

## Executive Summary

### Introduction

Rodeo Creek Gold Inc (RCG), a wholly owned subsidiary of Great Basin Gold Ltd (GBG), proposes to construct and operate the Hollister Underground Mine Project (project). The proposed project would include transition of existing underground exploration activities to a full-scale producing underground gold and silver mine, including the development of new facilities and expanded surface exploration. The proposed project is located in the northern end of the Carlin Trend, within Elko County, Nevada, approximately 47 miles northwest of Elko, 38 miles northeast of Battle Mountain, and 64 miles northeast of Winnemucca, Nevada.

### Summary of the Proposed Action

RCG is proposing an expansion of its existing surface and underground exploration activities at the Hollister Site and transition to full-scale underground mine production and associated support facilities. An amendment to the Plan of Operations (NVN-076802) for the proposed project was submitted to the Bureau of Land Management (BLM) in March 2008.

The Proposed Action would contain the following major components: continued and expanded surface and underground exploration activities; transition from underground exploration and bulk sampling activities to full-scale production of gold and silver underground mining operation; installation of the Hatter production shaft, raise, or ramp (collectively referred to as the HPS), as the geology of the area dictates; construction of a new 11.6-mile-long electric power transmission line (transmission line) and substation, including access routes; water discharge to Little Antelope Creek; construction of ancillary support facilities; and continued off-site processing of all ore.

The proposed project would utilize all of the existing support facilities at the Hollister Site. The anticipated mine life would be approximately 20 years, followed by an estimated 3 years of site closure and reclamation activities. At the end of mine life RCG would reclaim all the facilities associated with the project, except roads included in the BLM road system. The Proposed Action would result in a total of approximately 117 acres of proposed surface disturbance.

The Hollister Underground Mine Project would extract 2.0 to 3.0 million tons of ore and generate 2.6 to 3.7 million tons of waste rock. Underground mining would occur in the Vinini Formation, the host rock that is composed of quartzite, chert, and argillite, and contains the gold and silver veins to be mined under the proposed project. The underground workings would extend approximately 2,000 feet below ground surface to a bottom elevation of 4,570 feet above mean sea level.

Water would be removed from the underground workings up to a rate of approximately 1,100 gallons per minute (gpm) on a continuous basis for the 20-year mine life. Water then would be pumped to the surface and gravity-fed in an existing buried pipeline to the rapid infiltration basins (RIBs) or to the proposed National Pollutant Discharge Elimination System (NPDES) discharge point on Little Antelope Creek.

Under the Proposed Action, waste rock would be disposed of in the existing approved RCG Waste Rock Storage Facility (WRSF), in the West Pit or as backfill in the underground mine workings.

Electric power would be provided by NVEnergy through a proposed transmission line to replace current power provided by two diesel generators at the Hollister Site. A new 120-kilovolt (kV) overhead line would be routed 5.4 miles from the existing Coyote Creek substation to the proposed Rodeo Creek substation near the existing east RIB where it would be reduced to 24.9-kV to the mine site.

## **Summary of the Project Alternatives**

Four alternatives to the Proposed Action were considered for detailed analysis in the environmental impact statement (EIS), which include: Mud Springs Road Transmission Line Alternative; Mud Springs Waste Rock Storage Facility Alternative; Backfill Alternative; and the No Action Alternative. Eight other alternatives were considered but eliminated from detailed analysis.

## **Summary of Impacts Associated with the Proposed Action and Alternatives**

### **Land Use and Access**

The project area encompasses 10,168 acres, of which 9,301 acres are on public land. The project is located within the Twenty-Five and Squaw Valley allotments. New project-related disturbance of 117 surface acres would reduce the amount of land available for livestock grazing and dispersed recreation. Post-reclamation land use of most of the disturbance area would be returned to open space, grazing, dispersed recreation, and wildlife habitat.

Access to the area would be similar to present access. There would be continued access to the Tosawihi Quarries Archaeological District (Tosawihi Quarries).

### **Geology and Minerals**

Impacts of the Proposed Action on geologic and mineral resources would include the generation and disposal of about 2.6 to 3.7 million tons of waste rock and the extraction of 2.0 to 3.0 million tons of ore.

