CHAPTER 6
PUBLIC COMMENTS AND RESPONSES

This chapter includes copies of all public comments received during the comment period on the Draft Environmental Impact Statement (DEIS) for Newmont Mining Corporation's Emigrant Project. BLM responses to substantive comments are provided adjacent to the reproduced comment letters. Sixteen letters were received during the public comment period, which ended on January 7, 2009.

LETTERS

Letter No. 1 – Melissa Harmon
Letter No. 2 – Joe Armstrong-Nelson
Letter No. 3 – Kevin Sur
Letter No. 4 – Rocky Pray
Letter No 5 – Russell Sheets
Letter No. 6 – Robert Stokes (Elko County Commissioners)
Letter No. 7 – Bob St. Louis
Letter No. 8 – Nevada Division of State Lands
Letter No. 9 – Nevada Commission on Minerals
Letter No. 10 – Nevada State Historic Preservation Office (SHPO)
Letter No. 11 – U.S. Geological Survey (USGS)
Letter No. 12 – Kenneth Cole
Letter No. 13 – U.S. Fish and Wildlife Service (USFWS)
Letter No. 14 – Great Basin Resource Watch
Letter No. 15 – U.S. Environmental Protection Agency (EPA, March 23, 2009)
Letter No. 16 - U.S. Environmental Protection Agency (EPA, January 22, 2009)

LETTER I

2008 DEC -3 AM 7:30

Melissa Harmon
2135 Sierra Drive
Elko, Nevada 89801
(775) 778-9504

Tom Schmidt
Bureau of Land Management
3900 Idaho St.
Elko, Nevada 89801

December 1, 2008

Dear Mr. Schmidt,

I would like to express my comments on the Emigrant Project. I feel that the positive aspects of this project, including its affect on the community, far outweigh any potential risks.

First and foremost, the affect of this project on the local economy cannot be ignored. This project extends the mine life of Newmont's Carlin Operations, and allows continued employment of thousands of Northern Nevadans. Newmont and its employees have been excellent community partners for years, and there is every reason to believe this positive partnership will continue. Newmont provides high quality jobs with excellent benefits and pay and has significantly improved the quality of life in Northern Nevada since the company arrived on the Carlin Trend in the 1960's.

Newmont has taken every step possible to ensure that the Emigrant Project will have a minimal affect of the environment. The Emigrant mine is adjacent to an active mining district, and will therefore be able to use some existing infrastructure, minimizing the total disturbed land. In addition, the in-pit waste dumping plan devised for this project minimizes environmental impact and demonstrates Newmont's commitment to responsible mining. Newmont has an excellent record of environmental compliance and responsibility, and there is no reason to believe this record will not continue with the mining of the Emigrant project.

Newmont continues to demonstrate its desire to operate in a socially responsible manner, and the Emigrant project is no exception. I urge the BLM to approve the Emigrant Project and issue permits at the earliest possible date.

Thank you,

Melissa Harmon

Melissa Harmon, P.E.
Chief Mine Engineer
Newmont Mining Corporation
Carlin Surface Operations

I-1

Response I-1
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 2

Joe Armstrong-Nelson
Senior Mechanical Engineer II
PO Box 669
Carlin, NV 89822
775-778-4367/C775-778-5704

BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE

2008 DEC -5 AM 7:30

ELKO DISTRICT OFFICE		
DM		
ADM		
PLAN/NEPA		
LAW ENF		
TUSCARORA F.O.	✓	
WELLS F.O.		
SUPPORT SRV.		
FIRE		
OPERATIONS		
CA. TRAIL		
PUBLIC AFFAIRS		

December 4, 2008

Bureau Of Land Management
Elko District Office
Attention: Tom Schmidt
Emigrant Project EIS Coordinator
3900 East Idaho Street
Elko, NV 89801

Dear Tom:

I have worked in the mining industry for most of my adult life in the cement industry and in gold mining. Mining plays a vital part in our countries economy and is a critical part of the local economy. Gold mining in particular relies on continuing exploration and discovery and mining of new resources. The Emigrant mine is one of these new sources of gold for Newmont Mining Company. This new mine is necessary for Newmont to maintain production of gold at current levels for the next several years. Without new sources of gold and without Emigrant in particular Newmont will likely have to reduce staffing in the next year or two. This will have significant impacts on the local communities of Elko, Carlin, Battle Mountain, and Winnemucca. 2-1

Newmont has had a record of careful and prudent removal of mineral resources in Northern Nevada and has won many awards for their environmental stewardship and reclamation policies. Newmont has proven it can mine the resources from the Emigrant mine and will leave a clean site after the mining is completed. The DEIS that has been submitted will be followed and will ensure the site is left without negative impacts for future generations.

I urge you to carefully review and consider the DEIS for the Emigrant project and to approve it as submitted.

Thank you.

Sincerely,

Joe Armstrong-Nelson

Joe Armstrong-Nelson
Senior Mechanical Engineer II

Response 2-1
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 3

BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE
2008 DEC 31 AM 7:30

Kevin Sur
1880 Janie Lane
Elko, Nevada 89801
H-(775) 738-4104

Bureau of Land Management
Elko District Office
Attn: Tom Schmidt
Emigrant Project EIS Coordinator
3900 East Idaho St.
Elko, Nevada 89801

December 9, 2008

Dear Mr. Schmidt,

I would like to express my comments on the Emigrant Project Draft Environmental Impact Statement.

1. The Emigrant Project will make a valuable economic contribution to the local area economy.
2. The Emigrant Project EIS is adjacent to the Rain mining district and will use existing infrastructure thus minimizing the overall effect on the environment. Mitigation measures have been proposed where impacts to the environment are anticipated.
3. Newmont Mining Corporation has the right to enter the public lands and explore for and exploit mineral deposits under the General Mining Law of 1872. **3-1**
4. Newmont Mining Corporation is a responsible operator with a long history of operating in an environmentally and socially responsible manner.

I urge the BLM to approve the Emigrant Project EIS and issue permits at the earliest possible date.

Sincerely,

Kevin Sur

Response 3-1
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 4

MANAGEMENT OFFICE
2008 DEC 16 AM 7:30

Rocky Pray
218 Aerie Lane
Elko, Nevada 89801
(775) 753-5325

Mr. Tom Schmidt
Bureau of Land Management
3900 Idaho St.
Elko Nevada, 89801

December 14, 2008

Dear Mr. Schmidt,

I would like to express my support for Newmont's Emigrant Project. I feel the positive aspects of this project for the local communities outweigh any potential risk. The Emigrant Project will provide sustainable jobs and continued tax base for the State of Nevada and Elko County, where the project is located.

This project extends the mine life of Newmont's Carlin Operations, and allows continued employment for thousands of Northern Nevadans. Newmont provides high quality jobs with excellent pay and benefits while continuing to improve the quality of life in Northern Nevada. Newmont and the employees of Newmont work and live in partnership with the local communities where they operate. Newmont has resided in Northern Nevada since the company's arrival on the Carlin Trend in the 1960's. 4-1

Newmont has recognized the potential impacts and provided a number of measures through the EIS process to ensure that the Emigrant Project will have a minimal affect on the environment. The Emigrant mine is adjacent to an active mining district where use of the existing infrastructure and access minimizes the total land disturbances. In addition, the in-pit waste backfilling plan devised for this project minimizes environmental impacts and demonstrates Newmont's commitment to long term responsible mining and reclamation. Newmont has an excellent record of environmental compliance and social responsibility.

Newmont continues to demonstrate its desire to operate in a socially responsible manner, and the Emigrant project is no exception. I urge the BLM to approve the Emigrant Project and issue permits at the earliest possible date.

Thank you,

Rocky Pray
Citizen – Elko County

Response 4-1
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 5

MANAGEMENT
OFFICE
2008 DEC 19 AM 7:30

Russell Sheets
435 Rawlings Dr.
Spring Creek, Nevada 89815
(775) 340-3091

Tom Schmidt
Bureau of Land Management
3900 Idaho St.
Elko Nevada, 89801

December 15, 2008

Dear Mr. Schmidt,

I am writing to provide comments in support of Newmont's proposed Emigrant Project southeast of Carlin, Nevada.

An important aspect when developing a mine plan is to have design an area that will mitigate and prevent potential issues with the environment. The location of the Emigrant Site is adjacent to the Rain Mine Site which will allow Newmont to utilize existing infrastructure. This minimizes the need to construct facilities that would disturb more land. Another aspect of the proposed Emigrant Project that will be beneficial is the ability to sequentially backfill each open pit in phases as mining progresses. This will return the area to "near" pre-mining conditions. Additionally, without requiring external waste rock disposal capacity the area of disturbance is limited. The approaches to the mine plan, although only briefly mention, show Newmont's continued commitment to responsible mining. 5-1

Newmont and the surrounding communities would readily benefit from projects that extend the mine life of Newmont's Carlin Operations. As a major employer in Northern Nevada, Newmont would be able to continue to provide quality jobs and employment. Furthermore, Newmont uses local services and suppliers to support mining operations which indirectly affects the employment of many more than those hired on by Newmont. Newmont and its employees have been excellent community partners for years, providing resources, funds, and time to many, many local organizations and charities. There is no reason to believe that this would change in the future.

Because of Newmont's ability follow through on its commitment to responsible mining, and the benefits to those living in Northern Nevada; I hope the BLM will be able to approve the Emigrant Project as soon as possible. Thank you for the opportunity to provide comments.

Thank you,

Russell J. Sheets

Russell J. Sheets, P.E.
Senior Geotechnical Engineer
Newmont Mining Corporation
Carlin Surface Operations

Response 5-1
Comment noted. Thank you for your interest in the Emigrant Project.

Elko County Board of Commissioners
569 Court Street • Elko, Nevada 89801
775-738-5398 Phone • 775-753-8535 Fax

COMMISSIONERS
SHERI L. EKLUND-BROWN
JOHN ELLISON
CHARLIE L. MYERS
WARREN RUSSELL

ELKO COUNTY MANAGER
ROBERT K. STOKES

EXECUTIVE ASSISTANT
MICHELE A. PETTY

LETTER 6

December 26, 2008

Mr. Tom Schmidt, Emigrant Project EIS Coordinator
BLM Elko District Office
3900 East Idaho Street
Elko, Nevada 89801

RE: Newmont Mining Company - Emigrant Mine Project
Draft Environmental Impact Statement (DEIS)

Dear Mr. Schmidt:

The Elko County Board of Commissioners continues its support of the Newmont Mining Corporation's proposal to develop and operate mining activities at the Emigrant Mine Project located ten miles south of Carlin, Nevada. Elko County is satisfied that the DEIS identifies project issues and provides appropriate protections to mediate those issues. Elko County supports the Preferred Alternative as the Proposed Action. **6-1**

Approval of the Emigrant Project will benefit the local economy while protecting the environment. This approval will be another example of cooperation between business and government that allows for wise management of public lands. Elko County applauds both Newmont Mining Corporation and the Bureau of Land Management for working together to allow for this appropriate use of public lands in our area.

Sincerely,

ELKO COUNTY BOARD OF COMMISSIONERS

Robert K. Stokes
Elko County Manager

2008 DEC 31 AM 7:30

Response 6-1:
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 7

RECEIVED
BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE
2008 DEC 31 AM 7: 30

115 Dingo Lane
Spring Creek, NV 89815
(775) 753-7513

29 December 2008

Bureau of Land Management
Elko District Office
Attention: Tom Schmidt
Emigrant Project Coordinator
3900 Idaho St.
Elko Nevada, 89801

Dear Mr. Schmidt,

I am writing today to express my support for the Emigrant Project. This project truly embodies the philosophy of sustainable development because it carefully plans for the reclamation of the area before mining commences. In fact, the mining sequence is driven by concurrent reclamation, which should make the closure phase very short.

Newmont has repeatedly received awards for its environmental and reclamation stewardship. It is clear that Newmont "walks the walk," when it comes to concern for the environment in the places where the company mines. In essence, the Emigrant Project will be a temporary use of the land, and upon completion, will leave a landscape that is changed, yet one that is just as viable for wildlife and livestock as the pre-mining landscape is. 7-1

The project will be of significant benefit to the local populace and economy, and is further evidence of Newmont's commitment to northeastern Nevada's well-being. Newmont has invested many, many dollars in the Elko area, and is clearly dedicated to ensuring that these investments continue to pay dividends, both for shareholders and the local citizenry.

I urge you and your team to approve this project and allow mining to move ahead as quickly as you can.

Thank you,

Bob St. Louis
Senior Hydrologist
Newmont Mining Corporation
Carlin Surface Operations

Response 7-1
Comment noted. Thank you for your interest in the Emigrant Project.

LETTER 8

Nevada State Clearinghouse

From: Skip Canfield
Sent: Tuesday, December 02, 2008 9:50 AM
To: Nevada State Clearinghouse
Subject: RE: E2009-153 Emigrant Mine Project DEIS - Bureau of Land Management

The Nevada Division of State Lands provides the following comments:

There is a concern about the cumulative visual impacts to public lands users' experiences.

As multiple use concepts are employed on our public lands, a comprehensive and consistent look at visual impacts must be considered. Small and inexpensive mitigation measures can play a large role in the compatibility of the built and natural environment.

AFTER READING THE 300 PAGES OF THE EIS, I WAS UNABLE TO FIND ANY INFORMATION ON THE FOLLOWING TOPICS:

Utilize appropriate lighting:

- Utilize consistent lighting mitigation measures that follow "Dark Sky" lighting practices. Dark sky measures are inexpensive, simple to implement, and very mainstream. The result is a less obtrusive impact to other users of adjacent public lands. www.darksky.org
- Effective lighting should have screens that do not allow the bulb to shine up or out. In fact, lighting that is installed using dark sky fixtures (light is only aimed at the subject property) is more efficient, safer, and results in reduced electricity costs.
- Federal agencies should include light shields as a condition of approval for all permanent and temporary uses.

8-1

Response 8-1:
Text revised per comment. New night lighting installed by Newmont would be fixtures with "Dark Sky" features. As existing lighting fixtures at the Rain Mine Shop Facility age and require maintenance they would be replaced with components designed to be energy efficient while providing lighting for safety and security purposes and have "Dark Sky" features.

Utilize building materials, colors and site placement that are compatible with the natural environment:

- Utilize consistent mitigation measures that address logical placement of improvements and use of appropriate screening and structure colors. Existing utility corridors, roads and areas of disturbed land should be utilized wherever possible.
- For example, the use of compatible paint colors such as "sudan brown" for water tanks and other vertical structures reduces the visual impacts of the built environment. Using screening, careful site placement, and cognitive use of earth-tone colors/materials that match the environment go a long way to improve the user experience for others who might have different values than what is fostered by built environment activities.
- Federal agencies should require these mitigation measures as conditions of approval for all permanent and temporary uses.

8-2

Response 8-2:
Text revised per comment. Visual contrast of new structures constructed at the Emigrant project would be minimized by using colors that blend with the land rather than the sky, and using finishes with low levels of reflectivity.

LETTER 9

Lowell Price

From: Nevada State Clearinghouse
Sent: Tuesday, November 25, 2008 11:29 AM
To: Lowell Price
Subject: E2009-153 Emigrant Mine Project DEIS - Bureau of Land Management

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0213 Fax (775) 684-0260

TRANSMISSION DATE: 11/25/2008

Commission on Minerals

Nevada SAI # E2009-153

Project: Emigrant Mine Project revised DEIS

Follow the link below to download an Adobe PDF document concerning the above-mentioned project for your review and comment.
E2009-153

Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local
areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than Friday, January 2, 2009.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference.

Clearinghouse project archive

Questions? Reese Tietje, (775) 684-0213 or clearinghouse@state.nv.us

This is a very large PDF file.
____No comment on this project __X__Proposal supported as written
AGENCY COMMENTS:

9-1

Response 9-1:
Comment noted. Thank you for your interest in the Emigrant Project.

12/24

Rebecca Palmer

From: Nevada State Clearinghouse
Sent: Tuesday, November 25, 2008 11:30 AM
To: Rebecca Palmer
Subject: E2009-153 Emigrant Mine Project DEIS - Bureau of Land Management

LETTER 10

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0213 Fax (775) 684-0260

TRANSMISSION DATE: 11/25/2008

State Historic Preservation Office
Nevada SAI # E2009-153
Project: Emigrant Mine Project revised DEIS

Follow the link below to download an Adobe PDF document concerning the above-mentioned project for your review and comment.
E2009-153

Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local
areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than Friday, January 2, 2009.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference.

Clearinghouse project archive

Questions? Reese Tietje, (775) 684-0213 or clearinghouse@state.nv.us

This is a very large PDF file.
____No comment on this project ✓ Proposal supported as written
AGENCY COMMENTS:
Rebecca L Palmer 12/23/08

10-1

Response 10-1:
Comment noted. Thank you for your interest in the Emigrant Project.

United States Department of the Interior

U. S. GEOLOGICAL SURVEY
Reston, VA 20192

LETTER 11

In Reply Refer To:
Mail Stop 423

January 6, 2009

Mr. Tom Schmidt, Emigrant Project Coordinator
Bureau of Land Management
Elko District Office
3900 East Idaho Street
Elko, NV 89801

Subject: Draft Environmental Impact Statement for the Newmont Mining Corporation's Proposed Emigrant Mine Project

Dear Mr. Schmidt:

As requested by your correspondence of November 11, 2008, the U.S. Geological Survey (USGS) has reviewed the subject draft environmental impact statement (EIS) and offers the following comment.

SPECIFIC COMMENT

Page 3-62 to 3-63, (unnumbered) Section "Water Quantity and Quality," last 2 paragraphs on page 3-62 continuing to the top of 3-63

This section presents two conflicting model results that differ by almost an order of magnitude. The authors describe the source and reasons for the difference. However, the section needs to draw a conclusion; there can only be one "right" answer. The section should state which result they think most accurately describes actual conditions, and why. **11-1**

In the References, there is an incorrect date:
Hill, J. 1918 (**SHOULD BE 1916**), Notes on some mining districts in Eastern Nevada, U.S. Geological Survey Bulletin 648. **11-2**

Thank you for the opportunity to review and comment on the DEIS. If you have any questions concerning our comment, please contact Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 350-8797 or at lwoosley@usgs.gov.

Sincerely,

/Signed/
James F. Devine
Senior Advisor for Science Applications

Response 11-1
Based on seepage flux rates discussed in the EIS for a 100-acre PAG cell footprint, the ranges are similar for the Hydrus-1D model (7 to 14 gal/min) and Hydrus-2D model (1 to 10 gal/min). Therefore, a water flux of 10 gal/min is considered to be representative of this situation.

Response 11-2
Text in Final EIS revised per comment.

January 7, 2009

RECEIVED
BLM OFFICE
2009 JAN -8 AM 7:53

LETTER 12

Bureau of Land Management
Elko District Office
Attention: Tom Schmidt
Emigrant Project EIS Coordinator
3900 East Idaho Street
Elko, NY 89801
(775) 753-0255

RE: Draft Environmental Impact Statement (DEIS) for Newmont Mining Corporation's (Newmont's) proposed Emigrant Mine Project.

The Draft Environmental Impact Statement (DEIS) for Newmont Mining Corporation's (Newmont's) proposed Emigrant Mine Project has inadequate mitigation for Greater Sage Grouse. We ask that mitigation include reductions in AUMs on adjacent allotments and those allotments which the mine owners may have some interest in as well as habitat restoration with native forbs, grasses, and sagebrush on seeding areas planted with crested wheatgrass and other non-native plants. 12-1

Kenneth Cole

NEPA Coordinator
Western Watersheds Project
P.O. Box 2863
Boise, ID 83701
208-429-1679

Response 12-1
The Emigrant Springs Grazing Allotment No. 5417 would be reduced by 306 AUMs (p. 3-106 of the Draft EIS). Potential mitigation measures including re-establishment of sagebrush on disturbed areas are commensurate with predicted impacts to Greater Sage Grouse.

LETTER 13

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502
Ph: (775) 861-6300 ~ Fax: (775) 861-6301

January 7, 2009
File No. 2009-FA-0046

Memorandum

To: Field Manager, Battle Mountain Field Office, Bureau of Land Management, Battle Mountain, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Comments on the Draft Environmental Impact Statement for the Newmont Mining Corporation's Emigrant Project Open Pit Gold Mine

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Newmont Mining Corporation's Emigrant Project (Project) located approximately 10 miles south of Carlin, Nevada. The proposed Project includes development and operation of an open pit gold mine and construction of a waste rock disposal facility, run-off mine heap leach pad, permanent engineered stream channel, ancillary support facilities, and reclamation of surface disturbances. Approximately 1,418 acres would be disturbed by mine-related facilities, including 248 acres of private land and 1,170 acres of public land (including 442 acres of split estate). The Project would have a 14-year operational mine life and produce approximately 92 million tons of ore and 83 million tons of waste rock. Closure activities may continue for a period of up to 30 years after mining activity is completed.

The U.S. Fish and Wildlife Service (Service) has previously commented on this Project in our letters of June 30, 1997, and May 19, 2005, (File Nos. 6-4/1-5-97-SP-286 and EC 32.7). We have reviewed the DEIS and are providing the following comments pursuant to the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*); Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703; and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act (CWA). Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, 48 Stat. 401, as amended, 16 U.S.C. 661 *et seq*, and the Fish and Wildlife Act of 1956, as amended, 70 Stat. 1119, 16 U.S.C. 742a.

TAKE PRIDE IN AMERICA

Field Manager File No. 2009-FA-0046

General Comments

The Service is concerned that the Project may result in increased sedimentation and reduced water quality in Dixie Creek, its tributaries and possibly the South Fork Humboldt River. This may negatively affect ongoing recovery efforts for Lahontan cutthroat trout (*Oncorhynchus clarkti henshawi;* LCT) in Dixie Creek. 13-1 The Project may also exacerbate the decline of greater sage-grouse (*Centrocercus urophasianus*) in the study area, a species currently being considered for listing under the Act. 13-2 Protection of sage-grouse habitat, including leks, nesting, brood rearing and wintering habitats should be considered in project planning. We are also concerned with the heap leach ponds and their potential impacts to migratory birds through cyanide toxicity. In semiarid areas, these ponds attract migratory birds to certain death if they are not appropriately monitored to assure exclusion devices work. 13-3 We strongly recommend that the Bureau of Land Management (BLM) require current surveys of fish and wildlife resources to appropriately assess impacts in the Final EIS. Surveys for raptors and bats from 2004 are not adequate to assess the impacts of this Project pursuant to the National Environmental Policy Act. 13-4 The Final EIS should also include those best management practices and conservation measures that will avoid, minimize and mitigate impacts to fish and wildlife resources.

Specific Comments

1. Page 1-8, Table 1-1, Regulatory Responsibilities: The table does not include the MBTA or the BGEPA in the list of regulatory responsibilities. The BLM is obligated to protect the many species of migratory birds, including songbirds, eagles and other raptors protected under the MBTA and BGEPA.

   The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess...any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. 13-5

   In order to promote the conservation of migratory bird populations and their habitats, we recommend the BLM implement those strategies outlined in Executive Order 13186, as directed by the President.

2. Page 2-6, Mine Development: The DEIS states that "where possible" surface disturbance would be timed to prevent destruction of active bird nests or young. Please see comment above regarding take of migratory birds. We recommend that mine related actions be conducted outside of the general avian nesting season based on known nest chronology of species that occur within the permit area. If this is not feasible, we recommend a qualified

Response 13-1:
Mining and associated activities at the Emigrant Project would be conducted in accordance with Storm Water Permit (No. MSW-365) issued by NDEP. This permit specifies monitoring program components and mitigation measures that would be employed to reduce and control run-on/runoff and sediment from disturbed areas. Two unnamed drainages that extend through the northern and southern portions of the proposed Project area are ephemeral downstream of the Project area and flow only in response to snowmelt or major rain events. Sediment load in these reaches is high during these flow events. Potential impacts to the South Fork Humboldt River due to sediment contribution from the proposed Project is considered minimal and are not anticipated to affect recovery efforts of Lahontan cutthroat trout in Dixie Creek.

