

PIT LAKE WATER QUALITY CHARACTERIZATION PROGRAM

NDEP PROFILE III

The Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR) is required by the Nevada Administrative Code to ensure that mine pit lake water quality does not '*...affect adversely the health of human, terrestrial or avian life*' (NAC 445A.429). As such, the BMRR has adopted an Ecological Risk Assessment (ERA) methodology to use in evaluating potential pit lake water quality risks. The ERA methodology is a well-known approach in evaluating potential hazards in the environment.

A first step in the BMRR ERA course of action was to develop a Screening Level Ecological Risk Assessment (SLERA) process. This process required the BMRR to develop a pit lake water quality Profile III. This Profile III is similar in structure to the NDEP Profiles I and II in that a water quality sample is compared to a set of established reference values and, depending on the extent of any parameter exceedance of a particular reference value, actions may be required.

A sample exceedance of a particular reference value does not necessarily mean non-compliance with NAC 445A.429. An exceedance of the reference value will provide cause for the mining operator and this agency to further evaluate pit lake conditions and future actions. Future actions may include one or more of the following: ERA; modify pit lake water parameter of concern concentration (treatment); reduce or eliminate exposure pathway; or reduce or eliminate receptor access.

Existing (if available) and predicted pit lake water quality will be incorporated into the SLERA. This actual and/or predicted water quality will then be compared to toxicology (screening) benchmarks, calculated for the No Observed Adverse Effects Level (NOAEL), linked to specific receptor species. If the pit lake water parameter concentration is below the NOAEL concentration, the parameter is not likely to cause adverse effects. The use of NOAEL screening benchmarks is a conservative approach, and NOAEL screening benchmarks will be a BMRR SLERA requirement (the NOAEL screening benchmarks are the Profile III reference values).

Profile III Sampling Procedure:

The Profile III pit lake water sampling procedure is designed to determine the quality of pit lake water that could adversely impact avian or terrestrial life through ingestion. Ingestion of pit lake water is considered the only viable exposure pathway for terrestrial and avian species (as a note, the only exposure pathway identified for humans was a fall from a highwall). As such, pit lake water samples should be taken at shallow depth – less than one foot below the surface. The sampling can either be from the shore or from a boat. Sample collection consists of grab samples for total recoverable metals. Profile III water samples must be analyzed by a Nevada-certified Clean Water Act laboratory (see <http://ndep.nv.gov/bsdw/labservice.htm> for certified laboratory listing).

Reporting Form:

The Profile III laboratory analytical results shall be reported on NDEP Form 0290 or equivalent. [NDEP Form 0290 is available here](#)