The Proposed Action would create limited changes to topography, mostly on pre-existing authorized mining-disturbed and reclaimed land. The existing West Pit would be backfilled with waste rock below the rim, and reclamation would result in a final topography closer to the original topography of the area prior to historical surface mining activities.

### **Groundwater and Geochemistry**

Groundwater would be removed from the underground workings within the Vinini Formation to access the gold and silver ore. Under the Proposed Action, groundwater pumping rates in the Vinini Formation would increase from current operation rates of approximately 400 gpm to a maximum rate of approximately 1,100 gpm.

The geotechnical water removal from the proposed expanded Hollister underground workings and the Hatter Expansion would result in lowering the water table in the Vinini Formation. The maximum extent of groundwater drawdown is predicted to occur in approximately 40 years after the cessation of mining. The maximum extent of the 10-foot groundwater drawdown contour is predicted to extend 7.9 miles from the underground workings, just beyond Antelope Creek to the southeast and just beyond Willow Creek to the northwest. Groundwater drawdown in the Vinini Formation could reduce flows in four spring complexes.

Mining would end after 20 years and the groundwater would begin to rebound. The simulated rebound of the water table shows recovery to within approximately 100 feet of the pre-mining water levels approximately 20 years after closure of the mine, and 10 years later at the Hatter Expansion area. Ninety-five percent recovery of the water table would occur approximately 30 to 35 years after the end of mine life.

### **Surface Water Resources and Watersheds**

Impacts from groundwater drawdown in the Vinini Formation could include a reduction in flow in four spring complexes and associated spring-derived streamflows on Antelope Creek, Alkali Creek, and Squaw Creek.

Discharges from mine groundwater pumping would increase flow in Little Antelope Creek downstream of the proposed outfall for the life of the mine. No impacts to the existing stability conditions of channels and banks are anticipated.

### **Soils and Reclamation**

The proposed project would result in 117 acres of surface disturbance that includes potential loss of soil to wind and water erosion, changes in chemical and physical properties, and decreased biological activity. Replacement of growth media is proposed for major disturbances associated with the proposed project.

Revegetation of disturbance areas would be conducted as soon as practical to minimize impacts to soils and vegetation and facilitate post-mining land uses. A period of overall reclamation monitoring (and maintenance as necessary) is required prior to agency approval of reclamation bond release. Major effects on the desired post-mining, exploration, and transmission line site productivity from soil quality impacts are not anticipated.

### **Vegetation Resources**

The proposed project would disturb 43.8 acres of sagebrush shrubland and 65.1 acres of grassland vegetation; and approximately 8.1 acres of disturbed/sparsely vegetated land. The loss of 43.8 acres of shrub-dominated vegetation would represent a long-term impact as it could take up to 25 years following reclamation for mature shrub species to re-establish.

To minimize mine-related impacts to vegetation, reclamation would be conducted as soon as practical, with concurrent reclamation implemented to the maximum extent possible. Satisfactory revegetation of mine-related disturbance areas is anticipated to occur approximately 3 to 15 years following reclamation. After 25 years, the reclaimed plant communities likely would consist of adequate herbaceous plant cover with sufficient diversity to substantially reduce the potential for soil erosion and provide forage for use by livestock and wildlife.

### **Riparian and Wetland Areas**

Continuous discharge of water into Little Antelope Creek temporarily would enhance existing riparian areas and create riparian areas further downstream for the 20-year life of the mine. After water discharge has ended, newly created riparian vegetation may take 3 to 5 years to transition back to upland vegetation, and the riparian vegetation transitions back to pre-discharge conditions.

Groundwater drawdown in the Vinini Formation potentially could reduce flow in four spring complexes and affect approximately 12 acres of wetlands. Based on the projected groundwater drawdown, it is anticipated that approximately 16 wetlands have the potential to be affected by groundwater drawdown in the long term. In addition, reduced flows from springs contributing to Antelope, Alkali, and Squaw creeks may result in the long-term loss of riparian vegetation. Groundwater flows to springs and seeps potentially impacted by the Proposed Action are projected to recover in approximately 50 to 100 years following initial drawdown.

