged, including such factors as climate, hydrology, geology and soil chemistry. In no event shall an alternative point of compliance be further from the boundary specified in paragraph 1 than is necessary for purposes of this paragraph, subdivisions (a) and (b), and in no event shall it be so located as to result in an increased threat to an existing or reasonably foreseeable drinking water source. In addition an alternate compliance point for a hazardous substance pursuant to this subdivision shall never be further downgradient than any of the following:
 - (i) The property boundary.

- (ii) Any point of an existing or reasonably foreseeable future drinking water source.
 - (iii) Seven hundred fifty feet from the edge of the pollutant management area.
3. For pollutants that are not hazardous substances the director, in identifying a point of compliance, shall take into account the volume and characteristics of the pollutants, the practical difficulties associated with implementation of applicable water pollution control requirements, whether the facility is a new facility or an existing facility, water conservation and augmentation and the site-specific characteristics of the facility, including, but not limited to, climate, hydrology, geology, soil chemistry and pollutant levels in the aquifer. The point of compliance must be so located as to ensure protection of all current and reasonably foreseeable future uses of the aquifer.

.....

Dennis L. Turner, R.G.
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Phoenix, AZ 85007

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"Dennis L. Turner" <Turner.Dennis@azdeq.gov>

05/06/2010 11:41 AM

To "Teresa Ann Ciapusci" <tciapusci@fs.fed.us>

cc

bcc

Subject: RE: Requested state statutes affecting the Aquifer Protection Program

History: This message has been replied to.

In this and the next three e-mails I provide four statutory references, with their respective texts for your enjoyment. They are:

- Licensing Time Frames (Title 41, Ch. 6, Art. 7.1 of Arizona Revised Statutes; ARS § 41-1072 to ARS § 41-1079);
- Inert Materials (Title 49, Ch. 2 Art. 1 of Arizona Revised Statutes; ARS § 49-201(20);
- Passive Containment (a.k.a. hydrologic sink)(Title 49, Ch.2, Art. 1 of Arizona Revised Statutes; ARS § 49-243(G); and
- Pollutant Management Area and Point of Compliance (Title 49, Ch. 2, Art. 3 of Arizona Revised Statutes; ARS § 49-244).

Licensing Time Frames appears below; I will follow up with three successive e-mails covering the others. Please let me know if you need more information.

- Licensing Time Frames (Title 41, Art. 7.1 of Arizona Revised Statutes; ARS § 41-1072 to ARS § 41-1079)

41-1072. Definitions

In this article, unless the context otherwise requires:

1. "Administrative completeness review time frame" means the number of days from agency receipt of an application for a license until an agency determines that the application contains all components required by statute or rule, including all information required to be submitted by other government agencies. The administrative completeness review time frame does not include the period of time during which an agency provides public notice of the license application or performs a substantive review of the application.
2. "Overall time frame" means the number of days after receipt of an application for a license during which an agency determines whether to grant or deny a license. The overall time frame consists of both the administrative completeness review time frame and the substantive review time frame.
3. "Substantive review time frame" means the number of days after the completion of the administrative completeness review time frame during which an agency determines whether an application or applicant for a license meets all substantive criteria required by statute or rule. Any public notice and hearings required by law shall fall within the substantive review time frame.

41-1073. Time frames; exception

- A. No later than December 31, 1998, an agency that issues licenses shall have in place final rules establishing an overall time frame during which the agency will either grant or deny each type of license that it issues. Agencies shall submit their overall time frame rules to the governor's regulatory review council pursuant to the schedule developed by the council. The council shall schedule each agency's rules so that final overall time frame rules are in place no later than December 31, 1998. The rule regarding the overall time frame for each type of license shall state separately the administrative completeness review time frame and the substantive review time frame.
- B. If a statutory licensing time frame already exists for an agency but the statutory time frame does not specify separate time frames for the administrative completeness review and the substantive review, by rule the agency shall establish separate time frames for the administrative completeness review and the substantive review, which together shall not exceed the statutory overall time frame. An agency may establish different time frames for initial licenses, renewal licenses and revisions to existing licenses.
- C. The submission by the department of environmental quality of a revised permit to the United States environmental protection agency in response to an objection by that agency shall be given the same effect as a notice granting or denying a permit application for licensing time frame purposes. For the purposes of this subsection, "permit" means a permit required by title 49, chapter 2, article 3.1 or section 49-426.
- D. In establishing time frames, agencies shall consider all of the following:
 - 1. The complexity of the licensing subject matter.
 - 2. The resources of the agency granting or denying the license.
 - 3. The economic impact of delay on the regulated community.
 - 4. The impact of the licensing decision on public health and safety.
 - 5. The possible use of volunteers with expertise in the subject matter area.
 - 6. The possible increased use of general licenses for similar types of licensed businesses or facilities.
 - 7. The possible increased cooperation between the agency and the regulated community.
 - 8. Increased agency flexibility in structuring the licensing process and personnel.
- E. This article does not apply to licenses issued either:
 - 1. Pursuant to tribal state gaming compacts.
 - 2. Within seven days after receipt of initial application.
 - 3. By a lottery method.

