

**Freeport-McMoRan Bagdad Mine**  
Aquifer Protection Permit No. 105258  
Place ID No. 1390, LTF No. 78996  
**SIGNIFICANT AMENDMENT**

## **I. Introduction:**

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

## **II. Facility Location:**

The Bagdad Mine is located near Bagdad, Arizona, Yavapai County.

## **III. Facility Description:**

Mining of copper from the Bagdad porphyry copper deposit began in 1928. The deposit is currently mined using open pit methods, with truck and conveyor haulage. The operations produce a combined total of 200,000 tons per day of sulfide ore, leach rock, and waste rock. Sulfide ores are processed in the flotation concentrator, and sent to off-site smelters. Oxide ore is processed through the leach dump and solution extraction/electrowinning (SX/EW) method. The mine includes an open pit, a concentrator, ore and concentrate stockpiles, an SX/EW plant, active and inactive leach dumps, waste rock dumps, active and inactive tailings impoundments, pregnant leach solution impoundments, raffinate impoundments, and stormwater diversion ditches and detention basins.

## **IV. Amendment Description:**

The purpose of this amendment is to add a coarse ore stockpile (COS) to be used for temporary storage of run-of-mine mineralized material prior to shipment to the mill. The COS is anticipated to have a capacity of approximately 55 million tons and a maximum elevation of 4,100 feet above mean sea level (amsl).

The application was processed as a "Significant Amendment" as per A.A.C. R18-9-A211(B)(9) since it pertains to addition of the COS, an APP discharging facility which meets the BADCT requirements.

## **V. Regulatory Status**

No violations were found in the most recent inspection that was conducted on March 13, 2019.

**VI. Best Available Demonstrated Control Technology (BADCT):**

The COS will be constructed on a base made of non-mineralized Gila Conglomerate (Gila Base) covering 232 acres, which will be built to an elevation of 3,720 feet amsl. The Gila Base will be constructed from run-of-mine (ROM) material that was previously demonstrated (studies conducted in 1993 and 2013) to be inert. The ore stockpile will consist of temporarily stored ROM primary crusher feed material that is not considered inert. A slope stability was performed for the COS. Based on the results of the analysis, the COS meets the design criteria for stability for both static and pseudo-static conditions for both critical cross-sections with resultant FOS of 1.37 under static conditions and 1.15 under pseudo-static conditions, which are greater than the minimum FOS of 1.3 for static stability and 1.0 for pseudo-static stability.

The other elements of BADCT for the COS include its location within the Passive Containment Capture Zone (PCCZ) of the open pit, the underlying low permeability bedrock and pre-mine topography beneath the COS that slopes toward the open pit.

**VII. Compliance with Aquifer Water Quality Standards (AWQS):**

The COS lies completely within the PCCZ of the Bagdad Pit. Groundwater flow patterns show that any discharge from this facility will report to the Bagdad Pit. As a result, no additional Point of Compliance (POC) monitoring is required. Compliance with AWQS will continue to be monitored at the existing POCs.