HQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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San Francisco, CA 94105-3901

November 9, 2007

Kenneth Miller
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, NV 89801-0611

Subject: South Operations Area Project Amendment Cumulative Effects Draft Supplemental Environmental Impact Statement (SEIS) [CEQ # 20070368]

Dear Mr. Miller:

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.

The Bureau of Land Management (BLM) published the South Operations Area Project Amendment (SOAPA) Cumulative Effects Draft Supplemental Environmental Impact Statement (SEIS) in response to a decision by the U.S. Court of Appeals for the Ninth Circuit: Great Basin Mine Watch v. Hankins, 456 F.3d 955, 9th Circuit 2006. The Court required BLM to prepare a Supplemental EIS to adequately address the cumulative impacts for the SOAPA, which was analyzed in a Draft EIS in 2000 and a Final EIS in 2002. BLM signed the Record of Decision for the project in 2002. The project has been operating throughout the law suit.

We have rated the SOAPA Draft SEIS as "EO-2 – Environmental Objections – Insufficient Information" (see enclosed "Summary of Rating Definitions and Follow-Up Action"). Together, the 2002 SOAPA Final EIS and the current SOAPA SEIS constitute the SOAPA EIS. Our rating is based on our continuing environmental objections to the project because of its potential significant adverse impacts to water quality. We do not believe the project includes sufficient measures to ensure against acid rock drainage. Neither the original EIS nor the Draft SEIS contains sufficient information to confirm that the acid neutralization potential of SOAPA waste rock is adequate to prevent acid generation and ensure against adverse impacts to water quality over the long term. We recommend that the Final SEIS provide additional information regarding mine geochemistry, measures to prevent acid drainage, mitigation for potential impacts to pit lake water quality, water quality monitoring, mercury emissions and controls, and

bonding and long-term financial assurance. Our detailed comments are enclosed. Our recommendations are consistent with our previous comments on the SOAPA Draft and Final EISs. While we understand that this project has been ongoing for several years, this SEIS provides an opportunity for reevaluation of, and adjustments to, some project components to ensure protection of environmental resources, both during mine operation and after mine closure.

We are glad we had the opportunity to review this Draft SEIS and raise these issues to BLM in advance of our letter. We look forward to working with BLM to identify solutions to the concerns we have raised. We request one copy of the Final SEIS be sent to this office when it is officially filed with our Washington, D.C. office. If you have any questions, please call me at (415) 972-3846, or have your staff call Jeanne Geselbracht at (415) 972-3853.

Sincerely,

Nova Blazej, Manager
Environmental Review Office

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Enclosure

Cc: David Gaskin, Nevada Division of Environmental Protection
Paul Pettit, Newmont Mining Corporation
Damien Higgins, U.S. Fish and Wildlife Service

South Operations Area Plan Amendment
Draft Supplemental Impact Statement

Mine Geochemistry and Waste Rock Management

In our October 26, 2000, comment letter on the South Operations Area Plan Amendment (SOAPA) Draft Environmental Impact Statement (EIS) and our June 4, 2002, comment letter on the SOAPA Final EIS, we expressed objections to the project in part because of its potential for significant adverse impacts to water quality from acid rock drainage. We requested a copy of the geochemistry studies conducted for the project and recommended the Final EIS include a summary of the geochemistry to clarify the acid generating potential of the waste rock piles. Specifically, we requested static and kinetic test results for representative samples of each rock type, sampling type and frequency, the geochemical model used, volume estimates for each rock type that would be placed in the waste rock piles, and volumetric calculations of acid neutralization potential to acid generation potential (ANP:AGP) for the waste rock. We also recommended that BLM require more frequent waste rock sampling; specify, in detail, the requirements and source for the neutralizing material necessary in the waste rock dumps; consider that neutralizing waste rock may need to be stockpiled for purposes of strategic placement; and address long-term bonding needs prior to issuance of the Plan of Operations. We did not receive this information, and it was not provided in the Final EIS or the current Draft Supplemental Impact Statement (SEIS).

