UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MAY 16 2013

Miles Kreidler
Bureau of Land Management
Ely Field Office
HC33 Box 33500
Ely, NV 89301

Subject: Pan Mine Project Draft Environmental Impact Statement, White Pine County, Nevada [CEQ# 20130071]

Dear Mr. Kreidler:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) NEPA Implementation Regulations at 40 CFR 1500-1508, and our NEPA review authority under Section 309 of the Clean Air Act.

We have rated this Draft EIS as EC-2 – Environmental Concerns-Insufficient Information (see enclosed "Summary of Rating Definitions and Follow-Up Action"). Our rating is based on our concerns about the quality of the geochemical characterization conducted for this project and the need for additional water quality monitoring at the mine. We recommend that the Final EIS provide additional information, including a detailed adaptive management plan for geochemical characterization, a commitment to monitor waste rock disposal areas for seepage, and more detail on the heap leach evapotranspiration cell and the power transmission line. Our detailed comments are enclosed.

We appreciate the opportunity to review this Draft EIS. Per our Memorandum of Understanding with Nevada BLM for mining EISs, we respectfully request a copy of the preliminary Final EIS prior to its publication. If you have questions, please call me at (415) 972-3521 or contact Jeanne Geselbracht at 415-972-3853.

Sincerely,

Kathleen M. Goforth, Manager
Environmental Review Office

Enclosures: EPA's Summary of Rating Definitions and Follow-Up Action
EPA's Detailed Comments

cc: Bruce Holmgren, NDEP

Pan Mine Draft EIS
EPA Comments – May, 2013

Geochemical Characterization

Before the North Pan Pit is mined, an adaptive management plan for supplemental waste rock characterization will be implemented with a focus on the North Pan Pit waste rock "with low neutralizing potential" (Waste Rock Management Plan, Draft EIS, App. 2A). If future humidity cell test results indicate acid rock drainage and/or significant metal leaching potential in localized zones of the waste rock, the block model will be refined to the extent possible to identify problematic waste rock zones, and potentially acid generating (PAG) material would be selectively handled in the North Waste Rock Disposal Area. EPA supports conducting supplemental geochemical characterization throughout mining operations and using new information to adaptively manage the project. The Pan project, however, does not appear to present a sampling and analysis plan in support of its geochemical characterization program for either the characterization that has been conducted thus far or the characterization that is to be done under the adaptive management plan. Neither the Waste Rock Management Plan nor the June 2012 Pan Project Final Baseline Geochemistry Report provides the details for sampling and analysis, such as the basis for the samples selected, number of samples, and quantity of material subjected to mineralogical analysis and static and kinetic testing (whole rock analysis, acid base accounting, short-term leach tests and humidity cell tests).

Recommendations: The Final EIS and Waste rock Management Plan should include a detailed waste rock sampling and analysis plan for adaptive management. The plan should specify the protocols for selecting representative waste rock samples for testing, the parameters to be analyzed, and criteria for determining whether humidity cell tests have run long enough.

The sampling and analysis plan should provide for a statistically representative approach that allows for evaluation based on:

- Geological and lithological units
- Zones of mineralization within the units
- Source type (wall rock, waste rock, ore, etc.)
- Mining phase

The plan should provide the basis for the samples selected, number of samples, and quantity of material tested, for each unit, source, and phase. The plan should also address sample storage and preparation, quality assurance/quality control, and identify and justify the type and number of mineralogical, whole rock, acid-base accounting, and short-term and long-term leach tests to be performed.

The following table identifies some references that address these issues and which we recommend be considered for the sampling and analysis plan:

Reference	Title	Description
BLM 2010	IM-NV-2010-014 Rock Characterization and Water Resources Guidance for Mining Activities	II. Statistical Approach to Characterization (define statistical adequacy) 1. Sample selection 2. Number of samples 3. Quantity of material
EPA 2003	EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska	Appendix C - Characterization of Ore, Waste Rock and Tailings
GARD (2009)	Global Acid Rock Drainage Guide	Section 5.4.15 Quality Assurance/Quality Control
Price (2009)	MEND Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials	Chapter 8 Selection, Storage and Preparation of Samples

Criteria for determining the duration of individual humidity cell tests should be based on the relative reactivity of, and actual available neutralization potential present in, each sample. These criteria should account for initial reactivity of calcium and magnesium carbonate minerals and allow for their complete dissolution in the presence of acid generation potential before discontinuing tests. We recommend that tests continue until the rates of sulfate generation and metal leaching have stabilized at relatively constant rates for at least several weeks and until either acid effluent is produced or all calcium and magnesium carbonate minerals have been depleted.

