

## SUMMARY

Newmont Mining Corporation (Newmont) proposes to develop and operate an open pit mine with associated surface support facilities at the Emigrant Project in Elko County, Nevada. The Project would result in development of an open pit mine, construction of a waste rock disposal facility and oxide heap leach facility, excavation of borrow material areas, construction of haul roads and ancillary facilities, and continued exploration activities. Development of the Emigrant Project is described in a Plan of Operations submitted in February 2004, revised in May 2004, and re-submitted with further revision in March 2007 to the Elko Field Office of the Bureau of Land Management (BLM). The Emigrant Project is located on public and private land in Elko County, Nevada approximately 10 miles south of Carlin, Nevada.

This Environmental Impact Statement (EIS) describes Newmont's Proposed Action, No Action alternative, and environmental consequences that could result from implementation of these actions. Potential direct, indirect, and cumulative effects on the environment are analyzed in this EIS. Impacts described herein will form the basis for a BLM decision regarding the Proposed Action, No Action alternative, and selection of appropriate mitigation measures. No distinction is made in this EIS between potential impacts on public versus private land that would result from possible authorizations by BLM.

### SUMMARY OF PROPOSED ACTION

Implementation of Newmont's Proposed Action would result in removal of ore and waste rock from multiple phases of an open pit mine. Approximately 83 million tons (Mt) of waste

rock would be removed to extract and leach 92Mt of ore over a 14-year operational life. Development of the Emigrant Project would disturb approximately 1,418 acres, of which 1,170 acres are public land (including 442 acres of public surface and private mineral estate) and 248 acres of private land.

The proposed open pit mine would be approximately 615 acres. Mining would progress in a series of phases beginning at lower elevations of the southern mine pit area. Dewatering would not be necessary because the mine pit would not extend below the groundwater table.

A waste rock disposal facility would be necessary during the first three phases of mine development. This facility would be located outside (external) proposed pit boundaries and used only for disposal of non-potentially acid generating (Non-PAG) waste rock. The external waste rock disposal facility would cover 78 acres extending 190 feet above existing topography with a capacity of 15Mt. Waste rock generated from subsequent mining phases would be placed in mined-out portions of the pit. Potentially acid generating (PAG) waste rock would not be placed in the external waste rock disposal facility.

PAG waste rock encountered during mine development would be placed in cells and encapsulated with material (Encapsulation Material) that exhibits an acid neutralizing potential to acid generating potential (ANP:AGP) ratio of at least 3:1. Encapsulation would be 10-feet thick on all portions of the cell (bottom, sides, and top). PAG would be placed on top of a sloped 10-foot thick bottom layer of Encapsulation Material and compacted in small lifts using random wheel compaction techniques.

Based on the current mine plan, approximately 5 percent (4Mt) of total waste rock to be excavated (83Mt) would be managed as PAG waste rock.

Low-grade oxide ore would be placed on a heap leach facility constructed south of the mine pit. The heap leach facility would be constructed in three phases on approximately 344 acres rising to an ultimate height of 300 feet above existing ground surface. The heap leach would be a run-of-mine facility so that crushing of ore would not be necessary at this time. In the future, if crushing becomes necessary, Newmont would obtain necessary permits from the Nevada Division of Environmental Protection (NDEP).

Ore and waste rock would be drilled and blasted in sequential benches to facilitate loading and hauling. Blasted ore and waste rock would be loaded into off-road, end-dump haul trucks using shovels and front-end loaders. Benches would be established at approximately 20-foot vertical intervals with bench widths varying to include safety berms and haul roads. Haul trucks would move within the pit using roads on the surface of benches with ramps extending between two or more benches.

Two tributary drainages to Dixie Creek exhibit perennial flow immediately west of the proposed mine area. These two channels combine to form a single channel at the west side of the proposed mine pit. Below the confluence of these channels, flow is ephemeral and intermittent and occurs in response to spring snow-melt and major rain storms. A permanent engineered stream channel for this drainage would be constructed across the southern part of the proposed mine pit area during the first two phases of mining.

## **PHASE I MINING**

Mining would begin at the south end of the deposit above the existing streambed elevation and extend eastward to establish a highwall. The next sequence would involve mining down to the streambed and constructing the engineered stream channel to the east of the existing streambed. Flow would continue in the existing channel until this section of the diversion is completed. Once the new engineered stream channel is established, flow would be diverted into the new channel, which would allow mining to progress below the level of the original streambed. Non-PAG waste rock generated during this phase of mine development would be placed in the external waste rock disposal facility. PAG waste rock would be segregated and placed in a mined-out portion of the pit on benches of Devils Gate limestone, and encapsulated with a minimum of 10 feet of neutralizing waste rock.

## **PHASE II MINING**

This phase of mine development would be similar to Phase I, but would occur on the north or upper section of the drainage. Excavation would progress eastward above the existing elevation of the streambed allowing flow to remain in the existing channel. Portions of Non-PAG waste rock generated during this phase would be placed in the external waste rock disposal facility and some would be used as backfill in mined-out portions of the Phase I sequence. Upon completion, surface flow would be redirected into the engineered stream channel and mining below the streambed would occur. The permanent engineered stream channel would be completed at the end of Phase II mining sequence. The new engineered stream channel would be constructed at the same grade as the original streambed (4%) and would be located entirely on Devils Gate limestone.

## **PHASE III THROUGH PHASE VIII MINING**

Once Phase I and Phase II mining are complete, and the permanent stream channel established, mining would proceed from lower elevations of the deposit toward higher elevations. A portion of Non-PAG waste rock generated during Phase III of mining would be placed in the external waste rock disposal facility. Subsequent waste rock generated through Phase VIII would be placed as backfill within mined-out portions of the pit. PAG waste rock encountered during these phases of mining would be encapsulated in the same manner as described above.

## **ANCILLARY FACILITIES**

Ancillary facilities would include an operations office, processing facility, and septic leach field constructed near the south end of the heap leach facility. Existing shops at the Rain Mine facility would be used for equipment and vehicle maintenance. A lime silo would be installed at the northern end of the heap leach facility. Above ground diesel storage tanks would be located in the equipment fueling area near the external waste rock disposal facility. A prill silo would be located adjacent to the road from the Rain Mine to the Project area. Other ancillary facilities associated with the Project include explosives magazines, water fill stations, and growth media stockpiles. Growth media stockpiles would be located throughout the Project area.