Response 13-2
Less than 1 percent (approximately 1,000 acres) of the regional sagebrush habitat available to Greater sage grouse would be affected by the proposed Emigrant Project. Mitigation measures would be implemented to re-establish sagebrush communities and over time, would offset this impact.

Sagebrush habitat is the dominant cover type in the project area and it will not be possible to plan construction to avoid all of this habitat. No leks have been identified that would be affected by the Proposed Action; however, nesting and brood rearing habitat may be affected. Brood rearing habitat is present around springs in the area.

Response 13-3:
Newmont has obtained an Industrial Artificial Pond permit from NDOW. Measures that would be implemented as a condition of that permit are protective of wildlife (including migratory birds) that may frequent the area. Process ponds would be fenced and covered with protective netting or bird balls to preclude access by wildlife. Cyanide heap leach areas will be routinely monitored to assess the efficacy of exclusion devices in preventing mortality to migratory birds.

Response 13-4
Comment noted. In response to this concern, Newmont completed additional studies on sage grouse, pygmy rabbits, and raptors in the proposed Project area during May 2010. Field surveys did not detect the presence of pygmy rabbit or sage grouse or evidence of their presence in the Project area. Five raptor species were observed in the area: an active great horned owl nest was found on a power pole within the proposed Project area, and an active red-tailed hawk nest was identified on a rock outcrop in an area adjacent to the proposed Project area. Text in the Final EIS has been revised to reflect results of the May 2010 survey. A bat survey was completed in August 2010. Results of the survey are not yet available.

Response 13-5
Comment noted. Text revised in Final EIS per comment.

biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active. The DEIS also states that after July 15, new land clearing activities would continue yet no further surveys would be conducted. Although most nests may be fledged by July 15, we recommend you consider individual species' nest chronology to best determine the appropriate date that land clearing activities may occur. We look forward to reviewing completed avian survey reports to assist you in species specific protection of active nests.

13-6

Response 13-6
Newmont intends to construct during the migratory bird nesting season and will conduct nesting surveys as required by the Migratory Bird Treaty Act to ensure nesting is not occurring within the construction area.

3. Page 2-33, Energy and Water Supply Wells and Use: The DEIS states that electrical energy would be provided by accessing an existing line and constructing two new electrical substations. The DEIS also states that the right-of-way includes an overhead power line. The Service urges you to take strong precautionary measures to protect raptors by raptor-proofing the power lines as two primary causes of raptor mortality are electrocutions and collisions with power lines. Power lines should be designed, constructed or retrofitted in accordance with *Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 2006* published by the Edison Electric Institute/Raptor Research Foundation.

13-7

Response 13-7
Comment noted. Powerlines would be designed to avoid mortality to raptors.

4. Page 2-34, Covering/Containment: The DEIS states that bird balls or netting would be placed on or over process ponds to preclude access by birds. It also states that the Nevada Department of Wildlife (NDOW) would periodically check the status of the devices. The Service commends the BLM for requiring measures for migratory birds and other wildlife to prevent contact with potentially lethal chemicals in the pond solution. Regardless of the method employed, the BLM is obligated to prevent migratory birds from entering these ponds. In the event that NDOW does not have staffing resources to monitor these ponds for efficacy in precluding wildlife, we recommend that the BLM and/or the mine operators provide the means to monitor the ponds adequately.

13-8

Response 13-8:
Monitoring will be done by BLM and mine representatives.

5. Page 2-40, Reclamation: The DEIS states that a highwall would remain along portions of the pit offering habitats for bats and raptors. The Service recommends that the BLM ensure that this creation of habitat is not in an area where these species did not normally occur or did occur, but at very low numbers. Artificial inflation of avian predators in or near greater sage-grouse habitat (i.e., leks, nesting or brood rearing) may result in abandonment of the area by sage-grouse.

13-9

Response 13-9
It is doubtful that allowing a portion of highwall to provide habitat for bats and birds would contribute substantially to mortality of sage grouse from predation by raptors. Avian predator populations in the project area do not appear to be limited by suitable nest sites.

6. Page 3-90, Birds: The DEIS discusses bird species that have been documented in the study area and notes that no raptor nesting territories have been documented citing a September 2004 "wildlife reconnaissance." We strongly recommend that a survey be conducted to determine the current use of the site by avian species to assist the BLM in their analysis of the Project's impacts. Analyses based on information from 2004 surveys are not adequate to assess impacts.

13-10

Response 13-10
Comment Noted See Response 13-4.

7. Page 3-90 through 3-93, Lahontan Cutthroat Trout: The DEIS states that a population of LCT exists 15 miles upstream of the confluence of Dixie Creek and the unnamed tributary within the Project's study area. It also states that the BLM is improving habitat in the area to sustain LCT throughout Dixie Creek, not just in the headwaters. The Service commends the BLM for its efforts to improve habitat for LCT; however, we encourage you to ensure that this Project does not impede recovery actions for LCT through surface or ground water contamination. 13-11

The DEIS states that lower Dixie Creek could be accessed by non-native salmonids from the South Fork Humboldt River, but a fish barrier to preclude access is scheduled to be constructed. We recommend you update the Final EIS to state that the fish barrier was completed sometime in 2008. These actions indicate agency commitments to recover LCT; we encourage the BLM not to approve projects that may exacerbate the species decline or inhibit recovery efforts. 13-12

8. Page 3-93, Bats: The DEIS states that seven bat species were documented in the study area during an August 2004 survey. We are concerned that this Project's analysis is based on survey data from 2004. We recommend that the BLM require more current surveys of the area to determine current use by fish and wildlife resources to provide a better analysis of impacts from this Project. 13-13

9. Page 3-94, Pygmy Rabbit: The DEIS states that surveys from 2004 and 2008 did not document sightings of pygmy rabbits (*Brachylagus idahoensis*) but fecal pellets and burrows, thought to be that of pygmy rabbits, were observed. On January 8, 2008, the Service published a substantial 90-day finding on a petition to list the pygmy rabbit as threatened or endangered under the Act, thus initiating a status review of the species. Draft survey guidelines have been developed for this species and are available upon request from the Nevada Fish and Wildlife Office. We encourage you to survey the proposed project area for pygmy rabbits prior to any ground disturbing activities and to consider the needs of this species as you complete project planning and implementation. 13-14

10. Page 3-94, Sage Grouse: The DEIS states that greater sage-grouse, forage, nest and winter in the study area but there are no known leks in the study area. The DEIS does not state when surveys were completed or if they are completed annually. We are concerned that the project may impact greater sage-grouse. On February 26, 2008, the Service published in the Federal Register an initiation of a status review for the species as threatened or endangered under the Act. The Western States Sage and Columbian Sharp-tailed Grouse Technical Committee, under direction of the Western Association of Fish and Wildlife Agencies, has developed and published guidelines to manage and protect sage grouse and their habitats in the Wildlife Society Bulletin (Connelly *et al.* 2000). We ask that you consider incorporating these guidelines (http://ndow.org/wild/sg) into the proposed project. On a more local level, the Sage Grouse Conservation Plan for Nevada and Portions of Eastern California was completed in June 2004. The Plan is available online at 13-15

Response 13-11
Contamination of LCT habitat in Dixie Creek as a result of the Proposed Action is not predicted.

Response 13-12
Text revised to reflect that the fish barrier has been constructed.

Response 13-13
Although the 2004 studies are dated, habitat conditions in the project area relative to bat habitat have not substantially changed since 2004. However, a bat survey was completed in August 2010, but results are not yet available.

Response 13-14
During the May 2010 survey no burrows with associated rabbit pellets were observed and the density of burrows made by ground squirrels, badgers, coyotes, and other mammals was substantially lower than observed in 2008. Text in the Final EIS has been revised to reflect results of the May 2010 survey.

Response 13-15
BLM has determined that existing baseline data concerning sage grouse populations is adequate to determine effects of the Proposed Action on those resources. The project area is dominated by sage brush communities, which are sage grouse habitat. The proposed project would cause an incremental reduction in sage grouse habitat.

http://www.ndow/org/wild/sg/plan/index.shtm. We encourage you to adopt all appropriate management guidance from this Plan as you implement your proposed action.

11. Page 3-95 and 3-96, Proposed Action: The DEIS states that species that would experience the greatest impact from loss of sagebrush habitats include jackrabbits…sage grouse…and pronghorn. The Final EIS should also state that sagebrush obligate songbirds, protected under the MBTA, will also experience extensive impacts from the loss of sagebrush due to the Project. See comment 1. **13-16**

12. Page 3-97: The DEIS states that the industrial artificial pond permit through NDOW requires daily monitoring and reporting of wildlife mortality. In the event that migratory birds are found dead or alive we recommend you also contact our office for guidance. See comment 1. **13-17**

13. Page 3-97, Lahontan Cutthroat Trout: The DEIS states that LCT would not be affected by the Project; however, opportunities to reestablish them in lower Dixie Creek could be reduced if the Project results in increased sediment or impaired water quality in Dixie Creek. See comment 7. **13-18**

14. Page 3-100, Monitoring and Mitigation Measures: The DEIS states that wildlife monitoring will be identified in the monitoring plan developed by the BLM in consultation with NDOW. Our office would appreciate reviewing the plan and associated reports (i.e., surveys), especially those sections discussing migratory bird monitoring. **13-19**

15. Page 4-32, Cumulative Effects: The DEIS states that sedimentation from roads and livestock grazing would act cumulatively with the Project to reduce stream shading…and increase sediment loading to Dixie Creek, its tributaries and possibly the South Fork Humboldt River. See comment 7. **13-20**

We look forward to reviewing future documents related to this Project. If you have any questions regarding this correspondence or require additional information, please contact me or Kathleen Erwin at (775) 861-6300.

Robert D. Williams

cc: Fisheries Biologist, Nevada Department of Wildlife, Elko, Nevada (Attention: A. Jenne)

Response 13-16
The Final EIS includes a description that species obligately linked to sage brush habitats will also be affected by the project. These species will include black-tailed jackrabbit, pronghorns, and migratory bird species protected under the MBTA.

Response 13-17
If monitoring activities detect bird mortality associated with project facilities, the USFWS will be notified. Birds that are found alive will not be reported to the USFWS as it is expected that birds will be present in the project area as part of their normal foraging activities.

Response 13-18
It is not projected that mine activities would affect Dixie Creek and populations of LCT.

Response 13-19
All wildlife monitoring plans developed by Newmont and the BLM will be submitted to the USFWS for review.

Response 13-20
The Direct and Indirect Impacts section (page 3-88) does not predict impacts to fisheries in Dixie Creek from the Proposed Action; consequently, the Proposed Action would not act cumulatively with other factors in the watershed to affect Dixie Creek or the aquatic biota of the stream.

Text on Page 3-97 indicates that there are no Lahontan cutthroat known to be present in lower Dixie Creek; the population is 15 miles upstream from the project area; and there is no indication that the project would affect this fish. There is no reason to expect cumulative impacts to Dixie Creek and the text has been revised to reflect this determination.

References

Connelly J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967 - 985.

Edison Electric Institute and the Raptor Research Foundation. 1996. Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996. Washington, D.C.

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Our mission is to protect the health and well being of the land, air, water, wildlife, and human communities of the Great Basin from the adverse effects of resource extraction and use.

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LETTER 14

January 7, 2009

ATTN: Tom Schmidt
Emigrant Project EIS Coordinator
Bureau of Land Management
Elko District Office
3900 East Idaho Street
Elko, NV 89801

Re: **Draft Environmental Impact Statement - Emigrant Project, November 2008 (BLM/NV/EK/ES-GI-09/02+1793)**

Great Basin Resource Watch (GBRW) appreciates the opportunity to comment on the Emigrant Mine project.

General Considerations

GBRW is very concerned about the development of the Emigrant Project (to be referred to as the project). As we will discuss later, there are clear geochemical hurdles to managing this site without significant environmental degradation. The Rain Mine has similar geology, is within two miles of the project location, and continues to produce acid drainage.[1] Thus, there is president for problematic geology in the region of the project.

In general, the Draft Environmental Impact Statement (DEIS) does not detail the existing analysis of acid rock development sufficiently. As the widely available public document (print and online) there needs to be explanations of the various geochemical tests along with an uncertainty analysis of values cited in the DEIS. In particular, where the methodology is not generally known and not easily accessible through local libraries and/or online. For example, the "Biological Acid Production Potential Kinetic Testing" used is cited as - *2004a. Newmont Standard ARD Waste Rock Evaluation Method (July 30, revision). Newmont Metallurgical Services. Englewood, Colorado.* This is an internal document that is not easily accessible.

GBRW strongly recommends that the Final EIS and further National Environmental Policy Act (NEPA) documents contain a methods and procedures appendix to explain to the public the various experimental test

[1] This mine is in closure, mining last occurred at the Rain site in the late 1990's. The waste rock dump, just east of the pit, has been reclaimed with up to 5 feet of evaporative cover. However, as of 2007, approximately 40 gallons per minute of highly acidic water (pH 2-3) has been draining from the dump, which is down from the 600 gallons per minute in 2006. This acid drainage must be actively captured and managed; water this acidic from a mine site typically contains high levels of metals and dissolved salts making it toxic to humans and wildlife. (source: Private site tour with Newmont staff May 5, 2007)

methods used as part of the NEPA analysis. We also recommend an appendix which reviews uncertainty issues related to these analyses, so when "actual" uncertainties are cited in the numerical data the public has a better understanding of their significance.

Take for example the result cited in the DEIS regarding the mass percent of acid producing rock, "Potentially acid generating waste rock at Emigrant would total approximately 4 million tons (Mt) or 5 percent of total waste rock to be removed during mining." (pg. 3-24). What is the range of uncertainty with this value, i.e., what does "approximately" mean here? Given the current analysis could the percentage be as high as 10% or as low as 2%? Understanding how the project will need to be managed depends on this uncertainty. How would the management plan, procedures, be different if 10% turned out to be closer to reality? 14-1

Predictions of water quality due to mining and reality are often quite different,[2] so requiring a "precautionary principle" approach to evaluating the project. Because of the complexity of natural systems (on many levels) predicting the behaviour at most mine sites is very difficult especially for times well after the mine closes and the mining company is "gone." Ultimately the Bureau of Land Management (BLM) has the responsibility to act on the public interest in the use of our natural resources, and ensure a clean and vibrant environment into the future. It is therefore critical that a precautionary approach be evoked here, which requires predictions to be bracketed so that maximum (and minimum) impacts can be assessed.

Acid Generating Potential

Static testing

GBRW is skeptical about the utility of the NCV static acid generation prediction method used extensively in this analysis. This test was devised by and is used almost exclusively by Newmont. The NCV formulation contains certain assumptions that are not supportable without a detailed mineralogic analysis. This formulation assumes that one (mole of) sulfide forms one (mole of) sulfuric acid and consumes one (mole of) carbon dioxide.[3] It further assumes that the CO_2 content of a carbonate mineral is a good measure of its neutralizing ability. However, siderite (an iron carbonate) can dissolve and, depending on the pH, form ferric hydroxide. The precipitation of ferric hydroxide will cause a drop in pH, but this step is ignored in the NCV formulation. The formulation also ignores the neutralization produced by dissolution of feldspars. In a rock type such as the Webb Siltstone, which has essentially no neutralizing feldspars (see, Appendix D, Table 1 - no calcite feldspars or other types of base-producing minerals [aside from calcite and dolomite] were identified)[4], it is acceptable to ignore the neutralization produced by feldspars. However, there is iron present in pyrite, siderite, jarosite, and iron oxides (Appendix D, Table 1)[4], so acid could be formed by the precipitation of iron, and this source of acidity should not be ignored. In addition, full detailed

[2] Kuipers, J.R., Maest, A.S., MacHardy, K.A., and Lawson, G., "Comparison of Predicted and Actual Water Quality at Hardrock Mines: The reliability of predictions in Environmental Impact Statements," Kuipers & Associates and Buka Environmental, 2006.

[3] Buckham, C.H., 1997. Net carbonate value (NCV) for acid-base accounting. On Buckham's personal website-www .buckham.com/ncv.html

[4] ERM. 2006. Supplemental Geochemical Data for Environmental Impact Statement, Emigrant Project, Elko County, Nevada. December 7. Prepared for Newmont.

Response 14-1

The EIS adequately summarizes the geochemistry testing program and references the ERM 2006 Supplemental Geochemical data report. Newmont's detailed methods, including Net Carbonate Value (NCV) and Biological Acid Production Potential (BAPP) tests, are included in Appendix A of that report.

Use of the term "approximately" is intended to reflect rounding of numbers (i.e., actual estimate of potentially acid generating (PAG) waste rock that would be produced is 4.06 million tons (Mt) and this represents 4.9 percent of the total waste rock that would be produced which is approximately 83 Mt).

Newmont, in conjunction with NDEP and BLM, has developed an Adaptive Management Plan (AMP) for Waste Rock as a mitigation measure for the Emigrant Project. This mitigation measure (AMP) provides for supplemental testing of waste rock to address uncertainties associated with previous geochemistry studies. The AMP also provides for management actions should the amount of PAG waste rock differ from the current Plan of Operations (POO). The AMP is contained in Appendix A of this Final EIS.

mineralogy was not performed, so iron may also be present in other sulfides that were not identified. The formulation also assumes that the only minerals that produce acid are pyrite and arsenopyrite. This assumption ignores possible acid formation by pyrrhotite and by iron sulfates and other iron-containing sulfides that could be oxidized by ferric iron to produce acid.[5] **14-2**

The conversion from NCV to NNP per ton of rock also contains unsupportable assumptions about the type of carbonate present. The NNP value is used to calculate how much rock is needed to neutralize acid generating rock; therefore, the conversion is important for mine management. If the minerals that contribute to the neutralization potential have not been identified, it is impossible to know how to convert NCV in $\%CO_2$ to kg $CaCO_3$/tonne. If all the neutralization comes from calcite, the conversion from the NCV results in $\%CO_2$ to $CaCO_3$ is 0.44. (The formula weight for CO_2 is 44 and $CaCO_3$ (calcite) is 100; therefore, the percent of CO_2 in calcite is 44/100, or 44%). But if varying amounts of calcite, dolomite, and siderite exist in the samples (as is the case for the Emigrant Mine and most mines), a single conversion factor cannot be used. ERM (2006, Appendix D, Table 1) indicates that for some ore samples, the percent of calcite and dolomite are approximately equal (e.g., EM O42 OC HR), while for others no dolomite was identified (e.g., EM O41 OC B (SB) and EM O43 OC HR). Similarly, one waste rock sample has equal proportions of calcite and dolomite (EM W45OC HR), while one has 5% calcite and 6% dolomite (EM W46 OC HR) and another has 7% dolomite and no calcite (EM W47 OC B). **14-3**

The DEIS indicates that mineralogical analysis was done, and gives only qualitative results (pg. 3-11). There should be at table of summarized quantitative results of the mineralogical analysis that clearly identifies composition from the unique geological excavations. These results should then reflect the formula(s) used in the NCV method. There is no information in the DEIS on the specific formula used in arriving at $\%CO_2$ values, which depends on mineralotopic composition. **14-4**

Page 3-10 of the DEIS discusses the static tests and notes that the Net Neutralizing Potential (NNP) is taken as the difference between the Neutralizing Potential (NP) and the Acid Potential (AP): NNP= NP – AP. Although not explicitly explained it appears as though NP and AP values are determined using method of residual carbon and sulfur by Bucknam, which would then be used in the NCV determination as the sum of the NP and AP values. If so, then all of the inherent assumptions of the NCV method are contained in static test data presented in the DEIS (Tables 3-4 – 3.6). Thus, the static tests here hinge on the same set of assumptions. Alternatively, GBRW supports the use of a range of testing protocols each with specific merits and assumptions and then taken as a whole in the analysis. **14-5**

The DEIS needs to explain why the NCV method is being used here relative to other static testing methods, especially since it appears not to be supported by kinetic testing, see below. Furthermore, Newmont plans to use this test in the field to determine the potential for acid generation, "Every third blast hole is analyzed for NCV; if results show potential for acid generation, this rock volume would be encapsulated in rock that provides neutralization.

[5] Plumlee, G.S., 1999. The environmental geology of mineral deposits. Chapter 3 in: The Environmental Geochemistry of Mineral Deposits, G.S. Plumlee and M.J. Logsdon, eds., Rev. Econ. Geol. V 6A, Soc. Geol. Inc., Littleton, CO, 71-116.

Response 14-2

All static tests are subject to the concerns noted and an understanding of the mineralogy is important in order to interpret the distribution of NCV and/or Acid-Base Accounting (ABA) results for each specific lithology. Static testing simply provides a starting point for evaluating the variability within a specific lithology and whether the lithology has characteristics of "uncertain" acid generation potential. To determine whether a group of samples with similar NCV and/or ABA characteristics will generate acidity, the materials are subjected to kinetic testing (humidity cell testing). Specific mineral assemblages that limit use of static testing data as a stand-alone predictor of acid generation are indicated in both the NCV/ABA distributions and the kinetic testing results. Mineralogy is used to interpret humidity cell test results and whether there are overall limitations of how the NCV and/or ABA data are calculated and to determine the appropriate range that should be applied in an operational setting.

Mineralogy data are presented in the 2006 ERM data report. In addition to the NCV data, the EIS presents ABA data for the samples subjected to humidity cell testing. Mineralogical work and the other characterization tests suggest this is not a major factor. Static tests include sulfide sulfur present in all iron sulfides as well as other sulfide minerals, some of which do not contribute to acid generation. The tests assume all sulfide sulfur is present as pyrite, which can overestimate acid generation potential because some sulfides do not contribute to acidity, and other iron sulfides have less sulfur per mole than pyrite. "Static" tests, depending on whether they use total sulfur (S) or Sulfide S, can also miss Sulfate S which may be present as jarosite or other Fe Sulfate minerals, or overrate acid production if non-acid producing sulfate minerals such as barite ($BaSO_4$) are present. Static tests do not include a detailed evaluation of acid formed by the dissolution of iron minerals other than iron sulfides and sulfates, as noted above. If this were a potential concern, it would become apparent in kinetic tests results and more detailed mineralogical work would be required.

Response 14-3

With the exception of the Sobek-Siderite Correction method, all of the ABA methods dissolve or combust all carbonate minerals as part of the Neutralization Potential (NP) calculation and so would have the same difficulty reflecting the lower NP of dolomite. Consequently, ABA values, whether expressed as NCV values or tons $CaCO_3$/1000 tons are only one factor to consider in waste rock characterization. If the carbonate carbon is assumed to be calcite, then the NCV in percent CO_2 multiplied by 22.7 would result in an NCV value in tons $CaCO_3$/kiloton of waste rock (ABA units). ABA results can be compared to NCV results using this calculation and/or other mineralotopic compositions (with regards to variability present in both static test methods). Both NCV and ABA methods adequately identify samples with uncertain potential to generate acid. Humidity cell test results confirm the magnitude of NCV and/or ABA values required to adequately classify a material as non-acid generating.

Net Neutralization Potential (NNP) can theoretically be used to determine how much carbonate rock (typically as $CaCO_3$) is needed to neutralize acid generating rock, but that is not its proposed use here. To use the NNP value for this purpose, a much more comprehensive assessment of mineralogy and stoichiometry must be performed. NNP is mostly used as part of a waste characterization and handling program.

Response 14-4

The EIS summarizes mineralogy and detailed mineralogical analyses; this information is available in Appendices D and E of the ERM 2006 report. The ERM 2006 data report (Appendix A) details formulas used to calculate NCV, and the EIS also presents results of ABA testing data for humidity cell test samples. The NCV test determines carbonate carbon (percent carbon) as the difference between total sulfur and residual sulfur after roasting. The resultant percent carbon is multiplied by 3.67 (44÷12 = Molecular Weight carbon dioxide/Molecular Weight carbon), and the percent CO_2 calculation does not depend upon the mineralogical composition of the sample. Mineralogy becomes a factor if the percent CO_2 value is converted to tons $CaCO_3$/kton waste rock, both of which are typical units for ABA data (see Response 14-3 for explanation).