According to the June 2012 Pan Project Final Baseline Geochemistry Report (p. 29), the majority of unconfirmed PAG waste rock samples have "low total sulfur (less than 1.5 percent)" and "are generally relatively inert" because they have low acid potential (AP) and low neutralizing potential (NP). It appears that these assumptions may have led to an erroneous discounting of samples with less than 1.5 percent sulfur content. According to the MEND Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials, the Global Acid Rock Drainage (GARD) Guide, and other sources, a percent sulfur cut-off grade should not be used as the only means of addressing acid generation potential to limit kinetic testing of PAG samples. Even low levels of sulfide can lead to acid drainage if neutralization potential is less than acid generating potential.[1]

Recommendation: We recommend that samples be considered for testing if their NP:AP ratio is less than 3:1, and that 1.5 percent sulfide not be used as a cut-off to determine "low neutralizing potential."

[1] GARD (2009), Global Acid Rock Drainage Guide, Section 5.4.10 Net Acid or ARD Potential; Price (2009), MEND Prediction Manual for drainage Chemistry from Sulphidic Geologic Materials, Chapter 14 Acid Base Accounting and Criteria Used to Predict Potential for Acid Drainage

Water Quality Monitoring

The Draft EIS includes the Groundwater Monitoring Plan and the Stormwater Management Plan, which describe water quality monitoring of wells, and inspection schedules and best management practices for stormwater controls, respectively. Neither these plans nor the Waste Rock Management Plan, however, address monitoring and reporting of surface or subsurface discharges from the waste rock disposal areas, should they occur.

> **Recommendation:** The Pan Project Waste Rock Management Plan should be revised in the Final EIS to include a monitoring and reporting section to address potential seepage. We recommend that the waste rock disposal areas be thoroughly inspected for seepage between seven and 14 days after 25-year, 24-hour storm events, as well as during and after spring runoff, to look for non-stormwater seeps. Any detected seepage should be sampled and analyzed for Profile I parameters. The plan should describe the actions that would be taken to prevent pollutant migration and wildlife exposures if any pollutants are found at concentrations trending toward or exceeding water quality criteria. We recommend that this information also be added to Section 6, Non-Stormwater Discharge Management, of the Pan Project Stormwater Management Plan.

Heap Leach Facility

The Draft EIS provides no information regarding the fate and transport of cyanide, metals, and the other constituents in the leached ore and evapotranspiration (ET) cell over the course of closure and post-closure. The document states that operational monitoring data for drain down flows and chemistry would be used to confirm modeled flows, and submitted as part of the Final Plan for Permanent Closure at least two years prior to closure of the heap leach facility. We agree that operational monitoring should be used to inform and update the closure and post-closure plans as the project approaches its closure phase; however, information on the projected drain down flows and chemistry of the heap leach facilities and ET cell is needed at the planning stage and should be disclosed in the EIS. This information is necessary to inform and support the Record of Decision (ROD) with respect to the mine design and anticipated closure and post-closure needs, including appropriate financial assurance.

> **Recommendation:** The Final EIS should provide the projected drain down chemistry and flow timelines for the heap leach facility and ET cell.

According to the Draft EIS (p. ES-5), the spent leach material on the heap leach pad would be rinsed with water to reduce reagent and dissolved metals concentrations in the heap leach pad drainage to the solution ponds. The Draft EIS (p. 2-68) and the May 2012 Plan of Operations (p. 3-9), however, state that the spent heap would be allowed to drain with no fresh water rinsing. Based on personal communication (May 1, 2013 email from Miles Kriedler to Jeanne Geselbracht), we understand the latter to be the case.

> **Recommendation:** The Final EIS should clarify that no fresh water rinsing of the spent ore is anticipated during closure.

Connected Actions

According to the Draft EIS (p. 2-10), a new 69 kV power transmission line will be constructed as part of the proposed action. While part of the transmission line is evaluated as a connected action in the Draft EIS, the segment of the line that would run north of Highway 50 is evaluated in a separate Environmental Assessment rather than in this EIS. It is unclear from the Draft EIS whether the segment planned for north of Highway 50 would have independent utility. For example, if the Pan Mine were not permitted, would the transmission line segment north of Highway 50 still be constructed? Other than transmitting power to the Pan Mine, what are the purpose and need for the new transmission line?

> **Recommendation:** If the northern segment of the transmission line does not have independent utility, the entire proposed new transmission line should be evaluated as a connected action in the Pan Project Final EIS.