Berms and ditches would be constructed as appropriate to preclude meteoric water from flowing into mine pits, or onto the external waste rock disposal facility. Sediment control measures would be implemented, as necessary to reduce soil movement within the site and to minimize off-site effects. These structures would be designed and constructed to allow access for maintenance throughout the life of

the Project. Soil collected in these structures would be periodically removed and placed in the soil stockpile or on reclaimed areas. Sediment control structures would be removed once vegetation has stabilized on reclaimed areas.

## **RECLAMATION**

Reclamation activities would include regrading the external waste rock disposal facility and heap leach pad, removing structures after cessation of operations, regrading disturbed areas (including roads), drainage control, removing and regrading stockpile areas, replacing salvaged growth media, revegetation, and reclamation and diversion control monitoring. The reclamation schedule would encompass the period between cessation of mining through revegetation. Reclamation would take place concurrent with operations, where possible.

## **SUMMARY OF IMPACTS**

Analysis of potential impacts and mitigations associated with Newmont's proposed Emigrant Project is presented in Chapter 3 - *Affected Environment and Environmental Consequences*. The following is a summary of potential impacts, by resource, resulting from the Proposed Action and No Action Alternative.

## **GEOLOGY AND MINERALS**

### **Proposed Action**

Direct impacts to the geologic resource associated with implementation of the Proposed Action include relocation of approximately 83Mt of waste rock and 92Mt of ore. No known important paleontological resources (e.g., vertebrate fossils or fossil quarries) are located in the area to be disturbed by the Proposed Action. Seismic risk is acceptable with

respect to the stability of proposed waste rock and heap leach facilities resulting from earthquakes that may affect the Emigrant Project site.

The Proposed Action involves excavation and exposure of waste rock and ore to oxygen and precipitation, which could result in formation of acidic water. Acidic water contact with minerals in the waste rock and ore could result in release of trace elements into groundwater and surface water at concentrations above background levels and/or water quality standards. In order to characterize the potential for the primary rock types at the Emigrant Mine site to generate acid and/or mobilize metals, several static and kinetic tests were performed.

Initial static Acid-Base Accounting tests conducted by Newmont generally show that the unoxidized Chainman/Fresh Webb siltstone (1% of waste rock and 3% of ore) is PAG; whereas the Devils Gate limestone (32% of waste rock and 21% of ore) is Non-PAG. A small portion of the remaining primary rock type (oxidized Webb siltstone) was determined to have a potential to generate acid.

Initial static testing to determine potential for acid generation of rock was conducted by Newmont in 2002 for 1,272 samples of waste rock and ore. As a result of some uncertainty in the oxidized Webb siltstone, supplemental testing was conducted by Newmont in 2005-2006 using 36 representative composite samples. Supplemental testing included both static and kinetic tests. Results of the supplemental static tests in 2005-2006 generally confirmed initial static test results for the Chainman/Fresh Webb siltstone and Devils Gate limestone samples. Supplemental kinetic tests show that some of the oxidized Webb siltstone has potential to generate acid. Newmont conducted another set of tests in 2008 that evaluated Paste pH and Net

Carbonate Value (static tests) for 1,271 composite samples of oxidized waste rock and ore.

Based on the static and kinetic testing results, and a comparison of the Paste pH tests with the kinetic Humidity Cell tests, a recommendation has been made to revise the criteria for classifying rock as potentially acid producing in the field using Net Carbonate Value (NCV) and Paste pH: PAG rock =  $[NCV < 0\% \text{ CO}_2]$  or  $[NCV > 0\% \text{ CO}_2 \text{ and Paste pH} < 6]$ . Using the revised criteria, potentially acid generating rock at the Emigrant Mine would total approximately 4Mt or 5 percent of total waste rock to be removed during mining. Newmont's mine plan is designed to manage this tonnage of rock as PAG.

To address discrepancies in the acid generation potential of certain waste rock lithologies Newmont, in consultation with the NDEP and BLM, developed an Adaptive Management Plan (AMP) for Waste Rock to verify predicted waste rock behavior associated with development of the proposed Emigrant Project. The AMP identifies future waste rock characterization and monitoring associated with the Project and options that could be employed to manage PAG waste rock should the volume of PAG waste rock differ from the current plan or a revised method for managing PAG waste rock be warranted.

Potential for mobilizing metals from waste rock and ore at the Emigrant site was evaluated using analysis of leachate collected during Meteoric Water Mobility Procedure tests and Humidity Cell tests. In general, metal mobility was higher for PAG rock. Constituents for which NDEP Profile I reference values were most commonly exceeded in waste rock and ore tests include aluminum, arsenic, manganese, nickel, thallium, fluoride, and sulfate.

Isolation and encapsulation of PAG waste rock with a 10-foot thick layer of neutralizing rock (ANP:AGP ratio of 3:1) on all portions of the cell (bottom, sides, top) would provide some buffering material around PAG rock, and would limit exposure of this rock to oxygen and direct meteoric water; thereby reducing potential for acid generation. In addition, PAG waste rock would be placed onto limestone benches in the mine pit. Acidic seepage that may be generated by waste rock would be neutralized by the underlying limestone. PAG rock may be exposed during mining in the west pit highwalls. These exposures would be reclaimed during pit backfilling by buffering with limestone waste rock. The reclaimed surface of all PAG encapsulation cells would include placement of 2-feet of growth media as a store-and-release cover which would minimize infiltration of water into the PAG cell.

Thickness of the unsaturated zone beneath the mine pit (approximately 450 feet) would result in slow dispersed movement of unsaturated flow. Unsaturated seepage from backfilled pits into the Devils Gate limestone would move primarily within interconnected fractures. Slow downward advancement of unsaturated flow in the limestone provides increased opportunity for attenuation and precipitation of metals in the limestone. Results of unsaturated flow modeling are summarized in the *Water Quantity and Quality* section.

Waste rock at the Emigrant site would be regraded, covered with growth media, and revegetated. This type of store-and-release cover is effective in reducing infiltration rates into the underlying waste rock, especially in climatic conditions characteristic of the Emigrant Project area.

