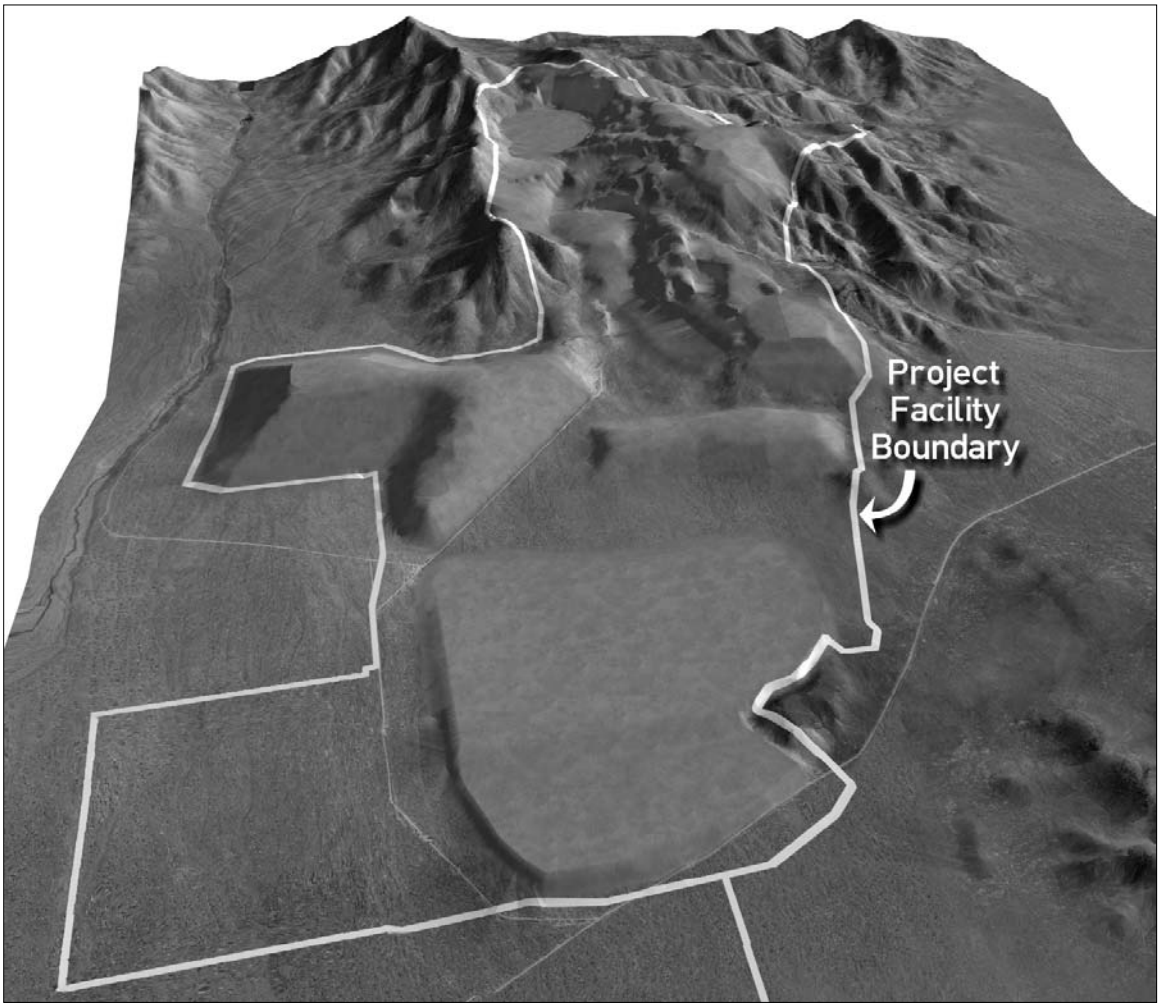
United States Department of the Interior
Bureau of Land Management

Battle Mountain Field Office
Battle Mountain, Nevada

January 2002

Phoenix Project
Final Environmental Impact Statement



Cooperating Agency:

Nevada Department of Conservation and Natural Resources, Division of Wildlife

MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific, and cultural values.

BLM/BM/PL-01/003+1793

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Battle Mountain Field Office
50 Bastian Road
Battle Mountain, Nevada 89820
http://www.nv.blm.gov/battlemountain/

In Reply Refer To:
NV063-99-001P
(NVN067930)
3809
NV063-EIS00-28
1790

Dear Reader:

Enclosed is the Final Environmental Impact Statement (FEIS) for the Phoenix Project, prepared by the Bureau of Land Management, Battle Mountain Field Office. The Phoenix Project is an expansion of current mining operations being proposed by Battle Mountain Gold Company, a wholly owned subsidiary of Newmont Mining Corporation.

The FEIS analyzes the direct, indirect, and cumulative impacts associated with proposed Phoenix Project mining and processing activities. The Phoenix Project is located approximately 12 miles southwest of Battle Mountain, in Lander County, Nevada.

Comments on the FEIS can be sent to the above address, attn: Pam Jarnecke. Comments should be postmarked by February 11, 2002, to ensure full consideration. If you would like any additional information, please contact Pam Jarnecke at (775) 635-4144.

