FACT SHEET
(Pursuant to Nevada Administrative Code (NAC) 445A.401)

Permittee Name: **Barrick Gold Exploration Inc.**

Project Name: **Horse Canyon/Cortez Unified Exploration Project**

Permit Number: **NEV2016104**
Review Type/Year/Revision: **New Permit 2016, Fact Sheet Revision 00**

A. Location and General Description

Location: The **Horse Canyon/Cortez Unified Exploration Project (HCCUEP)** is located in north central Nevada in eastern Lander County and westernmost Eureka County, approximately 40 miles southeast of the town of Battle Mountain and 70 miles southwest of Elko. The facility is situated to the east of Cortez Hills Mine Area 34 Heap Leach Facility (Water Pollution Control Permit (WPCP) NEV2007106), approximately 2 miles south of the Cortez Mine (WPCP NEV0000023), approximately 10 miles southeast of the Pipeline Project (WPCP NEV0093109), and approximately 8 miles east-southeast of the Pipeline Infiltration Project (WPCP NEV0095111). The project is located at the north end of Grass Valley. The facility is located within Sections 1, 2, 3, 11, and 12, Township 26 North (T26N), Range 47 East (R47E); Sections 1-17, 20-29, 32-36, T26N, R48E; Sections 14, 15, 20, 22, 23, 26-29, and 32-36, T27N, R48E, Mount Diablo Baseline and Meridian, on both private land and public land administered by the U.S. Bureau of Land Management, Mount Lewis Field Office, Battle Mountain.

The site may be accessed by traveling 40 miles west from Elko, or 30 miles east from Battle Mountain, on Interstate Highway 80, then approximately 31 miles south on Nevada State Route 306, and approximately 9 miles southeast on Lander County Road 222, then through the Cortez Hills property.

General Description: The HCCUEP facility will consist of twin underground declines accessed from two portals, exploration drifts, ore-grade/potentially acid generating (PAG) transfer pad, portable shotcrete plant and storage area, and associated surface facilities. As proposed, the underground exploration project is expected to last approximately 5 years.

B. Synopsis

General: Mining in the Cortez Mining District began with the discovery of silver ores in 1862 along the western base of Mount Tenabo. Silver mining continued in this area from extensive underground workings until the 1930's. The modern era of gold production began in 1968 at the Cortez Mine, located at the base of the Cortez Mountains on the southeast edge of Crescent Valley, and continued with

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production of oxide gold ore from Cortez Mine open pits during the periods of 1969 to 1973 and 1983 to 1988. Mining of oxidized gold ores occurred at the Gold Acres open pit, located on the east flank of the Shoshone Range at the west side of Crescent Valley, from 1973 to 1976, and was followed by mining and treatment of refractory gold ores from 1990 to 1996. Refractory gold ores were mined from the Horse Canyon and South Silicified open pits, located on the east side of the Cortez Mountains, from 1988 to 1993. Mining of oxide gold ores from the Pipeline and South Pipeline open pits, located at the east toe of the Shoshone Range on the west edge of Crescent Valley, commenced in 1996 and continues to the present time. Mining of the gold ores from the Cortez Hills open pit and underground commenced in 2008 and continued to the present time.

The HCCUEP project is intended to provide access to explore the Goldrush mineral reasource in the Horse Canyon area.. The portals for the declines will be located adjacent to the existing Horse Canyon haul road in the northern part of Grass Valley, near the Cortez Hills mine. The declines will extend approximately to the east beneath the south ridgeline of Mount Tenabo in the Cortez Mountains and will terminate beneath the upper part of Horse Canyon in western Pine Valley.

Geology: Sedimentary rocks form the regional basement throughout the Project area and have undergone a complex history of sedimentation and deformation. Marine clastic and carbonate rocks were deposited in a shallow sea that represented the western continental margin of North America. These marine clastic rocks (referred to as the Western Assemblage) were deposited in the deep water to the west while carbonate rocks (referred to as the Eastern Assemblage) were deposited in shallow water to the east.

The lower-plate sequence includes (from oldest to youngest) the Hamburg Dolomite, Eureka Quartzite, Hanson Creek Formation, Roberts Mountain Formation, and Wenban Limestone. The Paleozoic rocks are mantled by Tertiary and Quaternary alluvial and colluvial sediments. The mineralization is located in the carbonate host rock of the Wenban units. The twin declines will be developed entirely within the Paleozoic lower-plate strata with the portals collared in the Cambrian Hamburg Dolomite and the declines terminating in the Upper and Lower Devonian Wenban Limestones.

