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

MAR 1 8 2013

OFFICE OF THE
REGIONAL ADMINISTRATOR

Amy Lueders
Bureau of Land Management
1340 Financial Boulevard
Reno, Nevada 89520

Subject: Draft Environmental Impact Statement for the Arturo Mine Project, Elko County, Nevada [CEQ 20130007#]

Dear Ms. Lueders,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement (DEIS) for the Arturo Mine Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act; as well as Sections 404 and 402 of the Clean Water Act.

According to the DEIS, the Arturo Mine Project, proposed by Barrick-Dee Mining Venture Inc. (BDMV) is a proposed gold mining operation that would disturb approximately 2,703 acres of BLM lands and would include expansion of the existing Dee Mine pit, construction of two new waste rock disposal facilities (WRDFs), construction of a new heap leach pad, construction of additional new support facilities, and transport of mill-grade ore material to Barrick's Goldstrike Mine facility.

The DEIS contains a number of apparent inconsistencies and provides inadequate information to assess the potentially significant environmental impacts of the proposed action. For example, while concluding that the proposed mine expansion poses no risk to water quality as a consequence of zero discharge facility designs, the DEIS also identifies possible waste rock seeps associated with existing Dee Mine facilities that are currently releasing water that exceeds applicable State water quality standards. In addition, based on the Overburden Management Plan appended to the Arturo Mine Plan of Operations, it appears that a substantial amount of infiltration is likely to occur through the waste rock disposal facilities even after reclamation and closure. Given the proposed project design, the limited information regarding the existing Dee Mine features, and EPA's experience with hardrock mines in Nevada, it appears that some mine facilities, such as waste rock impoundments, would result in degradation of groundwater and surface water quality unless additional protective measures are added to the project design. Additional source controls and/or a clearly defined adaptive management approach may be needed to prevent waste rock seepage, heap leach draindown, pit lake infiltration and existing facility leachate from entering adjacent surface or ground water sources and causing water quality violations.

We anticipate that long term post-closure monitoring and mitigation measures will likely be required in

order to ensure that the above cited source controls are properly maintained. The DEIS, however, does not contain discussion of long term maintenance and management activities proposed for the project, nor does it provide any projection or estimation of costs for post-closure obligations on the operator, or how the BLM will ensure that these funds will be available for as long as they are needed. Without this information, EPA is unable to fully assess the potentially significant environmental impacts of the proposed project and whether the project might result in a long term financial liability to the federal government and the American taxpayer in the future, e.g., under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Based on this lack of information, EPA has rated the Arturo Mine Project DEIS as "3 – Inadequate Information" (see Enclosure 1: "Summary of Rating Definitions and Follow-Up Action"). Our detailed comments on the DEIS are enclosed (Enclosure 2).

We appreciate the time and effort that you and your staff have devoted to discussing, with EPA, the important larger issues of financial assurance for mining on federal lands. We look forward to continuing the national interagency dialogue on this subject to seek resolution between our agencies on this issue. In the meantime, EPA continues to believe that the adequacy of financial assurance is a critical element to be disclosed during the NEPA process. We believe such disclosure is consistent with CEQ's guidance.[1]

We recommend that BLM analyze and revise the discussion of potential impacts to water resources; use data from the existing Dee Mine to inform site design and water resource monitoring and mitigation; discuss anticipated mitigation effectiveness; and prepare more detailed monitoring and mitigation plans with established contingencies in the event that unforeseen impacts are identified. The EIS should also disclose an estimate of funding for the reclamation and the closure bond, as well as for the long-term funding mechanism for the proposed Arturo Mine project and should include an analysis of the adequacy of the funding amount and mechanism, including associated uncertainties to ensure that sufficient funds would be available as long as they are needed. The above information should be circulated in a Supplemental DEIS for public comment, in accordance with NEPA and CEQ's NEPA Implementation Regulations. EPA respectfully requests the opportunity to review this information and provide BLM our feedback before you publish the Supplemental DEIS.

In addition to what has been discussed above, EPA has serious concerns regarding the project's air quality impacts, assessment of potential Clean Water Act implications, alternatives analysis and other issues that we recommend BLM address in the NEPA document. Our specific recommendations are provided in the attached detailed comments.

We appreciate the opportunity to review this DEIS and look forward to working with BLM to resolve

---

1 CEQ, *Memorandum for Federal NEPA Liaisons, Federal, State and Local Officials and Other Persons Involved in the NEPA Process*, Question 19b, (March 16, 1981) states that all relevant, reasonable mitigation measures that could improve the project are to be identified in an EIS and, to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented should also be discussed . CEQ, *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact*, 76 Fed. Reg. 3843, 3848-3849 (Jan. 21, 2011) may also be relevant. This guidance views a discussion of funding for implementation of mitigation commitments as critical to ensuring informed decision making, and suggests that agencies should not commit to mitigation measures if it is not reasonable to foresee the availability of sufficient resources to ensure the performance of the mitigation.

the issues outlined in this letter. We will call to arrange a meeting with you to discuss these issues. I have also asked Enrique Manzanilla and his staff to work with your office under the framework of our existing Memorandum of Understanding to better align our mutual expectations regarding what constitutes appropriate NEPA compliance for mining projects in general. In the meantime, if you have any questions, please call me at (415) 947-4238 or have your staff contact Carter Jessop, our lead NEPA reviewer for this project, at (415) 972-3815. Please send a copy of the Supplemental DEIS to this office (mail code CED-2) at the same time it is electronically filed with our Washington, D.C. office.