Sincerely,

Gerald M. Smith
Field Manager
Battle Mountain Field Office

FINAL
ENVIRONMENTAL IMPACT STATEMENT
PHOENIX PROJECT
NV063-EIS00-28
NVN-067930

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Battle Mountain Field Office
Cooperating Agency:	Nevada Division of Wildlife
Project Location:	Lander County, Nevada
Comments on this EIS Should be Directed to:	Pam Jarnecke, EIS Project Manager Bureau of Land Management Battle Mountain Field Office 50 Bastian Road Battle Mountain, Nevada 89820 (775) 635-4000
Date Final EIS Filed with EPA:	January 11, 2002
Date by Which Comments Must Be Received by the BLM:	February 11, 2002

ABSTRACT

Battle Mountain Gold Company (BMG) has submitted a Plan of Operations to the Battle Mountain Field Office of the Bureau of Land Management (BLM) to expand its current mining and mineral processing operations in Copper Canyon south of the town of Battle Mountain in Lander County, Nevada. The proposed project would involve developing the Phoenix and Reona pits and expanding the existing Midas and Iron Canyon pits. Mining the ore deposits would be coupled with excavating and processing low-grade gold ore stockpiles associated with previous mining operations. Heap-leach-grade ore would be processed at the existing and proposed expansion of the Reona heap leach facility. Mill-grade ore would be processed at proposed crushing, grinding, and milling facilities. Tailings would be deposited at a new lined tailings facility south of Copper Canyon. The proposed plan also includes closing and reclaiming the previous copper heap leach facilities, lining and isolating the previous copper tailings facility, and backfilling three existing open pits. The proposed expansion would result in approximately 4,295 acres of new disturbance on public and private lands in the Copper Canyon area.

This Final Environmental Impact Statement (EIS) describes the environmental impacts associated with the proposed development of the Phoenix Project (the Proposed Action) and the No Action alternative.

Responsible Official for EIS:

Gerald M. Smith
Field Manager
Battle Mountain Field Office

SUMMARY AND ACRONYMS AND ABBREVIATIONS

SUMMARY

Introduction

Battle Mountain Gold Company (BMG) proposes to expand its current operations near Battle Mountain, Nevada, to include mining and beneficiation of gold, silver, and copper. This operation is located in the Copper Canyon Mining District, which is in Lander County, approximately 12 miles southwest of the town of Battle Mountain, Nevada.

Because of the potential for the proposed project to result in significant environmental impacts, the Bureau of Land Management (BLM) determined that an environmental impact statement (EIS) would be necessary. The BLM is serving as the lead agency for preparing the EIS in compliance with the National Environmental Policy Act of 1969, the Council on Environmental Quality regulations for Implementation of Procedural Provisions of the National Environmental Policy Act (40 Code of Federal Regulations 1500-1508), and the BLM's National Environmental Policy Act Handbook (H-1790-1). The Nevada Division of Wildlife (NDOW) is serving as a cooperating agency for preparation and review of the EIS.

This EIS describes the proposed expansion and development of the Phoenix Project (Proposed Action) and implementation of the No Action alternative, and the environmental consequences of implementing the Proposed Action or the No Action alternative.

Shortly before this EIS was released, Battle Mountain Gold Company merged with Newmont Mining Corporation. BMG shareholders approved the merger on January 5, 2001, and the merger closed on January 10, 2001. As a result of the merger, BMG, the proponent of the Phoenix Project, has become a wholly owned subsidiary of Newmont Mining Corporation. Under an agreement that became effective January 11, 2001, BMG (as a wholly owned subsidiary of Newmont) will continue to own the Phoenix Project, but Newmont will be the operator of the project. At this time, it is not expected that the merger will have any impact on the Proposed Action or the potential environmental impacts of the Proposed Action or the No Action alternative.

Proposed Action

The proposed project would have an estimated operational life of up to 28 years followed by approximately 5 years of reclamation. The proposed project would involve developing the Reona Pit, expanding the existing Fortitude and Northeast Extension pits to create the Phoenix Pit, and expanding the existing Midas Pit and Iron Canyon Pit. Mining the ore deposits would be coupled with excavating and beneficiating low-grade gold ore stockpiles associated with the previous Tomboy, Northeast Extension, and Fortitude mining operations.

Heap-leach-grade run-of-mine and crushed ore would be beneficiated at the existing and proposed expansion of the Reona heap leach facility, while mill-grade ore would be beneficiated at the proposed new crushing, grinding, and milling facilities. The proposed crushing/milling facilities would supply milled ore to a precious metal recovery plant. Tailings material from the beneficiation facility would be deposited at a new lined tailings facility south of Copper Canyon, using the existing disturbance associated with the Copper Canyon copper tailings facility. The heap leach and tailings facilities would be designed as zero-discharge facilities.

The Plan of Operations and Reclamation Plan for the proposed Phoenix Project integrates mining and beneficiation of new ore deposits with closure and reclamation of previous disturbances. The plan incorporates mining the Phoenix, Reona, Midas, and Iron Canyon pits, and excavating the Fortitude, Northeast Extension, and Tomboy stockpiles. The plan also includes closing and reclaiming the copper heap leach facilities, lining and isolating the previous copper tailings facility, and backfilling three existing open pits. The proposed project would result in approximately 4,295 acres of new disturbance in the Copper Canyon area.

No Action Alternative

Under the No Action alternative, current mining operations at the Battle Mountain Complex would continue as they are currently authorized by the BLM and State of Nevada. The proposed new and expanded facilities that comprise the Phoenix Project would not be built. Upon completion of currently permitted mining operations, the existing facilities would be closed and reclaimed in accordance with current permits and applicable federal and state closure and reclamation

requirements. After closure and reclamation, the total area that had been subject to mining and reclamation would be approximately 2,822 acres.

The No Action alternative would include completion of the Reona Project as currently permitted, and closure and reclamation of the Reona Project facilities in accordance with the Reona Reclamation Plan and permits. The No Action alternative also would include closure and reclamation of the other existing facilities in Copper Canyon in accordance with approved closure and reclamation plans and requirements.

Further mining under the Reona Project Plan of Operations could include deepening the Sunshine Pit and expanding the Midas Pit, placement of additional waste rock on the Natomas and Sunshine waste rock facilities, possible backfilling of the Tomboy and Minnie pits with additional waste rock, and leaching of additional ore on the Reona heap leach pads. It is estimated that the additional mining could be completed in approximately 6 months; however, the actual timing and duration of any further mining under the Reona Project would depend upon economic conditions.