Response 14-5

NP and AP were determined using residual carbon and sulfur.

potential (Newmont 2007a)." (pg. 3-10). Clearly this test must be meaningful since it is to be applied on a regular basis as the mine develops and is critical to acid generation mitigation. Therefore, it is essential that the FEIS demonstrate that NCV results are statistically meaningful when compared to results from acid base accounting (ABA) or kinetic tests for the test could be used in mine management. **14-6**

The full value of the information presented in Table 3-4, pg. 3-15, is not well represented by arithmetic means. Each table entry, as GBRW understands it, is an average of non-duplicate tests results, so a small set of values at the extremes can shift the average resulting in a misrepresentation of the bulk of the data. GBRW recommends that the FEIS show entries with a more complete statistical breakdown of these components, including percentiles (e.g., 25th, 75th, and 95th percentiles, median values, etc.) by rock type (this also applies to the kinetic test data, etc.). In general, at the very least, the maximum, minimum, median and mean should be a given. Just providing this kind of information will aid considerably in understanding the uncertainties that surround Acid-Base Accounting (ABA), and thus applicable management practices. **14-7**

Kinetic testing

The number of and apparent duration of kinetic testing seems inadequate to fully characterize the extracted rock and ore. The DEIS states that, "Samples falling into the "uncertain" category from Acid-Base Accounting tests typically use kinetic testing methods to evaluate whether the samples or rock types would generate acid over an extended period of weathering," (pg. 3-11), which amounted to only 30 samples total. Of this 30, for example, there were 6 humidity cell and 11 biological acid production potential (BAPP) tests for Webb Siltstone waste rock, which is expected to be 67% of all the waste rock. This corresponds roughly to 1 humidity test for every 9,300,000 tons and 1 BAPP for every 5,000,000 tons of Webb Siltstone going to waste rock. Because so few kinetic tests were conducted, a good relationship cannot be developed between static and kinetic test results. This is clear from what little data is presented in Table 3-5, pg. 3-17. The Webb Siltstone consistently produced acidic results in the BAPP tests and to a lesser extent in the humidity cell tests; yet, none of the NCV tests indicated acid generation potential. This data seems to indicate that the NCV method is not good for the determination of PAG rock and runs counter to Newmont's plan to use it on an ongoing basis in the field. Of particular concern is the possibility that the NCV values underestimate the potential for acid generation at the Emigrant Mine. The FEIS needs to examine this discrepancy and determine why the BAPP tests are considerably more acid producing. What is the significance here? It appears to GBRW as though the BAPP test results are not being incorporated into the analysis. **14-8**

The DEIS states that Tetra Tech (2007) did conduct humidity cell tests for 20 week periods, which is well under the needed time to develop a sense of the long-term acid generating potential. GBRW recommends that the BLM require Newmont to conduct kinetic tests of 1-2 years in duration at least. It is more important to look at trends in pH and alkalinity over time and the proportion of the sulfide that has weathered to sulfate (and the type of sulfides present. There is some evidence of this need as stated on page 3-17, "The discrepancy Humidity Cell test, however, indicates a trend of increasing acidity near the end of the test (TetraTech 2007)." Thus, more time was needed to see where that trend was going. GBRW assumes that a 20 week time frame was used for the BAPP test, but there is no statement of this in the DEIS, and the FEIS needs to clarify this as well as explain this kind of test further. **14-9**

Response 14-6
Newmont has developed the NCV method for use during operations because it is efficient when large numbers of samples are required for operational testing. NCV is a standardized ASTM method and is capable of classifying PAG rock when compared with results of kinetic test data for the same rock. NCV data are supported by kinetic testing if the PAG cutoff is raised to 0.3 percent CO_2 (Tetra Tech 2007). As described in Response 14-1, an Adaptive Management Plan for Waste Rock (Appendix A of this FEIS) has been developed as a mitigation measure to provide supplemental testing of waste rock to address uncertainties associated with previous geochemistry studies.

Response 14-7
The arithmetic means are provided as an overall summary and are not intended to convey the acid potential of a specific lithology. Data needed to generate percentile ranges were not available in electronic format. The distribution of NP, AP, and NCV was considered in the design of the kinetic testing program, and these results are presented graphically in Appendix B, Figures B-1 and B-2 of this FEIS. Deposit-wide NCV distribution by lithology is also graphically shown in Appendix A of Tetra Tech (2007).

Response 14-8
No set guidelines exist for the number of kinetic tests per tons of rock. The kinetic testing focused on problematic units and resulted in a recommendation to change the NCV cutoff from 0.1 to 0.3 percent CO_2 (Tetra Tech 2007). The original proposed NCV cutoff of 0.1 percent CO_2 was problematic due to samples with values above this range for which one or more of the various confirmation tests were either uncertain or reflected possible acid production. No NCV test results above the 0.3 percent CO_2 level exhibited uncertain confirmation test results; all tests above this value (NCV 0.3 percent CO_2) reflected the non-acidic nature of the samples.

To clarify the long-term acid generating potential of oxidized Webb siltstone, an Adaptive Management Plan (AMP) has been developed as a mitigation measure to provide for supplemental waste rock characterization (see Response 14-1). The proposed AMP (Appendix A of Final EIS) uses NCV of 0.3 percent CO_q as the upper limit for identifying PAG waste rock, and the supplemental waste rock characterization study is focused on the uncertain NCV range of 0.0 to 0.3 percent.

Response 14-8 (continued)
Inert materials occasionally produce misleading BAPP results due to acidification of the sample to promote microbiological growth within the test procedure. The pH of the test solution is maintained between 2.5 and 2.8 until microbiological activity ceases. Once biological activity ceases, additional solids are added in accordance with the test protocols. If the sample being tested has minimal carbonate minerals, the pH will not rise above 3.5. This test result is considered a "false positive" if the peroxide acid generation test final pH is greater than 4.5.

NCV classification is based solely on the acid neutralization and acid generation potentials calculated from carbon-sulfur analyses. The classification is not directly related to pH, but to the acid-base balance of the sample using estimates of carbonate and sulfide phases.

Response 14-9
BAPP tests usually require 2 to 3 months to complete and the duration is dependent on when bacterial action ceases in the test material.

The "discrepancy humidity cell test" cited in Tetra Tech 2007 is from the Chainman siltstone lithology and this sample had an NCV = -0.54 percent CO_2. Newmont is proposing to manage all negative NCV waste rock as PAG; therefore, how this material behaves during the kinetic tests is not important because the analysis of the static and kinetic tests data classified this material as PAG. The behavior of this lithology during the humidity cell tests also can not be directly transferred to other lithologies. The uncertain lithology is the oxidized Webb Siltstone (67 percent of waste rock) and this is the lithology where the kinetic testing was focused. While most kinetic test samples exhibit pH values at the conclusion of the 20 week kinetic test period that approximately correspond to their NCV rating, the NCV classification as "basic, slightly basic, acidic, etc" is not meant to be predictive of their ultimate performance in a kinetic test. "Inert" samples 25, 26, 29 and 32 exhibited final pH values ranging from 6.42 - 6.76. Basic and slightly basic samples exhibited a pH range from 5.83 - 6.5. Also see Response 14-8.

PAG management

Given the above discussion GBRW does not have faith that the PAG encapsulation procedure discussed in the DEIS will be successful. Generally, the Webb Siltstone does not appear to have sufficient NNP to "encapsulate" PAG waste rock cells to prevent acid generation. In fact, results from static and kinetic testing indicate that the Webb Siltstone does not have enough NP to neutralize its own AGP. The static testing results show that, even though the sulfide percentages are low, there is essentially no carbonate in the Webb Siltstone. Therefore, as the rock weathers, there will not be enough neutralization potential to balance the acid generation potential in the Webb Siltstone. It is, therefore, unlikely that this rock will be able to provide neutralizing potential to itself and other, more acid-generating rocks at the site - such as the Chainman formation. **14-10**

Test results indicate that a large portion of the Webb Siltstone has a low NP and that under longer term kinetic testing, many of the Webb Siltstone samples would likely become acidic. Table 3-4 in Tetra Tech[6] shows that for waste rock, the entire range of NNP for the Webb Siltstone is in the uncertain range (between -20 and +20 ton/kton CaCO3), with values ranging from a low of -2.0 to a high of 16.3, and a mean of only 2.8 ton/kton $CaCO_3$. Static test results (ANP/AGP) for the Webb Siltstone waste rock show that 86 percent of the samples are either in the potentially acid generating or uncertain category. Similarly for Webb Siltstone ore samples, the entire range of NNP values is in the uncertain range, with a low of -2.3, a high of 16.4 and a mean of only 3.0 ton/kton $CaCO_3$. **14-11**

Hydrologic and Hydrogeologic Considerations[7]

General Hydrogeology

The proposed Emigrant Springs mine lies east of the crest of the Pinon Mountains and groundwater flows from west to east through the site. Mountains west of the site are low, therefore there is not substantial recharge above the mine and groundwater flux through the site is small. However, the DEIS calculated recharge to the watershed west of the proposed mine using the method of Maurer et al (1996) for determining recharge to a basin, an improper use of the method. The method is based on the classic Maxey-Eakin method which was derived with and has been intended to be used for estimates at the scale of a basin. It is not appropriate to use the method for small watersheds or portions of a basin as used here. The Maxey-Eakin recharge estimated for the Ten Mile Creek Area is 13,000 af/y.[8] **14-12**

One problem with using the method as used here is that the method does not consider geology. If the geology is not conducive for distributed recharge (mountain block recharge), the precipitation or snowmelt will runoff and recharge at the mountain-front, near the top of

[6] Tetra Tech. 2007. Final Evaluation of Geochemical Data for the Emigrant Mine Project EIS. May.
[7] This section, Hydrologic and Hydrogeologic Considerations, was extracted from: Myers, Tom, "Review of Hydrogeology and Water Resources for the Draft Environmental Impact Statement, Emigrant Springs Project," Prepared for Great Basin Resource Watch, January 7, 2009.
[8] NV State Engineer, 1972. Water for Nevada, 3, Nevada's Water Resources. NV Dept. of Conservation and Natural Resources, Division of Water Resources, Carson City, NV.

Response 14-10

The Webb siltstone is for the most part a chemically inert rock formation consisting of argillaceous siltstones and fine-grained sandstones. Closer to the mineralized zones, the Webb siltstone can be strongly oxidized; original pyrite mineralization having been oxidized to oxide and sulfate minerals. Both the Fresh Webb siltstone and the Chainman siltstone are characterized by similar mineralogy to the Webb siltstone, but the sulfide minerals are largely unaltered. These unoxidized units can be strongly acidic and are generally confined spatially to the southwest corner of the Project area below the 6200-ft elevation. A structural control element for the occurrence of the unaltered Webb and Chainman formations may be present which may help Newmont refine their waste management program. This will be assessed as mining proceeds in this zone. As an inert formation consisting of argillaceous siltstones and fine-grained sandstones, a standard "static" test would classify it as "uncertain" with respect to NNP because it has little CO_2 or S.

Static test data for the oxidized Webb siltstone place it into the "uncertain" acid generation potential category (based on NNP results). The low neutralizing potential of the oxidized Webb siltstone is not being relied upon to neutralize potential acidity for project waste rock (including acidity from the PAG Chainman and Fresh Webb siltstone).

The top, side slopes, and bottom of the PAG encapsulation cell would be covered with a minimum 10-ft thick layer of encapsulation material which is defined as NPAG waste rock with an ANP:AGP ratio of 3:1 or greater. The purpose of the encapsulation material is to intercept and drain meteoric water away from the compacted PAG waste rock. In addition, the encapsulation material is alkaline and, therefore, would neutralize fluids that may contact PAG waste rock. The overall design goal is to minimize contact of meteoric water with PAG waste rock and neutralize any acidity generated from PAG material within the encapsulation cell.

Response 14-10 (continued)

Newmont, in conjunction with BLM and NDEP, developed an Adaptive Management Plan (AMP) for Waste Rock as a mitigation measure for the Emigrant Project (Appendix A of Final EIS). The AMP provides for supplemental testing of waste rock that would be generated during the mine project to confirm previous geochemistry studies. The AMP depicts waste rock management actions that address the encapsulation of PAG waste rock that exceeds the amount included in the Proposed Action (4Mt). Management action descriptions include encapsulation of PAG waste rock totaling 14Mt. The volume of PAG identified in the AMP is based on waste rock within the NCV range of 0.0 to 0.3 percent CO2 which represents the range of uncertain rock as identified in previous geochemistry studies of Emigrant waste rock.

AMEC (2009) calculated tons of calcite that would be required to neutralize the acidity generated by PAG waste rock that would be mined at the proposed Emigrant Project for two scenarios: Scenario 1 -- 4Mt waste rock with NCV <0 or paste pH <6 material; and Scenario 2 -- 14Mt waste rock with NCV <0.3 or paste pH <6. The calculation assumes that 100 percent of the pyrite is oxidized. Average sulfide sulfur content of 0.13 percent and median sulfide sulfur content of 0.43 percent were used to estimate acidity of the two scenarios, and the tons of calcite required to neutralize the acidity. The resultant calculation indicates that the volume of calcite needed to neutralize acidity ranges from 11,000 to 145,000 tons. The amount of Devils Gate limestone that would be placed as encapsulation material for PAG waste rock cells at the Emigrant Project ranges from 1.4 to 4Mt to meet the 10-ft thick drainage layer requirement.

AMEC also determined that the maximum acidity that could be produced from the pyritic sulfur would be neutralized by the Devils Gate limestone bench material within 3 feet below the bottom of the PAG encapsulation cell (AMEC 2009). This calculation assumes that no buffering would be provided by encapsulation material placed on top of or on sides of the PAG cell. The estimate does not include acidity that could be generated from other minerals (i.e. jarosite) that could dissolve, but as indicated in the above discussion, substantial excess neutralizing potential is available within the Devils Gate limestone.

Response 14-11

Based on the mineralogy and characteristics of the oxidized Webb siltstone waste rock lithology described in Responses 14-9 and 14-10, it is likely that these samples will not become acidic under longer-term humidity cell testing. To address these concerns, Newmont, in conjunction with BLM and NDEP, developed an Adaptive Management Plan (AMP) for Waste Rock as a mitigation measure for the Emigrant Project (Appendix A of Final EIS). Also see Response 14-10 for more discussion about the AMP.

Response 14-12

Comment noted. The method of Maurer et al. (1996) was used in the EIS to estimate recharge and evapotranspiration; however, we acknowledge that there are other methods that can be used.

the alluvial fans; areas with carbonate outcrops may have no runoff because far more than the rate predicted with Maxey-Eakin recharges. At the basin scale these differences tend to be averaged; however, much uncertainty remains even at the basin scale.

The DEIS also used the same reference to estimate evapotranspiration through the mine site. It states the "total ET rate from this area is approximately 2 acre-ft/year" (DEIS, pg. 3-45). The units are for flux, not a rate; the DEIS should amend and explain this. A rate would be a depth of ET (evapotranspiration) at a point; the flux is rate multiplied by area which is a volume per time and can be expressed as a rate for the area. The total groundwater evapotranspiration (GW ET) estimate from NV State Engineer (1972) is about 4000 af/y, resulting in an estimate of groundwater outflow from the basin equal to 9000 af/y. **14-13**

The DEIS also stated that the estimated "volume of groundwater flowing through the total area . . . is 285 gal/min" (*Id.*), which is about 460 af/y. The DEIS should state that the groundwater flux or flow rate through the area is 285 gpm, not the volume because volume is not a flow rate. It is also not clear whether the watershed area for which the DEIS estimated 285 gpm is from the groundwater divide west of the mine to the alluvium east of the mine or if it is along Dixie Creek. **14-14**

Irregardless, estimated flux is the difference between estimated recharge and GW ET and is probably the correct order of magnitude for the area.

The DEIS reports that groundwater levels are also below the bottom of the pit (DEIS, pg. 3-51). However, there is no data supporting the statement that the "lowest point in the proposed mine pit would be approximately 450 feet above the project bedrock water table east of the Emigrant Fault" (*Id.*). The only borehole with data presented in the DEIS is REP-5 which, although dry, was at least 300 feet above the projected water level. **14-15**

The presence of drainages and perennial surface water flowing into the area of the pit do not support the idea that groundwater is hundreds of feet below the pit bottom. Perennial flow and storm runoff in channels monitored as EMI-D1-A and –B (DEIS, Figure 2-10) would recharge groundwater in the vicinity of the pit. They appear to discharge from canyons onto a wider canyon into which the pit will be constructed. That a cutoff trench will be needed to divert groundwater flow from the pit area along the engineered channel also indicates there is more groundwater in the area than otherwise expected. **14-16**

Surface Water

Stream channels draining from the west to the pit area will be diverted into engineered stream channel to divert it past the pit. The details of the design and related assumptions around the channel require more explanation. For example, a 5000-foot channel will be constructed into a pit bench, which slopes at about 4%, and then discharge to the natural channel downstream. The channel will be constructed into existing bedrock (Figure 2-6), presumably Devils Gate limestone (DEIS, pg. 2-7). For this to be correct, however, the Webb formation mudstone must be excavated. It is not possible to excavate down to the Devils Gate, maintain existing channel slopes (DEIS, pg. 2-8), and match the existing natural channel at each end. The EIS should explain this better. **14-17**

Response 14-13
See Response 14-12.

Response 14-14
Comment noted. The stated groundwater flux of 285 gal/min is from the groundwater divide west of the mine to the alluvium in the Emigrant project area.

Response 14-15
Groundwater elevation projections underneath the mine pit area are based on water table depths measured in wells EMW-2 and EMW-5. These wells are completed in bedrock near the proposed heap leach pad and the external waste rock disposal facility (WRDF). Both of these wells are located proximal to the proposed mine pit area and indicate depths to groundwater in excess of 450 feet below ground surface in the mine area.

Response 14-16
As indicated in the EIS, approximately 950 exploration borings have been completed in the proposed mine pit area (100-ft centers) and none of the borings encountered groundwater. Flowing streams can indicate perched systems on or within alluvium that overlies unsaturated bedrock.

Installation of a cut-off trench and wall is to ensure that the relatively small flux of alluvial system groundwater and surface water flow in the channel is not lost to bedrock that has been affected by mining. The design of the channel, including a liner, is to maximize the amount of surface water flow in the new channel to support fish movement and habitat rehabilitation.

Response 14-17
The pit bench that would be used for the new engineered stream channel would be located near the current trace of the stream channel. As indicated on Figures 3-1 and 3-3 in the EIS, the Webb siltstone thins near the existing stream channel. As the Phase I – III pit is developed, the Webb siltstone would be removed from this area exposing Devils Gate limestone throughout the reach of the new engineered channel. Although located somewhat north of the proposed engineered channel location, cross-section E-E' on Figure 3-3 of this Final EIS shows a portion of the existing stream channel and the pit configuration that would expose Devils Gate limestone.

Additionally, Newmont will construct a cutoff trench upstream from the engineered channel so there will not be alluvial groundwater flowing into the pit area; the trench will cause the groundwater to surface into a sediment basin and discharge to the channel. There must be a plan for managing the sediment basin, in perpetuity. Also, the DEIS should estimate this flow rate. As noted above, this flow is currently a groundwater discharge to the pit area. **14-18**

The engineered channel will have a geosynthetic liner presumably to prevent seepage. If the stream is crossing non-PAG Devils Gate formation, why is it necessary to prevent seepage? If the channels naturally lose significant flow, it would be appropriate to construct the channel to mimic natural hydrology as much as possible, including seepage. The DEIS should explain the reason for the liner. **14-19**

That said, no part of the channel should cross backfilled waste rock, especially if it is PAG, because it could increase seepage. The liner should not be relied upon, in perpetuity, to prevent water reaching PAG rock. The EIS should explain how the stream flow will not reach any backfilled waste rock. **14-20**

It appears that overland flow from the pit could reach the stream; this could include seepage from the backfilled waste rock that flows from the waste rock onto the pit bottom and becomes overland flow if it does not infiltrate. The DEIS is adamant that seepage into the bedrock will not occur rapidly (pg 3-53), therefore it follows that some seepage from the backfilled waste rock which does not infiltrate, may flow overland along the various pit terraces, including the one in which the engineered channel is constructed, during storm and snowmelt events. Therefore, Newmont should construct a diversion channel above the stream channel to prevent inflow to the stream; perhaps it should be infiltrated, but the BLM should analyze in the EIS the fate of this water. They should also extend the cutoff trench along the uphill side of the channel to prevent shallow groundwater flow, emanating from waste rock seepage, from reaching the channel. **14-21**

It is critical to monitor the flow in the engineered channel, both quantity and quality. The DEIS should require monitoring of inflow to and outflow from the channel, preferably with a recording gaging stating for time period. This would detect leaks. Water quality monitoring should also occur at both points initially monthly, followed by quarterly. **14-22**

There maybe a need for dewatering of some perched groundwater located at shallow depths in or near the pit (DEIS, pg. 3-51). The DEIS should identify the source of this water because it could be much more substantial that implied. Also, is there a discharge from these aquifers within the pit area; perched aquifers must have a discharge point, unless they are simply volumes of residual water. **14-23**

Groundwater Production Pumping

Groundwater production pumping for mining and milling, at rates up to 130,000,000 g/yr, is the largest potential groundwater quantity impact, but the DEIS (pg. 3-52) barely analyzes it. The statements that "[n]o adverse impacts are expected to surface water flow…" and "[g]roundwater withdrawals for the Rain Mine … have not measurably impacted flows in Dixie Creek" (Id.) do not pass for an analysis. Based on the amount of surface water gaging available on Dixie Creek, four synoptic flow measurements (DEIS, pg. 3-30), the BLM could

Response 14-18
See Response 14-16. Sediment buildup in the channel is encouraged to support establishment of riparian habitat. Seasonal stream flow (spring run-off events) will maintain the channel in terms of surface water flow and would redistribute sediment similar to a natural channel.

Response 14-19
See Response 14-16. Natural stream flow loss can occur downgradient from the engineered channel.

Response 14-20
The engineered channel, as depicted in Figure 2-7, would be constructed in limestone bedrock. As described in Response 14-18, the channel is designed to promote capture of natural sediment to enhance the habitat. Infilling of fines (sediment) in the channel would eventually replace the liner system and would continue to functionally seal the channel against loss of water to the limestone bedrock.

Response 14-21
A run-off control diversion channel and sediment pond system has been included in the design of the engineered channel (see Figure 2-7 and related description in EIS). The large sediment catch basins would prevent run-off from the pit highwall areas into the new channel. Sediment caught in these basins would be periodically removed and returned to reclamation areas to maintain the capacity of the catch basins.

Response 14-22
Final channel design review by BLM and NDEP may include monitoring requirements including water quality and quantity.

Response 14-23
No "discharge point" has been identified for perched water zones within the mine pit area. The perched groundwater zones were identified during core drilling and are associated with shallow alluvial material overlying bedrock (alluvium less than 15 feet thick). Recharge to these shallow alluvial packages appears to be local and seasonal.

not make a determination as to the effects on streamflow. The DEIS does not even compare how the proposed pumping rates compare with those used for the Rain Mine. **14-24**

It would be necessary to have a minimum of two continuous gaging stations, above and below the pumps and operating prior to the commencement of pumping to adequately monitor the effects. Alternatively, a series of synoptic streamflow measurements could be made, replicated at different seasons and during different years, so that loss and gain could be determined along the stream. Based on this information, the effect of pumping these wells could be made.