Acidity potentially produced by ore on the leach pad would be neutralized by the leaching solution which is maintained at basic pH values. This potentially acid producing ore (mined

during early phases) represents approximately 3 percent of the ore placed on the heap leach pad. In addition, a soil water balance cover would be placed on the heap leach pad at closure. For these reasons, it is unlikely that acid generation would occur from ore at the Emigrant Project site.

### **No Action**

The No Action alternative would avoid potential direct and indirect impacts of the Proposed Action. It would also eliminate recovery of approximately 92Mt of ore from the geologic resource, and the gold reserve intended to be mined would remain in-place. Paleontological resources, if present, would not be affected.

## **AIR QUALITY**

### **Proposed Action**

Mining-related activities at the Emigrant Project would be a source of particulate and gaseous air pollutants. Fugitive dust emissions would be generated by mining, loading, hauling, and placing ore on the heap leach facility, and disposal of waste rock. Particulate emissions would be mitigated by minimization of drop heights during loading, dust suppression and procedures outlined in the Handbook of Best Management Practices. Gaseous pollutant emissions would result from blasting, construction and mining equipment, and vehicle exhaust. These emissions would be minimized by proper equipment maintenance and operation.

A comprehensive inventory of potential sources and modeled emission rates for five criteria air pollutants (PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>x</sub> (a conservative substitute for NO<sub>2</sub>) and SO<sub>2</sub>) were performed for the proposed Emigrant Project. Estimates of air pollutant emission rates were

made from each emission unit (e.g., mine pit, waste rock disposal areas, heap leach facility) for operational year 8, the project year determined to have the potential for the greatest air pollution emissions. Model results demonstrate that emissions of the five criteria air pollutants from the proposed Project, when added to the representative background air pollutant concentrations, would not exceed National or Nevada ambient air quality standards.

In addition to regulated gaseous emissions, CO<sub>2</sub>, an unregulated gas, is produced during consumption of diesel fuel by mining equipment. Under the Proposed Action, Newmont estimates that approximately 2.3 million gallons of diesel fuel would be consumed annually emitting about 19,000 tons of CO<sub>2</sub>.

Mercury emissions are associated with the carbon handling and refinery services that would process Emigrant ore. These services would be performed at Newmont's South Operations Area located approximately 15 miles north of the Emigrant Project. Maximum potential hourly emissions would not increase due to processing of loaded carbon columns from the Emigrant Project at the South Operations Area. Based on the average mercury content of Emigrant ore (4.0 ppm) approximately 1,100 lbs of mercury would load to the carbon columns annually. Emission factors based on 2008 source testing for Newmont's South Operations Area processing facilities indicate that 99.89 percent of the mercury is retained or removed through emission controls at the roaster and carbon regeneration plant. As a result, the average annual mercury emissions from processing Emigrant Project carbon columns would be approximately 2 lbs. Mercury emissions from Newmont's Mill 5/6 in 2008 totaled 422 lbs. Assuming that the annual ore and carbon processing at Mill 5/6 would remain at 2008

levels, processing carbon columns from the Emigrant Project would constitute 0.4 percent of total mercury emissions from Mill 5/6.

Given that the mercury content of Emigrant Project ore is low (4.0 ppm) compared with other ore sources, when combined with control technology, processing carbon columns from Emigrant as a batch or blended with other ore (columns) would not increase annual mercury emissions from the Mill 5/6 facility, but would extend the period of emissions and increase the total amount of mercury emitted from Mill 5/6.

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.

Newmont has obtained a Class II Air Quality Operating Permit (AP1041-2085) from the Nevada Bureau of Air Pollution Control for the Emigrant Project. The Emigrant Project is located within an area classified by NDEP as an Attainment Area indicating air pollution levels in the area do not exceed ambient standards. Emigrant Project emissions would not affect air quality or visibility in any Class I areas.

### **No Action**

The No Action alternative would avoid potential direct and indirect impacts of the Proposed Action to air resources.

## **WATER QUANTITY AND QUALITY**

### **Proposed Action**

The Proposed Action would have direct impacts on some water resources in the Project area. Impacts to surface water would be associated primarily with diversion and replacement of a natural intermittent stream with an engineered

stream channel through the operational and reclaimed mine pit area. The engineered stream channel would allow continued natural surface water flow volumes to move through the Emigrant Project site. Backfilling and reclamation of the mine pit also would allow natural runoff conditions to occur after completion of post-mining activities.

Areas to be disturbed by mine-related activities (e.g., roads, mine pit, waste rock disposal area, and heap leach facility) would result in increased erosion and sedimentation until reclaimed vegetation has been sufficiently established. Best Management Practices would be implemented, as part of storm water permit requirements, for disturbed areas to prevent or minimize sediment movement to off-site areas. A monitoring program would be implemented to verify on-site control of erosion and sedimentation. If on-site increases in sediment load to surface water did occur from the Emigrant Project, these increases could extend to Dixie Creek and possibly South Fork Humboldt River.

Short-term impacts to groundwater levels would result due to removal of water by production wells in the central part of Dixie Creek Valley. These wells and conveyance systems would transport water from the valley bottom to proposed mine facilities located farther upland on the west side of Dixie Creek Valley. This groundwater pumping, however, has been occurring since 1988 for the nearby Rain Mine. Groundwater withdrawal from the production wells for the proposed Emigrant Project (130 to 140 million gals/yr) would be similar to full water production for the Rain Mine (138 million gal/yr peak production). Water production for the Rain Mine has been reduced to about 2 to 3 million gals/yr.

The Emigrant Project ore body is shallow and would be mined above the groundwater table in bedrock. Therefore, impacts to groundwater levels and discharge from springs are not expected as a result of the mine pit.

Another potential impact could involve release of trace elements into groundwater or surface water at concentrations above water quality standards from the backfilled mine pit and/or Non-PAG waste rock disposal facility. Excavation and exposure of waste rock and ore associated with the Proposed Action to oxygen and precipitation could result in formation of acidic water and resultant release of metals to groundwater and/or surface water. Testing performed to characterize the potential for the primary rock types at the Emigrant Mine site to generate acid and/or mobilize metals is described in the *Geology and Minerals* section.

Ore placed on the lined leach pad would be neutralized by the leaching solution. At closure, a store-and-release cover comprised of growth media and vegetation would be constructed over the leach pad. Residual drain-down of leachate from the heap would be managed in an evapotranspiration cell, to be operated until leachate no longer drains from the heap, or the water quality is acceptable for discharge.