According to the Draft SEIS (Table 3-1), 47 percent of the waste rock at Gold Quarry is potentially acid generating (PAG). Acid mine drainage from PAG rock releases metals and other constituents that can contaminate surface water, groundwater, and mine pit lakes for hundreds or thousands of years. PAG waste rock must be strategically placed so it is surrounded by sufficiently neutralizing waste rock to preclude the generation of acidic drainage and associated contaminants. Given such a high amount of PAG rock at SOAPA, EPA believes there may not be a sufficient amount of neutralizing waste rock to buffer all the acid generated, which could result in long-term unmitigated releases to surface water and groundwater. In addition, we believe the amount of PAG rock at SOAPA could be significantly greater than 47 percent. The 47 percent projection was estimated based on Newmont's Net Carbonate Value (NCV) testing, which does not account for some uncertainties and does not appear to have been confirmed with kinetic tests. We believe the NCV values may underestimate the potential for acid generation at this mine.

We are also concerned because the Draft SEIS (p. 3-3) states that waste rock generated at the mine is classified in accordance with Nevada Division of Environmental Protection (NDEP) Waste Rock and Overburden Evaluation Guidelines (1996). NDEP classifies PAG waste rock with an ANP:AGP ratio of 1.2:1 or higher as non-PAG rock. This reference is inconsistent BLM Nevada's Instruction Memorandum No. NV-97-017, which defines samples with an ANP:AGP ratio between 1.0 and 3.0 or a net neutralizing potential between -20 and +20 tons $CaCO_3$ per kiloton rock material as having an uncertain acid generation potential, and recommends kinetic tests be conducted on

samples within this range to better determine potential to generate acid. If only waste rock with an ANP:AGP ratio equal to or less than 1.2:1 is classified and disposed as PAG rock without confirmation by kinetic testing, it is possible that some waste rock is being misclassified and improperly disposed.

Recommendation: We recommend that BLM reevaluate the geochemistry for this mine and provide a description in the Final SEIS of this evaluation, supporting it with the detailed geochemistry information requested above. If kinetic testing has not been conducted, we recommend BLM require it for waste rock with ANP:AGP ratios between 1:1 and 3:1 to better characterize this portion of the waste rock and help determine how it should be properly disposed. If kinetic testing is not conducted, we recommend waste rock with AGP:ANP ratios less than 3:1 be classified as PAG for purposes of proper disposal.

Neither the 2002 SOAPA Record of Decision nor Newmont's *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (2003) include sufficient measures to ensure that waste rock piles would be adequately designed and material with sufficient acid neutralization potential would be available to prevent acid generation at the mine. In light of the high volume of PAG waste rock at the mine, we believe sufficient neutralizing waste rock may not be available and borrow material may be needed to adequately neutralize PAG waste rock at the mine. Accurate characterization of the waste rock is important in determining the amount and timing of available neutralizing waste rock to sufficiently encapsulate and buffer the PAG rock. One purpose of a waste rock handling plan is to specify how the distinctions within and between the different rock types will be made during operations and how each rock type will be disposed accordingly. We have serious concerns about the existing plan for waste rock management at this mine for the following reasons:

- The plan specifies that sulfide waste rock dumps are placed on a 12-inch layer of waste rock, existing subsoil, or borrowed subsoil with a permeability of 1×10^{-5} cm/sec or less. EPA's analysis has determined that such a layer would not necessarily preclude leachate movement through it.

- The plan specifies that PAG material within the waste rock dump is encapsulated with a 10-foot layer of waste rock with an ANP:AGP ratio of at least 3:1, <u>especially</u> in situations where the first-loaded material is PAG. A thick neutralizing base layer is a positive component of the management plan. However, the plan does not account for the actual amount of neutralizing waste rock needed for each PAG cell based on stoichiometry. For example, a ten-foot layer of neutralizing rock may not be sufficient for lifts of PAG waste rock many times thicker.

- The plan does not specify that sulfide waste rock would be encapsulated on all sides with sufficiently neutralizing waste rock. PAG rock could be laterally surrounded with "non-reactive material," which would not necessarily provide any neutralizing potential. The appropriate volume and neutralizing capacity of

encapsulating rock needs to be calculated for each lift of PAG rock based on stoichiometry of the material.

Recommendation: The Final SEIS and Record of Decision (ROD) should describe how sufficient neutralizing material will be assured and all waste rock will be properly disposed during all phases of the project to prevent acid rock drainage. The site specific waste rock handling plan should identify all areas of PAG waste rock based on the appropriate geochemical analysis, and identify the source of neutralizing material for each phase when PAG waste rock is disposed. If the volume and neutralization potential of waste rock will not be sufficient based on stoichiometry, we recommend appropriate borrow material be used. The Final SEIS should describe the site specific waste rock handling plan, and it should be included in the ROD.

Recommendation: We recommend an implementation monitoring plan be developed and followed to ensure proper placement of waste rock.

