

Silver Bell Mine
Aquifer Protection Permit No. P-100510
Place ID 2867, LTF No. 77997
Other 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. Permittee & Facility Location:

The Silver Bell Mine is located approximately 17 miles west of Marana, Pima County, Arizona.

III. Facility Description:

The permitted facility is an open pit mining and copper leaching operation consisting of leach dumps and in-situ leaching of rubblized ore within the existing Oxide and El Tiro open pits, and in the new West Oxide and North Silver Bell open pits. Copper ore placed in rock heaps is leached with a dilute sulfuric acid solution. Solutions from leaching called Pregnant Leach Solution (PLS) are collected in sumps or ponds and pumped via pipelines to a solvent extraction/electrowinning (SX-EW) plant for increasing the concentration of copper from which copper cathode is produced. Solutions stripped of copper (called raffinate) are recycled back to the leaching circuits.

IV. Amendment Description:

The purpose of this amendment is to:

- Expand footprint of Facility No. 39 – Overburden Dump No. 39 (aka. North of Oxide Pit or NOX). This overburden dump is being expanded to provide operations flexibility. This dump has not been leached and is used for stockpiling overburden and spent ore (previously leached ore).
 - The closure cost has been updated accordingly to increase the closure cost of the expanded facility footprint by the percent increase in footprint area.
- Add newly constructed monitoring well MW-7C to replace current monitoring well MW-7R due to MW-7R not representing the regional groundwater characteristics at the site.
- Add a facility, the Emergency Containment Pond, currently permitted under Type 3.04 General Permit (LTF Id: 73110, Place ID: 144797), to the existing SBM Aquifer Protection Permit.
- Add a facility, the North Silver Bell Pit Collection Sump. The North Silver Bell Pit Collection Sump may be used for storing stormwater and/or process water from the No. 1 PLS Collection Pond.

- Adjust the Pollutant Management Area (PMA). The current PMA boundary has been adjusted to correct previous errors on PMA exhibits. Previous maps showing the PMA and DIA showed very “rounded” boundaries inside of the actual final contour of the No.1 Leach Dump and stormwater cut off channel. The PMA and DIA are revised to delineate the actual physical boundaries of the PMA and DIA. The PMA and DIA is also be updated to reflect the new expanded Overburden Dump No.39 (NOX facility) footprint.
- Update permit language to update and revise facility descriptions that are incorrect or require more clarity.
- Update permit language to clarify the relationship between water level monitoring and the 5-year Pollutant Containment Capture Zone (PCCZ) report.
- Update the Compliance Schedule to clarify the due date for installing POC wells MW-13 and MW-23.
- Update Alert Level for dissolved Nickel for POC Well No. MW-4R from 0.7 mg/L to 0.08 mg/L

V. Regulatory Status

No enforcement actions at this time.

VI. Best Available Demonstrated Control Technology (BADCT):

The facility BADCT relies on a combination of engineered design and site-specific hydrogeologic characteristics. For facilities constructed prior to 1986, special consideration is allowed for the age of the facility as it relates to the evaluation of alternative demonstrated control technologies and their cost effectiveness for additional discharge reduction. None of the existing facilities will be modified in this amendment.

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

The pollutant management area (PMA) for the Silver Bell Mine and discharge impact area (DIA) are changing with this amendment as described in the amendment description, above. The existing Point of Compliance (POC) monitoring locations and parameters will remain the same because they adequately monitor any discharges from the expanded No. 1 Leach Dump. Specifically, existing POC wells MW-10, MW-14, MW-19, MW-20 and MW-21 are located downgradient from the expanded dump.