Summary of Impacts

Proposed Action

Geology and Minerals

Issues related to geology and minerals include 1) geologic hazards created or exacerbated by project development, 2) failure of or damage to critical facilities caused by seismically induced ground shaking, and 3) exclusion of future mineral resource availability caused by the placement of facilities (tailings, heap leach, waste rock, or ore stockpile).

Dam embankments for Tailings Areas #1 and #2 would be constructed of compacted tailings, mine waste, and alluvial borrow materials over existing copper tailings and alluvium. Slope stability analyses for the dam indicate both the downstream and upstream slopes would be stable under both static and earthquake loading conditions. Seismic deformation analyses indicate that neither the Operational Basis Earthquake nor the Maximum Credible Earthquake design earthquake events would induce deformations during or after construction. Liquefaction is not anticipated to be an issue for long-term stability of Tailings Areas #1 and #2, because the existing copper tailings materials are fairly well drained and are expected to remain unsaturated.

Tailings Area #3 would be constructed in part on existing gold tailings. Construction and operation of Tailings Area #3 relies on the gold tailings being drained and maintained in an unsaturated condition to maintain stability and prevent liquefaction of the tailings under earthquake loading.

Stability analyses indicate that waste rock facilities are expected to remain stable with regard to mass slope stability. Therefore, the likelihood of disruptions to reclamation covers or caps caused by mass slope instability is expected to be low.

The Reona heap leach facility would be expanded. ***The potential for facility damage from seismically induced slope instability and deformation are expected to be minimal***. The heap leach materials would not be susceptible to liquefaction because of their gradational characteristics.

The existing Minnie and Iron Canyon pits and the proposed Phoenix, Reona, and Midas pits would be partially or completely backfilled. Stabilization of the pit walls is not an issue for the Reona, Minnie, and Iron Canyon pits, which would be completely backfilled. The Phoenix and Midas pits would be partially backfilled to elevations above the projected postmining ground water levels. The remaining exposed pit walls may experience periodic slope instability because of weak geologic materials; adversely oriented geologic structures, such as bedding, faults, and jointing; and the presence of ground water. Stabilization of the pit walls is not proposed as part of closure or reclamation. After some period of weathering, it is likely that portions of the pit walls would eventually experience some degree of slope failure. Progressive slope failure through time would tend to expand the perimeter of the pits and reduce the overall angle of the pit slopes. Long-term progressive raveling of the Phoenix Pit walls has a potential for ultimately undermining the toes of adjacent waste rock facilities.

Existing geologic information and condemnation drilling results indicate the placement of the proposed facilities would not conceal known or inferred mineable ore. The mineralization below the facilities is low-grade and presently constitutes non-minable ore. The existing information indicates that with respect to public lands, the Proposed Action would not inhibit future attempts to recover minerals.

Other direct impacts of the Proposed Action on geologic and mineral resources would include 1) the generation and permanent disposal of approximately 135 million tons of tailings material, 910 million tons of waste rock, and 50 million tons of spent heap leach material; 2) the permanent alteration of geologic terrain associated with new disturbance of 4,295 acres on both private and public lands; and 3) the recovery of approximately 5.2 million ounces of gold, 27 million ounces of silver, and 360 million pounds of copper.

Water Resources and Geochemistry

Three of the proposed pits (Reona, Phoenix, and Midas) would extend below the water table and require dewatering. The total dewatering from all pits is estimated to average between 150- to 1,500-gpm over the first 24 years of the project; no pit dewatering is expected after year 24. Ground water also would be pumped from alluvial well fields.

Near the end of mining, pit dewatering would result in a maximum drawdown of approximately 650 feet in the upper Copper Canyon area and over 50 feet of drawdown in the chloride mitigation well field area. By model year 50 (26 years after active mine dewatering ceases, and 19 years after chloride plume pumping ceases), drawdown in the basin fill alluvium is predicted to fully recover. The drawdown centered in upper Copper Canyon is predicted to reach a maximum areal extent at approximately model year 150, measuring approximately 6 miles in a north-south and 4 miles in an east-west direction. After model year 150, the drawdown area would gradually contract, but it is not predicted to fully recover due to a reduction in local recharge in areas covered by reclaimed waste rock facilities.

By the end of mining, the drawdown area (defined by the 10-foot drawdown contour) is predicted to extend into the lower perennial reach of Willow Creek. The lower perennial reach is characterized as a gaining reach that is probably connected to the regional ground water system. A reduction in ground water levels in Willow Creek could reduce flows and possibly reduce the length of the perennial stream reach in this area. The model results indicate that ground water elevations would fully recover in the Willow Creek area within 10 to 15 years after ground water pumping in the alluvial well field ceases. Any reductions in flows in Willow Creek that occur due to mine-induced drawdown are expected to fully recover to pre-Phoenix Project conditions by this time. Excluding local perennial flows associated with spring discharge, there are no other perennial streams located within the predicted drawdown area.

There are 10 inventoried perennial springs located within (or near) the predicted Phoenix Project drawdown area. The interconnection between these springs and the regional bedrock system that would be impacted by long-term, mine-induced drawdown is not well understood. In the late summer and fall, flow from these springs is supported by discharge from the ground water system. If the perennial flow from these springs is interconnected with the regional bedrock ground water system being dewatered, a reduction of ground water levels from mine-induced drawdown would likely reduce discharge to springs located within the ground water drawdown area. Potential impacts to these springs range from a slight reduction in flow to elimination of all flow. Most of these springs occur within areas where the ground water elevation is predicted to experience long-term drawdown impacts and where the ground water elevations are not predicted to fully recover. As a result, any reduction in flows that occurs as a result of drawdown is likely to persist for the foreseeable future.

There are six surface water rights located within the predicted mine-induced drawdown area. The actual potential for impacts to individual surface water rights would depend on the site-specific hydrologic conditions that control surface water discharge. There are five water rights associated with ground water extraction located within the drawdown area. Lowering of water levels in water supply wells could potentially reduce yield, increase pumping costs, or make the well(s) unusable if the water level is lowered below the pump setting or below the bottom of the well.