It is not possible to pump groundwater from the alluvial system along Dixie Creek without eventually affecting streamflow. Simple conservation of flow indicates that impacts must occur; any new discharge point will take flow from somewhere else or induce inflow to the system, which could mean increasing stream recharge. Every year the production well lowers the water table, as noted in the DEIS (page 3-52), water draws from somewhere. The DEIS is correct in that the levels recover seasonally; this is due to movement in storage or induced recharge. It is that change in storage or induced recharge that will cause impacts to eventually manifest. The DEIS has failed to consider these issues. **14-25**

The system is relatively simple however and the amount of water pumped is relatively small compared to the perennial yield of the basin. That only means, however, that water may be available in the basin, as defined by Nevada water law; it does not account for local impacts or protect local resources. Developing perennial yield means, by definition, that the natural discharge from the basin will be diverted to beneficial use.

The DEIS should consider the impacts; it would be acceptable to use a standard Theis analysis to calculate the long-term drawdown caused by the production wells and affecting the streamflow. BLM must account for the fact that even a small drawdown affects streamflow. It is also irrelevant that the drawdown may be less than seasonal changes; the drawdown is imposed on top of those seasonal changes. If the stream loses flow during dry periods, the pumping will cause it to lose more. **14-26**

Groundwater Quality

The primary threat to groundwater quality is seepage through the PAG waste rock to the groundwater. The DEIS acknowledges that seepage through the waste rock to the unsaturated zone would exceed standards for manganese, nickel, sulfate, and TDS (DEIS, pg. 3-54); the DEIS should provide a table showing the entire profile 1 water quality for the tests used to determine the quality of seepage through the PAG cells. In other words, they predict the project will discharge to the ground waste rock seepage water that exceeds standards at rates up to 1.47 m/yr for a 2 foot growth media cover. **14-27**

Seepage through the waste rock could move contaminants to the groundwater or to the ground surface across which it may flow to the toe of the dumps and discharge to the environment. The potential for seepage reaching the engineered channel was discussed above. The DEIS provides predicted seepage rates for flow through the waste rock containing PAG as determined using the unsaturated flow model HYDRUS-1D and HYDRUS-2D. Very little data concerning the modeling was provided in the DEIS and the reference was not reviewed at this time. One outstanding difference between the 1D and 2D predictions was that the 2D model predicted seepage rates that were only about 1/5th the rates determined with the 1D

Response 14-24
The Draft and Final EISs include a description of the history of Rain Mine pumping rates for its production wells in the Dixie Creek valley from 1988 to 2004, as well as other information about the hydrogeologic setting of these production wells (see "Dixie Creek Area" under "Groundwater Quantity" of the Affected Environment section and the Direct and Indirect Impacts section). Empirical data available from the Rain Mine pumping period since 1988 with respect to effects on stream flow and groundwater levels is considered reliable information to base predictions on potential impacts from continued similar pumping for the Emigrant project.

Response 14-25
Comment noted. Groundwater connectivity to surface water will occur at some point in the overall hydrogeologic system. Pumping groundwater from the existing production wells would result in a volume of water that would not be available for beneficial uses or, at some point within the hydrogeologic system, support surface water flow. These are factors that the State Engineer considers in issuing a water right for groundwater pumping. Once mining ceases and reclamation is completed, the pumping of groundwater to support mining would cease and groundwater conditions would eventually return to pre-mining levels.

As stated in the EIS, no evidence has been observed to suggest that groundwater withdrawal from the existing production wells used for the Rain Mine has adversely affected groundwater levels and surface water flow in Dixie Creek and/or the Humboldt River basin. Also see Response 14-24.

Response 14-26
See Responses 14-24 and 14-25. Empirical information from the period of production wells is deemed more reliable than predictions using the Theis analysis.

Response 14-27
See revised description in Chapter 2 – *Proposed Action* regarding the design and construction of encapsulation cells for disposal of PAG waste rock. Specifically, the design provides for construction of a drainage layer composed of Encapsulation Material to encapsulate compacted PAG waste rock. The primary function of the drainage layer is to intercept and direct infiltrating meteoric water around and away from the PAG waste rock. This redirected meteoric water would not contact PAG waste rock and, therefore, would not be contaminated. Based on this design, BLM anticipates that the bulk of meteoric water that infiltrates through the growth media would not contact PAG waste rock.

model. The explanation, that "[i]n the Hydrus-2D model, the thick growth media cap maintains moisture loser to the surface over a greater surface area, and thus results in great actual evaporation and less seepage ... to underlying limestone" (DEIS, page 3-53) does not make sense. The primary difference is the 2-d model can consider runoff along the 1 and 5% slopes; the growth media should not hold more water if both models use the same soil properties. If runoff accounts for the difference, the model should also account for run-on, which is runoff from uphill reaching a downhill section. If there is availability for additional storage of infiltration, the run-on should increase the seepage. In other words, there would be differential seepage around the area of the backfill cover; the DEIS does not mention this areal variability. The DEIS should improve this explanation. If the modeling did not include run-on, it should have been; this should be added to the final EIS.

14-28

The DEIS inappropriately relies on attenuation in the underlying bedrock (Devils Gate limestone) to prevent the movement of contaminants to the groundwater. First, as discussed above, the 450-feet of unsaturated bedrock between the pit bottom and groundwater has not been adequately proven. Second, the conditions for seepage through intact bedrock do not resemble the meteoric water mobility procedure used to collect data for the modeling. Mixing is much better in the MWMP. Flow through bedrock, including the Devils Gate formation, likely depends on fractures. The proportion of the Devils Gate that is neutralizing is 25% (DEIS, page 3-54), described incorrectly by the DEIS as "abundant" (*Id.*). The DEIS does not discuss whether the calcite or dolomite, which would neutralize any acid, would coincide with the fractures. The DEIS is deficient for not discussing this and for assuming that the resultant chemistry after seeping to the groundwater would be similar to that of a fully mixed system.

14-29

Binding

Kuipers et al. show that mitigation failures have resulted from blending of PAG and non-PAG rock at the Greens Creek Mine in Alaska, the McLaughlin Mine in California, the Thompson Creek Mine in Idaho (segregation of PAG rock), and the Jerritt Canyon Mine in Nevada.[8] The exact causes of the failures were not identified, but more site-specific testing of mitigation approaches should be conducted before they are employed. For the Emigrant Mine, NCV is not the proper management tool to use to identify PAG and non-PAG, and percent sulfur values are also not conclusive for identifying PAG rock or rock with the potential to leach contaminant concentrations above water quality standards. Additional work is needed to determine effective management measures to separate these materials from environmentally benign mined materials. Until that time, if the project goes forward, all carbon sulfide refractory (CSR) and all Webb Siltstone should be handled as PAG rock. Devils Gate oxide carbonate material does not need to be handled as PAG rock. Webb Siltstone should not be used to encapsulate CSR rock or other rock that is more clearly PAG.

14-30

Mercury Concerns

Mercury emission impacts from this project are effectively not addressed in the DEIS since the final processing (carbon stripping, etc.) will be done at Newmont's South Operations Area processing facility. The DEIS states on page 3-30, "Mercury concentrations in ore from the Emigrant Project are approximately 4 parts per million (ppm). This concentration is less than average mercury concentrations in other sources of ore being processed at the South

Response 14-28
Comment noted. Text has been revised in the Final EIS to address run-on control to PAG waste rock areas.

Response 14-29
Comment noted. Text has been revised in the Final EIS to further discuss the neutralization and attenuation of seepage into underlying bedrock (i.e. Devils Gate limestone).

Response 14-30
BLM has determined that supplemental waste rock characterization would be conducted as a mitigation measure to confirm previous geochemistry work for the Emigrant Project (see Appendix A of Final EIS). See Responses 14-3, 14-4, and 14-5.

Operations Area facility (e.g., Leeville Project ore = 17.54 ppm mercury; and South Operations Area Gold Quarry = 6.90 ppm mercury)," implying that there will be no addition impact from emigrant ore processing. The FEIS should give more data on the mercury content of the Emigrant ore. As with other data presented in the DEIS more statistical information should given; again what is the range and median value of mercury content to be expected. However, ultimately, if more processing is done, even if over time (i.e. total amount), at the South Operations Area due to Emigrant ore then there is a cumulative ecosystem impact. Mercury can bioaccumulate in the environment, and end up concentrating in fish which is a human food source. The State of Nevada mercury control program is designed on a maximum achievable control technology basis, so a "standard" emission rate will not be imposed under current law. The total amount of mercury emitted over the long term is not controlled[3] and the FEIS should contain an analysis of the potential added cumulative impacts of mercury due increased total processing.

14-31

Conclusion

Great Basin Resource Watch sees the DEIS to be incomplete in representation of data, explanation of methods, and evaluation of uncertainties. As a result, a thorough public review of this DEIS is not possible. There is not sufficient clarity regarding the potential for acid generation at the Emigrant site and hence potential for ground and surface water degradation for this project to go forward. Therefore, the PAG rock management plan, closure and reclamation plan, and bonding issues cannot be fully addressed.

At this time Great Basin Resource Watch cannot support the preferred action.

Sincerely,

John Hadder
Staff Scientist

cc:
Roger Flynn, Western Mining Action Project

[3] This not to say that the State of Nevada Mercury Program will not decrease the overall emissions and accumulation in the environment. GBRW has every expectation that the program will decrease mercury in the environment.

Response 14-31
Text has been revised in the Final EIS addressing the mercury emissions that could result from carbon stripping and regeneration associated with Emigrant ore.

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

LETTER 15

OFFICE OF THE
REGIONAL ADMINISTRATOR

March 23, 2009

Ron Wenker, State Director
Bureau of Land Management
1340 Financial Blvd.
Reno, NV 89520

Subject: Emigrant Project Revised Draft Environmental Impact Statement (EIS), Elko County, Nevada [CEQ # 20080468]

Dear Mr. Wenker:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided consistent with the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. We appreciate the extensions BLM has granted us on the comment due date for this Revised Draft EIS.

We have rated this Revised Draft EIS as "**3 - Inadequate Information**" (see Enclosure 1; "Summary of Rating Definitions and Follow-Up Action"). The proposed Emigrant gold mine would disturb 1,418 acres of land and involve: (1) the excavation of a 615-acre open pit, (2) heap leaching of 92 million tons of ore with cyanide, and (3) the disposal of 83 million tons of waste rock over a 14-year mine life. EPA does not believe that the Revised Draft EIS adequately assesses the potentially significant environmental impacts of the action, particularly to surface water and groundwater. In particular, we believe that (1) the proposed waste rock handling methods are inadequate to prevent groundwater or surface water contamination, and the proposed project would likely result in unmitigated exceedences of the water quality standards on a long-term basis; (2) the Revised Draft EIS does not support the Bureau of Land Management's (BLM) conclusions that mine operations will not contaminate groundwater and surface water; (3) leachate control, capture, and/or treatment measures will be needed to effectively prevent groundwater and surface water contamination from the mine; and (4) a sufficient financial assurance mechanism needs to be in place to ensure that the necessary funds are available as long as they may be needed for this purpose. 15-1

EPA does not believe that the Revised Draft EIS is adequate at this stage. EPA believes that because of the deficiencies in the Revised Draft EIS, additional alternatives and measures should be evaluated and made available for public comment in a revised or supplemental Draft EIS. On the basis of the potential significant impacts involved, this

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Response 15-1
The proposed waste rock handling methods are reasonable and adequate for minimizing potential impacts to surface water and groundwater from waste rock. The encapsulation of potentially acid generating (PAG) material within pit backfill is a best management practice that is not unique to this project.

The Proposed Action section of Chapter 2 has been revised to provide a more detailed description of the construction of PAG waste rock encapsulation cells. As described in Chapter 2, the top, side slopes, and bottom of the PAG encapsulation cell would be covered with a minimum 10 ft-thick layer of encapsulation material which is defined as NPAG waste rock with an ANP:AGP ratio of 3:1 or greater. The purpose of the encapsulation material is to intercept and drain meteoric water away from the compacted PAG waste rock. In addition, the encapsulation material is alkaline and, therefore, would neutralize fluids that may contact PAG waste rock. The overall design goal is to minimize contact of meteoric water with PAG waste rock and neutralize any acidity generated from PAG material within the encapsulation cell.

The entire waste rock handling plan is focused on mitigating potential impacts to surface water and groundwater; therefore, long-term unmitigated exceedances of water quality standards are not expected. Supplemental waste characterization testing that would be required as a mitigation measure under the Adaptive Management Plan (Appendix A of Final EIS) will provide clarification on the long-term net acid generating potential of the oxidized Webb siltstone.

See Response 14-10.

project could be a candidate for referral to the President's Council on Environmental Quality (CEQ) in accordance with 40 CFR Part 1504.

We are including in our comments alternatives and engineering controls that are not analyzed in the Revised Draft EIS, but are available and have been implemented at other mines throughout the western U.S. These alternatives and control measures, such as facility relocation, covers, liners, and capture and treatment systems, should be analyzed in the revised or supplemental Draft EIS in order to reduce the potentially significant environmental impacts. We recommend the development of additional alternatives and measures be accompanied by a process that uses state-of-the-art means to determine their effectiveness in addressing various contaminant leaching issues. 15-2

Financial assurance is not discussed in the Revised Draft EIS. Long-term post-closure care may be necessary to protect water quality, and meaningful assurances are needed that a financial instrument will exist to ensure adequate funds are available as long as they may be needed for this purpose. The need for, and cost of, reclamation and closure activities and post-closure controls and/or treatment should be addressed in the revised or supplemental Draft EIS. Because the amount and viability of financial assurance are critical factors in determining the effectiveness of these activities, EPA believes it is necessary to analyze these factors in the EIS to determine the significance of the impacts and inform a decision about whether the project is cost-effective. EPA believes this information is essential for an adequate analysis of the proposed project because it could make the difference between a project sufficiently managed over the long-term by the site operator versus an unfunded/under-funded contaminated site that becomes a liability for the Federal government, e.g., under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). 15-3

We also continue to have many of the same concerns we expressed to BLM on the 2005 Draft EIS. These issues include heap leach closure, Clean Water Act permitting and best management practices, water quality, groundwater characteristics, avoiding waters of the U.S., air quality and hazardous air pollutant emissions, and closure and reclamation. The revised or supplemental Draft EIS should also provide information regarding these issues. Our detailed comments on this Revised Draft EIS are enclosed (Enclosure 2).

We appreciate the opportunity to review this Revised Draft EIS and look forward to working with BLM as this project continues. We will call to arrange a meeting with the Elko Field Office to discuss plans for completing the NEPA process. In the meantime, if you have any questions, please call me at (415) 947-4238 or have your staff contact Jeanne Geselbracht, our lead NEPA reviewer for this project, at (415) 972-3853. Please send two copies of the revised or supplemental EIS to this office (mailcode CED-2) at the same time it is filed with our Washington, D.C. office.

Response 15-2

BLM and NDEP have evaluated alternative facility locations, cover and capping systems, and solution capture systems as part of the review conducted under 43 CFR 3809 regulations and State of Nevada requirements associated with Water Pollution Control Permit regulations and as a component of NEPA review of the original Emigrant POO and subsequent POO revisions. The evolution of the mine and closure plan described in the Emigrant Project Draft EIS (BLM 2008) from the original POO submitted in 2004 has resulted in a waste rock management plan and site-wide closure plan that is predicted to have no adverse effects on the environment. Modifications in the mine design (i.e., engineered channel; PAG encapsulation methods; waste rock management) have been made to the current version of the Emigrant Project POO as compared to the original POO (2004) and as such, issues and concerns raised during review of initial mine and reclamation plans have been addressed.

Specifically, the PAG waste rock encapsulation cell construction description has been revised to provide more detail on drainage layers around compacted PAG materials to intercept and drain meteoric water away from PAG waste rock before contact. The interception of meteoric water and directing drainage away from PAG waste rock would result in most infiltrating water remaining as non-contact storm water.

The existing surface water and groundwater monitoring program that has been used to characterize current water resources would be augmented with an additional monitoring program. This additional program would be developed in conjunction with NDEP and BLM.

BLM has not identified alternative locations for any of the proposed mine facilities that would have an environmental advantage over the Proposed Action. Any alternative location for project components would result in expanding the footprint of disturbance associated with the project with no identifiable reduction in potential effects.

Response 15-3

Reclamation bonding levels will be determined prior to issuance of the authorization from both BLM and NDEP. To the extent that bonding levels incorporate the need for future treatment or other measures to ensure post-closure reclamation goals are met, the level of bonding required will address such aspects.

Sincerely,

Laura Yoshii
Acting Regional Administrator

004374

Enclosures:
(1) "Summary of Rating Definitions and Follow-Up Action"
(2) EPA's detailed comments on the Emigrant Mine Revised Draft EIS
(3) October 17, 2007 letter from EPA to BLM
(4) January 22, 2009 letter from EPA to BLM

cc: Ken Miller, BLM – Elko District Office
Leo Drozdoff, Nevada Division of Environmental Protection
Jim Harvey, U.S. Fish and Wildlife Service
Christine Hanson, U.S. Army Corps of Engineers

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's 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 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 must 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 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."

Emigrant Mine Revised Draft EIS
EPA Detailed Comments – March, 2009

I. General Comments and Background

We have provided comments to BLM over the last several years to improve the information used to support the proposed project. A high degree of uncertainty remains regarding acid generation potential at the proposed mine site. A better understanding of the geochemistry of the ore rock and waste rock is critical to predicting the proposed project's potential environmental impacts and determining appropriate alternatives and/or measures to avoid those impacts. 15-4

Mine drainage has contaminated surface water and groundwater at numerous mine sites around the country. EPA believes the proposed waste rock handling methods in the Revised Draft EIS are likely inadequate to prevent groundwater or surface water contamination. In accordance with 40 CFR 1502.14, EPA believes BLM should develop and analyze, in a revised or supplemental Draft EIS, additional alternatives and/or mitigation measures to effectively prevent groundwater and surface water contamination from the mine. 15-5 These measures should include leachate control, capture, and/or treatment technologies. The need for, and cost, of reclamation and closure activities and post-closure controls and/or treatment should also be addressed in the document, as well as the need for meaningful assurances that a financial instrument will exist to ensure funds are available as long as they may be needed to prevent degradation of water quality. 15-6

II. Geochemistry

A. Uncertainties Regarding Mine Geochemistry.

It is unlikely that waste rock at the Emigrant Mine will be able to provide neutralizing potential to itself and other, more acid-generating rocks at the site, such as the Chainman Formation. The Webb Siltstone comprises 67% of waste rock and 76% of the ore that would be excavated for the proposed Emigrant Mine project. A large number of static tests were conducted on the ore and waste rock at the site.[1] The static testing results showed that 86 percent of the samples are either in the potentially acid generating or uncertain category. In addition, even though the sulfide percentages are relatively low, there is essentially no carbonate in the Webb Siltstone. Short-term 20-week kinetic test results show that samples with sulfur values well below 1.0 percent can produce acid and elevated metal concentrations. Even during the 20-week period, leachate from a number of the Webb Siltstone samples became more acidic as the tests progressed. Most "final" pH values were outside the water quality standard range for pH. 15-7

Because the kinetic tests were stopped prematurely, the results of those tests are inadequate to determine whether or not the Webb Siltstone will become acid-

[1]Newmont, 2005: *Spreadsheet reporting LECO data for waste and ore samples within current Emigrant Plan of Operations pit design.*

Response 15-4
See Response 15-1. The engineered design of the PAG encapsulation cells is to maximize the interception and drainage of meteoric water away from compacted PAG waste rock; minimizing and reducing the potential contact of water with PAG waste rock. Because meteoric water would be directed away from PAG waste rock, the need for a system to capture and/or treat meteoric water has not been identified.

Run-on storm water would be diverted around mine disturbance areas and would be returned to drainages as non-contact water. Run-off storm water would be captured and contained on site during and after operations to ensure sediment does not leave the site.

Response 15-5
See Response 15-3.

Response 15-6
Static test data for the oxidized Webb siltstone place it into the "uncertain" acid generation potential category (based on net neutralization potential (NNP) results). The low neutralizing potential of the oxidized Webb siltstone is not being relied upon to neutralize potential acidity for project waste rock (including acidity from the PAG Chainman and Fresh Webb siltstone). Devils Gate limestone, which would be used to neutralize any acidity generated from project waste rock. As described in Response 15-1, Devils Gate limestone provides excess neutralizing capacity to address potential acidity associated with Webb siltstone and Chainman Formation rocks.

The portion of oxidized Webb siltstone that showed a net release of acidity in humidity cell tests conducted under the AMP for material with an NCV ranging from 0.0 to 0.3 percent CO_2 would be placed with the PAG Chainman and Fresh Webb siltstone within the PAG encapsulation cell. As described above, the Emigrant POO calls for the top and side slopes of the PAG encapsulation cell to be covered with a minimum 10 ft thick layer of Encapsulation Material which would result in limiting the amount of meteoric water that could infiltrate into the compacted PAG waste rock and provide a buffering capacity that will neutralize acidic water that may come into contact with the Encapsulation Material. The base of the encapsulation cell is constructed on top of underlying Devils Gate limestone benches within the backfilled pit. This overall design (Encapsulation Material combined with underlying Devils Gate limestone) is expected to neutralize any acid leachate generated from the encapsulated PAG cell.

Response 15-6 (continued)

The oxidized Webb siltstone is classified as "inert" according to NCV criteria and overall, based on the data summarized below, contains more residual carbonates than sulfides and is not expected to contribute net acidity. The production of acidity in some of the humidity cells containing oxidized Webb siltstone was noted and investigated (NCV + paste pH testing of 1,272 samples); which lead to the incorporation of the paste pH test to the operational testing program to segregate this type of material in the field. A review of the NCV calculation spreadsheet for this study shows that for 1,271 samples tested, 51 percent had NCV >0.4 %CO_2 (99.7 percent of these samples had %Carbonate Carbon (%CC) values greater than %sulfide sulfur (%SS) values) and 40 percent had NCV > 1 %CO_2.

Approximately 35 percent of the samples had NCV values greater than or equal to 0 %CO_2 and <0.4 %CO_2. For this group of samples, approximately 64 percent had %CC > %SS; 22 percent had both %CC and %SS values = 0.00; and 15 percent had %SS>%CC. It is acknowledged that small concentrations of iron carbonates are present within the ore and waste rock, and that overall carbonate composition contains dolomite which can decrease the overall neutralizing potential of the total (%CC). However, based on this LECO furnace data, there is more carbonate in the oxidized Webb siltstone than sulfide which supports the net alkalinity observed in most of the humidy cell tests. As indicated previously, these materials would be subjected to supplemental testing under the Adaptive Management Plan to confirm these results.

The water quality standard range for pH (comparison of the final pH to pH 6.5) is not applicable to the evaluation of the acid generation potential of humidity cell leachate. For certain siliceous materials, like the Webb siltstone, it is unlikely that the ultimate final pH would ever exceed 6.0, due to the application of deionized water with an approximate pH of 5.8 that subsequently equilibrates with silica. Tables 3-5 and 3-6 of the Draft EIS used a pH criterion of 5 (found in literature) to evaluate the acid rock drainage (ARD) potential of humidity cell leachate. EPA (2003) states "not significantly acid generating (or generated acid is overwhelmed by excess alkalinity) if solution pH exceeds 5 (BC AMD Task Force 1989; Humphries 1990)".

Response 15-7

The Tetra Tech (2007) report concluded that anomalous results from the earlier geochemical work were likely due to presence of soluble sulfates (i.e. jarosite and other similar acid–forming salts/minerals) in the samples. These acid salts can be common in weathered portions of sulfide deposits and constitute immediately available acid. The Acid Concentration Present Low Range (ACPL) is a test Tetra Tech recommended for use in determining presence of these minerals.

As indicated in Response 15-6, the encapsulation of PAG waste rock does not rely on the properties of Webb Siltstone to encapsulate or neutralize acidic water that may form in PAG cells.