The Final EIS and Draft SEIS do not identify or discuss the potential impacts should the waste rock dumps fail to contain and control all waste rock drainage (acidic and neutral), both beneath and downgradient of the facility. The Gold Quarry North Waste Rock Disposal Facility is proximate to Maggie Creek. These documents do not provide information on how contaminated groundwater or surface water would be mitigated should it occur.

Recommendation: The Final SEIS should discuss the potential impacts to surface water and groundwater resources should the waste rock dumps generate uncontrolled drainage either in the short- or long-term, and describe contingency measures to control these releases.

Water in the post-closure Gold Quarry pit lake would exceed drinking water or aquatic life water quality standards for antimony, manganese, mercury, and selenium (Draft EIS, p. 4-51). However, the potential ecological risks have not been fully addressed, and commitments to mitigation measures have not been made. The Draft SEIS (p. 3-29) states that, because pit lakes are not intended to be used by fisheries, aquatic life standards are not applicable to the pit lake. However, fish live in several pit lakes in Nevada. It is appropriate, therefore, to discuss whether future pit lake water is predicted to always meet all aquatic life standards, describe measures to monitor the pit lake and mitigate potential impacts, and estimate the cost of conducting these activities.

Recommendation: The Final SEIS and ROD should describe monitoring measures for pit lake water quality during and after infilling, the mitigation measures that would be implemented if necessary, and the estimated cost of conducting these activities. These costs should be included in the post-closure monitoring and mitigation fund.

Financial Assurance

In light of the high amount of PAG waste rock at this mine, EPA has serious concerns that bonding for this project may be significantly underestimated because additional borrow material may be necessary. Adequate bonding is critical to ensure funds will be available to properly close the site and reduce the potential for future taxpayer liability.

> **Recommendation:** We recommend BLM reevaluate the reclamation bond, taking into account the potential need for neutralizing borrow material. The Final SEIS and ROD should include an updated bond estimate.

In light of the uncertainty whether sufficient neutralizing waste rock is available for the SOAPA, it is unclear that the high volume of PAG waste rock disposed since 2002 has been sufficiently encapsulated/neutralized. In our Draft EIS comment letter, we recommended that the Final EIS discuss whether long-term operations and maintenance may be necessary after closure of the South Operations facilities and indicate the estimated financial assurance amounts for these activities. This information was not provided in the Final EIS, and BLM responded that addressing closure would be an iterative process with NDEP. As we have stated in the past, BLM should not wait until closure to determine whether a long-term operation and maintenance plan will be needed to avoid environmental degradation in the future. Such determinations are a part of project evaluation during project planning because they are necessary for decisions on whether and how the proposed project should go forward. NEPA requires that all relevant information concerning environmental impacts be disclosed to the public before decisions are made and before actions are taken (40 CFR 1500.1 (b)). If a long-term trust fund is deemed necessary, early contribution of funds is necessary to ensure adequate funds will be available in the future to cover operation and maintenance after the mine is closed and reduce the potential for future taxpayer liability. Deferring payments for many years would require a larger sum to be paid by the mine operator near or after project completion.

> **Recommendation:** In its reevaluation of the geochemistry of this mine, we recommend BLM address whether a long-term operation and maintenance plan and trust fund are needed to control acid drainage in the future. The Final SEIS and ROD should thoroughly discuss this assessment by providing information to support BLM's determination. If a long-term operation and maintenance plan would be needed, the Final EIS and ROD should describe the plan in detail and identify and justify the amount and terms of the trust fund.

BLM anticipates seepage from the tailings will be minimal (Final EIS, Response 63r), and treatment and disposal of residual effluent, if necessary, would be addressed in the Closure Plan that will be submitted to NDEP two years prior to closure. In our comments on the Draft and Final EISs, we recommended that BLM require a long-term care plan for the tailings prior to approval of the Plan of Operation, with financial assurance sufficient to cover the monitoring and pump/ treat/ disposal that may be necessary after closure.

We recommended that BLM not wait until two years prior to closure to require financial assurance for this activity for the reasons stated in the previous paragraph.

> **Recommendation:** The Final EIS and ROD should commit to including sufficient coverage for handling closure/post-closure tailings seepage for as long as it may be necessary. This financial assurance should be included in the updated bond estimate and, if necessary, long-term operation and maintenance plan and fund.