Thickness of the unsaturated zone beneath the mine pit (approximately 450 feet) would result in slow dispersed movement of seepage from the pit bottom, unless preferential pathways of water movement develop. Any fractures created in the underlying Devils Gate limestone as a result of blasting at the mine would not propagate to depth. The slow downward advancement of any seepage also provides greater opportunity for attenuation and precipitation of any metals from seepage water to the Devils Gate limestone. Results of unsaturated zone seepage modeling show that

seepage would discharge from the base of the PAG cell at a rate in the range of 0.021 to 0.223 acre-feet/acre/year, which is equivalent to 1 to 14 gal/min for a 100-acre PAG cell. This flux of unsaturated water flow would move down through about 450 feet of limestone before reaching the groundwater table.

Waste rock at the Emigrant site would be regraded, covered with growth media, and revegetated. This type of store-and-release cover is effective in reducing infiltration rates into the underlying waste rock, especially in climatic conditions characteristic of the Emigrant Project area.

### **No Action**

The No Action alternative would result in no change to natural stream channels in the Project area, no make-up water pumping from wells in Dixie Creek Valley, and no potential quality impacts to groundwater and/or surface water from the mine pit and waste rock disposal area. Impacts to surface water resources associated with other ground disturbing activities (*i.e.*, grazing) in the area would continue.

### **SOIL RESOURCES**

#### **Proposed Action**

The proposed Emigrant Project would result in approximately 1,418 acres of surface disturbance including the mine pit area, haul roads, Non-PAG waste rock disposal facility, heap leach pad, process ponds, borrow areas, access roads, and continued exploration activities. Potential impacts to soil resources include loss of soil during salvage and replacement, soil loss in stockpiles due to wind and water erosion, and reduced biological activity and soil structure. These impacts would be reduced by direct hauling stripped growth media from active mine pits for placement over

backfilled portions of previously mined areas whenever practical. Newmont would initiate reclamation activities concurrent with ongoing mining operations. As mining operations progress, backfilled portions of the pit would be concurrently regraded, growth media placed, and seeded.

The last mine pit panel (98 acres) would be partially backfilled and remain with exposed rock faces at the end of mining. Interruption of soil processes and functions during operation of the proposed Project would be reversed by returning soil to disturbed areas through reclamation and allowing natural soil development to become reinstated.

### **No Action**

Implementation of the No Action alternative would preclude potential impacts of the Proposed Action on soil resources.

### **UPLAND VEGETATION**

#### **Proposed Action**

Implementing the Proposed Action would result in disturbance to plant communities, consisting of 11 vegetation types. Reclamation would occur on disturbed areas after mining activities cease. Approximately 98 acres of the Phase VIII mine pit would not be completely backfilled. Establishment of big sagebrush communities on reclaimed areas may take decades, and would require special reclamation measures that favor sagebrush over grasses and other herbaceous species.

#### ***Special-Status Plant Species***

The Proposed Action would not affect special-status plant species. No special-status plants are known to be present in the Project area.

### ***Invasive, Non-Native Species***

Disturbed areas would be susceptible to invasion by undesirable, non-native species (weeds). Noxious weeds would be controlled by implementation of a weed control plan during and after mining operations. Adjacent areas would continue to be a source of noxious weeds.

#### **No Action**

Vegetation resources in the Study Area would not be impacted by implementation of the No Action alternative since no ground disturbance associated with mining activities would occur. Since there are no known special-status plants in the Project area, the No Action alternative would be similar to the Proposed Action. Effects of invasive, non-native species would not occur from the No Action alternative because there would be no new ground disturbance. Impacts to vegetation associated with other ground disturbing activities in the area, including livestock grazing, would continue.

### **WETLAND/RIPARIAN AREAS**

#### **Proposed Action**

The Proposed Action would result in removing or filling approximately 0.15 acre of wetland and 0.376 acre of non-wetland Waters of the U.S. associated with the mine pit, waste rock facility, heap leach facility, and sediment ponds. Wetland mitigation and enhancement would compensate for lost or degraded wetland functions and values that would result from the Proposed Action. The new engineered stream channel segment that would be constructed through the reclaimed mine pit area to replace the existing stream reach would support wetland and riparian vegetation. Riparian areas adjacent to proposed mine facilities would be fenced to protect against livestock grazing and trampling.

#### **No Action**

Implementation of the No Action alternative would result in no additional impacts to wetland/riparian areas in the Study Area. Impacts to wetland/riparian areas associated with other ground disturbing activities in the area would continue.

### **FISHERIES AND AQUATIC RESOURCES**

#### **Proposed Action**

Approximately 0.15 acre of aquatic habitat could eliminate a small population of Lahontan speckled dace, Lahontan redbottom shiner, and aquatic macroinvertebrates. These populations may reestablish and increase based on the design of the new engineered channel to increase surface water flow and provide habitat features including step pools and riparian plant communities.

#### **No Action**

Potential impacts to fisheries and aquatic resources that would result from development of the Emigrant Project would not occur under the No Action alternative. Impacts to fisheries and aquatic resources associated with other ground disturbing activities (*i.e.*, grazing) in the area would continue.

### **TERRESTRIAL WILDLIFE**

#### **Proposed Action**

Direct impacts to wildlife resulting from the Proposed Action would be loss of habitat and subsequent displacement or loss of wildlife.

Direct loss of wildlife habitat would eliminate cover (nesting, hiding, and thermal), breeding sites, and forage. Most of the affected habitat within the Study Area consists of sagebrush/bunchgrass communities.

Construction of new haul roads, ancillary facilities, and mine development would result in 1,418 acres of habitat loss, most of which is dominated by sagebrush. Reclamation of disturbed land would eventually restore habitat for some species; however, species dependent on plant communities with a large component of big sagebrush, and trees would experience a net loss in habitat quality as a result of the Proposed Action.

### ***Special Status Wildlife Species***

The threatened Lahontan cutthroat trout would not be affected by the Proposed Action. Removal of upland and wetland vegetation would reduce bat foraging opportunities until reclamation is successful. Bat roosting habitat (cliffs, rock crevices, and juniper trees) in the mine pit area would be removed. Habitat for Preble's shrew, pygmy rabbit, and burrowing owl may be affected by the Proposed Action; however, these species have not been confirmed to occur in the Study Area. Foraging habitat for Swainson's and ferruginous hawks would be reduced; however, no nests have been identified in the Project area.