There are two principal hydrogeologic units in the HCCUEP area: the basin fill unit and the carbonate bedrock lower-plate unit (Eastern Assemblage). The basin fill unit is comprised of the alluvial, colluvial, terrace, pediment, and landslide deposits. The carbonate bedrock lower-plate geologic unit is comprised of: Horse Canyon Formation which consists of largely calcareous bedded argillaceous weathering slabby limestone; the Roberts Mountain Formation which is a homogenous, black, pyritic, laminated, silty, graptolitic limestone; and the fine grained dolomite with siliceous limestone of the Hanson Creek Formation.

There is also a siliceous bedrock upper-plate hydrogeologic unit in the HCCUEP area comprised of the Ordovician Vinini Formation which contains sequences of siltstone and shale interbedded with fine grained chert, sandstone and quartzite that are generally extensively sheared, carbonaceous siliclastics.

Mining: The twin declines will extend approximately east-northeast and will terminate in western Pine Valley. The portal entrances for underground exploration development and workings will be located above the approximate elevation of 6,580 feet above mean sea level, which is approximately 720 feet above the average ground water table in the immediate area. The twin declines will allow for technical investigations that include but will not be limited to bulk sampling, geological characterization, exploration drilling and sampling, and geotechnical studies. The declines are planned to be completed in about 3 years followed by another 2 years of exploration.

The declines are designed to be 20 feet high by 18 feet wide for the first 50 feet then 16 feet high by 15 feet wide. They are designed to accommodate mining equipment, piping, and ventilation ductwork. Underground support facilities may include pump stations, sumps, explosives magazines, and drill stations in exploration drifts. The initial decline will be driven at a slightly positive gradient followed by a declining gradient to ensure that surface water will not enter the decline. There will be a petroleum oil and lube storage facility in the underground..

Waste Rock Management: Waste rock will be transferred to the existing Cortez Hills Mine Canyon Waste Rock Facility (See NEV2007106 Fact Sheet for more information). If potentially acid generating (PAG) waste rock is encountered it will be excavated and placed on the lined ore-grade/PAG material transfer pad for relocation to the Cortez Hills Mine Canyon Waste Rock Facility.

Transfer Pad: The lined ore-grade/PAG material transfer pad (Transfer Pad) is located on the lower portal pad. It is approximately 24,000-square-foot and can store up to 4,000 tons of material stacked to six feet high. The lined pad is designed to have 12-inch compacted subgrade material (92% max dry density), 80-mil high density polyethylene (HDPE), and a drainage geocomposite layer and a three to five foot thick protective layer of high-permeable drain aggregate over the liner system. The contact water will drain to the southwest corner of the pad into piping to three single-walled 12,150-gallon tanks.

Contact Water Tanks and Containment: The tanks are designed to overflow into each other by a series of 6-inch diameter heavy-duty flex hoses and bolted flanges near the top of the tanks. The three tanks are also connected at the bottom with 6-inch diameter butterfly valves to keep each tank isolated. Each tank will be fitted with a separate 6-inch diameter drain valve for tank excavation. The containment

is designed with a 2 to 2.5-foot high perimeter embankment and 2 horizontal to 1 vertical (2H:1V) inside slopes. The containment for the tanks is designed to have a 12-inch layer of prepared subgrade and 80-mil HDPE liner. This secondary containment has a capacity of 16,950-gallons not counting the volume occupied by drainage material. The south half of the containment will be filled with drainage aggregate material to the top of the perimeter containment berms. This will form a load out pad over the geomembrane, where a water truck can safely access and park to evacuate the contact water tanks. A geocomposite material will be installed under the drainage aggregate to assist with drainage and provide protection to the 80-mill HDPE liner. The containment pad is designed to drain to the north half of the pad where any accumulated contact water or precipitation will be pumped into the contact water tanks.

Incidential Contact Water Management: Incidental contact water will be conveyed from the portals to the three contact water tanks by a 6-inch diameter HDPE pipe contained in 10-inch diameter HDPE containment pipe (pipe-in-pipe). Most of this dual containment pipe will be buried from the portals to the contact water tanks. The underground contact water in the contact water tanks is expected to be minimal, since the contact water tank volumes will be monitored and excavated on a regular basis. A flowmeter/totalizer will be installed on this pipeline near the portal to monitor volumes of contact water pumped from the underground exploration project. The line will be constructed to gravity drain from the portals to the contact water tanks. Leakage from the 6-inch line will drain in the 10-inch line to the contact water tanks as well.