41-1074. Compliance with administrative completeness review time frame

- A. An agency shall issue a written notice of administrative completeness or deficiencies to an applicant for a license within the administrative completeness review time frame.
- B. If an agency determines that an application for a license is not administratively complete, the agency shall include a comprehensive list of the specific deficiencies in the written notice provided

pursuant to subsection A. If the agency issues a written notice of deficiencies within the administrative completeness time frame, the administrative completeness review time frame and the overall time frame are suspended from the date the notice is issued until the date that the agency receives the missing information from the applicant.

- C. If an agency does not issue a written notice of administrative completeness or deficiencies within the administrative completeness review time frame, the application is deemed administratively complete. If an agency issues a timely written notice of deficiencies, an application shall not be complete until all requested information has been received by the agency.

41-1075. Compliance with substantive review time frame

- A. During the substantive review time frame, an agency may make one comprehensive written request for additional information. The agency and applicant may mutually agree in writing to allow the agency to submit supplemental requests for additional information. If an agency issues a comprehensive written request or a supplemental request by mutual written agreement for additional information, the substantive review time frame and the overall time frame are suspended from the date the request is issued until the date that the agency receives the additional information from the applicant.
- B. By mutual written agreement, an agency and an applicant for a license may extend the substantive review time frame and the overall time frame. An extension of the substantive review time frame and the overall time frame may not exceed twenty-five per cent of the overall time frame.

41-1076. Compliance with overall time frame

Unless an agency and an applicant for a license mutually agree to extend the substantive review timeframe and the overall time frame pursuant to section 41-1075, an agency shall issue a written notice granting or denying a license within the overall time frame to an applicant. If an agency denies an application for a license, the agency shall include in the written notice at least the following information:

1. Justification for the denial with references to the statutes or rules on which the denial is based.
2. An explanation of the applicant's right to appeal the denial. The explanation shall include the number of days in which the applicant must file a protest challenging the denial and the name and telephone number of an agency contact person who can answer questions regarding the appeals process.

41-1077. Consequence for agency failure to comply with overall time frame; refund; penalty

- A. If an agency does not issue to an applicant the written notice granting or denying a license within the overall time frame or within the time frame extension pursuant to section 41-1075, the agency shall refund to the applicant all fees charged for reviewing and acting on the application for the license and shall excuse payment of any such fees that have not yet been paid. The agency shall not require an applicant to submit an application for a refund pursuant to this subsection. The refund shall be made within thirty days after the expiration of the overall time frame or the time frame extension. The agency shall continue to process the application subject to subsection B of this section. Notwithstanding any other statute, the agency shall make the refund from the fund in which the application fees were originally deposited. This section applies only to license applications that were subject to substantive review.

- B. Except for license applications that were not subject to substantive review, the agency shall pay a penalty to the state general fund for each month after the expiration of the overall time frame or the time frame extension until the agency issues written notice to the applicant granting or denying the license. The agency shall pay the penalty from the agency fund in which the application fees were originally deposited. The penalty shall be one per cent of the total fees received by the agency for reviewing and acting on the application for each license that the agency has not granted or denied on the last day of each month after the expiration of the overall time frame or time frame extension for that license.

41-1078. Reporting; compliance with time frames

- A. Beginning on September 1, 1998 for agencies that have established time frames before July 1, 1998 and by September 1 of each year thereafter for all agencies that issue licenses, each agency shall report to the governor's regulatory review council on summary forms developed by the council the agency's compliance level with its overall time frames for the prior fiscal year. The agency reports shall include the number of licenses issued or denied by the agency within the applicable time frames, the dollar amount of all fees returned to applicants and all penalties paid to the state general fund due to the agency's failure to comply with the applicable time frames and, if this article does not apply to licenses issued by the agency because the licenses are issued within seven days after receipt of initial application, a certification by category of license, including a statutory reference for the category of license, that the agency has complied with the seven-day requirement.
- B. By December 1 of each year, the governor's regulatory review council shall compile the summary forms submitted by the agencies pursuant to subsection A and present them to the governor, the president of the senate, the speaker of the house of representatives and the cochairmen of the administrative rules oversight committee.

41-1079. Information required to be provided

- A. An agency that issues licenses shall provide the following information to an applicant at the time the applicant obtains an application for a license:
 - 1. A list of all of the steps the applicant is required to take in order to obtain the license.
 - 2. The applicable licensing time frames.
 - 3. The name and telephone number of an agency contact person who can answer questions or provide assistance throughout the application process.
- B. This section does not apply to the Arizona peace officer standards and training board established by section 41-1821.

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