The simulated water balance for the Buffalo Valley and Lower Reese River Valley hydrographic areas indicates that the project should cause no significant change to the water balance components in this area, including outflow to the north to the middle Humboldt River area.

Under the Proposed Action, all of the open pits that extend below the water table would be backfilled or partially backfilled to preclude pit lake development. Therefore, no impacts associated with pit lake development are anticipated.

Waste rock facilities include pit backfill facilities and surface-deposited facilities. Pit backfill facilities would include complete and partial

backfill designs. Ground water is expected to inundate pit backfill materials after dewatering ceases; these materials would be amended to neutralize acid formed by contact of rebounding ground water.

Most of the waste rock is anticipated to be acid-generating, and all waste rock facilities would have the potential to generate acidic leachate. Oxidized waste rock with neutral or positive net neutralization potential would be selectively handled and used to construct caps for each waste rock facility. Modeling results indicate that infiltration through the waste rock pile could eventually impact ground water quality beneath and downgradient of the waste rock facilities. The Proposed Action includes a Contingent Long-term Groundwater Management Plan that specifies monitoring, and the capture and treatment of impacted ground water to prevent degradation of ground water downgradient of the project facilities. With proper implementation of this contingency plan, significant impacts to ground water downgradient of the collection system are not anticipated.

The heap leach facility is designed to operate as a lined zero-discharge facility. Monitoring would be conducted during operation and closure to verify that no releases have occurred. No impacts to water quality are expected from heap leach operations.

Geochemical tests of tailings from a mill pilot plant indicate that some of the tailings material could potentially generate acid and mobilize metals and other constituents of concern in concentrations that exceed water quality standards. Without chemical additives to adjust the pH, water ponded on the tailings facilities could at times be acidic and contain elevated metal concentrations. However, operation and closure of the tailings facilities are not anticipated to have a significant impact on water quality outside of the facilities because the facilities would be designed and constructed for complete containment to prevent discharge to surface water or ground water.

Some transient impacts to runoff water quality may occur when precipitation comes in contact with potentially acid-generating material in waste rock facilities and in ore stockpiles prior to processing. However, runoff water affected by sulfide oxidation products would be captured and managed. Therefore, no offsite impacts to surface water quality from runoff are expected.

Short-term reductions in seasonal runoff in ephemeral drainages would result in reduced surface water yield from the project area. However, considering that most of the seasonal runoff is lost to evaporation or contributes to ground water recharge, these potential reductions in surface water yield are not anticipated to have a significant impact on surface water resources in the hydrologic study area.

Soils and Reclamation

No significant adverse impacts on soil erosion, slope instability (compromised public safety), or soil productivity would occur, since erosion control, slope design, and reclamation measures would be implemented. Reclamation would include the use of selected growth media, soil amendments, and revegetation practices that have been demonstrated to be effective under similar conditions. Accelerated erosion and sedimentation are not anticipated due to the nature of the reclaimed growth media and the commitment to control erosion and sedimentation through concurrent reclamation, Best Management Practices, and long-term revegetation success.

Waste rock metals concentrations were compared to published soils criteria and benchmarks to evaluate the potential risk to terrestrial organisms that may be exposed to materials in the waste rock facility caps. These criteria have been developed to assess the potential risk to selected species that may forage in areas where elevated concentrations of metals may occur (i.e., at mining sites or other naturally occurring non-mined, mineralized areas). Based on this comparison, the concentrations of metals would pose minimal risk to most terrestrial mammals that are likely to occur in the area. However, these conservative screening evaluations indicate that there could be a risk to soil invertebrates and subsequently to those organisms that consume those invertebrates. The metals that consistently exceeded the risk criteria were arsenic and, to a lesser degree, copper and zinc. In addition, depending on the sensitivity of the plants used for reclamation, the arsenic concentration in the capping material could potentially inhibit plant growth and reclamation success.

Vegetation

A total of 7,073 acres of vegetation in five plant communities within the proposed Phoenix Project area would be disturbed in the short-term following implementation of the Proposed Action; of this

total, 4,295 acres would be new disturbance. A total of 576 acres, associated with pit highwalls, would remain disturbed in the long-term. Nine areas of spring-related vegetation or riparian areas potentially could be affected by ground water drawdown. No special status plant species potentially could be affected. Assuming successful reclamation, appropriate grazing management, and implementation of the noxious weed control plan, there would be no impacts associated with noxious weeds, and there would be a long-term increase in the carrying capacity (available forage) of the plant communities.

As stated under Soils and Reclamation, depending on the sensitivity of the plants used for reclamation, the arsenic concentration in the capping material could potentially inhibit plant growth.

Wildlife and Fisheries Resources

No loss of critical or important habitat for any federally listed threatened, endangered, proposed, or candidate species would occur with the Proposed Action. However, habitat loss has the potential to affect a number of BLM special status bat species, raptors, and game species (mule deer and upland game birds).

Waste rock disposal, backfilling, and recontouring would result in the loss of the Fortitude Mine adits and the Reona Adit Complex. If any of these adits serve as important hibernation or maternity sites for Townsend's big-eared bat or other special status myotis bat species, loss of these adits could result in a reduction of local populations of these bats resulting in a significant wildlife impact.

Construction of the tailings facilities and the tailings pipeline, as well as the excavation of the clay and gravel borrow pits, would affect potential burrowing owl habitat. Since no burrowing owl nests were found in these areas, project development may affect individual burrowing owls by a reduction in available habitat, but it is unlikely to result in a reduction in population viability of burrowing owls.

All located nest sites for other raptor species, except a great horned owl nest, are located more than 0.5-mile away from and out of direct line-of-sight of proposed project development sites. Therefore, any adverse effects on these nest sites would be unlikely. Great horned owls are relatively adaptable to human activity, and project activities are not likely to render this nest site unsuitable for use by great horned owls.