Sincerely,

Jared Blumenfeld
Regional Administrator

Enclosures:
(1) Summary of Rating Definitions and Follow-Up Action
(2) EPA's detailed comments on the Hollister Underground Mine DEIS

cc: Richard Adams, BLM Elko District Office
John Daniel, BLM Elko District Office
Colleen Cripps, Nevada Division of Environmental Protection
Alan Jenne, Nevada Division of Wildlife
Neil Kornze, BLM Headquarters

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

U.S. EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE ARTURO MINE PROJECT, ELKO COUNTY, NEVADA, MARCH 18, 2013

Existing Dee Mine Facilities

According to the DEIS Section 2.2.3.1 Dee Gold Mine, the existing facilities associated with past mining operations disturbed 812 acres. Most of the existing facilities, including waste rock, tailings, and heap leach, have been reclaimed and the bond has been released for earthwork and revegetation; however, closure and reclamation monitoring is ongoing. Page 2-5 states, "The draindown management facilities associated with the reclaimed heap leach pads at the site are monitored in accordance with state Water Pollution Control Permit No. NEV50005 that requires quarterly reporting to NDEP-BMRR." Despite these ongoing monitoring efforts, the DEIS contains little discussion or information related to previously performed reclamation and subsequent closure monitoring. These data would be highly valuable in representing an on-site analog for what might be expected for the proposed Arturo facilities. The existing seeps identified in the discussion of Surface Water Quality data (Table 3.4-5) serve as the nearest source provided for these data; however, based upon the monitoring program described, much more data should be available to the BLM and project proponent. Furthermore, it does not appear that existing waste rock and heap leach facility seepage rates, chemistry, or related information was used to inform the prediction of the likely future effects of the proposed Arturo mine. This information would be very useful, both in terms of predicting possible water quality impacts associated with the proposed action and in terms of anticipating end of mine reclamation efficacy. This comparison of existing on site facilities is a low cost method to predict future effects that should not be overlooked or missed.

> **Recommendation:** Include additional information on the existing reclamation at the Dee Mine in the Supplemental DEIS. Specific water quality and reclamation efficacy monitoring data should be cited to confirm reclamation effectiveness and protection of water resources. The discussion of potential water quality impacts of the proposed project and its alternatives should make reference to existing on-site facilities and their seepage chemistry and whether or not this chemistry is representative of what should be expected from the proposed expansion.

The DEIS identifies a number of existing seeps across the Plan of Operations area. Table 3.4-5 shows the exceedance of NDEP standards for arsenic, antimony, TDS and pH at sites AR09 and AR36 as well as AR17. In addition, the detection limits for various metals are well above the water quality standards for those constituents and, therefore, the data are insufficient to determine whether there are exceedances. For example, the selenium detection limit indicated is about ten times the Class C surface water quality standard noted. Other metals that have detection limits above the standard provided include copper, cadmium, and lead. It is unclear how the baseline conditions or future impacts can be assessed when the detection limits exceed the standards the measurements are being compared against.

The DEIS goes on to state that the water quality exceedances at AR09, AR17, and AR36 do not appear to have generated concentrations above the Class C reference values in Boulder Creek, citing factors such as the impounded nature of the AR09 and AR36 locations, limited flow durations in the project-area tributaries, seepage into channel beds, and dilution from other tributaries to Boulder Creek to explain this (p. 3.4-16). EPA agrees that the present impoundment of the AR09 and AR36 seeps is likely an important component for prevention of impacts to Boulder Creek. We note, however, that the only surface water quality monitoring location in Boulder Creek that occurs downstream of the seeps in question is site BC-AA, which lies over 3 miles downstream and after Boulder Creek's confluence with

Rodeo Creek. Absent a monitoring location nearer the project area, it is unclear whether or not surface water quality standards are being violated where these seeps appear to occasionally enter Boulder Creek. Furthermore, the DEIS does not specifically address how this potential contaminated discharge to Boulder Creek will be managed under the proposed project or how discharge will be controlled post closure.

EPA also notes in Table 4.3-5 an abnormal indication of WAD cyanide at site AR09. The presence of WAD cyanide appears to be an indication of a process water discharge, possibly from Heap Leach Pad No. 1-9, that has the potential for discharge into Boulder Creek.

> **Recommendation:** Include additional discussion regarding the discharges from the existing waste rock dump facilities, which appear to have the potential to impact Boulder Creek, in the Supplemental DEIS. Address the applicability of State requirements for ensuring that this discharge does not enter waters of the State and how these requirements are, and will continue to be, met under the proposed project. Also include long-term monitoring and management measures that will be required in order to prevent the discharge from impacting surface water, post reclamation. Include in the monitoring proposal the installation of a water quality monitoring location in Boulder Creek at the downstream edge of the project area to ensure that impacts are being appropriately identified. In addition, discuss and address the presence of cyanide at site AR09, its probable source, the potential for surface water quality impacts, and what mitigation measures would be employed to prevent additional discharge.

The discussion of the existing Dee Mine facilities does not include information regarding the post-closure requirements for the Dee mine and how the proposed Arturo mine project might inherit and/or affect those obligations. This is an important aspect of the existing facilities and the project site considerations.

> **Recommendation:** Discuss the existing post closure requirements for the Dee mine facilities, how successful these measures have been, any remaining outstanding issues still to be resolved, and the affect that the proposed project would have upon these matters, in the Supplemental DEIS.

Page 3.4-5 of the DEIS states that an impoundment located immediately down gradient from the existing Tailings Disposal Facility No. 2. "receives runoff from [TD2] drainage and the nearby watershed." No water quality data are provided for this impoundment.

> **Recommendation:** Because this water body receives runoff from the existing tailings facility, provide water quality data so that an assessment can be made of existing TD2 seepage chemistry. If no water quality data exist for this impoundment, collect the data or provide a discussion in the Supplemental DEIS explaining why such data could not be collected.

The proposed project and action alternatives include the excavation and removal of three reclaimed Dee mine Heap Leach Pads, Pads No. 1-9, No. 10 and No. 11, as well as the rehandling and movement of a substantial amount of waste rock material. The material from the heap leach facilities would be incorporated into the proposed Heap Leach Pad No. 12, while the waste rock material would be placed in one of the two newly proposed waste rock disposal facilities (WRDF). The DEIS describes the

procedure whereby the existing heap leach pads and waste rock material would be relocated.

> **Recommendation:** EPA suggests that the BLM consider requiring an analysis of the heap leach pads and WRDFs to be excavated and relocated as components of the proposed project, prior to and during the removal of these facilities. By comparing actual performance to estimated performance, this work could strengthen the reclamation and closure design for the Arturo project to further protect against the development of unanticipated impacts.

Arturo Mine Water Quality Impacts

Waste Rock Management

The DEIS concludes that minimization of net infiltration into the WRDFs through use of soil covers would provide an effective means of preventing migration of interstitial water from the facility, thereby protecting surface water and groundwater quality. As is evident from the existing seeps noted above, the use of soil covers at the project site has not effectively prevented the discharge of waste rock dump seepage. Nor has the chemistry of that discharge met water quality standards by means of sorption of deleterious constituents in the interior of the WRDF, as suggested elsewhere in the DEIS (p. 3.4-38). EPA believes that a more appropriate assessment would rely on the existing conditions as the best indicator and would conclude that, despite the proposed measures, it is still likely that some seepage exceeding water quality standards for some contaminants will migrate through and discharge from the waste rock facilities and require long-term monitoring and management measures.