The Proposed Action would likely result in the long-term reduction of habitat quality for sage grouse. Reclamation of sagebrush on the post mine area and mitigation involving sagebrush enhancement within and adjacent to the proposed mine disturbance area would improve sage grouse habitat and offset the reduced sagebrush density in other areas. Increased sediment could adversely affect white-faced ibis and California floater in South Fork Humboldt

River; however, erosion and sedimentation would be controlled through use of Best Management Practices.

### **No Action**

Under the No Action alternative, Newmont would not be authorized to develop defined ore reserves or undertake any of the previously described associated activities. Potential impacts to terrestrial wildlife and special status wildlife species from development of the Project would not be realized. Impacts from previously authorized activities would continue under the No Action alternative.

## **RECREATION**

### **Proposed Action**

The Emigrant Project would result in up to approximately 3,900 fewer acres available for recreational activities during operation and after cessation of mining until reclamation is complete. The Project would bisect the Tonka Creek road precluding continuous or "loop" travel through the area during active mining operations. Upon completion of reclamation, the road segment would be reconstructed and relocated to connect with the existing route and re-establish "loop" travel through the area. Most of the work force for facility construction and mining would be drawn from the local labor pool; consequently, impacts to existing campgrounds and other area recreational opportunities are expected to be minimal relative to existing conditions.

### **No Action**

Under the No Action alternative, no additional disturbance to private or public land or direct impacts to recreation resources would occur.

Impacts from previously authorized activities would continue under the No Action alternative.

## **GRAZING MANAGEMENT**

### **Proposed Action**

Implementation of the Emigrant Project would result in the loss of 306 Animal Unit Months (AUMs) in Emigrant Springs Allotment No. 5417. Carrying capacity of the allotment would be reduced until reclamation of disturbed areas is complete and vegetation established. Alternative water sources would be developed to compensate for losses incurred from mining activity. There would be no reduction of AUMs in Tonka Allotment No. 5468.

### **No Action**

Implementation of the No Action alternative would not affect current grazing practices or range resources in the Project area. No additional disturbance to soil or vegetation would occur and current stocking rates would continue as permitted. Impacts from previously authorized activities would continue under the No Action alternative.

## **ACCESS AND LAND USE**

### **Proposed Action**

The Emigrant Project would bisect the Tonka Creek road precluding continuous or “loop” travel through the area during active mining operations. Upon completion of mining the road segment would be reconstructed and relocated to connect with the existing route and re-establish “loop” travel through the area.

### **No Action**

The No Action alternative would result in no additional impacts to land use and access. Impacts from previously authorized activities would continue under the No Action alternative.

## **WASTES, HAZARDOUS OR SOLID**

### **Proposed Action**

Implementation of the Emigrant Project would result in the transportation, storage, and disposal of solid and hazardous wastes. No direct or indirect impacts have been identified that would result from the transportation, storage, and disposal of solid and hazardous wastes associated with the Proposed Action. Implementation of management and spill response measures would eliminate or reduce the effects of release of wastes to the environment.

### **No Action**

Under the No Action alternative, solid and hazardous wastes would not be transported, stored, or disposed in the Project area.

## **VISUAL RESOURCES**

### **Proposed Action**

Visual impacts of the Proposed Action were analyzed using procedures set forth in the Visual Resource Contrast Rating Handbook. Terraced, flat-topped waste rock piles and rock faces would present moderate to strong contrasts with the existing landform and line of steep canyons and gentle slopes. The moderate to strong form contrasts would impact visual resources in a localized manner. Views of the majority of mining activities would be hidden from view by canyon walls and higher ridge land

forms to the north and east. The color and texture of the reclaimed area would be a moderate contrast to the existing landscape. Reclamation of disturbed areas would meet Class IV VRM objectives.

### **No Action**

Under the No Action alternative, no visual impacts would occur at the Emigrant Project beyond those already present.

## **CULTURAL RESOURCES**

### **Proposed Action**

Forty-three cultural resources are located within the Area of Potential Effect (APE). Of these, three prehistoric period resources (CrNV-12-13259, -13261, and -13272) have been determined eligible to the National Register based on Criterion D. These sites are located within the proposed oxide heap leach facility and would be impacted during construction of that facility. Because avoidance was not possible, a data recovery plan was prepared and approved by BLM in consultation with the Nevada State Historic Preservation Office.

### **No Action**

There would be no effect on cultural resources under the No Action alternative.

## **NATIVE AMERICAN CONCERNS**

### **Proposed Action**

Implementation of the Proposed Action would have no direct or indirect impacts on Western Shoshone traditional cultural values, practices, properties, or human remains. Compliance with all applicable state and federal design

parameters is expected to reduce impacts resulting from the Proposed Action.

### **No Action**

The No Action alternative would result in no further direct or indirect impacts on Native American religious or traditional values, practices, properties, human remains, or cultural items.

## **SOCIAL AND ECONOMIC RESOURCES**

### **Proposed Action**

The Emigrant Project would employ approximately 180 people. Most of the work force for the Project would be from existing mine-related work forces in the Carlin Trend. The initial construction work force for the Emigrant Project would be approximately 100 people decreasing to about five employees at the end of construction. Construction and development are expected to require approximately 12 months.

The Proposed Action would create positive impacts through continued employment in the mining industry and indirect employment in the retail and service sectors. Direct and indirect employment provided by the Emigrant Project would average 330 jobs and \$19.3 million in annual wages. Property and net proceeds of mining taxes paid by Newmont for the Emigrant Project collected by local and state jurisdictions would also continue. Negative impacts would be minimal because employees from existing and nearby facilities likely would be used for construction and operation of the facility, thereby extending their work rather than bringing in new workers.

## No Action

Under the No Action alternative, the Emigrant Project would not be approved. Since most of the work force for the Project would come from the existing mine-related work force in the Carlin Trend, negative impacts under the No Action alternative would include increased unemployment, reduced wages spent in the local economy, decreased revenue to local and state jurisdictions, increased stress on public assistance programs, and decreased quality-of-life for some residents.