Construction of the proposed project would not remove or disturb riparian or wetland areas.

### **Noxious Weeds and Non-native Invasive Plant Species**

Noxious weeds and non-native invasive plant species invade areas that have been subject to surface disturbance. A decrease or cessation of flow in affected seeps and springs within the maximum extent of the 10-foot groundwater drawdown contour may increase establishment of noxious weeds and non-native invasive plant species known to invade riparian/wetland habitats.

Water-loving noxious weeds and/or non-native invasive plant species have the potential to become established along the margins of Little Antelope Creek due to increased flow from the discharge. Weed monitoring and control practices would be implemented to limit the growth and spread of noxious weeds and non-native invasive plant species and to facilitate successful revegetation with the proposed seed mixes. Weed control practices would follow RCG's existing Noxious Weed Prevention and Control Plan and Bureau of Land Management (BLM) and Nevada Division of Environmental Protection regulations.

### **Range Resources**

The proposed project would not result in changes to the existing grazing system. Currently, the area inside the existing mine perimeter fence is excluded from grazing and would continue to be excluded from grazing. The majority of rangeland in the project area currently utilized for livestock grazing would continue to be available for livestock grazing during the project mine life.

The potential loss of these water sources may affect livestock distribution within portions of the Twenty-Five, Squaw Valley, and Tuscarora allotments.

### **Wildlife**

Impacts to mule deer would include the incremental long-term reduction of potential forage and the incremental increase of habitat fragmentation from vegetation removal associated with the proposed project. A small amount of undisturbed, limited use, and transitional mule deer habitat would be impacted. No mule deer crucial winter habitat would be disturbed as a result of the proposed project. Impacts to pronghorn would be similar to those previously discussed for mule deer. No pronghorn low density habitat would be disturbed as a result of the proposed project. Potential impacts to elk would include the incremental long-term reduction of undisturbed low-density, habitat and crucial winter habitat within the study area. Given the suitable habitat adjacent to the disturbance areas, these impacts are anticipated to be minor.

Impacts to small game and non-game species would include displacement from the disturbance areas and increased habitat fragmentation, until reclamation has been completed and vegetation is re-established. In most instances, suitable habitat adjacent to disturbance areas would be available for use by these species.

Potential impacts to migratory bird species would include the long-term loss of approximately 117 acres of potentially suitable breeding, roosting, and foraging habitat. However, this temporary loss is expected to have little effect on local bird populations based on the amount of suitable breeding and foraging habitat in the surrounding area.

Generally, transmission lines pose an electrocution hazard for raptor species attempting to perch on the structures. RCG has committed to using Avian Power Line Interaction Committee raptor-detering design measures.

### **Aquatic Biological Resources**

Based on groundwater modeling using the maximum extent of the 10-foot drawdown contour, groundwater pumping in the Vinini Formation could reduce flows and water levels in four spring

complexes. The effects of reduced flow would be more pronounced in small springs where changes in habitat conditions could represent a substantial portion of the habitat. Flow changes in affected springs could impact the occurrence of invertebrates.

Groundwater pumping also could reduce flow in the wetland areas in Antelope and Squaw creeks. If present, amphibian habitat could be adversely affected by flow and water level reductions. Groundwater pumping also could reduce flows in Antelope Creek and its tributaries, and Squaw and Alkali creeks from reduced flows from affected springs, which could reduce fish and invertebrate densities.

Mine discharge could cause increased temporary flow in Little Antelope Creek, which would create temporary additional aquatic habitat. Stream reaches with increased flow would provide habitat for aquatic macroinvertebrates and possibly nongame native fish species that have been observed in nearby drainages and amphibians. By adhering to the NPDES permit requirements, no adverse effects of water quality on aquatic species would occur in Little Antelope Creek.

### **Special Status Species**

Impacts to special status species would include the temporary (short-term and long-term) reduction or loss of habitat. Short-term impacts arise from habitat removal and disturbance as well as from activities associated with mine operation.