> **Recommendation:** Include in the Supplemental Draft EIS additional information about the existing waste rock dump seepage and use this information to inform the discussion of future water quality management needs, in particular considering whether some seepage requiring long-term monitoring and management is likely to occur following reclamation. Revise the reclamation and closure plan to reflect long-term water management requirements and address those requirements in sufficient detail so they can be evaluated both in terms of effectiveness and financial assurance requirements. Where uncertainty exists, an adaptive management approach may be an appropriate measure to ensure potential sources of contamination are controlled. Additionally, the alternatives analysis in the Supplemental Draft EIS could consider alternative reclamation measures, such as construction of an engineered source control cover designed to limit infiltration, to better control predicted waste rock dump seepage.

According to the DEIS Section 3.4.1.4 Rock Geochemistry, Waste rock units classified as "environmentally adverse" contain rock with the potential to become acidic, leach metals, or both. Environmentally adverse rock would account for an estimated 12 percent of the material placed in the WRDFs. Environmentally adverse waste rock would be intermixed with oxidized waste rock and not segregated. This intermixed waste rock material would be underlain and covered by a shell of waste rock classified as oxidized (i.e., non-PAG). The minimum thickness of the oxidized (non-PAG) shell would be 25 feet at the base of the facility, and 50 feet along the sides and top of the final reclaimed facility. The perimeter shell would ensure that migrating water contacting acid forming rock in the interior of the facility also would encounter acid neutralizing rock in the perimeter shell before exiting the facility (p. 3.4-40).

EPA is concerned about the effectiveness of the proposed method, which utilizes intermixing of PAG and NAG material as a mitigation measure. The measure requires sufficient intermixing in order to be successful and has not been proven on a long-term basis. If the intent of the waste rock management plan is to ensure that migrating water contacting acid forming rock in the interior of the facility would encounter acid neutralizing rock in the perimeter shell before exiting the facility, we are concerned by the fact that the thickness of the shell is less thick (25 ft) at the bottom of the pile, where most seepage would migrate, than it is along the sides and top (50 ft) where seepage would be unlikely to migrate. EPA recommends the Supplemental Draft EIS clarify how the proposed configuration is determined to be adequate for ensuring environmental adverse material control.
In addition, the waste rock management plan does not present any management strategies for addressing the presence of leachable arsenic and antimony associated with neutral and alkaline pH environments. Although the DEIS concludes that attenuation of these constituents will occur sufficient to prevent migration into the environment, the DEIS does not provide sufficient support for this conclusion given the elevated concentrations of these contaminants in existing waste rock dump discharges observed at seep AR-09 and AR36.

Recommendation: Provide in the Supplemental DEIS:

- A discussion of the reasoning behind the proposed waste rock management plan approach and design, and provide examples of where it has been used successfully, given similar waste rock characteristics (e.g. % of PAG and NAG)
- Information to support the conclusion that 25 feet of NAG material with the stated geochemistry is sufficient to prevent the release of acidic or adverse leachate.
- A discussion of the likelihood that the WRDFs will release leachate, and provide the range of anticipated flow rates for this seepage.
- A discussion of the potential that waste rock dump seepage will exceed water quality standards for TDS, pH, arsenic, antimony and other constituents relative to the existing waste rock dump seepage, and that, in both cases (existing and future), long-term monitoring and water management to avoid discharges will most likely be required.

According to the DEIS Section 3.4.1.4 Rock Geochemistry, the WRDFs are sited and designed to minimize the risk of impact to waters of the State. The DEIS states that the WRDFs would be closed utilizing a closure design found to be highly effective at the Barrick Goldstrike Mining Inc facility. This closure design involves shaping the facility to a geomorphically stable configuration, placing a soil cover that incorporates high water holding capacity and includes capillary breaks to reduce net infiltration, and establishment of perennial vegetation to meet post-mining land use objectives (p. 3.4-42). Page 3.4-42 contains the only mention of capillary breaks as part of the cover design that EPA could find in the DEIS. Elsewhere, cover design is described simply as 2 feet of cover material with a soil cap. EPA believes that capillary breaks can be an effective part of a cover system that minimizes infiltration, provided they are properly designed and long-term performance and maintenance considerations are addressed.

Recommendation: Consistently describe the capillary break as part of the cover system, and provide additional information as to the particular design of the capillary break, its anticipated performance, and any long-term performance issues and/or maintenance requirements in the Supplemental DEIS mitigation and reclamation and closure discussions. A comprehensive analysis would include examination of the existing Dee facility caps and the BGMI caps

mentioned to assess cap performance in relation to future cap design at Arturo. In addition, the reference to new reclamation practices employed at the BGMI facility to reduce infiltration should be expanded upon, including data on the real world effectiveness of the infiltration control methods, realistic infiltration percentages based upon the best available data, and the likely seepage volume that the WRDFs could be expected to release in the post-closure period.

Page 3.4-42 states that, "Toe seepage may be observed during the operational phase due to the potential preferential flow, snowmelt infiltration and surface water runoff from the sloped area." Monitoring and Mitigation measures SW-2 are proposed to mitigate this potential impact (p. 3.4-57). The DEIS concludes that the measures proposed would "effectively mitigation impacts to water quality" and no residual impacts are anticipated. More information is necessary to support this conclusion, however, given the uncertainty regarding where toe seepage may occur, what control measures would be necessary, what the expected seepage water quality would be, what additional treatment methodologies might need to be implemented, and a project site history that includes some contribution of mine seepage into Boulder Creek. While the discussion of mitigation effectiveness indicates that "methods to capture, control and treat small amounts of toe seepage from WRDF are well known and easily implemented" EPA notes that there are many examples where these same treatment methodologies have been unsuccessful.

The proposed mitigation measures for water quality control do not include any provision for potential impacts to water quality after reclamation activities are complete. The DEIS does not provide adequate data to support the assumption that no seepage will be released from the reclaimed facilities, particularly in light of the existing seepage at the site.