## ENVIRONMENTAL JUSTICE

There would be no disproportionate direct or indirect impacts to minority or low-income populations resulting from implementation of the Proposed Action and No Action alternative.

## SUMMARY OF POTENTIAL IMPACTS AND MITIGATIONS

Potential impacts resulting from implementation of the Proposed Action, along with mitigation and monitoring measures to reduce or eliminate impacts, are summarized in **Table S-1**.

## PROJECT ALTERNATIVES

Primary issues identified during review and scoping of the Emigrant Project include: 1) permanent relocation of a drainage that would be impacted by mine development; and 2) potential for mined rock to become acidic and release trace metals to the environment. Newmont has committed to construct a permanent engineered stream channel that would convey surface water along the reclaimed mine pit area on Devils Gate limestone. This engineered stream channel has been designed to incorporate step-pools, native riparian grasses (graminoides), shrubs, and rock weirs to

create a drainage that appears and functions as a natural channel providing both aquatic and riparian habitat.

Similarly, Newmont has sampled, tested, and classified waste rock in accordance with NDEP Waste Rock and Overburden Evaluation Guidelines to determine acid generating potential of mined waste rock. Classification of waste rock was determined through use of static and kinetic testing to determine acid generation potential. Results of these tests indicate that about 5 percent of the overall waste rock volume (4Mt of the total 83Mt waste rock) to be excavated would be managed as PAG. PAG rock would be placed on Devils Gate limestone benches in mined-out portions of the pit. PAG material would be encapsulated (bottom, top, sides) with a minimum 10-ft thick layer of acid neutralizing (ANP:AGP ratio 3:1) waste rock to effectively isolate the PAG rock from atmospheric oxygen and water. Any seepage from the PAG waste rock would move slowly downward through a 450-ft thick unsaturated zone in Devils Gate limestone.

During the review periods associated with previous applications and EIS documents issues or concerns identified with the Proposed Action that typically would warrant development of an alternative have been resolved and incorporated into the current Plan of Operations.

No other component of the Proposed Action was determined to have potentially adverse impacts requiring an alternative to eliminate or reduce impacts. Therefore, the only alternative discussed in detail in this Draft EIS is the No Action Alternative. Minor issues and potential impacts identified in Chapter 3 (*Affected Environment and Environmental Consequences*) are addressed with specific mitigation measures.

## **NO ACTION ALTERNATIVE**

Under the No Action alternative, the Proposed Action would not be approved. Newmont would not be authorized to develop the defined ore reserves, construct ancillary mine facilities, place waste rock in the disposal facility, or construct the oxide heap leach facility on public land. Potential impacts predicted to result from development of the Project would not occur.

## **ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

This section describes alternatives to the Proposed Action that were eliminated from further review in the EIS. These alternatives were identified during the public scoping process or by BLM during review and analysis of the Proposed Action. These alternatives were considered technically infeasible, unreasonable, provided no advantage over the Proposed Action, or would not meet the purpose and need of the Proposed Action.

### **USE EXISTING HEAP LEACH FACILITY AT RAIN MINE**

This alternative would include all components of the Proposed Action, but would require Newmont to haul ore approximately 2.5 miles from the Emigrant Project to the existing heap leach facility at the Rain Mine. This alternative could eliminate the need to construct the proposed heap leach facility at the Emigrant Project site.

## **RATIONALE FOR DISMISSAL**

The Rain Mine heap leach facility is no longer active and drain-down of process solution is ongoing. The existing heap leach facility at the Rain Mine encompasses approximately 40 acres and expansion of this facility to accommodate approximately 92Mt of ore from the Emigrant Project would require an additional 320 acres of leach area. Such an expansion at the Rain Mine was determined to not have an advantage over the Proposed Action.

## **AGENCY PREFERRED ALTERNATIVE**

The agency preferred alternative is the Proposed Action with mitigation.

<b>TABLE S-1</b>				
<b>Summary Comparison of Potential Direct and Indirect Impacts of Alternatives</b>				
<b>Resource</b>	<b>Potential Impacts Proposed Action</b>	<b>Proposed Environmental Protection Measures</b>	<b>Potential Impacts No Action</b>	<b>Monitoring and Mitigation Recommendations</b>
<b>Geology and Minerals</b>	Relocation of approximately 83Mt of waste rock and 92Mt of ore.	PAG waste rock generated during all phases of mining would be placed on limestone benches in mined out portions of the pit. Isolation and encapsulation of PAG waste rock with compacted Devils Gate limestone and neutralizing waste rock would limit exposure of this rock to oxygen and direct meteoric water, thereby reducing potential for acid generation.	Eliminate recovery of approximately 92Mt of ore from the geologic resource	Implementation of Management Actions associated with the AMP would result in excavation, stockpiling, and relocation of Encapsulation Material and PAG to meet encapsulation requirements (10-foot thick drainage layer surrounding PAG waste rock). Monitoring program for waste rock may be modified pending results of supplemental testing program.
	Excavation and exposure of waste rock to oxygen and precipitation could result in formation of acidic water and potential release of trace elements into groundwater and surface water at concentrations above background levels and/or exceed water quality standards.	A waste rock management report that summarizes mining progress and disposition of waste rock would be submitted to BLM and NDEP annually.		
<b>Air Quality</b>	Fugitive dust emissions would be generated by mining, loading, hauling, and placing ore on the heap leach facility, and disposal of waste rock.	Minimize drop heights during loading, dust suppression (e.g., road watering, application of magnesium chloride) and procedures outlined in the Handbook of Best Management Practices	Air quality in the Study Area would remain within ambient levels.	Implementation of Management Actions associated with AMP may result in increased emissions associated with encapsulation of increased volume of PAG waste rock.