The kinetic testing focused on problematic units and resulted in a recommendation to change the NCV cutoff from 0.1 to 0.3 percent CO_2. The original proposed NCV cutoff of 0.1 percent CO_2 was problematic due to samples with values above that range for which one or more of the various confirmation tests were either uncertain or reflected possible acid production. There were no NCV test results above the 0.3 percent CO_2 level for which any of the confirmation tests were uncertain, all reflecting the non-acidic nature of the samples. The AMP (Appendix A of Final EIS) uses NCV of 0.3 percent CO_2 as the upper limit for identifying PAG waste rock and the supplemental waste rock characterization as a mitigation measure is focused on the uncertain NCV range of 0.0 to 0.3 percent. Also see Response 14-8.

To clarify the long-term acid generating potential of oxidized Webb siltstone, an Adaptive Management Plan has been developed as a mitigation measure to provide supplemental waste rock characterization. See Appendix A of Final EIS.

generating over time as a result of mining activities (see our October 17, 2007 letter to BLM - Enclosure 3). First, static and kinetic test results indicate that most of the Webb Siltstone, which would comprise two-thirds of the waste rock at this mine, will provide poor neutralization potential and is unlikely to adequately neutralize the acid generated by waste rock from this formation. Second, the kinetic testing was conducted for too short a time and on too few samples to support BLM's conclusion that only a small percentage of the waste rock should be handled as potentially acid generating (PAG). BLM has required several Nevada mines to conduct kinetic tests far longer than 20 weeks to more reliably predict how mine rock will react over the long term. For example, the Mount Hope, Round Mountain, and Phoenix mines have all run kinetic tests for longer than one year. Not only has the Webb Siltstone not been demonstrated to have sufficient net neutralizing potential, it also appears, based on the static and kinetic test results, to comprise much more PAG rock than the text of the Revised Draft EIS indicates. We believe the criteria proposed by Newmont Mining Corporation (Newmont) and BLM to distinguish PAG rock from non-PAG rock are not supported by the test results and that, without an effective management tool to distinguish PAG from non-PAG rock in the field, it is likely that PAG rock may be incorrectly identified as non-PAG rock.

15-7 (contd)

EPA believes the follow-up paste pH tests and PHREEQC modeling conducted more recently by Newmont do not lend additional support to BLM's conclusions drawn from the kinetic test results (see our January 22, 2009 letter to BLM - Enclosure 4). The very short-term paste pH and the net carbonate value (NCV) results may dramatically underpredict the longer-term acid generation potential of the samples. In addition, we believe the inputs used in the PHREEQC modeling led to an underestimation of contaminant concentrations in waste rock leachate. We continue to believe the testing results are inadequate to determine if the Webb Siltstone will become acid-generating over time as a result of mining activities.

15-8

EPA believes that, before the project moves forward, a more effective management tool must be found to separate potentially acid generating (PAG) and metal-leaching rock from environmentally benign rock to ensure that the mine is properly managed over the long-term by the site operator. We have previously outlined two options for BLM's consideration: (1) longer kinetic tests should be conducted on more samples to support the characterization of the waste rock and ensure proper disposal; or (2) in the absence of further testing to improve the geochemical characterization of the waste rock, all Webb Siltstone should be considered and handled as PAG rock in the mining process, and financial assurance should be adequate to ensure proper reclamation, closure, and post-closure care.

15-9

Recommendation: We continue to recommend that, consistent with BLM practice at other Nevada mines, longer kinetic tests (up to one year or longer) be conducted on more samples (approximately 30 Webb Siltstone samples) to more reliably characterize the waste rock. This would help in the development of appropriate waste rock management measures to ensure proper disposal. The revised or supplemental Draft EIS should describe, in detail, the geochemistry of the Webb Siltstone within the pit, as well as a discussion of the availability of net

Response 15-8

Response 15-8: As noted above, anomalous results from earlier geochemical work were most likely due to the presence of soluble sulfates (i.e. jarosite and other similar acid–forming salts/minerals) in the samples (Tetra Tech 2007). The presence of acid salts in the weathered (oxidized) zones of sulfide mineral deposits is a common problem that is addressed using paste pH or similar field tests. These tests have been used world-wide as an integral part of waste characterization programs at hard rock and abandoned mine sites. (Miller & Hertel 1997; Price, & Kwong, 1997; Shaw 2000; Shaw et al. 2002; Shaw et al. 2003; Shaw et al. 2006; Weber et al. 2006; Williams et al. 2009). Also, the following is an excerpt from an EPA Region 8 letter (August 6, 2001) on the use of paste pH at the Zortman-Landusky mine site in Montana:

*"The mine feature-by-feature acid rock drainage potential obtained by the **field pH paste (bold added)** and TSS tests were extremely valuable in identifying the portions of each waste rock pile, each part of the pit, and each portion of every leach pad and dike that contribute to metal contaminant loads. That work effort by the State's consultant will help establish improved criteria for hard rock mine reclamation procedures at other similar sites."*

The comparison to using paste pH testing at coal sites is inappropriate as the paste pH test was not being properly applied at those sites (Keith Brady, Personal Communication, 2009).

The paste pH test is designed for a weathered (oxidized) material and the predictive value of the test is limited when it is applied to an unweathered rock that contains sulfide minerals. If the paste pH test was the sole criterion being applied to Emigrant waste rock, then the concern regarding this test would be valid. For operational monitoring, paste pH will be used in conjunction with NCV (LECO furnace) tests. For the three rock types found at Emigrant, test results show that the NCV is adequate for characterizing material that has sufficient neutralizing potential (Devils Gate limestone) to be classified as NPAG and the Fresh (unweathered) Webb siltstone which contains sulfur refractory minerals to be classified as PAG based solely on the negative NCV values for this lithology. The paste pH test is being applied to the remaining waste rock that is comprised of highly weathered (oxidized) Webb siltstone containing residual amounts of carbonate and sulfide minerals. This material is appropriate for paste pH testing which measures the stored, soluble mineral acidity that can be released when placed in contact with water.

Response 15-8 (continued)

Generally, kinetic test results such as humidity cell tests are considered to be more representative of long-term leachate than shorter-term tests such as Meteoric Water Mobility Procedure (MWMP) tests. EPA (2003) acknowledges that Synthetic Precipitation Leaching Procedure (SPLP) and MWMP testing provides a more conservative estimate of constituent release. Humidity cell testing is used to determine release rates under accelerated conditions and has been shown to accelerate weathering by at least an order of magnitude greater than observed field rates (ASTM D5744-96). It also has been found to over-predict pyrite oxidation by a factor of two (Fennemore et al., 1998). Since humidity cell tests are conservative and the PAG encapsulation cell design further reduces exposure of the PAG material to water and oxygen, the use of constituent concentrations from the humidity cell test period having the highest acidity as model input is reasonably conservative.

Response 15-9

Newmont completed additional testing to improve the geochemical characterization of waste rock used to develop the revised NCV plus paste pH criteria for identifying PAG material in the field. Based on this data set and results of previous 20-week humidity cell tests, Newmont proposed a method for segregating rock during mining. However, concerns regarding the length of the humidity cell tests and questions about the long-term acid generating potential of the oxidized Webb siltstone waste rock has resulted in uncertainty regarding the operational characterization method. To address these concerns, Newmont, in conjunction with NDEP and BLM, has developed a supplemental waste rock characterization study as a mitigation measure to provide data clarifying these issues (See Appendix A of the Final EIS). The testing program will be implemented by Newmont, in consultation with the BLM and NDEP in regards to sample selection and data review. Based on the results of the supplemental testing, the operational method of identifying PAG material may be modified by the appropriate agency if required.

neutralizing waste rock during each mining/disposal phase, and measures that would be taken to ensure sufficient neutralizing capacity during each phase.

Recommendation: If further work is not conducted to improve geochemical characterization of the waste rock, the revised or supplemental Draft EIS should characterize all Webb Siltstone as PAG rock, and it should be handled as such in the mining process. More detailed comments on this option are provided below.

15-9 (contd)

B. Potential Impacts of Mine Rock.

EPA believes that the Revised Draft EIS does not adequately identify or discuss the potential impacts should the waste rock, pit high wall, or heap leach facility generate contaminated leachate in the future. According to the Revised Draft EIS (p. 3-59), potential release of trace metals and other constituents to surface water would not be expected due to the surface water control systems, site reclamation, isolation of PAG rock, and lack of interconnection between the groundwater and surface water. However, data provided for "Metal Mobility Results for Waste Rock and Ore Samples from Meteoric Water Mobility Procedure Tests" (Table 3-7, p. 3-21) indicate that stormwater discharges may contain metals and other constituents at concentrations that will exceed the water quality standards. In addition, it appears that part of the pit high wall will be in the Chainman Shale, which has acid generation potential.

15-10

Even under non-acidic conditions, static and kinetic test results indicate potential for contaminant mobility and elevated concentrations (above water quality standards) for several metals and metalloids. The Meteoric Water Mobility Procedure (MWMP) simulates the expected characteristics of storm water discharge from waste rock and the potential for mobilizing metals from waste rock and ore. The Webb Siltstone will comprise approximately 67% of waste rock (approximately 56 million tons) of the proposed project. The MWMP results indicate exceedences of the water quality standards for arsenic, manganese, nickel, selenium, thallium, zinc and sulfate. The Devils Gate Limestone will comprise approximately 32% of waste rock (approximately 27 million tons) at the mine site. The MWMP results for the Devils Gate Limestone waste rock samples exceeded water quality standard values for antimony, arsenic, cadmium, manganese, mercury, selenium, thallium, fluoride and sulfate. Additionally, the Chainman/ Fresh Webb Siltstone formation may be exposed in the high wall of the final pit (Fig 3-3), even after backfill. The MWMP test results indicate water exposed to Chainman/ Fresh Webb Siltstone formation exceeded water quality standards for arsenic, cadmium, lead, manganese, nickel, selenium, thallium, zinc, fluoride, sulfate, and pH.

15-11

Waste rock facility specifications do not appear adequate to preclude air and water flow into the waste rock or to provide sufficient neutralizing capacity to prevent generation of contaminated leachate. The proposed project also involves the encapsulation of PAG waste rock with a 10-foot thick layer of non-PAG acid-neutralizing waste rock and placement of a 0.5- to two-foot thick growth medium cover over each encapsulation cell (Revised Draft EIS, p. 2-23). The encapsulation cell would be located in the backfilled pit where Devils Gate limestone is exposed. As has been demonstrated

15-12

Response 15-10

Under the Proposed Action, contact storm water would not be discharged from the site unless it meets water quality standards. In cases where Chainman Shale remains exposed in portions of an open pit at end of mining in any individual pit, the exposed shale would be covered with 10-feet of Encapsulation Material to promote drainage away from the shale unit and buffer meteoric water that may contact the shale.

Response 15-11

The potential for metal mobility and exceedence of standards is discussed in the "Groundwater Quality" section of the Draft EIS beginning on page 3-61. This section also includes a discussion of the likelihood of attenuation and precipitation of constituents as meteoric water moves down through approximately 450 feet of unsaturated Devils Gate limestone as well as constituents that would not attenuate within the limestone (i.e, sulfate, manganese, nickel, and TDS). To reduce the potential for these constituents to affect groundwater quality in the bedrock aquifer, the design of PAG encapsulation focuses on reducing the amount of meteoric water and oxygen that could contact PAG waste rock. The PAG waste rock encapsulation design description in Chapter 2 of the Final EIS has been revised to provide more detail on the methods to be employed. These features include establishment of a growth media cap and vegetative cover on reclaimed waste rock and construction of drainage layers of Encapsulation Material to surround compacted PAG waste rock. In addition, a surface water and groundwater monitoring program will be developed in conjunction with NDEP and BLM and will be implemented to detect effects on water quality.

Supplemental testing of waste rock would be addressed through implementation of the AMP (see Appendix A of Final EIS).

Response 15-12

See Response 15-11. The encapsulation cell design promotes lateral flow of meteoric water away from compacted PAG waste rock by creating a preferential flow within the 10-foot thick drainage layer of Encapsulation Material. The design is also intended to limit air and water flow into the PAG waste rock by compacting the PAG material during placement. The cell would be sloped to direct water flow to a limestone contact to avoid drainage to surface waters of the U.S. As stated previously, the encapsulation design focuses on limiting the volume of meteoric water that would contact the compacted PAG waste rock in each cell.

The need for and location of additional monitoring stations (groundwater wells and surface water) would be in accordance with an operational monitoring program to be developed in conjunction with BLM and NDEP.

Newmont proposes to place a growth media cover at least 2-feet thick or a thickness of cover on the PAG cell areas as determined by NDEP under the Water Pollution Control Permit.

at numerous mine sites where acid drainage has occurred, water infiltration and air flow can occur deep inside waste rock dumps, and insufficient information was made available for this project to demonstrate that such exposures will not occur. Furthermore, as discussed earlier, non-acidic leachate is projected to exceed water quality standards and must be controlled. 15-12 (contd)

EPA believes several streams in the area could be significantly adversely affected by acidic and/or non-acidic rock drainage from the waste rock dump, the high wall, and the heap leach facility. Some of these streams would be adjacent to or overlain by proposed mine facilities, and one stream will be diverted along the high wall of the pit. 15-13

EPA believes groundwater quality could also be adversely affected by improper design of the mine facilities. The Revised Draft EIS predicts that any potential groundwater impacts would be adequately mitigated by the limestone and approximately 450 feet of unsaturated zone underlying the PAG waste rock storage area. However, the underlying limestone will not necessarily be available for contact or reaction with contaminated leachate emanating from the mine sources. This is due to both the potential for fracture flow to be the predominate flow path, reducing or eliminating contact times, and the potential for the limestone to become unavailable for reaction due to rimming that often occurs after initial contact with acidic solutions. In addition, flow through the unsaturated zone may not take on the characteristic of "slow dispersed movement," but rather may find the most favorable flow paths, or "finger flow," through the unsaturated zone, which has been observed and investigated at other mine sites. 15-14

> **Recommendation:** The revised or supplemental Draft EIS should discuss the potential impacts to surface water and groundwater resources should the waste rock or spent ore generate contaminated leachate either in the short- or long-term.

C. Alternatives to Avoid Surface Water and/or Groundwater Contamination

The Revised Draft EIS does not evaluate alternatives to avoid long-term uncontrolled surface water and groundwater contamination from mine facilities. In light of the potential for contaminated leachate to affect water quality, the revised or supplemental draft EIS should describe and discuss measures that would be taken, if needed, to prevent acidic and non-acidic leachate from contaminating surface water and groundwater, as well as remedial measures that could be taken should prevention measures fail. Properly sited and designed facilities could help minimize the need for, and costs of, long-term post-closure treatment activities. 15-15

> **Recommendation:** The revised or supplemental draft EIS should evaluate alternatives to control, capture, and treat any leachate, including non-PAG leachate, from the mine site. At a minimum, this evaluation should address the following.

Response 15-13
As stated in the Draft EIS (Surface Water Quantity and Quality section beginning on page 3-57), several factors would combine to prevent release of trace metals and other constituents to surface water. These include: surface water control systems, site reclamation, isolation of PAG rock, and lack of interconnection between groundwater and surface water. No discharges, except for non-contact storm water, are planned from the mine project to surface water. Storm water discharges would be managed under the Storm Water Permit issued by NDEP for the Emigrant Project (Permit No. NVR300000; ID No. MSW-365). Design of the engineered channel that would replace the existing stream channel through the mine area would capture excess sediment using ponds upgradient and downgradient of the engineered channel. In addition, the channel would be constructed almost entirely in Devils Gate Limestone and, therefore, would not adversely affect water quality (Draft EIS, page 3-60). The surface water monitoring program will be designed to detect any potential water quality problems; if detected, further mitigation can be required and implemented.

Response 15-14
See Responses 15-8 through 15-12.

Response 15-15
BLM assumes that the commenter's suggestion to relocate facilities is in reference to waste rock disposal. Development of a waste rock disposal facility at another location would likely result in placement of waste rock at sites that are further away from the mine pit thereby increasing the overall disturbance footprint of the proposed Project. In addition, relocating waste rock disposal to an alternate location would eliminate the advantages of the proposed site in terms of backfilling open pits to restore land surface and placement of waste rock on limestone bedrock where groundwater is approximately 450 feet below ground surface. The predicted effects of the Proposed Action on groundwater and surface water in the project area have not identified the need to consider other locations for waste rock disposal.

The methods to be employed to encapsulate PAG waste rock are designed to control and direct meteoric water away from PAG rock. A growth media cover would be installed on backfilled pits, external waste rock disposal facility, and spent ore pile to stabilize the reclaimed surfaces and uptake meteoric water. A sustainable vegetation cover would serve to reduce the volume of meteoric water that would infiltrate the waste rock and spent ore piles through evapotranspiration

Response 15-15(continued)

Meteoric water that infiltrates through the growth media layer above encapsulation cells would be directed to flow along the drainage layers constructed of Encapsulation Material thereby limiting contact with compacted PAG waste rock. Because the design of the encapsulation cells is to limit contact of meteoric water with PAG waste rock, the majority of water that would flow within the drainage layers surrounding the encapsulation cell would be water that has not contacted PAG waste rock. Based on the predicted volume and chemistry of this water, the need for a method to collect this water has not been identified.

Newmont, in conjunction with NDEP and BLM, has developed an AMP for Waste Rock as a mitigation measure that would be implemented to confirm previous geochemical test results for waste rock to be produced at the proposed Emigrant Project (see Appendix A of Final EIS).

Newmont would install additional monitoring stations (groundwater wells and surface water) in accordance with an operational monitoring program to be developed in conjunction with BLM and NDEP. The monitoring program would also address mitigation measures to be implemented should monitoring results indicate a need. Mitigation measures may include groundwater pumping and water treatment as necessary.

See also Responses 15-7 and 15-8.

- Relocation of facilities should be evaluated to determine if control of leachate could be facilitated by careful site designation (i.e., to take advantage of, or avoid, certain geologic or hydrologic features).

- Waste rock handling alternatives should include appropriate cover to prevent or minimize infiltration of meteoric water into, and contaminant leaching from, both PAG and non-PAG material. Bottom liners and leachate capture systems to preclude, to the extent practicable, the transmission of any contamination to groundwater or surface water should be evaluated. The evaluation should discuss whether any leachate recovered by this alternative would be treated, discharged, or used in mine operations.

- Additional geochemical information is needed to demonstrate whether some of the Webb Siltstone has sufficient net neutralizing potential to be used to neutralize PAG rock in certain instances. Additional mass balance information is needed to demonstrate whether sufficient Devils Gate Limestone is available to be used for this purpose.

- Groundwater capture systems (e.g., slurry walls, French drains, groundwater wells) should be evaluated. We believe additional hydrological characterization (e.g., geologic structures, flow preferences, etc.) is needed to properly design and determine the effectiveness of a capture system. The additional hydrological characterization would also aid in determining the extent to which the proposed mitigation (underlying limestone and unsaturated zone) would truly be effective.

- Treatment systems (passive and/or active) should be evaluated and targeted for each contaminant of concern.

15-15 (contd)

Recommendation: The development of additional alternatives for the Emigrant Project should be accompanied by a process that evaluates those alternatives using state-of-the-art means to determine their effectiveness in addressing various contaminant leaching issues.

- The technical participants in this analysis should agree on the selection of appropriate models for predicting water quality at the Emigrant Mine and use them to conservatively predict contaminant leaching potential and impacts on various water resource receptors. (Note: We believe it is appropriate for EPA to be involved in the development and evaluation of these models.)

- The models should be used to conduct sensitivity analyses based on various alternative actions (e.g. reduction of infiltrate quantity and/or change in leachate chemistry), and determinations should be made of the

15-16

Response 15-16

Analysis provided in the EIS describes the release of constituents of concern associated with exposure of PAG waste rock to oxygen and water and describes the attenuation of some of these constituents in contact with Devils Gate limestone. Some constituents released under non-acidic conditions do not attenuate in the limestone rock (e.g., sulfate, manganese). To address this issue, PAG encapsulation cells have been designed to reduce and redirect infiltration of meteoric water around the PAG waste rock. See revised description in Chapter 2, Figure 2-9, and the AMP for Waste Rock in Appendix A.

BLM has not identified the need for further model evaluation of the Proposed Action. The emphasis of the waste rock management plan is to prevent contact of meteoric water with PAG waste rock to the extent possible or to limit the volume of meteoric water that actually contacts PAG waste rock. The design, including a growth media cover to evapotranspire precipitation, is intended to reduce the volume of any meteoric water entering the limestone underlying the mine pit area.

See Response 15-3 regarding financial assurance.

likelihood of various outcomes, such as exceedance of applicable water quality standards.

- The revised or supplemental draft EIS should describe and discuss contingency measures that would be taken should prevention measures fail.

- The revised or supplemental draft EIS should include the costs of these prevention, capture, and treatment controls, as well as additional measures likely to be needed over the life of the project and for as long as they would be implemented after mine closure. The document should calculate the costs of operations and maintenance, facilities replacement, monitoring, and reporting.

15-16 (contd)

III. Financial Assurance

Financial assurance is not discussed in the Revised Draft EIS, but is critical to determining whether all commitments for proper closure, reclamation, and post-closure care can be met by the mining company. Because the amount and viability of financial assurance are critical factors in determining the effectiveness of these activities, EPA believes it is necessary to analyze these factors in the EIS to determine the significance of potential impacts and the feasibility of long-term mitigation measures. For example, if appropriate closure, reclamation, and post-closure care measures are significantly underfunded and, therefore, infeasible, contamination of surface water and groundwater may not be controlled. EPA believes the adequacy of financial assurance for these activities could make the difference between a project sufficiently managed over the long-term by the site operator, or an unfunded/under-funded contaminated site that becomes a liability for the Federal government, e.g., under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Furthermore, the economic viability of the proposed project, including the cost of long-term controls and/or treatment, should be evaluated before the project is authorized, so that Newmont and BLM can make an informed decision about whether the project is cost-effective. BLM should require Newmont to provide adequate financial assurance that long-term controls and/or treatment will be implemented when necessary during and after mine closure.

15-17

Response 15-17
See Response 15-3. Reclamation bonding is not a federal action that is analyzed under NEPA.

> **Recommendation:** We recommend that the revised or supplemental Draft EIS identify the estimated bond amounts needed for each closure and reclamation activity for the proposed project facilities. Also discuss whether and how BLM can modify the bond during the course of operations if temporary, long-term, or perpetual treatment and/or remediation needs are discovered during operations. Identify who would be responsible for any post-closure cleanup actions should they be necessary.

Long-term post-closure operations and maintenance may be necessary for the proposed project, especially if facilities are not properly designed up front.

15-18

Mining projects have resulted in the expenditure of billions of dollars by the federal government for environmental cleanups. There are many examples of large and well capitalized mining companies going bankrupt before their responsibilities for environmental cleanups could be satisfied. In light of this history, BLM's Surface Management Regulations for Surface Mineral Operations at 43 CFR 3809 authorize BLM to require operators to:

> "...[e]stablish a trust fund or other funding mechanism available to BLM to ensure the continuation of long-term treatment to achieve water quality standards and for other long term, post-mining maintenance requirements. The funding must be adequate to provide for construction, long-term operation, maintenance, or replacement of any treatment facilities and infrastructure, for as long as the treatment and facilities are needed after mine closure. BLM may identify the need for a trust fund or other funding mechanism during plan review or later." [43 CFR 3809.552(c)]
>
> **Recommendation:** If long-term post-closure operations and maintenance are necessary, a long-term, post-closure plan for preventing and/or managing mine drainage should be developed and included in the revised or supplemental Draft EIS. It should include specific plans for operating, maintaining, and replacing facilities, monitoring, and follow up mitigation over the long term. The plan should also include protocols for surface water and groundwater monitoring, and specify the parameters to be monitored. It should identify and describe follow-up mitigation actions that would be taken should destabilization or contamination be detected, and identify who would be responsible for these actions.