Recommendation: Include additional details regarding the mitigation measures proposed for control of waste rock seepage in the Supplemental DEIS. Discuss likely treatment and control methodologies and, where applicable, provide specific examples of where these measures have been effective at other mines. Discuss existing site seepage water quality in the context of waste rock seepage mitigation and the ways in which existing water quality data does or does not inform future mitigation design.

EPA recommends the use of an adaptive management planning approach to address changing operational and water quality conditions, and inclusion of a contingency plan for additional for water management (and/or treatment) facilities should release of contaminants occur after project cessation and reclamation. For example, the waste rock dumps could be constructed on a compacted clay liner or other barrier to limit infiltration to groundwater. An ET cell could be constructed at the toe of the WRDFs at such time seepage is observed to minimize migration to surface and groundwater.

Heap Leach

The DEIS Section 2.2.3.1 discusses the three help leach pads constructed and operated and reclaimed in association with the Dee Mine. During reclamation, process ponds associated with the heap leach pads were converted to draindown management facilities. Draindown from Heap Leach Pad No. 1-9 and Heap Leach Pad No. 10 is combined and managed through a synthetically lined ET cell and clay lined constructed wetland facility located to the south of Heap Leach Pad No. 1-9. Draindown from Heap

Leach Pad No. 11 is managed in a synthetically lined ET cell located on the northern perimeter of the facility.

Process solution management for the proposed Arturo Mine is discussed in the DEIS in Section 2.3.8.9 Post- Closure Monitoring and Maintenance. The DEIS contains inadequate information on the anticipated heap leach drain rate for Pad No. 12. The only reference provided is that of the observed draindown period for the last heap leach pad closed within the project area (Heap Leach Pad No. 11). This pad took 12 months to drain down, during which period draindown decreased from 300 to 2 gallons per minute (gpm). Based on this observed draindown, the time required to drain the proposed heap leach pad is estimated at approximately 2 years, with solution management/fluid inventory reduction activities planned for up to 30 years following this primary draindown (p. 2-43). EPA is concerned by the fact that the DEIS does not reference project-specific numerical simulation for the heap leach draindown rate, nor is there a discussion of the true representativeness of Heap Leach No.11 as an analog for the proposed Pad No. 12. Rehandling and weathering could considerably decrease grain size of the materials on Pads 1-9, 10, and 11, so their incorporation into Pad 12 could affect the overall transmissivity of the pad. Given all of the above, as well as the substantial differences in overall dimensions, EPA does not believe that the figure provided represents an appropriate estimation of the heap leach draindown time or residual drainage rate for anticipating potential long term effects.

Furthermore, the DEIS briefly describes the draindown period observed for Pad 11 as 12 months (p. 2-43), but does not contain a detailed discussion related to reclamation and closure monitoring of draindown seepage, in particular, water quality information, from the reclaimed Dee Mine heap leach facilities. This information would be both valuable and significant in terms of evaluating the efficacy of previous reclamation efforts, and predicting draindown water chemistry with respect to heap leach development for the proposed action.

> **Recommendation:** Include a detailed discussion related to draindown of the reclaimed Dee Gold Mine heap leach facilities, with respect to water quantity and quality over time, in the Supplemental Draft EIS. Perform numerical modeling to more carefully estimate the probable length of the primary draindown period and predict the residual seepage rate. Include a more detailed discussion regarding seepage chemistry, rates and the representativeness of Pad No. 11 in comparison to Pad 12 to inform the reader of whether comparisons between these facilities are appropriate.

The DEIS Section 3.4.2.1 describes potential impacts to surface water quality from the heap leach and other process facilities if process fluids, fuels, solvents, or other liquids were released to surface waters in sufficient quantities to exceed water quality standards or degrade beneficial uses; and if runoff, erosion, or sedimentation were accelerated to a degree that degraded surface water flows or features (p. 3.4-43). Although there is a clear potential for water quality impacts, the DEIS concludes that no impacts to surface water quality are anticipated from process components under proposed construction and operating conditions. This is attributed to the proposed project design and operation as a zero-discharge facility according to NDEP requirements. Compliance with interagency closure and reclamation requirements, including monitoring, is then stated as the primary means of minimizing the potential for long-term effects on surface water quality after cessation of proposed project operations (p.3.4-43).

The DEIS does not, however, provide any discussion on draindown water management and predicted water quality during reclamation and closure of the proposed the heap leach facility. As noted previously, the DEIS should include data showing the draindown water quantity and quality from the reclaimed Dee Mine heap leach facilities. This analog site information could then be used to inform predictions of draindown water quality at closure, and associated long-term reclamation, closure and monitoring requirements for the proposed heap leach facility.

> **Recommendation:** Include a prediction of the heap leach facility draindown period and associated chemistry, based on the best available data and the use of the NDEP/BLM draindown model, in the Supplemental Draft EIS. These data can be used to inform long-term reclamation, closure and monitoring requirements to ensure protection of regional groundwater and surface water resources.

Page 2-20 states that monitoring of the groundwater system near the proposed heap leach pad and processing facilities would be conducted using monitoring wells located downgradient and upgradient of the pad in compliance with the Water Pollution Control Permit. No specific information is provided regarding monitor well location, sampling frequency, mitigation triggers, or potential mitigation measures. While NDEP is the permitting agency responsible for the issuance of the Water Pollution Control Permit, the provisions of that permit are highly pertinent to the potential environmental impacts of the proposed project.

> **Recommendation:** Include additional details regarding ground water quality monitoring, as outlined in the Water Pollution Control Permit to be issued by NDEP, in the Supplemental Draft EIS. If this permit is still in draft form, note this and include the currently available draft information.

Section 2.3.8.6 of the DEIS states that the design of Heap Pad 12 was, in part, informed by data from the existing heap leach pad closures at the site that have "demonstrated stability and acceptable draindown control since 2001" Based upon the data from previous heaps, BLM anticipates that the use of evaporation and ET cells will result in no discharge requiring treatment. However, "actual results would be monitored during the post-closure period and alternative use or treatment of the fluids would be developed if required." (p. 2-42). EPA acknowledges that predicting final closure and reclamation efficacy entails considerable uncertainty. NEPA allows for, and EPA encourages, the use of adaptive management to address circumstances where uncertainty remains regarding potential impacts. An AMP would allow for upfront contingency planning to be developed, while affording flexibility for unanticipated outcomes.