Mercury Air Emissions

The Emigrant Project Draft EIS (p. 4-11) and Leeville Mine Draft EIS (p. 4-14) both indicate that ore processed from those mines at the South Operations Area would offset production from existing sources with no projected increases in total annual mercury emissions from the South Operations Area. It is unclear what such offsets would entail and which existing sources would be offset. Different ore bodies contain different amounts of mercury. Although mercury emissions controls at Newmont's South Operations Area capture a substantial amount of mercury at its processing facilities, emissions are a function of the mercury content of the ore. None of the earlier EIS analyses conducted for the SOAPA, Leeville, or Emigrant projects estimate the amount of mercury that could be released into the air by processing ore from the Leeville and Emigrant mines, describe how controls at the South Operations facilities will reduce mercury emissions from these ores, or discuss potential deposition impacts to watersheds. In addition, it is unclear whether the current mercury emissions at the South Operations Area, reported as 311 pounds for 2006 (Draft SEIS, Table 3-2), are expected to be similar over the remainder of the life of the Leeville project.

> **Recommendation:** The Final SEIS should provide additional information regarding ore sources and existing and future projected mercury emissions and watershed deposition impacts from Emigrant, SOAPA, and Leeville ore processing at South Operations, as well as from other mines that may foreseeably be processed at Newmont's South Operations. This discussion should break down the mercury emissions projections for each mine to illustrate how emissions are, or will be, offset.

> **Recommendation:** The Final SEIS should provide an updated, detailed list of all sources of mercury, the unit processes that generate mercury, and the equipment included in the system to condense, capture, and/or treat mercury and reduce mercury emissions.

The 2006 testing required for Tier 1 facilities under Nevada's Mercury Control Program has revealed that the pre-heaters at Newmont South Operations Area emit a significant amount of mercury air emissions.

> **Recommendation:** The Final SEIS should identify the controls Newmont anticipates installing on these units in the second phase of Nevada's Mercury

Control Program, and discuss whether a significant change in the pre-heater emissions is expected.

In the section addressing mercury emissions, the Draft SEIS discusses a recent study by EPA's contractor, ICF International (November 30, 2006). The Draft SEIS (p. 3-17) states this report concludes that "the dominant influence on air quality impacts for mercury is generally the source closest to the receptor." This is an incorrect interpretation of the report. The analysis in the report for individual states focuses on the single grid cell where sources in that state contribute the most to deposition. For instance, Figure 7-42 of the report depicts the single grid cell (blue triangle) with the maximum simulated contribution from sources within Utah. The "Contributions to Total Deposition" chart in Figure 7-42b of the report indicates that, for this grid cell, Utah sources are contributing 74.7% of total deposition. This single grid cell is not necessarily the location in the state that has the greatest overall mercury deposition or the greatest deposition from out of state sources. Therefore, it does not present a complete picture of how Nevada sources, and northern Nevada sources in particular, are affecting neighboring states.

In order to draw conclusions about the cumulative impacts of mercury in the cumulative effects study areas (CESA), the model's GIS AggreGATOR tool should be used. For any given 12-km grid cell within the United States, the tool can be used to trace mercury emissions back to the sources that were tagged for the model. For example, Gold Quarry is individually tagged in the model, as are the Barrick Gold Strike, Twin Creeks, Jerritt Canyon, Bald Mountain, and Cortez mines. In addition, the model includes a collective tag for all Nevada gold mines.

This model and tool will be updated within the next few weeks, and we will provide BLM with a copy as soon as it is available. The current version of the tool allows the user to trace emission related deposition backward from a 12-km grid to the tagged sources. The update will allow users to start with individual or combined tagged sources of interest and determine their deposition impacts. This application should, in turn, help the user delineate a reasonable CESA for mercury impacts.

Recommendation: The Final SEIS should describe and quantify in detail the mercury impacts in the CESA based on the modeling results, which can be accessed with the updated GIS AggreGATOR tool.

The Emigrant Mine should be included in the CESA because of its ore processing association with the South Operations Area. The CESA for air and water resources affected by mercury may need to be expanded based on the results of the modeling. The updated model and tool, which will allow users to start with individual or combined tagged sources of interest and determine their deposition impacts, should help BLM to delineate a reasonable CESA for mercury impacts. The cluster of grid cells that are demonstrated by the model to be affected to a reasonable degree by mercury deposition in and from northern Nevada should suggest the location and extent of the CESA.

Recommendation: We recommend BLM reconsider the CESA associated with mercury emissions. The Final SEIS should describe how the CESA was delineated and support the decision with the model results.

Appendices

Appendices A, B, and C are missing in the Draft SEIS and should be provided in the Final SEIS.