Sage grouse inhabit the cumulative effects area but generally prefer higher elevation habitats than those located within the project area. Project development is unlikely to adversely affect sage grouse populations.

Only minor new disturbance would occur within mule deer yearlong and winter range. There would be no disturbance to mule deer summer range, which is considered most limiting for mule deer populations in the cumulative effects area. The majority of new disturbance would occur at the edge of mule deer winter range or outside of identified mule deer ranges. Therefore, direct impacts to mule deer populations in the cumulative effects area would be minimal, and there would be no disruption of movement corridors between winter and summer range.

Drawdown analyses indicate that the drawdown area would extend into the lower perennial reach of Willow Creek below the Willow Creek reservoirs resulting in a probable reduction in flows in this reach of the creek and reducing the extent of suitable habitat for resident trout species. A loss or decrease of this perennial water system would result in a significant impact.

Drawdown analyses also indicate that springs in Philadelphia Canyon and in Galena Canyon and its tributaries could be affected. Two of these springs, one in Cow Canyon and one in Duck Creek Canyon, support populations of springsnails. Loss of or dewatering of these springs and a subsequent loss of the springsnail population would result in a significant project impact.

Project development also has the potential to indirectly affect mule deer, sage grouse, and other wildlife species by modifying springs and seeps that serve as potential water sources in Philadelphia and Galena canyons and its tributaries. Loss of or dewatering of springs in these tributaries would result in a significant project impact.

Wildlife exposure to contaminated surface water at the tailings facilities, on the heap leach pad, and process ponds would be restricted by fencing. Netting would preclude bird and bat access to the process ponds, although these species groups could gain access to tailings pond waters and accumulations of cyanide solution on the heap

leach pad if leachate solutions are allowed to pool on the surface. WAD cyanide in the tailings pond waters would be reduced by the INCO process or some alternative technology to a level not likely to pose a significant toxicity hazard to wildlife. However, tailings pond water could have a low pH and also contain potentially toxic levels of metals. Industrial Artificial Pond Permits issued by NDOW require that all mine waters containing chemicals lethal to wildlife be fenced and covered to preclude access by all wildlife species and that these areas be monitored for wildlife mortalities. If wildlife mortalities are documented at the tailings or heap leach facilities, additional exclusion methods or process modifications beyond fencing would be required by NDOW.

As stated under Soils and Reclamation, a screening-level analysis was conducted to determine the potential risk to wildlife from chemical constituents in the capping material used for reclamation and revegetation. The risk to wildlife utilizing forage on the reclaimed facilities was determined to be low to moderate.

Range Resources

No significant adverse impacts are anticipated for key grazing areas, stock watering sources, or livestock movement corridors. Potential flow reductions in lower Willow Creek and seeps and springs in Philadelphia and Galena canyons could impact water sources for livestock. Monitoring and reporting of flow changes in these areas would be used to identify impacted areas for mitigation. Approximately 197 animal unit months (3.9 percent of the Copper Canyon allotment's carrying capacity) would be removed annually due to mining. Completion of a perimeter fence would preclude palatable forage annually for an additional 189 animal unit months (3.8 percent carrying capacity). These losses of carrying capacity would not be considered significant.

As stated under Soils and Reclamation, a screening-level analysis was conducted to determine the potential risk to livestock from chemical constituents in the capping material used for reclamation and revegetation. The risk to livestock ultilizing forage on the reclaimed facilities was determined to be low to moderate.

Paleontological Resources

No significant adverse impacts are expected for paleontological resources, since there is a low potential for significant resources to be present in the disturbance areas.

Cultural Resources

Implementation of the Proposed Action would result in direct disturbance to 17 cultural resource sites that have been found to be eligible for the National Register of Historic Places (NRHP) with State Historic Preservation Officer (SHPO) concurrence and 4 potentially NRHP-eligible sites (recommended eligible, recommended not eligible, eligibility undetermined) for which SHPO concurrence is pending.

All of the 21 eligible or potentially eligible or unevaluated sites have been previously mitigated under the Programmatic Agreement (PA) established between BMG, the BLM, and the SHPO. Two potential Traditional Cultural Properties (TCPs), CrNV-62-7027 and -7028, could be indirectly impacted by the Proposed Action. The TCP status of these properties has not been conclusively established during discussions with Native American tribal representatives. BMG has committed to avoiding disturbance at these two sites. No additional concerns have been expressed by Native American representatives if the sites are avoided.

Review of previous cultural inventories in the project area indicates that portions of the proposed fenceline construction area have not been previously surveyed for cultural resources. Potential effects to cultural resources in these areas cannot currently be identified. Prior to implementation of the Proposed Action, previously unsurveyed portions of the proposed fenceline would be surveyed for cultural resources prior to construction. If significant sites are found in these locations, attempts would be made, as identified in the PA, to avoid the sites. If avoidance is not possible, mitigation would be implemented as stipulated in the PA.

Air Quality

The Proposed Action would affect local air quality during project construction and operations; however, air quality emissions are not predicted to cause impacts that would exceed federal or state ambient air quality standards. Air quality would return to background conditions following the completion of mining and subsequent reclamation.

Project activities would result in increased emissions of PM_{10}, SO_2, NO_2, and CO. However,

the estimated concentrations for these pollutants would be below the state and federal ambient air quality standards.

Land Use and Access

The Proposed Action would convert an additional 4,295 acres of public and private land from grazing and wildlife habitat to mining and related uses. The project would be consistent with applicable land use plans. Access to public and private lands via Willow Creek Road would be lengthened slightly due to relocation of the road to accommodate project features, but access would not be impaired beyond the lengthening. Traffic on State Highway (SH) 305 would increase, especially during the morning and evening peak traffic hours. Levels of service on the state highway would decline from "A" to "B," but would remain well above the significance threshold. Traffic on SH-305 would be well below capacity of the highway throughout the life of the project.