> **Recommendation:** Include, in summary or incorporated by reference, an adaptive management plan for addressing uncertainties associated with the long term management of heap leach drain down in the Supplemental Draft EIS. Provide, in the adaptive management plan, as much information regarding specific action thresholds, range of contingency measures possible and estimated mitigation effectiveness possible given the best available data.

Pit Infiltration and Pit Lake

According to the DEIS Section 3.4.2.1, permanent pit lakes are predicted to develop in the South, East,

and North Pits when inflow from the carbonate aquifer enters the pit areas. The pit lake water is predicted to have constituent concentrations that exceed the Nevada primary water quality standards for antimony and arsenic. The predicted concentrations of fluoride, manganese, sulfate, and TDS also exceed the Nevada secondary drinking water standards. These pit lakes are predicted to eventually behave as groundwater sinks. As a result, it is anticipated that in the long term (after approximately 200 years), these lakes would not affect the water quality of downgradient aquifers (p. 3.4-38).

EPA is concerned that potential risk to downgradient aquifers during the period prior to, and during, pit lake filling may be underestimated in the DEIS. Although we acknowledge the additional modeling work performed to explore this issue (i.e. Schaefer 2011), the risk to downgradient aquifers could be greater than anticipated in the DEIS where fractured flow paths exist to allow pit lake groundwater to escape along preferential pathways. EPA is also concerned that the potential risk to wildlife posed by exposure to pit lake water may have been underestimated and no mitigation measures are included. If selenium, which bioaccumulates, or other contaminants that are toxic to wildlife were to increase only marginally beyond predicted levels, then exposure to wildlife could present at an unacceptable risk (p. 3.17-21). EPA is aware of examples of pit lake predictions that were miscalculated at other mines in Nevada.

> **Recommendation:** Discuss the possibility of fractured flow and what risk this might represent to downstream aquifers prior to and during pit filling in the Supplemental Draft EIS. Potential mitigation measures should be outlined for implementation in the event that monitoring identifies contamination greater than is predicted by the models provided.

Stormwater

According to the DEIS Section 3.4.1.4 Rock Geochemistry, although potential impacts would be avoided or reduced under anticipated construction and operating conditions by compliance with agency programs and proposed measures, extreme weather events may create bypass conditions or unforeseen impacts. Severe (high intensity) storms, rapid snowmelt, or rain-on-snow events have the potential to damage operating or reclaimed project components. This has been known to occur at other mining sites in the region. Resulting adverse effects may include degradation of waters of the State and delays in successful restoration of post-mining land uses (p. 3.4-43).

Nevada BLM has developed guidance on long-term monitoring and management (LTMM) closure costs to ensure the continuation of long-term treatment to achieve water quality standards and for other long-term post-mining maintenance requirements. This guidance recommends that LTMM costs be based on a 500 year period simulating perpetuity and include costs for dealing with acid rock drainage, groundwater contamination and miscellaneous access/site work including erosion controls.

> **Recommendation:** The Supplemental DEIS should explain why storm water controls based on design for 100-year return interval storms are adequate for ensuring long term post-mining maintenance requirements for the Arturo Mine Project, and how this design is consistent with existing BLM guidance that the LTMM costs should be based on a 500 year period. Explain what is expected with respect to the functioning of the storm water channel and catchment features and maintenance requirements for both routine maintenance tasks and those associated with storm events exceeding design criteria. Over time, storm events would be expected to

compromise storm water run-on controls and run-off features. EPA recommends that BLM consider requiring that reclaimed features be designed with storm water controls based on a 500 year storm event, when such controls are important to ensuring the prevention of environmental degradation and/or the meeting of water quality standards, rather than only requiring funding for 500 years of maintenance of storm water control features designed for 100 year events.

Reclamation and Closure

The DEIS includes only general information in regards to the reclamation and closure planning for the proposed Arturo mine project. Numerous areas of analysis important to determining the project's environmental consequences are deferred to either the Final EIS (i.e. the site wide monitoring plan) or to various other points after the completion of the NEPA process or during the project life. Section 2.3.8 states that "The detailed closure plan for each facility would be prepared at least 2 years prior to the anticipated closure date and would conform with the Water pollution control permit regulations in effect at the time of closure." (p.2-36). Although EPA understands the necessity of the closure plan being *finalized* in at a time nearer to closure, the DEIS should contain sufficient information to assess the likely long term consequences of the project. EPA does not believe that this threshold has been met in this instance.

Section 2.3.8.2 states that post closure monitoring by NDEP could continue up to 30 years following completion of processing, based on current regulations. The duration of the post-closure monitoring would depend on the project's final closure plan and implementation.

> **Recommendation:** Further discuss post closure water quality monitoring in the Supplemental DEIS, and consider the advisability of requiring at least 30 years of post-closure monitoring, with the option for a longer term requirement based upon the best available data at each point at which the monitoring plan is revised or updated. Describe the triggers and mitigating actions to be taken in the event that monitoring detects the release of contaminants from the site.

Section 2.3.9.4 indicates that NDEP could require ongoing rock characterization studies to confirm the test results prepared in development of the EIS. EPA believes that ongoing rock characterization studies would be an important means of ensuring that pre-mine predictions were accurate and that the project will not have additional unforeseen impacts. Rock characterization during the active mining period would be a valuable component of ongoing site monitoring.

> **Recommendation:** Include an adaptive management plan that outlines the monitoring, mitigation and adaptive considerations for detecting and controlling unforeseen impacts of the project in the closure and post-closure period in the Supplemental Draft EIS. Include, in the plan, the funding mechanism for the activities identified, in order to provide greater assurance that all future impacts and sources of contamination will be appropriately managed.

Section 2.3.9.7 states that "BDMV submitted a site wide monitoring plan for the proposed project to the BLM as part of the PoO. The detailed water monitoring plan would be prepared prior to issuing the Final EIS and would be reviewed and updated annually to reflect changes in surface water and groundwater resources monitoring locations in the proposed project vicinity." (p. 2-49)

Recommendation: Summarize the site-wide monitoring plan in the Supplemental Draft EIS and include the complete plan as an appendix to the Supplemental Draft EIS. Discuss the timing and duration of monitoring and how monitoring would be funded in the long term.