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<b>Air Quality (cont.)</b>	Gaseous pollutant emissions would result from blasting, construction and mining equipment, vehicle exhaust, and carbon handling.	Emissions would be minimized by equipment maintenance and operation.	Air quality in the Study Area would remain within ambient levels.	No additional monitoring has been identified by BLM or NDEP.
	Approximately 2.3 million gallons of diesel fuel would be consumed annually emitting about 19,000 tons of CO <sub>2</sub> .			
	Processing of gold-bearing carbon from Emigrant at Gold Quarry facilities would extend emissions of mercury at levels commensurate with existing permitted operations by about 4 years.	Newmont has installed Maximum Achievable Control Technology on carbon handling and refinery services that emit mercury. These controls are in accordance with Mercury Reduction Program (2002) and are listed in NAC 445B.3651 as constituting presumptive Nevada Maximum Achievable Control Technology for mercury.	Mercury emissions associated with ore processing at Gold Quarry would continue to be controlled and monitored in accordance with NDEP permit.	Increased monitoring of mercury emissions is being developed by NDEP.
<b>Water Quantity</b>	Water for mine operations would be supplied from existing Dixie Creek Valley wells at rates similar to amounts pumped for Rain Mine operations (130-140 million gals/yr). Pumping for about 14 additional years is not expected to affect flow in Dixie Creek.	Continue to monitor and report pumping of groundwater in Dixie Creek Valley to BLM, NDEP, and Nevada Division of Water Resources.	Groundwater withdrawal would continue at current levels (2 to 3 million gals/yr) to support closure of the Rain Mine.	Newmont would continue to monitor flow and groundwater levels.

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<b>Water Quality</b>	Diversion and replacement of a natural intermittent stream with an engineered stream channel through the operational and reclaimed mine pit area.	Prior to construction Newmont would obtain BLM approval of the engineered stream channel design. The channel would incorporate sediment control and vegetation components to function as a natural channel.	Functioning of the natural stream channel would not change from existing and reasonably foreseeable future conditions.	Newmont, BLM, and NDEP cooperatively develop mitigation and monitoring plan to verify the replacement channel is functioning as designed.
	Increased erosion and sedimentation from mine pit, roads, waste rock disposal area, and heap leach facility.	BMPs implemented to prevent or minimize sediment movement to off-site areas. Implementation of monitoring program to verify on-site control of erosion and sedimentation.	Water quality would remain in the current condition	Monitor total suspended solids (TSS) levels in surface water flow in drainages upstream and downstream of Project area and in natural stream channels located in Dixie Creek drainage but outside the influence of the proposed Project.  If monitoring identifies sediment contribution from the proposed Project site, BLM and NDEP personnel would review the sediment control system with Newmont to identify the source of sediment contribution and implement corrective actions as necessary.

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	Potential release of trace elements into groundwater and/or surface water at concentrations above water quality standards from the backfilled mine pits and/or Non-PAG waste rock disposal facility.	Slow advancement of unsaturated flow down 450 feet to groundwater in limestone bedrock beneath the mine pits provides for attenuation and precipitation of trace metals in the limestone.		Need for and location of additional surface or groundwater monitoring stations/wells would be determined by NDEP and BLM.  Implementation of the AMP may result in management of additional volume of waste rock as PAG. Material determined to be PAG would be placed in Encapsulation Cells and monitored. Implementation of Management Actions described in the AMP would result in similar impacts to water quality as the Proposed Action.
<b>Soil Resources</b>	Potential impacts from disturbance of about 1,400 acres include loss of soil during salvage and replacement, soil loss in stockpiles due to wind and water erosion, and reduced biological activities and soil structure.	Direct hauling stripped growth media from active mine pits for placement over backfilled portions of previously mined areas.  Installation of sediment control structures (ditches, sediment pond) would arrest soil movement – soil returned to reclaimed areas or stockpile.	Soil conditions would remain similar to current conditions.	No monitoring or mitigation measures for soil resources have been identified by BLM or NDEP.

**TABLE S-1  
Summary Comparison of Potential Direct and Indirect Impacts of Alternatives**

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		Initiate reclamation activities concurrent with ongoing mining operations. As mining operations progress, backfilled portions of the pit would be concurrently regraded, growth media placed, and seeded.		
<b>Upland Vegetation</b>	Disturbance to 11 vegetation community types over approximately 1,400 acres	Reclamation in accordance with approved plan would occur on disturbed areas after mining activities cease.	Vegetation resources would remain in the current condition.	Reclamation measures would be implemented that favor establishment of big sagebrush on portions of the site. Planting small patches of sagebrush among areas seeded with rapidly growing forbs and grasses would be coordinated with BLM and NDOW to control soil loss associated with slow establishment of big sagebrush after planting.
	Disturbed areas would be susceptible to invasion by undesirable, non-native species (weeds).	Newmont would continue to conduct annual weed surveys to direct weed control efforts for the life-of-mine and reclamation period to reduce potential impacts of new infestations. Certified weed free straw bales would be used for sediment control.	Detection and control of weed invasion from other related ground disturbing activities including livestock grazing, would continue.	Additional measures could include application of mulch, inoculation with <i>arbuscular mychorrhizae</i> , reduced competition with herbaceous species (lower seeding rate of grasses and forbs).

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	Removal of vegetation during site construction and operation would result in soil movement from the site (see <i>Soil Resources</i> above).	Newmont would eradicate Scotch thistle in and adjacent to Project area prior to commencing construction.		
	Potential off-site impacts to vegetation from use of enhanced evaporation system during heap leach decommissioning.			Atomizers used to disperse heap leach drain-down fluids would not be used during periods of high wind in order to keep solutions within areas designed for containment to avoid affecting surrounding vegetation.
<b>Wetland and Riparian Areas</b>	Loss of 0.15 acre of wetland and 0.376 acre of non-wetland waters of U.S.	Construct a low permeability transition between alluvial-valley fill material in ephemeral drainage upstream of the open pit mine, and the surface water diversion channel downstream that would cause water in the alluvium to the surface and flow into the engineered stream channel. The low permeability transition would 1) serve to elevate water levels in the alluvium upstream of the engineered stream channel, and 2) prevent dewatering of the alluvium and wetland areas	Impacts to wetland/riparian areas associated with existing land uses in the area would continue.	Fence wetland, riparian areas, and springs adjacent to proposed mine-disturbance areas to reduce effects of livestock on vegetation and stream banks. These sites include springs at the following locations: <ul style="list-style-type: none"> <li>• NE<sup>1</sup>/<sub>4</sub>Section 28, Township 32 North, Range 53 East</li> <li>• SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, Section 27, Township 32 North, Range 53 East</li> <li>• SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, Section 27, Township 32 North, Range 53 East.</li> </ul>