If a long-term plan is needed, a long-term trust fund or other funding mechanism will need to be established to ensure adequate funding will be available to implement the post-closure plan. The appropriate level of funding, types of financial instruments, and mechanics of the fund are critical to ensuring it will be available when it is needed. As you are aware, Newmont's Phoenix Mine long-term trust fund recently failed to perform as Newmont and BLM had predicted. In our comment letter to BLM on the Phoenix Final EIS (November 25, 2002), EPA noted that BLM's expected real return rate for that fund was unrealistic and that the net present value should be based upon investment in low-risk instruments, which would provide a higher degree of assurance that the funds would be available to pay for treatment when necessary. The failure of the Phoenix Mine long-term trust fund illustrates how the types of financial instruments and the specific fund details can affect the viability of the fund over the long term.

If a long-term plan and trust fund are needed, EPA would like to work with BLM to develop appropriate cost estimates and fund criteria. Engaging an independent third party could also be useful for this purpose.

> **Recommendation:** If a long-term plan is needed, a long-term trust fund or other funding mechanism should be established to ensure adequate funding will be available to implement the post-closure plan. The revised or supplemental Draft

15-18 (contd)

Response 15-18
BLM believes that mine drainage (assuming the commenter is referring to acid mine drainage) would not present an adverse effect based on the waste rock management plan. The design of the facility would direct meteoric water away from PAG waste rock. Recognizing the capping and sloping of backfilled pits that would effectively capture precipitation which would evaporate and evapotranspire, a limited volume of leachate that would migrate into the limestone unit would be subject to attenuation, adsorption, precipitation, and dilution. These physical and chemical actions would occur in a 450-foot thick vadose portion of the limestone unit that underlies the mine pits. See Response 15-16.

15-19

Response 15-19
As indicated previously, BLM will coordinate with NDEP in establishment of bonding levels for the Project in accordance with each agencies financial assurance regulations. See Response 15-17.

EIS should identify the projected long-term engineering and monitoring costs of each activity, as well as the financial assumptions used to estimate the funding level, projected trust fund growth rate, and mechanics of the trust fund. The revised or supplemental Draft EIS should discuss all requirements BLM would impose on the mine operator to establish a trust fund to ensure post-closure care, in accordance with 43 CFR 3809.552(c). EPA believes the financial assurance necessary to fund post-closure activities must be kept current as conditions change at the mine, and BLM should ensure that the form of the financial assurance does not depend on the continued financial health of the mine operator or its parent corporation.

15-19 (contd)

IV. Stormwater Management

A. Storm Water Permitting.

The Revised Draft EIS (p. 3-43) states, "Waste discharges to any state water must be such that no impairment of beneficial uses occurs as a result of the discharge (NAC 445A.120[2]). No discharges, however, are planned for the Emigrant Project." Nevertheless, based on the design and geochemistry of the proposed mine, as well as statements made in other sections of the Revised Draft EIS, it appears that there will be discharges from the mine site to tributaries of Dixie Creek that would be subject to National Pollutant Discharge Elimination System (NPDES) permitting requirements. See 40 CFR 122.26(b)(14). EPA regulations define "storm water associated with industrial activity" to include discharges of storm water from "active or inactive mining operations contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such active or inactive mining operations. 40 CFR 122.26(b)(14)(iii).

15-20

Recommendation: Information should be provided regarding how the site will meet the permitting requirements for discharges to surface waters. The revised or supplemental Draft EIS should describe the types of discharges subject to NPDES permitting (individual and/or general) for various discharge scenarios at the Emigrant Mine.

Response 15-20
This information has been added to the Final EIS (see Surface Water and Sediment Controls section of Chapter 2) to clarify that no discharges are anticipated for the Emigrant Project and, therefore, a NPDES permit would not be required. A Storm Water General Permit (Permit No. NVR300000; Project ID No. MSW-365) has been issued from NDEP to address storm water control at the project site.

B. Best Management Practices (BMPs).

The proposed storm water BMPs discussed in the Revised Draft EIS do not appear to adequately consider the water quality issues associated with storm water discharges from the waste rock. Because of the potential for stormwater discharges to exceed water quality standards, as described above, BMPs or treatment may be needed to control stormwater discharges. The Revised Draft EIS describes some of the BMPs that will be used on site, such as interceptor trenches, berms, ditches, silt traps, silt fences and sediment ponds. However, these BMPs are designed to control sediment and erosion and are not likely to control metals and metalloids (including arsenic and antimony) that may be dissolved or adsorbed onto clays, hydroxides and organic matter.

15-21

Response 15-21
As stated in Response 15-20 and on page 3-58 of the Draft EIS, a Storm Water General Permit has been issued by NDEP to Newmont for the Emigrant Project. This permit and Storm Water Pollution Prevention Plan (SWPPP) contains BMPs that would be used to ensure compliance with water quality standards for storm water. By incorporating sediment control ponds into the mine design, storm water is expected to be retained on-site and not discharged to Waters of the U.S via outfalls. This information has been added to the Surface Water and Sediment Controls section of Chapter 2 in the Final EIS.

Recommendation: The revised or supplemental Draft EIS should provide information on the BMPs to be utilized to ensure that there are no discharges of substances that will cause or contribute to a violation of the water quality standards. Specifically, it should identify the location of all stormwater outfalls and discuss how the BMPs will ensure compliance with all applicable water quality standards. If BMPs are not effective, what additional treatment or containment options would be implemented?

15-21 (contd)

The sediment basins depicted in Figure 2-2 of the Revised Draft EIS appear to be located in waters of the U.S., a practice that should be avoided and appears to be unwarranted in this case. Furthermore, before mine closure, additional basins and other BMPs will be needed for stormwater discharges from haul roads and flows across waste rock that has been placed back into the pit. BMPs such as bails or waddles are only temporary measures for construction and not appropriate as the only BMPs for channelized flow from waste rock piles.

Recommendation: The revised or supplemental Draft EIS should include a figure depicting the locations of sediment basins or other BMPs, and a discussion of when they would be built and when they would be reclaimed. Sediment basins should not be located in waters of the U.S.

15-22

Response 15-22
This information is in the Storm Water General Permit issued by NDEP for the Emigrant Project. Sediment ponds will be located outside of Waters of the U.S.

C. Monitoring.

The Revised Draft EIS indicates that total suspended solids (TSS) and possible other constituents in surface water would be monitored (p. 3-64).

Recommendation: The revised or supplemental EIS should present a detailed plan for monitoring stormwater discharges to demonstrate compliance with the water quality standards and that BMPs are functioning properly. We recommend quarterly monitoring of stormwater outfalls for all the parameters listed in Nevada's Profile 1, as well as implementation monitoring and effectiveness monitoring.

15-23

Response 15-23
As stated in Response 15-20 and on page 3-58 of the Draft EIS, a Storm Water General Permit has been issued by NDEP to Newmont for the Emigrant Project that specifies monitoring and mitigation measures to reduce and control runoff and sediment from disturbed areas. Specific BMPs are described in that permit and SWPPP. Surface water management and sediment control measures are described in the Surface Water and Sediment Controls section of Chapter 2 in the Final EIS.

V. Water Quality

A. Water Quality Standards.

The Draft EIS (p 3-42) states, "For purposes of comparison, Nevada 'Profile 1' reference values included in Table B-2 (Appendix B) are used to evaluate groundwater quality in the Study Area." While it may be appropriate to include the Nevada "Profile 1" reference values in Table B-2, all comparisons to evaluate the impacts on surface water quality should be made to the Water Quality Criteria and Standards for Nevada (also included in Table B-2). While many of the Nevada "Profile 1" reference values are identical to the Water Quality Criteria and Standards, several are not. For example, the aquatic life water quality criteria for copper are two orders of magnitude lower than the "Profile 1" reference value.

15-24

Response 15-24
The requested change has been made in the Final EIS.

Recommendation: In order to evaluate impacts to surface water quality, Table 3-7 (p. 3-21) and associated text on pages 3-19 to 22 documenting Meteoric Water Mobility Test Results should be revised to reflect the comparison to the Nevada Water Quality Criteria and Standards.

15-24 (contd)

We also note that the Revised Draft EIS, in summarizing applicable standards to Class B streams such as Dixie Creek, does not include their beneficial uses as specified in NAC 445.125.

15-25

Recommendation: We recommend the revised or supplemental Draft EIS include the following language specifying beneficial uses applicable to Class B waters: "The beneficial uses of Class B waters are municipal or domestic supply, or both, with treatment by disinfection and filtration only, irrigation, watering of livestock, aquatic life and propagation of wildlife, recreation involving contact with the water, recreation not involving contact with the water, and industrial supply. (NAC 445A.125.2)"

B. Existing Water Quality.

15-26

The description of existing surface water quality (pp. 3-41 to 3-45 and Table B-5) in the vicinity of the proposed mine is not adequate to determine baseline conditions. The only data for the suite of "Nevada Profile 1" parameters (including arsenic, mercury, lead, etc) appear to have been taken at Emigrant Spring. However, Emigrant Spring is downstream of acid mine drainage seep discharges from the Rain Mine waste rock pile, and should not be considered background water quality. For example, the mean conductivity at Emigrant Spring is approximately four times higher than conductivity elsewhere in the vicinity. Mean conductivity at Emigrant Spring was 809 μmhos/cm, compared to mean conductivities farther downstream of 255, 204, 182, 343, and 190 μmhos/cm (at DC-6, EMI-D1, EMI-D1-C, EMI-D2, EMI-D3, respectively). The Draft EIS describes the results of only one water quality sample for turbidity, TSS, electrical conductivity, pH, and temperature, which was taken between 1994 and 2004 immediately below the proposed mine site at EMI-D1.

15-27

Recommendation: The revised or supplemental Draft EIS should include baseline water quality data for the proposed project. Surface water sampling data from immediately upstream (EMI-D1-B and EMI-D1-A) and downstream (EMI-D1-C) of the proposed mining area for all the Nevada Profile 1 parameters should be obtained and included in the revised or supplemental Draft EIS.

Recommendation: The revised or supplemental Draft EIS should discuss the effects the Rain Mine has had on water quality, including Emigrant Spring and downstream. The discussion should include the chemistry of the Rain Mine acidic discharge, the distance the discharge flowed down stream, the length of time it flowed, the date when it was first discovered, when it was first fully contained, and when the stream was remediated.

Response 15-25
This language has been added to the Final EIS.

Response 15-26
Available water quality data for these monitoring stations are included in Table C-4 (Appendix C) of the Final EIS; no metals, however, were reported for these samples. Future monitoring of these sites and any additional water monitoring stations (groundwater and surface water) established in accordance with the operational water resources monitoring program will include all Nevada Profile 1 parameters. Sampling of all monitoring stations would occur prior to initiation of mining and leach operations.

Response 15-27
The Cumulative Effects section for Water Quantity and Quality in the Draft EIS (pages 4-24 through 4-28) describes how a reclaimed waste rock dump at the Rain Mine could contribute trace metals to groundwater and/or surface water in the Dixie Creek drainage. This will be further discussed in the Chapter 3 section of Water Quantity and Quality in the Final EIS.

VI. Hydrogeology

The Revised Draft EIS provides new information regarding the hydrologic properties of the subsurface. Information is still needed, however, regarding how long the drill holes were allowed to recover before the presence of water was determined and how removal of the Emigrant Fault hydrologic barrier during pit excavation could affect groundwater in the vicinity.

> **Recommendation:** The revised or supplemental Draft EIS should discuss how long the drill holes were allowed to recover before the presence of water was determined. In addition, a discussion should be included on how removal of the Emigrant Fault hydrologic barrier during pit excavation could affect groundwater in the vicinity, including potential dewatering of upgradient streams and springs.

VII. Proposed Mine Facilities

A. Diversion Channels and Roads.

The Revised Draft EIS indicates that the diversion channel will be located primarily on bedrock of Devils Gate limestone (p.2-9). However, Figure 3-1 and cross-sections D and E in Figure 3-3 indicate that the pit will be deep in that area (on the west side of the pit near the Emigrant fault).

> **Recommendation:** The revised or supplemental Draft EIS should provide a cross section of the diversion channel area to show this area in more detail and explain how the diversion will be on bedrock through the pit area and how the acid producing or otherwise reactive portions of the Webb formation will not degrade water quality in the channel or the bedrock near the channel. It is also unclear where sediment catch basins depicted in figure 2-6 would drain and how they would prevent contaminants from leaching into the engineered stream channel.

The Revised Draft EIS indicates that non-PAG rock would be used for roads and diversion channels. Given the outstanding uncertainties associated with the majority of the waste rock at the mine, it is unclear whether non-PAG rock would be available when it is needed for these facilities. As stated previously, we believe the very short-term paste pH and the NCV test results may dramatically underpredict the longer-term acid generation potential of the samples. It appears that the neutralizing potential to acid potential (NP:AP) ratio is a much better indicator with the results from the kinetic testing conducted on Emigrant mine materials. Many other mines rely on NP:AP ratios to characterize mined materials in the field, and the results presented by Newmont[2] show that this would also be the best approach to use for the Emigrant Project if further kinetic

[2] Newmont, 2008. NCV & Paste pH, a Proposal for Waste Rock Determination for the Emigrant Project. August 4.

15-28

Response 15-28
Drilling completed in the mine pit area did not encounter groundwater at depths that the proposed mining would occur. Deeper drilling indicated the bedrock water table to be at depths of approximately 450 feet below ground surface. Since no water was encountered in exploration boreholes competed in the mine pit area and mining would occur above the bedrock water table, the functionality of the Emigrant Fault as a hydrologic barrier would not affect mine operations. Exploration boreholes were not left open for extended periods of time to determine if any water would occur in them

15-29

Response 15-29
A cross-section of the engineered channel is shown on Figure 2-7 of the Final EIS. The sediment catch basin shown on Figure 2-7 would drain to the southeast along the engineered channel, with any water flowing to a sediment control pond at the downstream end of the engineered channel. The engineered channel would be underlain by a geosynthetic liner or clay liner to prevent any run-off water from adjacent bedrock from entering the channel, and to prevent infiltration of water from the engineered channel into underlying bedrock.

15-30

Response 15-30
Newmont, in conjunction with NDEP and BLM, will complete supplemental waste rock characterization studies as a mitigation measure to confirm previous kinetic testing associated with the Emigrant Project. These studies are described in the AMP located in Appendix A of the Final EIS. Materials used in construction at the Project will be analyzed to ensure that the material is Non-PAG.

testing is not conducted to more reliably characterize the waste rock. EPA believes additional information is needed regarding the specifications for waste rock that will be used at the mine for such facilities.

Recommendation: The revised or supplemental Draft EIS should provide the geochemical specifications that will need to be met by waste rock used for subgrade, roads, diversion channels and trenches, and other facilities at the mine. When the waste rock has been characterized and the best static test has been determined for use in the field (i.e. the one that comes closest to matching the results of the long-term kinetic testing), the numeric cutoffs for use of waste rock for these facilities can be determined. In the absence of further kinetic testing to more reliably characterize the waste rock, we recommend that waste rock used for these facilities meet an NP:AP ratio of 3:1 to ensure that net neutralizing rock is used. The document should also estimate the amount of such material that would be needed during each mining phase and the amount of material meeting the specifications that would be available during each mining phase for these facilities. If shortfalls may occur, identify alternative sources of material to be used for this purpose.

15-30 (contd)

VIII. Clean Water Act Section 404

According to the Revised Draft EIS (pp. 3-79 to 3 - 84), Newmont is seeking a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (Corps). Section 404 of the Clean Water Act (CWA), 33 U.S.C. §1344, regulates the discharge of dredged or fill material into waters of the U.S., including wetlands and other "special aquatic sites." The Revised Draft EIS indicates the proposed project will result in the fill of 0.15 acre of wetlands and 0.88 acre of other waters of the U.S., based on surveys conducted in the project area in 2004.

15-31

A. Jurisdictional Delineation of Waters of the U.S.

EPA is concerned about the potential adverse impact to aquatic resources that could result from the proposed project. To determine the extent of impacts to waters, a jurisdictional delineation should be conducted for the alternatives presented in the Revised Draft EIS, and verified by the Corps.

Recommendation: The revised or supplemental Draft EIS should provide the results of the U.S. Army Corps of Engineers' jurisdictional delineation for the project site.

B. Least Environmentally Damaging Practicable Alternative.

15-32

If it is determined that there are jurisdictional waters within the project area, a CWA Section 404 permit will be required to authorize any discharges of dredged or fill material into these waters, including wetlands and other special aquatic sites, and EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for*

Response 15-31

Newmont submitted an application to the U.S. Army Corps of Engineers (COE) for a 404 permit on July 15, 2008. In November 2009, the COE determined that wetland and non-wetland waters identified in the application were jurisdictional waters of the U.S. and issued a Public Notice in February 2010 seeking public comment on the Project. Subsequently, Newmont has prepared a plan to mitigate losses to wetland and non-wetland (Waters of the US) areas affected by mine development. As part of the plan, Newmont redesigned the disturbance footprint for the Emigrant Project to reduce the impact to non-wetland Waters of the US from 1.01 acre to 0.376 acre, a reduction of 0.635 acre.

Reestablishment of riparian zones within the engineered stream channel has the potential to mitigate for loss of wetlands and non-wetland waters of the US under Newmont's 404 Permit Application to the Corps of Engineers (COE). The COE is evaluating the adequacy of the riparian zone to meet mitigation requirements. The COE evaluation will include application of EPS Guidelines (40 CFR 230), as required by Section 404(b)(1) of the Clean Water Act. Other wetland mitigation options which may be considered include an In-Lieu Fee mitigation. This mitigation measure would provide financial support for conducting wetland establishment at other locations to mitigate loss of wetlands and non-wetland waters of the US associated with the Emigrant Project. Successful rehabilitation of riparian vegetation within an engineered stream channel is shown in Photos No. 1 and 2 in Chapter 2 of this Final EIS.

Response 15-32

See Response 15-31. Under the Proposed Action, fill material would be placed in waters of the U.S. for the construction of the external Non-PAG Waste Rock Disposal Facility and the heap leach pad. The only alternative that avoids discharge of fill material into waters of the U.S. is the No-Action Alternative.

Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA. Any permitted discharge into waters of the U.S. must be the Least Environmentally Damaging Practicable Alternative (LEDPA) available to achieve the project's purpose. (See 40 CFR 230.10(a)) Based on this provision, the applicant is required, in all cases, (regardless of whether the discharge site is a special aquatic site) to evaluate opportunities for use of non-aquatic areas and other aquatic areas that would result in less adverse impact on the aquatic ecosystem. A CWA Section 404 permit cannot be issued where there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem (so long as the alternative does not have other significant adverse environmental impacts). The Revised Draft EIS does not demonstrate that the proposed project is the LEDPA.

15-32 (contd)

Recommendation: The revised or supplemental Draft EIS should demonstrate the project's compliance with the 404(b)(1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into waters of the U.S., the revised or supplemental EIS should discuss alternatives to avoid those discharges. Specifically, the revised or supplemental Draft EIS should thoroughly evaluate alternatives that avoid waters of the U.S. for such facilities as the non-PAG waste rock disposal facility, the road from SP-10 to the non-PAG waste rock disposal facility, borrow area #1, the heap leach pad, and the mine pit.

C. Indirect Effects.

Waters of the U.S. would be altered by permanently changing physical and hydrological conditions, including modifying the timing, velocity and volume of stormwater flows, changing sediment transport conditions, and discharging pollutants from nuisance flows into receiving waters. In addition, as mentioned above, pit excavation across the Emigrant Fault hydrologic barrier could affect groundwater in the vicinity. EPA is concerned about the indirect changes to the physical and hydrologic conditions of the functioning network of waters of the U.S. and aquatic habitat values on the site, and the Revised Draft EIS does not provide adequate detail on these changes.

To ensure the long term integrity of waters of the U.S. on the mine site, appropriate buffers should be established. Waterway buffers are essential in protecting the functions of stream systems including desert washes. Land use changes that expand the cover of impervious surfaces tend to increase: (1) the frequency, rates and volumes of stormwater runoff; (2) the annual pollutant loads to receiving waters; and (3) the modification of physical and biological processes of the receiving waters.

15-33

Recommendation: To minimize the adverse effect of the project on ephemeral waters, appropriate buffer widths must be established to capture more of their floodplain and help maintain ecosystem processes. These should be described in the revised or supplemental Draft EIS.

15-34

Recommendation: The revised or supplemental Draft EIS should discuss how removal of the Emigrant Fault hydrologic barrier during pit excavation could

Response 15-33

See Responses 15-31 and 15-32. Total area of wetlands and non-wetland Waters of the U.S. that would be permanently disturbed by proposed mine operations would be 0.15 acre and 0.376 acre, respectively. Surface water control measures (e.g., diversion ditches, sediment control fences and ponds) and Best Management Practices would be employed to minimize effects to other wetlands and non-wetland Waters of the U.S. in the Project area.

Response 15-34

This assessment will be added to the "Water Quantity and Quality" section of Chapter 3 in the Final EIS.

Surface water flow in the area upgradient of the mine is intermittent/ephemeral. Construction of a groundwater cut-off wall upstream of the engineered stream channel would cause groundwater to rise to ground surface and flow into the new channel (see Figure 2-7 in this Final EIS). Design of the engineered stream channel that replaces the existing stream channel would allow sediment from undisturbed areas upstream of the mine area to accumulate in the channel which would facilitate establishment of riparian zones within the new channel.

potentially result in dewatering of upgradient streams and springs, as well as how such impacts would be avoided to comply with the 404(b)(1) Guidelines.

15-34 (contd)

D. Mitigation

If a discharge is to be permitted, required mitigation for impacts to waters of the U.S. should be identified in the revised or supplemental Draft EIS for evaluation by the public and decision-makers. The Record of Decision should include commitments to ensure such mitigation is implemented.

15-35

Recommendation: The revised or supplemental EIS should discuss how potential impacts would be minimized and mitigated if a discharge of dredged or fill material is permitted. This discussion should include: (a) acreage and habitat type of waters of the U.S. that would be created, restored, or preserved; (b) water sources to maintain the mitigation area; (c) a revegetation plan utilizing native plants, including the numbers and age of each species to be planted; (d) maintenance and monitoring plans, including performance standards to determine mitigation success; (e) the size and location of mitigation zones; (f) the parties that would be ultimately responsible for the plan's success; and (g) contingency plans that would be implemented if the original plan fails. Mitigation should be implemented in advance of the impacts to avoid habitat losses due to the lag time between the occurrence of impacts and successful mitigation.

Response 15-35
Development of a Mitigation Plan to address wetland loss will be coordinated with the Corps of Engineers should mitigation be determined to be necessary.

IX. Air Quality

A. Criteria Air Pollutants

The proposed project involves excavating and hauling an average of 18 million tons of ore and waste rock per year over a ten-year period. Ore processing is expected to last fourteen years. However, the Revised Draft EIS does not provide an analysis of impacts to air quality in the project area over the life of the mine. Open pit mine operations can be significant sources of particulates smaller than ten microns (PM10). Blasting, material handling, hauling, mobile emissions, and wind erosion can be significant fugitive sources of PM10. Crushers, conveyors, and carbon regeneration kilns also emit PM10. Other criteria pollutants, including particulates smaller than 2.5 microns (PM2.5), carbon monoxide, oxides of nitrogen (NOx), and sulfur dioxide (SO2), are emitted in the exhaust from mine processing equipment and mobile sources, such as earth-moving equipment and transportation vehicles.

BLM's South Operations Area Project Amendment Draft EIS (2000) states that ambient monitoring for PM10 has been conducted since 1992. Table 3-10 of the Emigrant Mine Revised Draft EIS includes PM10 emissions concentrations from Newmont's Gold Quarry Mine (South Operations Area) for 1995, 1996, and 1997, but does not include the air quality monitoring data for the years since then. Current information is important in establishing the existing air quality at Gold Quarry, which will be affected by the proposed Emigrant project. Ore from the Emigrant Mine will be processed at Gold

Quarry, and the associated impacts should be addressed in the supplemental or revised Draft EIS.