Financial Assurance

The availability of adequate resources to ensure effective reclamation, closure, and post-closure management is a critical factor in determining the significance of the project's potential impacts and its environmental acceptability. Based upon the potential that Heap Leach Pad No. 12, the proposed waste rock facilities and the existing on site facilities will need long term management, EPA believes that a long term funding mechanism will need to be established for the Arturo mine project.

> **Recommendation:** Disclose in the Supplemental EIS an estimate of funding for the reclamation and the closure bond, as well as for the long-term funding mechanism for the proposed Arturo Mine project; analyze the adequacy of the funding amount and mechanism, including associated uncertainties, to ensure that sufficient funds would be available as long as they are needed; and prepare more detailed monitoring and mitigation plans with established contingencies in the event that the project proponent is no longer financially capable of implementing essential mitigation measures in the post-closure period.

Page 3.4-56, Monitoring Measure SW-1 states that, "sediment and other water quality constituents could collect in existing impoundments within the proposed project area or within proposed storm water catchments created during project operation, closure, or reclamation. The functions of the impoundments could be impaired due to loss of storage capacities." Mitigation Measure SW-1, identified to mitigate this potential risk, indicates that, should the function of impoundments on the project site be impaired by sediment and other constituents, action would be taken to either remove sediment from the impoundment or construct new impoundments. It is not clear, from the discussion provided, whether this monitoring and mitigation would be mandated for the post-closure period of the project as well as during project operation and reclamation. The DEIS suggests that some amount of ongoing seepage would occur in the post-closure period. This seepage would require impoundment and management in the long term, thereby necessitating monitoring and mitigation of the sort described under SW-1 in the long term post-closure period.

> **Recommendation:** Describe in the Supplemental Draft EIS the period during which Monitoring and Mitigation measure SW-1 would be implemented. If this measure is not already intended to apply post-closure, state that these activities will be mandated in the long term post-closure period for the proposed project. Describe, in detail, how these activities would be funded in the long term, as previously discussed.

Geochemistry

According to the Draft EIS Section 3.4.1.4 Rock Geochemistry, kinetic testing, consisting of humidity cell testing was conducted for 52 weeks on six samples. Two of the six samples became strongly acidic over the period of testing. Acid generation was accompanied by high concentrations of trace metals. The samples that did not become acidic showed low concentrations of trace metals (p. 3.4-20). EPA appreciates the fact that SRK and Schafer conducted the kinetic cell tests for 52 weeks rather than only the minimum of 20 weeks sometimes employed. However, no citation is provided for the geochemical

technical report from which the kinetic test results portion of this section of the DEIS was compiled. Without additional information, EPA cannot determine what static samples were used for kinetic testing, what formations were tested, why the static test samples were selected, how many samples that were between 1 and 3 Net Neutralizing Potential were tested, or other important information for determining the suitability of the kinetic testing program. Based upon the data presented, it is also unclear what static testing (acid base accounting) cutoff was then used to determine the percentage of potentially acid generating material. No information is provided regarding why the relatively small number of samples tested (compared to other mine sites) is appropriately representative of the new material to be mined..

> **Recommendation:** Include additional information in the Supplemental Draft EIS on the kinetic tests performed (including an appropriate citation). The discussion should include what formations underwent kinetic testing, how samples were selected, the NNP of all samples tested, the protocol that was used to determine when the tests were discontinued, and how the tests were analyzed. Present the results in greater detail to support the conclusions reached in the DEIS. In addition, provide the rationale for choosing the limited number of samples involved in the geochemical program.

Offsite Ore Processing

Section 2.3.4.6 states that, based on metallurgical and economic considerations, an average of 1.8 MT per year (4.5 MT per year maximum) mill-grade ore from the proposed open pit would be sold to BGMI for further processing. Transportation of the mill-grade ore would be on the Bootstrap Haul Road (Section 2.3.5.2, Bootstrap Haul Road). Ore from the proposed project would be processed under existing BGMI permits and no expansion of BGMI facilities would be necessary.

The DEIS does not account for the connected or cumulative impacts associated with processing an estimated 14 MT (DEIS page 3.3-12) of mill-grade ore from the proposed Arturo Mine at the BGMI facilities. Tailings deposition will decrease the estimated life of facilities permitted to manage BGMI ore production and beneficiation. Although additional permitting is not immediately planned for the BGMI facilities to accommodate this action, it is unclear to what extent the addition of tailings and processing waste materials from the Arturo Mine may contribute to a possible future need for a request for expansion of BGMI facilities. Should such future expansion occur, the impacts of expansion would, in part, be due to the processing of Arturo ore and, thus, be secondary impacts of the Arturo Mine. It is also unclear if the additional processing of Arturo Mine mill-grade ore at the BGMI facilities has the potential to contribute to possible contaminant leaching potential from the BGMI facilities.

> **Recommendation:** Include the impacts associated with the 14 million tons of tailings disposal that the Arturo Mine would contribute to the BGMI facility in the cumulative impacts discussion in the Supplemental Draft EIS. Discuss the potential for future expansion of the BGMI facility and the extent to which Arturo Mine processing could contribute to the need for expansion.

Page 2-20 states that, "Oxide and non-oxide ores would be stockpiled separately in the stockpile areas, the ground surface below a stockpile for non-oxide ore would be lined to prevent seepage into the ground." There is not enough information regarding ore stockpile to reasonably assess whether this action poses a risk to surface or groundwater quality. It is unclear what type of liner will be employed for underlying the ore stockpile. We cannot determine what the potential seepage chemistry of ore

effluent might be should such seepage appear.

> **Recommendation:** Include in the Supplemental DEIS additional details regarding the stockpiling of ore at the Arturo Mine site, including the type of liner planned for use. Provide further discussion to identify the potential adverse environmental impacts that could result from ore stockpiling, including the expected seepage chemistry, should seepage through the ore stockpile be realized.