Batch Plant Sump: The shotcrete batch plant will have a concrete lined sump. This sump will collect surplus rinse water from operations. Using a submersible pump, this surplus rinse water from the batch plant sump will be conveyed to the portals through a 1-inch diameter HDPE pipeline, pressure rated at 100 pounds per square inch. From the batch plant sump to the portal entrances, this pipeline will be contained within a 4-inch diameter HDPE containment pipeline. Most of the dual-containment pipeline will be buried from the batch plant sump to the portals. Leakage from the 1-inch diameter pipeline will gravity drain to through the 4-inch secondary containment to the patch plant sump.

Storm Water Diversion and Culverts: A diversion channel will be built to the north-northwest of the portal pads to convey stormwater runoff away from the site from Basin 2. The diversion is designed to be a trapezoidal channel with 2H:1V side slopes, 10-foot bottom width, 2.5-foot depth, approximately 1,050 feet in length, and has a 14% to 15% grade. At the end of the channel the grade increases to 45% with 2 small stilling basins that form an inlet to a 48-inch diameter by 150-foot long corrugated metal pipe (CMP) culvert that discharges into rip-rap. The water then continues in the natural flow channel.

A second culvert is designed to convey stormwater from Basin 1 between the Upper and Lower Portal Pads and underneath the Horse Canyon Haul Road. The culvert consists of one 48-inch CMP that is 250 feet in length and slopes between 11% and 28%.

The third culvert is designed to convey storm water runoff from Basin 3 above the Upper Portal Pad and underneath the Horse Canyon Haul Road. The culvert consists of one 48-inch CMP that in 150 feet in length and slopes between 27% and 20%.

Petroleum-Contaminated Soil Management: Until a petroleum containment soil (PCS) management plan is approved and incorporated into the Permit all PCS must be shipped off site

C. Receiving Water Characteristics

HCCUEP declines are located in Grass Valley (State of Nevada Hydrographic Basin #138) and advancing towards and into Pine Valley (State of Nevada Hydrographic Basin #53). Per the Itasca model simulation there will be a passive average annual inflow of groundwater into the declines of less than 20 gallons per minute (gpm) for the first two years. The inflow rates would then fluctuate between 30 gpm to 50 gpm for the following 3 years. The inflow of water is planned to be managed with sump collection systems within the declines, and used underground for dust suppression and drilling make up water. None of the water is assumed to reenter the groundwater system.

Grass Valley is closed topographically. The Toiyabe Range separates Grass Valley from the southernmost part of Crescent Valley; the southern Cortez Mountains and northernmost section of the Simpson Park Range separate the northern part of Grass Valley from Pine Valley to the east (State of Nevada Hydrographic Basin #53). Groundwater monitoring data and numerical groundwater flow modeling indicates the dewatering in the Crescent Valley is increasing the rate of natural flow from the carbonate aquifer in Grass Valley and Pine Valley into Crescent Valley. The interbasin groundwater ranfer is incorporated in the Permittee's revised Four Basin Groundwater Flow Model in 2016.

Baseline groundwater chemistry for Grass Valley is circum-neutral, pH 6.5 -8.5 Standard units (S. U.). Baseline characteristics of several analyses periodically exceed Division Profile I reference values (drinking water standards) in one or more locations for iron and manganese. In first quarter of 2013 the iron level was 3.92 milligram per liter (mg/L) and in the fourth quarter of 2013 the manganese level was 0.17 mg/L in monitoring well PD-06.

D. Procedures for Public Comment

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate, and close, subject to the conditions within the Permit, is being sent to the **Battle Mountain Bugle** and **Eureka Sentinel** for publication. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the new Permit.

F. Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharge(s) except for those accumulations resulting from a storm event beyond that required by design for containment.

The primary method for identification of escaping process solution will be placed on required routine monitoring of the contact water tanks and containment area, and the monitoring well. Specific monitoring requirements can be found in the Water Pollution Control Permit.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (e.g., by covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Prepared by: Natasha Zittel
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Revision 00: New Permit