Recreation and Wilderness

There would be a very slight and virtually undetectable reduction in land available for dispersed recreation due to the project. There also would be a minor increase in demand for recreation facilities and resources from the project-related population increase. Population declines caused by mine lay-offs have decreased the demand in recent years, allowing for new growth with minimal impact. No adverse effects to designated wilderness or wilderness study areas have been identified.

Social and Economic Values

The Proposed Action would employ from 300 to 350 workers during construction and 250 to 270 workers during operation of the project. Resulting population growth would range from 328 to 453 people in the Battle Mountain area, including from 31 to 98 school-aged children. Although these numbers would exceed the 5 percent threshold established for significance, it is believed that the new people would be largely replacing population reductions due to job lay-offs in recent years, which have not yet shown up in state-produced population estimates. The project would generate construction payrolls of $13 million to $15 million annually during the 18-month construction period. Operations payroll would be about $12.7 million annually. The new population would require housing and public facilities and services; supplies are believed to be sufficient, again based partly on the population losses experienced in the area in recent years. Because no major public service shortfalls have been identified, project-related public revenues are expected to be largely a benefit to the community. In short, the social and economic effects of the proposed project are believed to be beneficial to a Battle Mountain community currently experiencing another of the "bust" cycles common to resource extraction communities throughout the West.

Analyses of the Proposed Action have not identified any disproportionate adverse effects on minority or low-income populations that would be different from effects on the general population of Battle Mountain and Lander County. Nevertheless, in keeping with Executive Order No. 12898, an extensive community outreach effort was made to encourage participation by all interested parties and groups in the review of the proposed Phoenix Project. In addition, a supplementary coordination effort was conducted with the Native American community in the project vicinity to ensure their understanding of the project and to encourage their participation in the review.

Visual Resources

The Proposed Action would result in an expansion of the existing mining and processing facilities in the Copper Canyon area. Additional large and unnatural landforms would be created that would be visible from a variety of viewpoints in the vicinity of the proposed Phoenix Project. Because of their scale and visibility, both short-term and long-term visual impacts would increase. Successful reclamation and revegetation would reduce the level of contrast in landform color and texture, but the unnatural form and line of the landforms would remain as a moderate long-term visual impact.

Noise

The Proposed Action would elevate noise levels slightly at two ranches south of the project site for the life of the project. The increased levels would remain well below the significance threshold. Noise levels would also increase at the Willow Creek picnic area, but are expected to remain below the 65 dBA threshold at that location. Noise-level increases in the town of Battle Mountain would be at virtually undetectable levels.

Hazardous Materials

There is a risk of an accidental release of liquids (sodium cyanide or diesel fuel) during truck transport during the life of the project. There is a 70 percent chance that a single accident involving either one of these substances could occur during the project operations. The environmental effects of a release would depend on the substance, quantity, timing, and location of the release. The event could range from a minor oil spill on the project site where cleanup equipment would be readily available, to a major spill during transport involving a large release of cyanide solution, diesel fuel, or another hazardous substance. Considering the anticipated transport routes, the probability of a spill into a waterway is very low.

Several hazardous substances would be stored and used on-site. Accidents involving cyanide solutions, other process solutions, and flammable or explosive materials also could occur during mine operation. However, proper implementation of the Emergency Response Plan is expected to minimize the potential for significant impacts associated with potential releases of hazardous materials.

No Action Alternative

Geology and Minerals

The No Action alternative would include placement and processing of up to an additional 2 million tons of oxide ore on the existing Reona heap leach pad. Since both the No Action alternative and the Proposed Action involve expansion of the Reona heap leach pad, impacts associated with the No Action alternative would be similar to those previously described under the Proposed Action.

Under the No Action alternative, seven pits would not be backfilled. Stabilization of the pit walls is not proposed as part of closure or reclamation. After some period of weathering, it is likely that portions of the pit walls would eventually experience some degree of slope failure. Progressive slope failure through time would tend to expand the perimeter of the pit and eventually damage portions of waste rock facilities situated within close proximity to the final pit rim (such as North Fortitude, East Fortitude, South Fortitude, Northeast Extension, Copper Leach and Waste, and Tomboy Minnie waste rock facilities).

Existing geologic information and condemnation drilling results indicate the placement of the No Action alternative facilities would not conceal known or inferred mineable ore. The mineralization below the facilities is low-grade and presently constitutes non-minable ore. Therefore, the existing information indicates that the No Action alternative would not inhibit future attempts to recover minerals.

Direct impacts of the No Action alternative on geologic and mineral resources would include 1) the generation and permanent disposal of up to approximately 4 million tons of waste rock and 2 million tons of spent heap leach material; 2) the permanent alteration of geologic terrain associated with new disturbance of approximately 44 acres on both private and public lands; and 3) the mining and recovery of approximately 40,000 ounces of gold and 270,000 ounces of silver.

Water Resources and Geochemistry

There would be no additional pit dewatering with the No Action alternative. Pits would not be backfilled, and pit lakes would be allowed to develop. Pumping would continue at three existing extraction wells at a combined rate of approximately 2,000 gpm for an estimated 10 years to mitigate the chloride plume near the tailings disposal area. Additional pumping would continue at other alluvial wells to provide clean water for reclamation and other mine uses.

In model year 25, ground water levels in the southern portion of the Copper Canyon area are expected to be lower than baseline conditions. The area of drawdown is predicted to extend approximately 2.5 miles in a north-south direction and 2.5 miles in an east-west direction centered on the Midas Pit area. Maximum drawdown of up to 500 feet is predicted to occur in the Midas Pit area caused by discharge from existing deep boreholes located in this area. Between model years 25 and 400, the areal extent of the drawdown is predicted to remain relatively constant over the southern Copper Canyon area.