Partial Pit Backfill Alternative

Section 2.4.2 of the DEIS states that, because of the physical configuration of the three-lobed ore body at the proposed project site, mining operations could be sequenced to allow for backfilling of the South and East Arturo pits. Partial backfilling provides the potential environmental benefits of reducing the total acreage of post closure disturbance and reducing the eventual pit lake volume once groundwater levels rebound. Page 2-61 states that, despite the placement of approximately 247 million tons of waste rock material in the pits, rather than on the West WRDF, the overall footprint of the West WRDF would remain the same as under the proposed action alternative. "Keeping the West WRDF footprint the same as that for the Proposed Action allows for the decrease in height, which allows for more efficient haul truck fuel usage on the West WRDF construction." The efficiency of haul truck fuel usage is the only rationale that EPA was able to identify for this WRDF configuration. It is unclear whether consideration was given to a partial backfill alternative that includes the construction of the West WRDF with height and slope dimensions similar to those under the Proposed Action and a reduced footprint. It seems that doing so would significantly reduce the total disturbance area under this alternative, thus reducing impacts on vegetation, wildlife, special status species, and other potential impacts. In light of our concerns regarding impacts to Antelope Creek from fill of tributaries, it may be possible, with a smaller-taller West WRDF design, to avoid fill to the Antelope Creek watershed completely.

Page 3.4-46 states that, in regards to the Partial Pit Backfill Alternative, the overall quantity of groundwater recharge from the pits during the period prior to and during pit lake filling would be substantially less than would occur under the Proposed Action. Given the concerns previously expressed regarding pit water infiltration, this potential reduction could represent a significant reduction in the risk of contamination the mine represents.

> **Recommendation:** Include in the Supplemental Draft EIS an alternative, or modification of the Partial Backfill Alternative, that considers the placement of waste rock in the West WRDF in a smaller, taller footprint, and consider the potential environmental consequences of this change in design. If this alternative would become economically infeasible in the absence of an ability to haul waste rock more efficiently to the West WRDF, clearly describe why that is the case.

Although the Partial Pit Backfill Alternative appears to represent a possible reduction in environmental impacts as compared to the Proposed Project, EPA notes that page 3.4-45 states that, "Although geomorphic drainage designs and storm water controls would be implemented, the potential for erosion, sedimentation and related run off impacts to upper Boulder Creek would increase under the Partial Pit Backfill Alternative in comparison to the Proposed Action." Based upon the information presented, it is unclear how significant this increase in potential impacts would be and whether this risk could be overcome through appropriate engineering design and mitigation.

Recommendation: Further examine the balance between the reductions and potential increases in environmental impacts and risks posed by the Partial Pit Backfill Alternative in the Supplemental Draft EIS. Discuss what criteria the BLM used to determine the preferred alternative and in what ways the Partial Pit Backfill Alternative does or does not meet those criteria.

Waters of the United States and Clean Water Act Compliance

Based on our review of information provided by JBR Environmental Consultants Inc. and the US Army Corps of Engineers (Corps) in support of the jurisdictional determination for Boulder Creek, EPA does not concur with the August 13, 2010 final determination that Boulder Creek is hydrologically isolated from the Humboldt River and the nearest Traditional Navigable Water, and is, therefore, not a water of the United States subject to CWA jurisdiction. We have communicated these concerns to the Corps both before and following the Corps' August 2010 determination. In accordance with Corps policy, its jurisdictional determination for Boulder Creek will be subject to reconsideration in August of 2015. However, regardless of Boulder Creek's current jurisdictional status, to the extent that pollutants related to the proposed project may move via Boulder Creek to the Humboldt River, the applicant would need to ensure compliance with applicable sections of the Clean Water Act, including Section 402.

Recommendation: The Supplemental DEIS should discuss how the project proponent would ensure compliance with the Clean Water Act should Boulder Creek be reclassified as a Water of the United States in 2015 or should pollutants related to the proposed mining project move via Boulder Creek to the Humboldt River.

The section entitled "Drainage Area Considerations" on page 3.4-26 of the DEIS identifies potential project impacts to drainages within the Antelope Creek watershed. Portions of Antelope Creek and its tributaries have been determined by the Corps to be waters of the United States under the Clean Water Act; however, EPA was unable to determine whether the applicant has conducted a jurisdictional waters review for waters/wetlands within the Antelope Creek watershed potentially impacted by the proposed project.

Recommendation: Provide documentation of the jurisdictional status of waters in the Antelope Creek watershed potentially impacted by the proposed project in the Supplemental Draft EIS.

The DEIS states that "Runoff and seepage from the West WRDF would contribute to flow in small ephemeral tributaries of Antelope Creek (p. 3.4-52)". The discharge of any seepage into a water of the United States would require an individual National Pollutant Discharge Elimination System (NPDES) permit from NDEP. NDEP's Mining Stormwater General Permit (NVR300000) authorizes the discharge of stormwater from the mine site, but does not authorize the release of non-stormwater flows such as mine seeps or mine process water. Therefore, discharge of seepage from the West WRDF is prohibited except as allowed under an individual NPDES permit.

Recommendation: Describe in the Supplemental Draft EIS how an individual NPDES permit will be obtained for this non-stormwater discharge, or the measures that will be imposed to

ensure that non-stormwater discharges from the project are prevented from release into any water of the United States.

Air Quality

National Ambient Air Quality Standards

On page 3.8-13, the DEIS states that the air quality impacts of the Proposed Action were modeled, including the addition of background concentrations, to determine that all criteria pollutant concentrations would be in compliance with the applicable ambient standards at any modeled point of public access. The air quality modeling performed to reach this conclusion used the Plan of Operation Area as the model boundary and did not include those emissions associated with the transport of mill-grade ore along Bootstrap haul road to the Barrick Goldstrike facility, or the emissions generated at the Goldstrike mine. Page 2-27 of the DEIS states, "Truck traffic would be present for up to 24 hours per day, 365 days per year. Up to 78 one-way trips per day would occur on the Bootstrap Haul Road." Table 3.8-6 then provides the maximum potential annual emissions resulting from the ore haulage to the BGMI facility. The emissions totals (provided in tons per year) exceed the annual emissions indicated in Table 3.8-4 for activities within the POO boundary by four times or more for all of the pollutants disclosed. Based on these data, it is unclear whether the modeling performed for the project might show exceedance of National Ambient Air Quality Standards for $PM_{2.5}$, PM_{10}, SO_x, CO and NOx if the actions along Bootstrap haul road were included in the air modeling. This does not mean that EPA believes that the Proposed Action would necessarily violate a NAAQS, but EPA is unable to determine whether or not the project would result in significant adverse environmental impacts for which additional mitigation measures should be considered.