Impacts to some special status species would include the long-term loss of approximately 117 acres of potentially suitable habitat. Based on the limited habitat to be disturbed, and available habitat in the vicinity, potential impacts to these species as a result of the proposed project would be low.

A long-term loss of approximately 43.8 acres of potentially suitable sagebrush shrubland habitat would potentially impact some special status species. These impacts would be considered low considering the small amount of disturbance and the availability of similar habitat in the study area.

Special status species dependent upon wetlands could be impacted from the loss of 12 acres of wetland and some riparian habitat as a result of groundwater drawdown. These impacts would include loss of available surface water and associated wetland and riparian vegetation. Nine springs within two spring complexes and associated habitat known to contain springsnails could be adversely affected by groundwater drawdown and associated reduction in spring flows.

Based on the results of the noise field measurements, impacts from increased human presence and noise at and near the Hollister Site on special status species and specifically greater sage-grouse is anticipated to be low. This is primarily due to the distance of the active leks in relation to the current Hollister Site, topographic shielding of the leks from the Hollister Site and Ivanhoe Road, and the existing level of human activity at the Hollister Site. Additionally, exploration activities would be prohibited from 1 hour before sunrise until 10 a.m. within 3 miles of a sage-grouse lek during the March 15 to June 15 breeding season.

### **Paleontological Resources**

Direct adverse impacts to fossils could potentially occur from transmission line construction activities conducted on the tuffaceous portions of the Carlin Formation. Indirect impacts during construction could include erosion of fossil beds. It is anticipated that impacts to paleontological resources associated with transmission line construction would be minimal due to the previous surveys confirming that the fossils on the surface within the proposed transmission line corridor were of minimal scientific value.

There is a very low risk of impacts to fossils on previously authorized disturbed lands. Underground mining is not likely to affect paleontological resources. Impacts to paleontological resources associated with surface exploration also would be minimal because pre-exploration surveys would be conducted as part of the cultural resources inventory prior to surface disturbance activities.

### **Cultural Resources**

Direct impacts to cultural resources could include loss of historic properties eligible for listing on the National Register of Historic Places. Mitigation would be developed and implemented in accordance with the Programmatic Agreement (PA). To minimize the potential for illegal collection, vandalism, and inadvertent damage, RCG would ensure that all its personnel and contractors are instructed on cultural resources avoidance and protection measures as part of its environmental training program.

### **Native American Traditional Values**

Effects to Native American traditional values include potential direct impacts to historic properties, as well as groundwater drawdown impacts to springs. In consultation with the Nevada State Historic Preservation Office and the Tribes, the BLM would determine whether construction and operation of the proposed project would have an adverse effect on any historic properties of traditional religious and cultural importance to the Tribes. If the BLM determines that historic properties of traditional religious and cultural importance would be adversely affected, then mitigation would be proposed in accordance with the PA. If construction or other project personnel discover what might be human remains, then construction would immediately cease and the BLM manager would be notified. The inadvertent discovery of human remains would follow the procedures stated in the Native American Graves Protection and Repatriation Act. Four spring complexes potentially would be affected by the proposed project from groundwater drawdown in the Vinni Formation. Any effects to springs and streams may in turn affect Native American traditional values because of the sacredness of water to the Tribes.

Government-to-government consultation regarding potential effects to any identified properties of traditional religious and cultural importance and graves/burials, as well as groundwater drawdown impacts to springs, and possible mitigation is ongoing and would continue as long as it is needed. The consultation efforts have included field visits, public scoping, site visits, and interviews conducted for the ethnography report prepared for the proposed project.

### **Recreation and Wilderness**

There would be a minor reduction in land available for dispersed recreation as a result of the Proposed Action. However, there is an ample supply of alternative public land for dispersed recreational activities in the project vicinity.

The project area does not contain any land that meets the criteria for wilderness characteristics or designation. No adverse impacts to designated wilderness or wilderness study areas have been identified.