Ground water recovery is predicted to occur in the postmining period in the vicinity of the chloride plume mitigation well field area, and in the Fortitude Pit area. In the chloride plume well field area, ground water elevations would rise approximately 10 feet. Ground water levels are expected to gradually rise more than 200 feet locally around the Fortitude Pit as the pit lake develops. By model year 400, ground water recovery would extend throughout the upper Willow Creek and Galena Canyon areas.

There are no perennial stream reaches located within or near the predicted drawdown area. Therefore, impacts to perennial streams from drawdown are not anticipated. One perennial spring is located within the predicted drawdown area. Flow within this spring may be reduced or eliminated. Any impact that occurs to this spring is unlikely to recover in the foreseeable future. The predicted long-term increase in ground water levels could result in additional ground water discharge (in the form of spring discharge to the stream) in the upper perennial reach of Willow Creek.

None of the surface water rights or ground water rights located in the project vicinity occur within the drawdown area predicted for the No Action alternative. Therefore, localized mine-induced drawdown associated with the No Action alternative is not likely to impact any water resources associated with existing water rights.

The Fortitude Pit lake is predicted to begin to form immediately and to continue to fill as the water table continues to rise over the next several hundred years. At 95 percent recovery, the pit lake is expected to have a surface area of 38 acres and depth of 285 feet. A small pond may also form in the Minnie Pit.

The water quality of the Fortitude Pit lake is predicted to have neutral pH and a sulfate concentration of approximately 1,000 mg/L with some constituents exceeding secondary drinking water quality standards. In the long term, the concentrations of constituents in the Fortitude Pit lake could increase due to evaporative concentration. Ground water flow modeling predicts that an outflow of pit lake water to downgradient ground water would occur at a rate of approximately 40 gpm after steady-state conditions are reached.

Water was observed in the Minnie Pit in late 1999, but disappeared in early 2000 due to drilling exploration before it could be sampled. If water does pond in the Minnie Pit, it would likely be acidic with some elevated metals concentrations.

The geochemical studies have determined that the vast majority of the waste rock material is potentially acid generating. Modeling results indicate that infiltration through the waste rock pile could eventually degrade ground water quality beneath and downgradient of these facilities. There is currently no plan in place to mitigate the predicted long-term infiltration from the waste rock facilities. In addition, there is no proposal or requirement for long-term monitoring of ground water quality either at or downgradient of the facilities. Therefore, under the No Action alternative, there is the potential for long-term impacts to ground water quality during the postclosure period.

Impacts to water quality resulting from runoff over sulfide bearing waste rock or ore stockpiles would be the same as for the Proposed Action. The effects of runoff on water quality would be expected to be minimal following closure, since facilities containing potential acid generating waste rock material would be capped with non-acid generating waste rock material.

Continuing heap leach operations are not expected to cause impacts to surface or ground water quality. Closure of the facility under the No Action alternative would remove the potential for post-closure impacts to water quality. No additional water quality impacts would be expected from the inactive tailings facility under the No Action alternative.

Soils and Reclamation

Reclamation and erosion control programs for the No Action alternative would be similar to the Proposed Action but would vary in the extent of additional soil disturbance and subsequent reclamation. Approximately 45 acres of additional disturbance associated with the Midas Pit would occur. Site recontouring, drainage, and erosion control would be similar to the Proposed Action. An approximately 1-foot cover of growth media materials would be used for the waste rock facilities; there is some uncertainty regarding the availability of suitable materials. Like the Proposed Action, there is a potential for plant uptake and bioaccumulation of dissolved metals in excess of irrigation or livestock watering standards.

Vegetation

Impacts associated with vegetation disturbance, special status plant species, and noxious weeds would be similar to those discussed for the Proposed Action. Most of the disturbance associated with the operations of the No Action alternative has previously occurred. An additional 45 acres associated with the Midas Pit would be disturbed, resulting in additional impacts to the Shadscale and Budsage/Grassland vegetation community.

Wildlife and Fisheries

Under the No Action alternative, there would be very little additional surface disturbance. A smaller percentage of pit area would be backfilled and reclaimed under the No Action alternative, and the existing pit lake would remain in the Fortitude Pit. Because there would be substantially less backfill of pits with this alternative, existing mine adits with documented bat use would not be backfilled, and existing levels of bat use would continue.

Water quality in the Fortitude Pit lake had a neutral pH and met all Nevada primary drinking water quality criteria in 1999. The water exceeded the secondary standard for iron, aluminum, manganese, and sulfate. Over a longer period, the concentrations of precipitates in the Fortitude Pit lake could increase due to evaporative concentration. It is uncertain whether increased concentrations of constituents over time would eventually reach levels that could have adverse effects on wildlife drinking from or using the Fortitude Pit lake for resting or foraging. If shallow lakes form in the Minnie and Bonanza pits, these waters would have a low pH and contain elevated levels of metals, which would be potentially toxic to wildlife.

Range Resources

Impacts to range resources under the No Action alternative would be similar to the Proposed Action. Approximately 126 animal unit months per year of grazing habitat would be lost in association with a total of 492 acres of unreclaimed pit areas.

Paleontological Resources

As for the Proposed Action, no significant adverse impacts are expected to paleontological resources, since there is a low potential for significant resources to be present in the disturbance areas.

Cultural Resources

Potential impacts to cultural resources under the No Action alternative would be similar to those discussed for the Proposed Action with the following exceptions. Implementation of the No Action alternative potentially would result in direct impacts to 9 sites that have been found to be NRHP-eligible with SHPO concurrence and 3 potentially NRHP-eligible (recommended eligible, unevaluated, or recommended not eligible pending SHPO concurrence) cultural sites. Portions of 8 of these 12 sites have been previously affected by existing operations at the Battle Mountain Complex. All of the sites have been previously treated as stipulated under the PA.

Air Quality

The No Action alternative comprises the existing facilities and operations that are authorized by the Nevada Bureau of Air Quality under an existing Class II Air Quality Permit to Operate. No exceedence of any state or federal ambient air quality standard is predicted to occur.