We recognize that some of the emissions sources associated with the Proposed Action would be covered by a permit issued by the Nevada Department of Environmental Protection, Bureau of Air Pollution Control, and others, such as the combustion emissions from mobile equipment, would not be covered. We also recognize that the permit would be issued under a program approved by EPA as meeting the requirements of Title I of the federal Clean Air Act, and that nearly all of the mobile sources are, to some degree, subject to emissions standards established by EPA under regulations promulgated under Title II of the FCAA. However, source-specific emissions standards are fundamentally different than health-based ambient air quality standards. Additionally, haulage along the Bootstrap haul road may or may not be classified as mobile source emissions, depending on the freedom of access of the public to this corridor and other factors. Regardless, for NEPA purposes, ambient air quality impact analyses should not distinguish between Title I sources and Title II sources, nor should such analyses discount emissions sources because they do not fall within the POO boundary. Instead, the impact analyses should take into account all Project-related emissions sources (fugitive and non-fugitive stationary, area, and mobile) and evaluate whether such sources, considered together, would cause or contribute to an exceedance of the NAAQS.

Section 3.8.4 states that no additional monitoring or mitigation measures have been identified beyond those that NDEP might require as a part of the air quality permitting process. No mention is made, however, as to the status of a possible NDEP Air Permit, nor is there any discussion of probable mitigation measures that would be imposed by such a permit. This section then concludes that no significant impacts to air quality would be anticipated as a result of the Proposed Action. It is not clearly

demonstrated that the information provided truly supports the conclusion drawn regarding the potential for significant impacts to air quality.

> **Recommendation**: Demonstrate in the Supplemental Draft EIS that the project as a whole, including all proposed activities, would not result in exceedance of National Ambient Air Quality Standards. Should modeling indicate a potential exceedance, discuss the potential impact upon sensitive receptors and the regional criteria pollutant attainment status. Discuss feasible mitigation measures for reducing these impacts, and indicate whether such mitigation would be required as a component of an NDEP air permit, or whether the BLM might require this mitigation as a condition of its POO permit approval.

Additional Mitigation

Although the area where the Proposed Project will be implemented is in "attainment – unclassifiable" for all pollutants having an air quality standard, in the interest of minimizing adverse impacts, EPA recommends consideration of measures to reduce emissions of criteria air pollutants and hazardous air pollutants. Some examples of measures that could be implemented are provided below.

Recommendations:

- *Equipment Emissions Mitigation Plan (EEMP)* – The Supplemental DEIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, CO, hydrocarbons, and NO_x associated with construction activities. We recommend that the EEMP require that all construction-related engines:
    - are tuned to the engine manufacturer's specification in accordance with an appropriate time frame;
    - do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
    - include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the Project site;
    - use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
    - include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.

<u>Wildlife and Aquatic Biological Resources, Wetlands, and Special Status Species</u>

Section 3.14 of the DEIS states that the proposed project has the potential to affect 12.6 acres of riparian and wetland vegetation, including direct disturbance of 1.6 acres of wetland. The mitigation proposed for this impact involves the fencing of a 34 acre plot in the Water Canyon spring complex (p. 3.14-18). No information is provided, however, describing the current status of these 34 acres, e.g., the acres of wetlands contained therein, the general function and health of these wetlands, or the likelihood that implementation would have an appreciable impact on these characteristics. Furthermore, it is not clear

whether any direct replacement of wetland acres will occur for the 1.6 acres of riparian zones/wetland features that the project would directly remove. While Section, Township and Range are identified textually, no map is provided identifying the mitigation plot in relation to the project area. Finally, while the exclusion of livestock from these lands may serve to reduce trampling and grazing within the plot, fencing would likely have the secondary effect of deterring wildlife access and utilization as well.

> **Recommendation:** Provide a figure in the Supplemental Draft EIS identifying the location(s) of proposed mitigation; describe the site characteristics, including acres of wetlands, health and function; and provide a discussion of secondary wildlife impacts that may result from the fencing off of the mitigation area.

A total of 46 special status species were identified as potentially occurring within the Special Status Species study area, including species listed as threatened and endangered under Section 7 of the Endangered Species Act. As stated in the DEIS, the BLM, in coordination with the United States Fish and Wildlife Service, must ensure that any action that it authorizes, funds, or carries out would not adversely affect a federally listed threatened or endangered species. Despite this acknowledgement of the need for consultation with the USFWS, Section 3.18 – Special Status Species does not contain further discussion of the current state of consultation with the USFWS regarding the Arturo Project.

> **Recommendation:** Describe in the Supplemental Draft EIS the status of consultation activities with the USFWS in regards to impacts to ESA listed species, including the timing and/or findings of the Biological Assessment and the Biological Opinion from the Fish and Wildlife Service. Provide in the Final EIS, if not the Supplemental DEIS, a summary of the Biological Opinion and any additional mitigation measures required.

Other Water Resource Comments

The DEIS did not include a map identifying the hydrologic study area for direct and indirect impacts to water resources as described on page 3.4-1. The textual description is insufficient and the visual cues provided in reference to figure 3.4-2 only provide north/south bounds for the study area, and do not indicate the overall area considered. The DEIS does not address whether potential impacts to Antelope Creek were included in the direct/indirect study area or whether impacts to Antelope Creek were only examined in the cumulative context.

> **Recommendation:** Include a figure in the Supplemental Draft EIS showing the direct and indirect hydrologic study area for water resources. In light of the possibility that the project will affect Antelope Creek, include Antelope Creek in the study area.

Based on location, description and water quality data provided, it seems highly likely that a number of the seeps identified in Figure 3.4-2 are fed by infiltration through and under existing mine facilities, however this figure does not contain an overlay of existing facilities on the project site, so making this determination based on the information contained in the DEIS, alone, is difficult.

> **Recommendation:** Revise Figure 3.4-2 or include a new figure in the Supplemental DEIS that clearly displays the existing Dee facilities overlain on the seep location information. Those seeps that appear to be mine water discharge should be clearly labeled as such.

Figures 3.4-3, 3.4-4 and 3.4-5 label Boulder Creek as perennial in the reach nearest to the project site. The map key for these figures indicates that the stream segments highlighted in blue are "perennial stream reach(s)". While Boulder Creek is labeled intermittent/ephemeral downstream of the project, the reach adjacent to the POO boundary is blue in all three of the figures cited. This is in conflict with the text of the DEIS, which describes Boulder Creek as intermittent adjacent to the POO boundary.

Recommendation: Please clarify this discrepancy.