Recommendation: The supplemental or revised Draft EIS should provide current ambient air concentrations in the Emigrant Mine project area, if available, as well as in the South Operations Area. The supplemental or revised Draft EIS should also provide direct, indirect, and cumulative emissions projections for criteria pollutants at the Emigrant Mine and the South Operations Area. In addition, it should provide projected emissions concentrations for both controlled and uncontrolled stationary and fugitive sources, and compare them to the National Ambient Air Quality Standards (NAAQS).

B. Emissions Control Measures.

The Revised Draft EIS mentions that fugitive dust from ore handling activities would be controlled using BMPs, which could include water application, use of chemical binders or wetting agents, and revegetation of disturbed areas. Additional measures exist that could be used to control PM10 emissions, as well as diesel particulate matter (DPM) and other criteria pollutants, from fugitive sources at the mine.

Recommendation: We recommend the following additional emissions reduction measures be considered to control fugitive emissions.

- Use particle traps and other appropriate controls to reduce emissions of DPM and other air pollutants. Traps control approximately 80 percent of DPM, and specialized catalytic converters (oxidation catalysts) control approximately 20 percent of DPM, 40 percent of carbon monoxide emissions, and 50 percent of hydrocarbon emissions;
- Minimize construction-related trips of workers and equipment, including trucks and heavy equipment;
- Lease or buy newer, cleaner equipment (1996 or newer model);
- Employ periodic, unscheduled inspections to ensure that construction equipment is properly maintained at all times and does not unnecessarily idle, is tuned to manufacturer's specifications, and is not modified to increase horsepower except in accordance with established specifications.

C. Mercury Air Emissions.

About once per week, the gold-loaded carbon from the carbon columns at the Emigrant Mine would be transferred to Newmont's Gold Quarry processing facility in its South Operations Area to recover gold. Mercury, a persistent bioaccumulative toxic substance, is often released during gold recovery. Releases from facilities that process or use greater than ten pounds of mercury per year must be reported by a mining company in its annual Toxics Release Inventory submitted to EPA. Controls added to processing equipment can recover some of the mercury to prevent its release. Mercury emission controls at

15-36

Response 15-36
Available recent data have been included in Table 3-10.

15-37

Response 15-37
Comment noted. Newmont would employ all necessary emission control systems, equipment, maintenance protocols, and travel frequency/speeds to ensure compliance with state of Nevada air quality permit.

Newmont's South Operations Area processing facility capture a substantial amount of mercury from the ore processed there.

The Revised Draft EIS states that carbon columns from the Emigrant Project would offset production from existing sources with no projected increases in total annual mercury emissions from the South Operations Area (p. 4-11). The Leeville Mine Draft EIS (2002) similarly states that processing of Leeville ore at the South Operations Area would offset production from existing sources with no projected increases in total annual mercury emissions. It is unclear what this statement means, e.g., which existing sources would no longer be processed and, therefore, be offset.

Recommendation: The following modifications should be made in the supplemental or revised Draft EIS.

- Explain how mercury emissions from current production at the South Operations Area would be offset by emissions from production of Emigrant ore.
- Describe how any condensed or captured mercury is recycled, sold, or disposed.
- Include a comparison of these cumulative mercury emissions to the total annual (mercury) air emissions in the United States. The supplemental or revised Draft EIS is an appropriate document to bring mercury air emissions from gold mines and ore processing into perspective.

15-38

Response 15-38
Cumulative mercury emissions information has been added to the Final EIS. Newmont's ore roasting, carbon stripping and regeneration, and retort furnace processing facilities at the Mill 5/6 complex at Gold Quarry have a maximum throughput of ore limited by both the design of the facility, on-line availability, and the air quality permit for the facility. As such, the amount of mercury associated with any particular ore source would not affect the overall emissions that would be released from the Mill 5/6 complex because of the throughput and emission limitations associated with the facility.

The Revised Draft EIS (p. 3-30) states: "Carbon handling and refinery services at the South Operations Area Facility that emit mercury to the atmosphere include carbon regeneration, carbon stripping, electro-winning, retorting, and melting. Mercury emissions at each of these processes are subject to controls that have been determined by the Environmental Protection Agency to provide the Maximum Achievable Control Technology (per Mercury Reduction Program 2002) and are listed in NAC 445B.3651 as constituting presumptive Nevada Maximum Achievable Control Technology proposed for mercury."

Recommendation: This section as written is not accurate and therefore should be revised to state: "Carbon handling and refinery services at the South Operations Area Facility that emit mercury to the atmosphere include carbon regeneration, carbon stripping, electro-winning, retorting, and melting. Mercury emissions at each of these processes are subject to controls that are listed in NAC 445B.3651 as constituting the presumptive Nevada Maximum Achievable Control Technology for controlling mercury emissions from these processes under Nevada's Mercury Air Emissions Control Program."

15-39

Response 15-39
Comment noted. Text has been revised in the Final EIS.

D. Other Hazardous Air Pollutant Emissions.

With the exception of mercury, the projected sources and emissions of hazardous air pollutants (HAP) from the proposed project are not provided in the Revised Draft EIS. The document also does not discuss or describe how HAPs would be controlled.

Recommendation: The supplemental or revised Draft EIS should estimate releases of HAPs from the proposed project, identify all sources of HAPs at the mine, and discuss how all HAPs would be controlled to reduce their emissions.

15-40

E. Greenhouse Gas Emissions

There have been significant developments in the scientific, regulatory, and judicial landscape regarding greenhouse gas emissions since the original publication of the Emigrant Project Draft EIS. Given these recent developments, EPA believes the potential greenhouse gas emissions from the proposed project and alternatives should be discussed in the revised or supplemental Draft EIS.

Recommendation: We recommend the revised or supplemental Draft EIS quantify the estimated greenhouse gas emissions from the proposed project and consider appropriate mitigation measures. Information on voluntary GHG reduction initiatives sponsored by EPA and other federal agencies can be found at: http://www.epa.gov/climatechange/policy/neartermghgreduction.html. We also recommend that the revised or supplemental Draft EIS include a qualitative discussion of cumulative climate change impacts related to greenhouse gas emissions.

15-41

Closure and Reclamation Activities

A. Growth Medium and Store and Release Covers.

During construction and excavation, growth medium will be stripped from disturbed areas such as the pit, waste rock pile, heap leach pad, and Borrow Area #1, and salvaged in stockpiles for use during reclamation. It appears from Appendix C of the Revised Draft EIS that the majority of soils in the pit area and proposed Borrow Areas are deemed either poor or not salvageable. The Revised Draft EIS (p. 2-43) states that soil replacement depths would vary according to location and soil type. Figure 2-8 indicates soil cover over PAG waste rock would be six inches to two feet thick. Given the uncertainties regarding the amount of PAG waste rock for the proposed project, it is unclear whether there will be sufficient growth medium to reclaim all disturbed areas, including up to two feet on PAG waste rock.

Recommendation: The supplemental or revised Draft EIS should identify the projected amount (cubic yards) of growth medium needed and the depths deemed sufficient to support vegetation for each reclamation site and each soil type.

15-42

Response 15-40
Fugitive releases of Hazardous Air Pollutants (HAPS) to the atmosphere are estimated to be less than 6,500 lbs/yr. Fugitive air releases primarily include dust from blasting, loading, and dumping of ore and waste rock. Stack releases which include crushing and material transfer of ore and waste rock are predicted to be less than 100 lbs/yr. Total annual HAPS emissions are estimated to be less than 10,000 lbs. and therefore, would be in compliance with federal and state air quality standards. Fugitive dust would be controlled through use of Best Management Practices which could include direct water application, use of approved chemical binders or wetting agents, water spray, and revegetation of disturbed areas concurrent with reclamation.

Response 15-41
A new section on greenhouse gas has been added to the Air Quality section of Chapters 3 and 4 of this Final EIS.

Response 15-42
See revised Soil Salvage section in Chapter 2 and Appendix D in this Final EIS.

Describe how this was determined and indicate whether sufficient growth medium exists on-site to successfully reclaim and revegetate the proposed project site.

15-42 (contd)

Recommendation: Store and release covers for the waste rock piles and leach pad should be evaluated and modeled for effectiveness and appropriateness, and discussed in the revised or supplemental Draft EIS. The document should indicate whether sufficient material exists in the project area for effective covers. If additional appropriate cover or growth medium may be needed during reclamation, discuss where it could be obtained, estimate its cost, and analyze the environmental impacts associated with its removal from its source location, its transport, and its use at the project site.

15-43

B. Proposed Evapotranspiration Cells

When heap leaching ceases, the total volume of solution in the pad and pond system would be reduced by evaporation, until flow has diminished to a point that it can be passively treated. As drain down from the process circuit subsides, evapotranspiration cells would be constructed by filling the ponds with growth medium and irrigating them with the drain down solution (Revised Draft EIS, p. 2-47). It is unclear how long the active and passive drain-down phases are predicted to take. We believe metals and salts would accumulate in the substrate and in the plants and invertebrates on top of the pond liner. *Nevada Bureau of Land Management's Reclamation/Closure Policy for Water Management for Hardrock Mining Activities* (August 2000 Instruction Memorandum) recognizes the need for collecting and evaluating information on heap detoxification and drain-down waters in Plans of Operation and NEPA documents. Nevertheless, the Revised Draft EIS does not provide adequate information on heap leach closure, which we believe is critical to evaluating the environmental impacts of the proposed project.

Recommendation: The revised or supplemental Draft EIS should discuss the fate and transport of cyanide and the other constituents in the heap over the course of closure and post-closure, and address the ecological risks posed by the evapotranspiration cells. The discussion should include cations, such as sodium which, if applied in excessive concentrations, can affect plant growth. The revised or supplemental Draft EIS should provide the following information:

- Describe the method proposed for handling/treating post-closure residual drain-down. For example, would the system be continued? Would the cells have sufficient capacity to ensure against overflow in the future? How important would a successful vegetation cover be to the water balance in the cells?
- Identify the constituents and their potential concentration ranges anticipated in the drain-down solution over the course of closure and over the long-term.
- Identify the constituents and their anticipated availability at the end of closure in (1) the substrate and (2) remaining in the heap.

15-44

Response 15-43
See Response 15-42. Modeling completed to assess the performance of PAG encapsulation cells in terms of predicting the flux of meteoric water that would report to the drainage layers surrounding PAG waste rock did not consider any reduction in meteoric water infiltration as a consequence of the growth media cover and vegetation uptake. This approach to modeling was intended to input conservativeness into model results.

No additional sources of growth media are anticipated to be needed to meet project needs. See Response 15-42.

Response 15-44
Final design and operation of the proposed Evapotranspiration Cell (ET Cell) for management of residual draindown solutions at the heap leach facility will be developed in conjunction with NDEP's final closure plan requirements. This plan would be submitted to NDEP within two years of cessation of operations in accordance with state of Nevada regulations.

The design will address all performance criteria established by NDEP including design of growth media system and placement, plant uptake of metals and salts, maintenance of the cell, and controls to be used to eliminate access and exposure of wildlife to the cell.

- Describe and discuss the potential problems that could result from contaminants concentrated in the substrate, and residual constituents remaining in the heap after closure.
- Describe the vegetation in the evapotranspiration cells during drain-down. Indicate whether the cells would be saturated and whether vegetation type would change over time as drain-down solution diminishes. Address the potential need for covering the contaminated substrate with growth medium in order to support plant growth should salts and metals accumulation preclude plant growth. Identify the potential vegetation seed mixtures that would be considered for reclaiming the cells.
- Identify the specific standards that cyanide and other constituents in the drain-down solution would be required to meet, and indicate whether these standards are expected to be met prior to start up of the passive treatment system.
- Describe how the substrate in the cells would be treated or disposed after they are no longer in use.
- Describe the plant and animal exposure pathways for constituents from drain-down solution in pumpback irrigation, evapotranspiration cell substrate, and any free-standing water.
- Describe the metals uptake and bioaccumulation predicted for plants, invertebrates, and other wildlife in the cells. The discussion should address all potential pathways, including pumpback irrigation, substrate, and any free-standing water.
- Discuss whether the constituents at anticipated concentrations from any of the pathways would be harmful to plants or wildlife.
- Describe methods that would be used to exclude wildlife (e.g., netting and fencing) from the cells during closure and/or post-closure.
- Discuss whether vegetation would need to be occasionally harvested in order to reduce the metals loading to these basins.

15-44 (contd)

C. Successes and Drawbacks of Evapotranspiration Cells.

Evapotranspiration cell leach heap closure systems have been proposed and/or used at other mine projects in Nevada over the last several years. However, the Revised Draft EIS does not provide information regarding the successes, drawbacks, or monitoring results associated with such systems at other mines. This information would be useful in evaluating this proposal for closure of the Emigrant Mine heap leach pad, including predicting potential impacts and identifying mitigation measures and/or contingency plans.

Recommendation: We recommend the revised or supplemental Draft EIS describe and discuss the success, drawbacks, and monitoring results of passive heap leach closure systems at other mines, including how long they have been used, whether the systems are meeting or exceeding expectations, the monitoring methods that are being used at these other mines, and any revisions that have been made to either the systems or their anticipated time lines thus far. The revised or supplemental Draft EIS should also

15-45

Response 15-45
See Response 15-44. Development of the ET Cell design and plan to be submitted to NDEP will address all requirements of the State of Nevada for such facilities. Lessons learned from other mine sites using this technology will be incorporated as applicable to the design developed for the Emigrant Project.

identify the applicable standards and describe how monitoring would be conducted during heap leach closure at the Emigrant Mine.

15-45 (contd)

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

LETTER 16

January 22, 2009

Ken Miller, Field Manager
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, NV 89801-4611

Subject: Emigrant Project supplemental geochemical information

Dear Mr. Miller:

This letter is in response to supplemental geochemical information (Newmont, 2008) recently provided to the U.S. Environmental Protection Agency (EPA) by your office and summarized in the Emigrant Project Revised Draft Environmental Impact Statement (EIS). We also offer a brief response to geochemical modeling conducted by Geomatrix (Geomatrix, 2008) for the pit-backfilled waste rock facility proposed for the Emigrant Project.

In a previous letter (October 17, 2007), we informed you that we believe the results of the Emigrant Project kinetic tests are inadequate to determine if the Webb Siltstone will become acid-generating over time as a result of mining activities. We cited two main concerns. First, static and kinetic test results indicate that most of the Webb Siltstone, which comprises two-thirds of the waste rock at this mine, will provide poor neutralization potential and may not be able to adequately neutralize acid generated by waste rock from this formation. Second, the kinetic testing was conducted for too short a time and on too few samples to support BLM's conclusion that only 16 percent of waste rock should be handled as potentially acid generating (PAG). The criteria proposed by Newmont and BLM to distinguish PAG rock from non-PAG rock are not supported by the geochemical testing conducted to date. Without an effective management tool to distinguish PAG from non-PAG rock in the field, it is likely that PAG rock may be incorrectly identified as non-PAG rock. In addition, even under non-acidic conditions, test results indicate potential for metals mobility and elevated concentrations (above water quality standards) for several constituents.

16-1

We recommended that, before the project goes forward, a more effective management tool be found to separate PAG and metal-leaching rock from environmentally benign rock to ensure that the mine is properly managed over the long-term by the site operator. We outlined two options for BLM's consideration: Either (1) longer kinetic tests should be conducted on more samples to support the characterization of the waste rock and

Response 16-1

The Webb siltstone is largely an inert formation, consisting of argillaceous silt and fine-grained sandstone. Closer to the ore deposits the Webb Siltstone can be strongly oxidized, original pyrite mineralization having been oxidized to oxide and sulfate minerals. Both the Fresh Webb siltstone and the Chainman siltstone are characterized by similar mineralogy to the Webb siltstone, but the sulfide minerals are largely unaltered. These unoxidized units can be strongly acidic and are generally confined spatially to the Southwest corner of the project area below the 6200 foot elevation level. There may well be a structural control element for the occurrence of the unaltered Webb and Chainman Formations which may help Newmont refine their waste management program.

Static tests results indicate that much of the Webb siltstone is inert (i.e., containing very little carbonate or sulfide mineralization) and not an acid producer; however, it is also not capable of neutralizing produced acid from the problematic units. The review confirms that the materials classified as inert according to NCV demonstrate higher pH values than do some other classifications, even though they are considered "uncertain" under most ABA guidelines.

Kinetic testing focused on the problematic units and was instrumental in Tetra Tech's previous recommendation changing the NCV cutoff to 0.3% CO_2 (Tetra Tech 2007). The Tetra Tech Report (2007) did not believe more or longer kinetic testing would have altered the conclusion that the NCV cutoff should be revised upward to the 0.3% CO_2 value. The Tetra Tech (2007) concluded that the original proposed NCV cutoff of 0.1% CO_2 was problematic due to samples with values above that range for which one or more of the various confirmation tests were either uncertain or reflected possible acid production. No samples above NCV 0.3% CO_2 exhibited uncertain confirmation tests results and all results indicated non-acid generating material.

ensure proper disposal; or (2) if further work is not conducted to improve geochemical characterization of the waste rock, all Webb Siltstone should be handled as PAG rock in the mining process, and financial assurance should be adequate to ensure proper reclamation and closure.

16-1 (contd)

Neither of these options has been pursued. Instead, in November 2008, BLM provided us with additional geochemical test (paste pH) results and modeling results intended to support its conclusions that most of the waste rock will not produce contaminated leachate. EPA believes the additional tests and modeling do not lend additional support to BLM's conclusions drawn from the kinetic test results. Paste pH testing is not appropriate for unweathered rock, and the very short-term paste pH and net carbonate value (NCV) results may dramatically underpredict the longer-term acid generation potential of the samples. In addition, we believe the inputs used in the PHREEQC modeling by Geomatrix led to an underestimation of contaminant concentrations in waste rock leachate.

Given what we do know about the geochemistry of the mine site, we believe the proposed waste rock handling methods are inadequate to prevent groundwater or surface water contamination. We recommend BLM evaluate the following alternatives to avoid long-term uncontrolled surface water and groundwater contamination.

1. Source control alternatives

- Location alternatives: to determine facility locations that would minimize the potential for groundwater and surface water interaction with contaminated leachate and/or maximize the potential for capture of contaminated leachate prior to interaction with water resources.
- Cover design alternatives: to prevent or minimize infiltration of meteoric water into and contaminant leaching from either PAG or non-PAG material.
- Chemical treatment/neutralization alternatives: with lime, limestone or other material, depending on the specific contaminant being considered.

16-2

Response 16-2
See Responses 14-10, 15-1, and 15-2.

2. Capture and treatment alternatives

- Waste rock liner alternative: within and outside of the open pit to protect water resources.
- Contaminant intercception alternatives: including slurry walls, French drains, and groundwater wells, as well as ancillary transportation and treatment requirements.
- Active or passive treatment alternatives: targeting contaminants of concern.

16-3

Response 16-3
See Responses 15-1, 15-2, and 15-4

For such controls to be effective, adequate financial assurance for the project's operational, closure, and post-closure phases will be critical. Funds must be adequate to provide for construction, long-term operation, maintenance, and replacement of any treatment facilities and infrastructure for as long as the treatment and facilities are needed after mine closure. Funds must also be adequate for monitoring and follow up mitigation measures over the long-term.

January, 2009

Our detailed comments on the recent paste pH and modeling results, as well as alternative methods to control, capture, and treat contaminated leachate, are enclosed. We wish to continue working with you and look forward to our scheduled conference call next week to work through these issues. If you have any questions, please call me at 415-972-3521, or have your staff call Jeanne Geselbracht at 415-972-3853.

Sincerely,

Kathleen Goforth, Manager
Environmental Review Office

Cc: David Gaskin, Nevada Division of Environmental Protection
Selena Werdon, U.S. Fish and Wildlife Service

EPA's Detailed Comments: Emigrant Project

Proposed Definition of Potentially Acid-Generating Rock

16-4

Newmont prepared an additional 1,271 composite waste rock and ore samples and analyzed them for net carbonate value (NCV) and paste pH (Newmont, 2008). Based on the results of these tests, Newmont proposed an NCV and paste pH method for determining potentially acid-generating (PAG) materials in the field under mining conditions. Their scheme would designate material as PAG if the NCV value is <0.0% CO_2, or if the NCV value is ≥ 0.0% CO_2 and the paste pH is < 6.0. Based on this classification, Newmont calculated that ~4 million tons, or 4.9% of the total waste rock would be categorized and treated as potentially acid-generation.

Newmont's reliance on paste pH is unsupportable for several reasons:

1. EPA asked Newmont to conduct more long-term testing, such as additional and longer kinetic testing. Instead, Newmont provided results from the shortest acid-base accounting test available: paste pH. While kinetic tests are usually conducted for 20 weeks or longer, and short term leach tests such as the MWMP last for 18 to 48 hours (Maest et al., 2005, Table 1), the paste pH test has a duration of only ten minutes to one hour.
2. The paste pH test comes out of the soil science community and is designed for weathered material such as soil. The test is not predictive when applied to unweathered rock, such as the rock used for ABA testing for the Emigrant Project. It is notable that paste pH has not been used for a number of years for mine permit applications in Pennsylvania because that State's Department of Environmental Protection has concluded that it is not predictive of acid mine drainage formation (Brady et al., 1998):

   > "The paste pH test may indicate the number of free hydrogen ions in the prepared sample, but, since pyrite oxidation reactions are time dependent, the paste pH results provide little indication of the propensity of a sample to produce acid mine drainage. In fact, the paste pH of a unweathered, high-sulfur sample is likely to be near that of the deionized water, while a weathered sample with relatively low percent sulfur, but which includes a small amount of residual weathering products, may have a significantly depressed paste pH. Because of its limited usefulness in helping predict the potential for acid mine drainage production, the paste pH test often is no longer performed, and for mine permit applications in Pennsylvania, it is not a required component of ABA."

16-5

In the Revised Draft EIS, Table 3-6 compares humidity cell and paste pH test results with other tests for waste rock and ore. Newmont concludes that the combination of paste pH and NCV results (as designated above) provides the best match with the humidity cell final

Response 16-4

The Tetra Tech Report (2007) concluded that longer kinetic testing would have altered the previous conclusion that the NCV cutoff should be revised upward to the 0.3% CO_2 value. The Report concluded that none of the kinetic tests were uncertain at the end of the 20 or 21 week test period, the minimum time period for kinetic tests under the ASTM standard. The rationale for conducting longer humidity cell tests is usually based on a determination that complexities exist in the sample stoichiometry due to mineralogy that may indicate neutralizing potential or acid generating potential is delayed or masked by the sample's specific mineral composition. In the case of Webb Siltstone, sample mineralogy was not viewed as being complex.

The Tetra Tech Report (2007) determined the proposed NCV cutoff of 0.1% CO_2 was problematic due to samples with values above that range for which one or more of the various confirmation tests were either uncertain or reflected possible acid production. No samples above NCV 0.3% CO_2 exhibited results which were interpreted as being uncertain; all test results above this NCV reflecting the non-acidic nature of the samples.

The 2007 Tetra Tech Report suggested that the few anomalous results from the earlier geochemical work were likely due to the presence of soluble sulfates (i.e. jarosite and other similar acid–forming salts/minerals in the samples). These acid salts can be common in weathered portions of sulfide deposits and constitute immediately available acid. The Acid Concentration Present Low Range (ACPL) is a test Tetra Tech recommended that can be used to determine presence of these minerals.

Additional work was performed to improve the geochemical characterization of the waste rock in order to develop a more effective management tool for identifying PAG and Non-PAG rock in the field. The results from additional NCV and paste pH testing were compared to the humidity cell results which resulted in a revised operational procedure for using Net Carbonate Value (static test) combined with the paste pH test for characterizing the waste rock at this deposit.

Also see Response 15-7.

Response 16-5

See Response15-8.

pH results. Kinetic tests are the best laboratory method to use for predicting the longer term geochemical behavior of mined materials. However, it is important to find shorter term tests that can be used in the field to identify potentially acid-generating or contaminant leaching materials so they can be managed to protect water and soil resources. Results from static testing, NCV, paste pH, and humidity cell tests are included in Table 1 below. This table is based on Table 3-6 in the Revised Draft EIS, but adds information from EMS, 2007, which we provided in our 17 October 2007 letter to you, and uses the actual results from Table 3-5 of the Revised Draft EIS. The results that indicate potentially acid-generating material are highlighted in light pink, those that are in the uncertain range are highlighted in light yellow, and those that indicate that the material will not be acid-generating are highlighted in light green (see Table 1).