### **Air Quality**

Modeling results indicate that the proposed project would not exceed state or national Ambient Air Quality Standards for particulate matter with an aerodynamic diameter of 2.5 microns or less, particulate matter with an aerodynamic diameter of 10 microns or less, oxides of nitrogen, carbon monoxide, and sulfur dioxide for Hollister Mine site operations, ore haul traffic along gravel/dirt roads, or for portable drill rigs. Electric power would be brought in via an overhead transmission line to replace the two diesel generators currently providing power thereby reducing emissions at the Hollister Site.

The combined hazardous air pollutant (HAP) emissions would be less than the major source limit of 25 tons per year (tpy); therefore the Proposed Action would not constitute a major HAP source. Mineral processing of 2 to 3 million tons of ore over the 20-year life of the project would result in no more than 7.0 pounds of mercury per year at either Esmeralda or Midas mills.

Conservative VISCREEN modeling results for potential visibility impacts from ore processing at Esmeralda Mill indicate that under worst-case conditions, there could be visibility impacts at Yosemite National Park, a Class I area. Based on the complex terrain at the mill site and between the mill site and Yosemite National Park and the local meteorology of the area, it is not likely that emissions from Esmeralda Mill would impact visibility at the national park. Ore processing at Midas Mill would not adversely affect visibility in the nearest Class I area, Jarbidge Wilderness.

Greenhouse gas (GHG) emissions would contribute approximately 30,768 tpy of GHGs for the Proposed Action assuming all ore was hauled to the Esmeralda Mill. Total GHG emissions would be approximately 20,997 tpy if all ore was hauled to the Midas Mill.

### **Social and Economic Values**

The proposed project would have a minor long-term effect on the population or demographics of study area that includes Humboldt, Lander, Eureka, and Elko counties.

The local economy would benefit from continuation and a slight increase in current activity for an additional 20 years. In 2009, RCG generated \$552,196 in net proceeds taxes; \$855,728 in sales and use taxes; and \$127,295 from ad valorem property taxes. These taxes are expected to increase over the 20-year mine life. The overall social and economic effects of the proposed project would be beneficial to study area communities.

### **Environmental Justice**

The Proposed Action would not be expected to disproportionately affect any particular population. Environmental effects that may occur would affect the study area's population essentially equally without regard to race, ethnicity or income level.

### **Visual Resources**

Development of the proposed project would expand the amount of visual contrast that currently exists between existing and previously approved exploration-related facilities and the natural character of the landscape. The proposed project also would extend visual effects through the use of the area and proposed mining activity. The proposed project primarily would expand the visual effects in the vicinity of the existing mine area, and would be most prominent during active mining. The visual contrast effects gradually would become less prominent with reclamation. The proposed project would comply with the Visual Resource Management Class IV objective during active mining and after reclamation because the color contrast and landform contrast would be weak.

### **Noise**

The two currently used diesel generators at the Hollister Site would be replaced by electric line power. However, the generators would be left in place for emergency backup power. All other surface equipment at the mine site would remain the same as current usage. The effect on noise from the Proposed Action would be a reduction in current noise emissions.

### **Hazardous Materials and Solid Waste**

All hazardous substances would be transported by commercial carriers or vendors in accordance with the requirements of Code of Federal Regulations (CFR), Title 49. The probability of a release anywhere along the transportation route, within a populated area, and the probability of a release involving an injury or fatality is minimal.

Based on the facility's design features and the operational practices in place, the probability of a major release occurring at the site during the life of the mine would be low. Any release would be reported and mitigated according to federal and state law.

### **Energy Requirements, Climate Change, and West Nile Virus**

The proposed project represents 1.2 percent of the GHG emissions from all sources in the region, approximately 0.04 percent of the emissions in Nevada, and a tiny fraction of the emissions on a global basis. As a result, the proposed project would be expected to have a negligible effect on climate.

The Proposed Action would not be creating any additional ponds that could increase the likelihood of humans contracting West Nile Virus.

### **BLM-preferred Alternative**

The Council on Environmental Quality Regulations (40 CFR 1502.14e) direct that an EIS "identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." The BLM has selected alternatives based on the analysis in the EIS. These preferred alternatives are those that best fulfill the agency's statutory mission and responsibilities, considering economic, environmental, technical, and other factors. The BLM has determined the preferred alternatives are the Proposed Action and the Backfill Alternative.