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		upstream of the mine pit, thereby maintaining an environment suitable for aquatic life and riparian vegetation.		Emigrant Spring enclosure would be reconstructed and maintained using pipe rail fencing.  Weed control currently being conducted in the Emigrant Spring enclosure would continue.
<b>Fisheries and Aquatic Resources</b>	Approximately 0.15 acre of aquatic habitat would be removed by the proposed mine pit, which would eliminate a small population of Lahontan speckled dace, Lahontan redbreast shiner, and aquatic macroinvertebrates.	The engineered stream channel is designed to allow fish passage during periods of low velocity stream flow. The channel configuration would support wetland and riparian vegetation to support resident fish populations.	Impacts to fisheries and aquatic resources associated with other ground disturbing activities ( <i>i.e.</i> , grazing) in the area would continue.	Review status of native fish and macroinvertebrate populations in Emigrant drainage and engineered stream channel every 5 years. Re-establish fish and macroinvertebrate populations into the channel as necessary or warranted. (See <i>Water Quality</i> above)
	Sediment control ponds constructed in the drainage channel would preclude fish from migrating through the Project area during life-of-mine operations.	Once reclamation is completed and sediment control ponds have been removed, fish could migrate through the area depending on flow conditions.		
<b>Terrestrial Wildlife</b>	Loss of approximately 1,400 acres of wildlife habitat would eliminate cover (nesting, hiding, and thermal), breeding sites, forage, and subsequent displacement or loss of wildlife.	Reclamation in accordance with approved plan would eventually restore habitat for some species.	Effects of current land uses and natural phenomena (wildfire) in the Project area would continue.	Construct spring enclosures described for Wetland/Riparian areas to benefit wildlife use. Scope, frequency and intensity of wildlife mitigation and

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	Species dependent on plant communities with a large component of sagebrush and trees would experience a net loss in habitat quality.			monitoring will be identified in a plan developed by BLM in consultation with NDOW and included in the Record of Decision.
	Bat roosting habitat (cliffs, rock crevices, and juniper trees) in the mine pit area would be removed.	Post mine highwall would offer potential bat roosting habitat.		
	Long-term reduction of habitat quality for sage grouse.	Reclamation including establishment of sagebrush on the mine area and mitigation involving sagebrush enhancement within and adjacent to the proposed mine disturbance area would improve sage grouse habitat and off set the reduced sagebrush density in other areas		
<b>Recreation</b>	Approximately 3,900 fewer acres would be available for recreational activities during operation and after cessation of mining until reclamation is complete.	Upon completion of reclamation fences would be removed and the road segment would be reconstructed and relocated to connect with the existing route re-establishing "loop" travel through the area. Newmont would provide funding for interpretive signs to be placed at the South Fork Special Recreation Management Area.	Recreational use of the area would likely continue at existing levels.	No additional monitoring or mitigation measures for recreation have been identified by BLM or NDEP.
	Interrupt continuous or "loop" travel on Tonka Creek road.			

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<b>Grazing Management</b>	Loss of 306 AUM in Emigrant Springs Allotment No. 5417.	Reclamation of disturbed areas would restore carrying capacity of the allotment.	No affect on current grazing practices or range resources in the Project area. Current stocking rates would continue as permitted. Previously authorized land use activities would continue.	Develop two springs within the Project area and pipe the water outside enclosure fence.
	Loss of grazing land until reclamation is successful.			Construct trough and pipeline system on east side; and, maintain east side cattle corridor.
<b>Access and Land Use</b>	Bisect the Tonka Creek road precluding continuous or "loop" travel through the area during active mining operations.	Upon completion of mining the road segment would be reconstructed and relocated to connect with the existing route and re-establish "loop" travel through the area.	Travel on Tonka Creek road would not be interrupted.	No monitoring or mitigation measures for access and land use have been identified by BLM and NDEP.
<b>Wastes, Hazardous or Solid</b>	Impacts to soil, water, and vegetation from accidents occurring during transport, storage, and use of solid and hazardous wastes and hazardous materials.	Solid waste would be disposed of in a Class III waived landfill. Hazardous waste would be stored in 55-gallon drums and periodically transported to an approved treatment, storage, and disposal facility in accordance with applicable federal and state regulations. USDOT approved containers would be used for on-site storage of hazardous materials, and spill containment structures provided.	No effect on resources from solid and hazardous waste and hazardous materials would occur.	No monitoring or mitigation measures for hazardous or solid wastes have been identified by BLM and NDEP.

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<b>Visual Resources</b>	Terraced, flat-topped waste rock piles and rock faces would present moderate to strong contrasts with the existing landform and line of steep canyons and gentle slopes.	Where practicable, grading would blend disturbed areas with the surrounding terrain. Angular features, including tops and edges of waste rock disposal facilities, would be rounded.	No visual impacts would occur at the Emigrant Project beyond those already present.	No monitoring or mitigation measures for visual resources have been identified by BLM.
		Reclamation of disturbed areas would meet Class IV VRM objectives.		
<b>Cultural Resources</b>	Three prehistoric period resources located within the proposed disturbance boundary for the heap leach facility have been determined eligible to the National Register.		No effect on cultural resources from mining related activities in the proposed Project area.	Because avoidance of eligible sites would not be possible, a data recovery plan was prepared and approved by BLM in consultation with the Nevada State Historic Preservation Office.
<b>Native American Concerns</b>	No impacts on Western Shoshone traditional cultural values, practices, properties, or human remains have been identified.		Same as Proposed Action	No monitoring or mitigation measures for Native American concerns have been identified by BLM or NDEP.

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<b>Social and Economic Resources</b>	Emigrant Project would employ approximately 180 people.		Potential for increased unemployment, reduced wages spent in the local economy, decreased revenue to local and state jurisdictions, increased stress on public assistance programs, and decreased quality-of-life for some residents.	No monitoring or mitigation measures for social and economic resources have been identified by BLM or NDEP.
	Continued employment in the mining industry and indirect employment in the retail and service sectors.			
	Property and net proceeds of mining taxes collected by local and state jurisdictions would continue.		Various taxes associated with the mine development would not be paid under this alternative.	
	Newmont's existing workforce would be used for operation of the facility, thereby extending employment in lieu of bringing in new workers.			
<b>Environmental Justice</b>	No disproportionate direct or indirect impacts to minority or low-income populations		Same as Proposed Action	No monitoring and mitigation measures for environmental justice have been identified by BLM or NDEP.