In Table 1, cut-offs for acid-generating potential are the same as those used in the Revised Draft EIS, with one important modification: the final humidity cell test results are characterized as potentially acid-generating if the final pH was 6.5 or less, rather than 6.0 or less. The reason for this change is that the water quality standard for pH for Class B streams in Nevada is 6.5 on the low end, rather than 6.0 (Revised Draft EIS, Table B-3). In addition, the humidity cell tests were only run for 20 weeks, and in many cases the pH of the humidity cell leachate was still decreasing over time at the end of the 20-week test period. If the pH was still decreasing at the end of the humidity cell test, the result is marked with an asterisk in Table 1.

When results from the static tests are compared to the final humidity cell pH, it is apparent that the NP:AP ratio is the closest match with the longer term kinetic test results (see Table 1). Six of the seven HCT tests had a final pH of 6.5 or lower, and all of these tests showed that pH values were still decreasing over the course of the test. The very short term paste pH and the NCV results dramatically under-predict the longer term acid generation potential of the samples. Paste pH results only showed one sample (38-reject) with a value in the potentially acid-generating range. NCV results for the waste rock showed only one sample, and a different one (1-pulp), with a result in the potentially acid-generating range. Using the proposed Newmont method of combined paste pH and NCV results, only two of the seven samples would be treated as PAG. In contrast, the NP:AP ratio results indicated that five of the samples are PAG and two are uncertain. Even if Newmont only treated the samples with NP:AP ratios of <1 as PAG, they would be considerably more protective and predictive of longer term conditions than if they used their proposed method to identify PAG material in the field.

The results are similar for the ore material. All the samples with final humidity cell pH values of 6.5 or less were identified as PAG using the NP:AP ratio (see Table 1). In contrast, only two of the five samples were identified as PAG using the paste pH results, and only one of the five samples were identified as PAG using the NCV results. The results in Table 1 show that paste pH alone does a better job of matching humidity cell test results

16-5 (contd)

Response 16-5 (contd)

Table 1 Discussion
It's not clear what the basis is for concluding that pH was still decreasing for some of the samples in Table 1 (Humidity Cell Final pH column). A review of the data in the 2007 Tetra Tech Report and the ERM 2006 report did not support this conclusion. For the oxidized Webb Siltstone waste rock samples, the humidity cell report from McLelland Laboratory concluded that samples W36 and W38 produced more acidity than alkalinity in 21 weeks of accelerated and aggressive kinetic ARD potential testing. The other oxidized Webb Siltstone samples exhibited excess cumulative alkalinity ranging 2-10 times the acidity.

For certain siliceous materials, like the Webb Siltstone, it is unlikely that the ultimate final pH would ever exceed 6.0, due to the application of DI water with an approximate pH of 5.8 that subsequently equilibrates with silica. Tables 3-5 and 3-6 of the Draft EIS used a pH of 5 to evaluate the ARD potential of the humidity cell leachates which is found in the literature. (EPA 2003) states "not significantly acid generating (or generated acid is overwhelmed by excess alkalinity) if solution pH exceeds 5 (BC AMD Task Force, 1989; Humphries, 1990)". (Note: An error was discovered in both Table 3-6 of the Draft EIS and Table 1 created by the EPA. Waste rock sample 36 showed an acid generating potential in the humidity cell test (cumulative acidity of 73 vs. cumulative alkalinity of 54) and the final pH was 5.37. The Newmont NCV plus paste pH classification method properly classified this material as PAG (see highlighted paste pH of 5.96 in Table 3-5 of the Draft EIS) but it is incorrectly represented as Non-PAG in Table 3-6 (the paste pH should be marked "Y" and the cell highlighted). Table 3-6 in the Final EIS has been corrected.

than NCV alone; combining the two test results does very little to improve the predictive ability of these short-term tests.

16-5 (contd)

Figure 1 below shows the results for NCV and NP:AP ratios for Emigrant waste rock samples. This figure was taken from the Revised Draft EIS (Figure A-2 in Appendix A). The results show that, for some unidentified reason, the NCV results for the Webb siltstone (oxidized samples) are not well matched to the results from the NP:AP ratios. This lack of agreement is acknowledged in the Revised Draft EIS, but the document implies that the sulfide sulfur percentages are so low that acid generation is not a concern (p. 3-14). However, only average sulfur percentages and NP:AP ratios are shown in Table 3-4 of the Revised Draft EIS (p. 3-15). In light of all the NCV and NP:AP ratio results (Revised Draft EIS, Figure A-2, and Figure 1 below), it is apparent that the Webb siltstone NP:AP ratios vary from 0 to over 6 – a very large range that spans acid-generating, uncertain, and non-acid-generating ranges. The NCV results are very narrowly confined from ~0 to ~0.5, a range that indicates inert to slightly basic rather than any indication of acidity. These results, combined with the results shown in Table 1, show that the NCV test severely underestimates the potential of the Webb siltstone to generate acid. Therefore, the NCV test should not be used to estimate the potential of the Webb siltstone to generate acid. Many other mines rely on NP:AP ratios to characterize mined materials in the field. It is clear from the results presented in the Revised Draft EIS and by Newmont that this would also be the best approach to use for the Emigrant Project.

Response 16-6
The Webb Siltstone mineralogy exhibits little sulfide (S) or carbonate and as a consequence, NP:AP ratios will be influenced by very small changes in the S or carbonate values (this also explains why the neutralization potential : acid potential (NP:AP) ratio and NCV don't correlate well). Based on the commenter's Table 1, several samples are represented as acid producing when the Humidity Cell data and other supporting tests demonstrate the samples are not acid producing. In the commenter's analysis, samples with Sulfide S percent as low as .01-.07 are identified as acid producing or uncertain. Therefore, the NP:AP ratio would not be helpful as part of a waste characterization or classification scheme.

NCV is a static test method, similar to other ABA test methods, only provides a carbonate/sulfide mass balance estimate. The humidity cell test is used to confirm the potential acidity of individual lithologies. Therefore, NCV and ABA are not being solely used to estimate the potential for Webb Siltstone to generate acid.

16-7

The explanation for the lack of agreement between NCV and NP:AP ratios for the oxidized Webb Siltstone is not known. However, the amount of siderite in the samples may offer a partial explanation. The Revised Draft EIS (p. 3-11) states that the Webb Siltstone contains calcite, dolomite, and siderite, but it does not provide the percentages of each. The presence of siderite is known to overestimate the neutralization potential in the NCV test (Maest et al., 2005, Table 11). ERM (2006, Appendix E) provided semi-quantitative information on the mineral content of 11 pit NCV samples. Instead of using x-ray diffraction (XRD) directly, Newmont used whole pattern fitting to estimate semi-quantitative XRD percentages for different minerals, including calcite, dolomite, and siderite. The results in Table 1 of the appendix show that for the six samples identified as "OS" (oxide siliceous, or Webb oxide siltstone – see ERM, 2006, p. 2), all had dolomite percentages that were equal to or higher than the calcite percentages (only two had equal percentages, the remainder had four or more times dolomite than calcite), and one sample of Webb oxide siltstone had 8 percent siderite and only 1 percent dolomite and no calcite. The Sobek method used for ABA testing and NP:AP ratios would reflect the lower acid neutralizing potential of dolomite, whereas the NCV test may not be able to reflect this difference in mineralogy. More direct mineralogic testing of the Webb Siltstone should be conducted to help explain the differences observed in Figure 1 below.

Response 16-7
Virtually all of the Acid Base Account methods except the Sobek-Siderite Correction method dissolve or combust all carbonate minerals as part of the Neutralization Potential determination and so would have the same difficulty reflecting the lower NP of dolomite. ABA values, whether expressed as NCV values or tons $CaCO_3$/1000 tons, are only one factor to consider in waste characterization.

Geochemical Modeling Results

Contaminant concentrations from the humidity cell tests were used as input to the geochemical code PHREEQC to estimate equilibrium concentrations of constituent in the Devil's Gate limestone bedrock under the Emigrant Project (Geomatrix, 2008). As noted in the Revised Draft EIS, the contaminant concentrations from the humidity cell tests were generally lower than those from the MWMP tests. Geomatrix (2008) used results from the worst acid-producing weeks. However, the test was only conducted to 20 weeks, and the highest contaminant concentrations did not necessarily occur during the worst acid-producing weeks. Therefore, the contaminant concentrations used as inputs to the model were undoubtedly underestimated. In addition, the humidity cell data were adjusted to account for the mass of the rock assumed to be in contact with the yearly annual flux volume (Geomatrix, 2008). The concentrations of contaminants in leachate from mined materials are much more a function of the surface area of the material than the mass of the material. Geomatrix should have measured and used surface area estimates rather than mass estimates in their modeling. Finally, Geomatrix (2008) assumes that the availability of the Devil's Gate limestone to neutralize and attenuate contaminant concentrations is not limited by its available surface area. In reality, the leachate generated from the waste rock would likely flow through fractures in the limestone and not reach equilibrium conditions. Geomatrix should have assumed that only a portion of the leachate would have effectively contacted the limestone, and made an adjustment in the model to account for this. In sum, their modeling underestimates contaminant concentrations in waste rock leachate and assumes that the PAG encapsulation cells will be 100 percent effective in limiting the movement of contaminated leachate to groundwater and surface water at the Emigrant Project.

Even with approaches that underestimate actual concentrations of contaminants in the unsaturated zone below waste rock in the pit, Geomatrix finds that manganese, nickel, sulfate, and total dissolved solids (TDS) concentrations exceed Nevada water quality standards by factors ranging from approximately two to greater than ten. Modeling conducted with more defensible input values would likely exceed relevant standards for more contaminants and by higher exceedence values.

Contaminated Leachate May Be Generated Regardless of Acid Generating Potential

It must be recognized that the results from the static testing and the final humidity cell pH are not necessarily a good indicator of the ability of the waste rock or ore to generate contaminated leachate. As shown in Table 3-7 of the Revised Draft EIS, all waste rock types have a notable ability to generate contaminated leachate, as measured by the short-term Nevada Meteoric Water Mobility Procedure (MWMP). MWMP results for the Chainman/Fresh Webb siltstone waste rock samples exceeded Nevada water quality standards for arsenic, cadmium, manganese, nickel, selenium, thallium, zinc, pH, fluoride, and sulfate. The Devils Gate limestone waste rock samples exceeded Nevada water quality standards for antimony, arsenic, cadmium, manganese, mercury, selenium, fluoride, and sulfate. The Webb siltstone waste rock samples exceeded Nevada water quality standards for arsenic, manganese, nickel, selenium, thallium, zinc, and sulfate (Revised Draft EIS,

Response 16-8

See Response 15-8. Samples prepared for inclusion in a humidity cell test are crushed to -0.25 inch diameter. The surface area associated with these samples is conservative in that a greater range of diameter of material would be represented in an actual waste rock disposal facility and therefore, less surface area would occur within a waste rock facility as compared to that exposed in a humidity cell sample.

16-8 Humidity cell data was adjusted to the mass of the rock associated with the annual flux in order to generate a concentration for use in the HYDRUS modeling exercise. The flux rates represent the volume of water that moves a down through the bottom of the waste rock facility in a year. Associated with this number is the height and area from which the flux is generated. This volume contains both rock and water. The mass released from the humidity cell is generated from 1-kg of rock and the mass is artificially placed into 1 liter of water during the extraction process resulting in a concentration. If two kilograms were used in the test, the mass released would double and the concentration would also double. Since the seepage volume is associated with more than 1 kg of waste rock and the leachate volume is not a meter, the mass was scaled up and then divided by the seepage volume. This method resulted in higher concentrations than those reported in the humidity cell tests.

Geomatrix's modeling did not address constituent movement to groundwater nor did they assume or indicate that the PAG encapsulation cells will be 100 percent effective in limiting the movement of contaminated leachate to groundwater. As disclosed in the EIS, some constituents would release to underlying Devils Gate limestone and would not attenuate in the limestone unit. The focus of the encapsulation cell design is to limit the amount of meteoric water that could contact PAG waste rock thereby reducing the amount of contact water that could reach the bedrock groundwater system.

16-9 Surface water control ditches would be constructed as necessary to preclude meteoric water from flowing into mine pits, onto the external waste rock disposal facility, or heap leach pad. Ditches would divert uncontaminated (non-contact) run-on water into natural drainages down gradient from disturbed areas. Sediment control structures would include silt traps and fences using certified weed free straw, hay bales, or geotextile fabric, and sediment ponds.

Also see Responses 14-10, 15-1, 16-9, *Encapsulation Cell* section in Chapter 2, and the Adaptive Management Plan for Waste Rock in Appendix A.

Table 3-7 and B-2). Results were similar for the ore material. The MWMP results indicate that all the mined material has a relatively high ability to generate leachate with elevated sulfate, metal, and metalloid concentrations. Independent of the PAG results, the mined material should be isolated from groundwater and surface water as part of the mine management system.

16-9 (contd)

Response 16-9

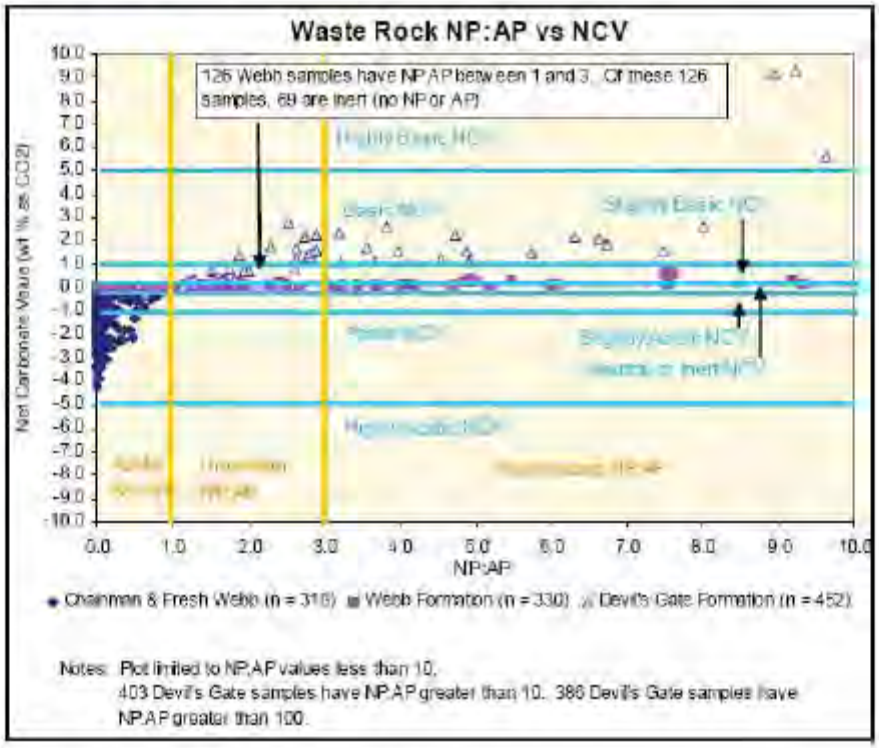
The design of waste rock management system for the Emigrant Project focuses on limiting the amount of meteoric water that could contact PAG waste rock and Non-PAG waste rock and to configure the post-closure reclaimed surface of the mine site to eliminate ponding and infiltration of precipitation. Run-on water would be intercepted and directed around disturbance areas. The closure and reclamation plan is designed to establish vegetation that would maximize evapotranspiration which would further reduce the amount of water available to infiltrate reclaimed areas. See Responses 15-1, 15-9, 16-8, and *Surface Water and Sediment Controls* section inn Chapter 2.

Table 1. Comparison of geochemical testing results for Emigrant waste rock and ore samples subjected to kinetic testing.[1, 2, 3]

Sample No.	Rock Type1	NP:AP	NNP ($TCaCO_3/k$)	NCV ($\%CO_2$)	Humidity Cell (final pH)[4]	Paste pH < 6?	Acid-generating by Newmont Method[5]?
Waste Rock Samples							
1-pulp	C/FW	0.40	-22.2	-0.54	7.25	No	Yes
34-reject	W	0.80	-1.1	0.31	6.45*	No	No
35-reject	W	0.13	-6.5	0.15	6.27*	No	No
36-reject	W	<0.06	-5.3	0.1	5.37*	No	No
37-reject	W	2.32	2.9	0.3	5.97*	No	No
38-reject	W	<0.04	-7.2	0.11	4.98*	Yes	Yes
48-reject	W	1.73	9.5	0.6	5.83*	No	No
Ore Samples							
17-pulp	C/FW	<0.01	-38.6	-0.22	2.81*	Yes	Yes
21-pulp	W	<0.01	-36.9	0.61	4.14*	Yes	Yes
25-reject	W	>1.87	0.5	0	6.73*	No	No
26-reject	W	0.24	-3.1	0	6.71	No	No
29-reject	W	9.33	5	0.03	6.76*	No	No
30-reject	W	0.24	-4.8	0.11	6.5*	No	No
32-reject	W	0.21	-7.4	0	6.42*	No	No
33-reject	W	0.26	-1.4	0.14	6.1	No	No

1 Composite sample 22 not included because it was collected from outside the proposed mine pit area; sample 40 not included because it was prepared with a combination of both Webb and Fresh Webb siltstone. C/FW = Chainman/Fresh Webb siltstone, DG = Devils Gate limestone, W = Webb siltstone
2 light pink = acid-generating, yellow = uncertain, light green = non acid-generating. NP:AP: <1=AG, 1-3=uncertain, >3 non acid-generating (AG). NNP: <-20=AG, -20 - +20 = uncertain, >+20=non AG. NCV: <0=AG, 0=uncertain, >0=non AG. Humidity Cell final pH: <=6.5=AG, >6.5=non AG. Paste pH: <6=AG, >=6=non AG.
3 NP = Neutralization Potential; AP = Acidification Potential, NNP = Net Neutralization Potential, NCV = Net Carbonate Value; TCaCO3/k = tons calcium carbonate per kiloton; %CO2 = percent carbon dioxide. "--" = not tested.
4 For samples with *, pH was still decreasing at end of test.
5 BLM, 2008. Non acid-generating = NCV>0.0%CO2 and paste pH>6.0; acid-generating = NCV<0.0% CO2 or NCV>=0.0% CO2 and paste pH < 6.0. Source: Draft EIS, Tables 3-5 and 3-6; EMS, 2007, Tables A and B.

Figure 1. Comparison of Waste Rock Neutralization Potential (NP) and Acidification Potential (AP) to Net Carbonate Value (NCV), Emigrant Project.



Source: BLM, 2008. Appendix A, Figure A-2.

Controlling Contaminated Leachate

The Revised Draft EIS predicts that the only potentially significant impacts to surface water would result from sediment transport and that any impacts to water quality would be adequately mitigated by surface water control systems, site reclamation, isolation of PAG rock, and lack of interconnection between groundwater and surface water. The Revised Draft EIS predicts that any potential groundwater impacts would be adequately mitigated by the limestone and approximately 450 feet of unsaturated zone underlying the PAG waste rock storage area. However, the underlying limestone will not necessarily be available for contact with or reaction with contaminated leachate emanating from the mine sources. This is due to both the potential for fracture flow to be the predominate flow path, reducing or eliminating contact times, and the potential for the limestone to become unavailable for reaction due to rimming that often occurs after initial contact with acidic solutions. In addition, flow through the unsaturated zone may not take on the characteristic of "slow

16-10

Response 16-10
See Responses 14-12, 15-1, 15-2, 15-11, and 15-12.

dispersed movement" but rather may find the most favorable flow paths, or "finger flow," through the unsaturated zone, which has been observed and investigated at other mine sites.

16-10 (contd)

Newmont has also proposed to encapsulate PAG waste rock with a 10-foot thick layer of non-PAG acid-neutralizing waste rock and place a 0.5- to two-foot thick growth medium cover over each encapsulation cell. However, these specifications do not appear adequate to preclude air and water inflow or to provide sufficient neutralizing capacity. As has been demonstrated at numerous mine sites where acid drainage has occurred, water infiltration and air flow can occur deep inside waste rock dumps (to depths of hundreds of feet). Furthermore, as discussed earlier, non-acidic leachate is projected to exceed water quality standards and must be controlled.

16-11

Response 16-11
See Responses 15-1, 15-2, 15-7, 15-8, 15-12, and 15-15.

In light of the uncertainties discussed above and the potential for contaminated leachate to affect groundwater and surface water resources, we believe the proposed waste rock handling methods are inadequate to protect these resources. We recommend BLM evaluate several alternatives to avoid long-term uncontrolled surface water and groundwater contamination from mine facilities.

BLM should evaluate alternatives to control, capture, and treat any leachate, including non-PAG leachate, from the mine site. Relocation of facilities should be evaluated to determine if control of leachate could be facilitated by careful site designation (i.e., to take advantage of or avoid geologic or hydrologic features). Waste rock handling alternatives should include appropriate cover to prevent or minimize infiltration of meteoric water into and contaminant leaching from either PAG or non-PAG material, as well as a bottom liner and leachate capture system in order to preclude, to the extent practicable, the transmission of any contamination to groundwater or surface water. Any leachate recovered by this alternative could be treated, if necessary, or otherwise discharged or used in mine operations. Other alternatives would involve groundwater capture systems (e.g., slurry walls, French drains, groundwater wells) and treatment systems (passive or active, and targeted for contaminants of concern). We believe additional hydrological characterization would need to be performed to properly design and determine the effectiveness of a capture system. The additional hydrological characterization would also aid in determining the extent to which the proposed mitigation (underlying limestone and unsaturated zone) would truly be effective.

16-12

Response 16-12
See Responses 15-1, 15-2, and 15-4.

16-13

Response 16-13
See Responses 15-1 and 15-2.

16-14

Response 16-14
See Responses 15-1, 15-2, and 15-6.

The Revised Draft EIS only addresses total suspended solids (TSS) with respect to potential monitoring and mitigation measures, and states that other monitoring wells may be required by the Nevada Division of Environmental Protection (NDEP) prior to issuing a mine permit. Based on the potential for groundwater and surface water contamination from mine sources as discussed above, we recommend specific groundwater and surface water monitoring protocols be addressed and evaluated.

The development of additional alternatives for the Emigrant Project should be accompanied by a process that evaluates those alternatives using state-of-the-art means to determine their effectiveness in addressing various contaminant leaching issues. The technical participants in this analysis should settle on the selection of appropriate models for predicting water

16-15

Response 16-15
See Response 15-2; The existing surface water and groundwater monitoring program that has been used to characterize current water resources would be augmented with an additional monitoring program. This additional program would be developed in conjunction with NDEP and BLM. Also see Responses , 15-4, and 15-16.

quality at the Emigrant Mine and use them to conservatively predict contaminant leaching potential and impacts upon various water resource receptors. The models should be used to conduct sensitivity analyses based on various alternative actions (e.g. reduction of infiltrate quantity and/or change in leachate chemistry), and determinations should be made of the likelihood of various outcomes, such as exceedance of applicable water quality standards.

16-15 (contd)

Financial Assurance

The costs of the aforementioned alternatives and mitigation measures should be developed and analyzed. For such controls to be effective, adequate financial assurance for the project's operational, closure, and post-closure phases will be critical. Funds must be adequate to provide for construction, long-term operation, maintenance, and replacement of any treatment facilities and infrastructure for as long as the treatment and facilities are needed after mine closure. Funds must also be adequate for monitoring and follow up mitigation measures over the long-term. The mechanisms to ensure that adequate funding will be available to implement all proposed alternatives and measures to protect water resources need to be thoroughly addressed.

16-16

Response 16-16
See Responses 15-3, 15-17, and 15-19.

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