Land Use and Access

Under the No Action alternative, approximately 45 acres of new disturbance would occur in association with the Midas Pit. The principal land uses would not change during the life of the project; therefore, there would be no impact to these land uses and existing land use patterns. All rights-of-way necessary to support operation of the No Action alternative are currently in place. Three land use authorizations would be affected by the additional disturbance, including a power line, communication line, and water line; these facilities would require relocation. Traffic on SH-305 would be well below the highway capacity.

Recreation and Wilderness

Implementation of the No Action alternative would not remove any public lands currently available for dispersed recreation; recreational use is already precluded for safety and security reasons. Developed recreational facilities within the region and within the town of Battle Mountain would not be adversely affected by the estimated 80 workers required for the 6-month duration of the No Action alternative. There would be no impact to wilderness areas or wilderness study areas.

Social and Economic Values

Under the No Action alternative, an additional 80 workers would be employed for approximately 6 months. There would be a temporary increase to the area population of approximately 53 people, followed by a return to approximately current levels for the 5-year period of closure and reclamation. Resumption of mining would raise the project-generated income and employment for a brief 6-month period. Tax contributions to local agencies during operations would be approximately $130,000, primarily for property and sales taxes. Impacts to local school enrollment,

housing, and other public services would be minor. No displacement of existing residences or businesses would occur, and there would be no disproportionate adverse effects to low-income or minority populations associated with the No Action alternative.

Visual Resources

The No Action alternative would result in very little additional visual impact to the existing landscape in the project area during operations. Following reclamation, the degree of visual contrast would be improved. Visual contrasts and visual impacts would be low and in conformance with the visual resource management Class IV area.

Noise

No measurable effects on noise at sensitive receptor locations are anticipated during the additional 6-month period of operations associated with the No Action alternative.

Hazardous Materials

The probability analysis indicated that the potential for an accidental release of liquids during truck transport during the 6-month operational life of the No Action alternative is very low. Due to the short project life, the potential for accidental releases during operation are less than discussed for the Proposed Action. As with the Proposed Action, the Emergency Response Plan is expected to effectively minimize the potential impacts associated with a release of hazardous materials.

BLM Preferred Alternative

Chapter V, Section B.2.b. of the BLM NEPA Handbook directs that "The manager responsible for preparing the EIS should select the BLM's preferred alternative. ... For externally initiated proposals, ... the BLM selects its preferred alternative unless another law prohibits such an expression. ... The selection of the preferred alternative should be based on the environmental analysis as well as consideration of other factors which influence the decision or are required under another statutory authority."

The BLM has selected a preferred alternative based on the analysis in this EIS; this preferred alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, considering economic, environmental, technical, and other factors. The BLM has determined that the preferred alternative is the Proposed Action as described in Chapter 2.0 with the inclusion of the mitigation measures to the Proposed Action specified in Chapter 3.0.

The selection of the Proposed Action as the BLM's preferred alternative rather than the No Action alternative is based on the impacts associated with water resources and geochemistry, and social and economic values. The No Action alternative potentially could have significant adverse water resources and geochemistry impacts (Section 3.2.2.2) from the development of acidic pit lakes and ground water degradation from existing waste rock facilities. The Proposed Action ***with the inclusion of the Contingent Long-term Groundwater Management Plan*** provides greater assurance that these impacts would not occur, or would be mitigated. No pit lakes would occur under the Proposed Action, and the proposed design, monitoring, and mitigation measures for the waste rock facilities in the Proposed Action would eliminate or greatly reduce potential ground water degradation from both the existing and proposed facilities. The Proposed Action would have beneficial social and economic impacts (Section 3.12.2.1) resulting from up to 28 years of employment for up to 435 individuals (includes up to 250 direct and 185 indirect jobs). Under the No Action alternative, 20 individuals would continue to be employed through a 5-year closure period, unless an improved gold price allowed mining to resume under existing permits. In this case, up to 80 individuals would be employed for 6 months before the 5-year closure period was completed with 20 individuals. The Proposed Action also is preferred because under the No Action alternative, identified mineral resources would not be developed.

ACRONYMS AND ABBREVIATIONS

µg/g	micrograms per gram
µg/m^3	micrograms per cubic meter
µg/L	micrograms per liter
AAQS	ambient air quality standards
ABA	acid-base accounting
AGP	acid-generating potential
amsl	above mean sea level
ANP	acid-neutralizing potential
APE	Area of Potential Effect
AUM	animal unit month
BHCR	Baseline Hydrologic Characterization Report
BLM	Bureau of Land Management
BMG	Battle Mountain Gold Company
CAAA	Clean Air Act Amendments of 1990
CEQ	Council on Environmental Quality
CIL	carbon-in-leach
CFR	Code of Federal Regulations
CO	carbon monoxide
DRTP	data recovery and treatment plan
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
gpm	gallons per minute
HAP	hazardous air pollutant
HDPE	high-density polyethylene
ISCST3	Industrial Source Complex Short Term 3 (EPA computer model)
kV	kilovolt
LDPE	low-density polyethylene
m^2	square meters
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mou	memorandum of understanding
MWMP	meteoric water mobility procedure
Na	sodium
NAAQS	National Ambient Air Quality Standards
NaCl	sodium chloride
NAG	net acid generation
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act
NNP	net neutralization potential
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NRHP	National Register of Historic Places

O_3	ozone
PA	Programmatic Agreement
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
PMF	probable maximum flood
PSD	Prevention of Significant Deterioration
SAG	semi-autogenous grinding
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SO_4	sulfate
TCP	Traditional Cultural Property
TDS	total dissolved solids
TSP	total suspended particulates
TSS	total suspended solids
USGS	U.S. Geological Survey
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WSA	wilderness study area

TABLE OF CONTENTS

CONTENTS

LIST OF TABLES

LIST OF FIGURES