FACT SHEET

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

Permittee Name: **Consolidated Virginia Mining Company**

Project Name: **Sutro Mine Project**

Permit Number: **NEV2015101**
Review Type/Year/Revision: **New 2015, Fact Sheet Revision 00**

A. Location and General Description

Location: The facility is located in Storey County, within Section 20, Township 17 North, Range 21 East, Mount Diablo Baseline and Meridian, approximately 1 mile northeast of the town of Virginia City, Nevada. The facility is located entirely on private land owned by the Permittee. To access the facility from Virginia City, drive approximately 0.7 mile north on Nevada State Route SR-341 to a dirt access road that descends easterly and then bends northerly approximately 0.3 mile to the Project site.

General Description: The Project is a physical separation mining facility designed to process up to 10 tons per day of gold and silver ore obtained from the Sutro Mine. The ore is friable and will not require blasting. All process components, and the ore and tailings stockpiles, will be located inside the mill building on engineered concrete containment. The process circuit includes a grizzly, trommel, mills, jig, concentrating table, sand screw, cyclone, and tailings drum filter. Tailings material will be dewatered to prevent seepage of process solution prior to being disposed in dry portions of the mine workings.

B. Synopsis

District Geology and Mining History: The Project is located in the northern portion of the Comstock Lode mining district, an area defined by the Nevada Bureau of Mines and Geology (NBMG) as being centered around Virginia City, and extending from Silver City on the south to Orleans Hill on the north, and from Mount Davidson on the west to the mouth of Six Mile Canyon on the east (Bonham and Papke, 1969, NBMG Bulletin 70). The Project is located approximately 1 mile northeast of Virginia City and approximately 0.9 miles southeast of Orleans Hill.

The northern Ophir sub-district of the Comstock Lode was discovered in 1859 by Pat McLaughlin and Peter O'Reilly, who yielded to apparently fraudulent allegations and threats by Henry Comstock and granted Mr. Comstock interest in their claim. Shortly thereafter, Comstock and others working that claim exposed a silver- and gold-rich mixture of black manganese sand, bluish-gray sticky clay, and quartz that represented the first strike of the fabulously rich Comstock

bonanza ore. According to NBMG Bulletin 70, the total recorded production from the Comstock Lode, 1859 through 1965, was $393,963,725 in gold and silver.

The main ore hosts for the Comstock Lode are the Miocene andesites of the Alta Formation, and lesser so, the overlying Miocene-Pliocene andesites of the Kate Peak Formation. The Kate Peak Formation consists of a series of breccias, tuffaceous sediments, and volcanic plugs and dikes. Comstock ore-bearing zones are adularia-sericite style epithermal veins and breccias that occur in and around the northeast- to northwest-striking, east-dipping, Comstock and Silver City Faults.

Project Geology: The Comstock Fault is mapped in the immediate vicinity of the Sutro Mine (Hudson, 2003, Economic Geology, v. 98), striking north to northeast and dipping 35 to 45 degrees to the east. The Sutro Mine is located in the footwall of the Comstock Fault. The ore zone is a siliceous quartz vein and/or fault structure, 150 to 250 feet wide, which is intercepted in the underground workings southwest of the portal under State Route SR-341 and Cedar Hill. The gold, silver, and copper ore body in the Sutro Mine is associated with propylitic, silicic, and clay alteration zones within the Kate Peak Formation. The ore-grade material that will be mined and processed is limited to zones of strong clay alteration and sulfide mineralization that visibly resemble the famous blue-gray clay of the historic Comstock bonanza ore. Accounts of the mining history of the Sutro Mine are not available, but the workings are not extensive and are all on one relatively flat level.

Hydrology and Water Supply: Water for the Project is supplied by production well PW-1, which is located approximately 100 feet west of the mill building. The water is pumped from the well to the process water tank in the mill building. The static water depth in well PW-1 is approximately 200 to 250 feet below ground surface (bgs), although 750 feet further east at the Tode well, water is only 52 feet bgs (see Receiving Water Characteristics below). Well PW-1 supplies the facility with good quality water that meets all Division Profile I reference values except for naturally elevated manganese.

The existing mine workings are free from water accumulations, although the blue-gray clay is locally moist. According to the Permittee, except for periodic drips near the portal during wet seasons, the underground workings remain dry throughout the year.

Mining: The ore is already exposed in the underground workings of the Sutro Mine, and is typically soft or friable; therefore, no blasting is anticipated. Ore will be mined from the existing workings using hand-held pneumatic jack legs and a small rubber-tired mucker. The ore is transported to the surface by mucker where it is placed on the mill floor to dry before processing. Pre-permitting

testing indicates that the average gravimetric moisture content of the ore is 5.7 percent, which is below field capacity. Waste rock is not anticipated, but if any is encountered, it will be moved internally within the dry underground workings and not be brought to the surface. Therefore, no new waste rock placement is proposed or authorized on the surface.

Ore Processing: The ore stockpile, all ore processing components, and the tailings stockpile are all located within the mill building on engineered concrete containment. Although the Permit authorizes processing up to 36,500 tons of ore per year, the Permittee plans to process less than 10 tons of ore per day (maximum 3,650 tons per year) and stockpile a maximum of 10 tons of ore in the mill at any given time.

An acid-base accounting analysis included in the Permit application indicates that the ore is potentially acid generating (PAG) with a ratio of Acid Neutralization Potential to Acid Generation Potential (ANP/AGP) of 0.002. A Net Acid Generation (NAG) analysis of the ore yielded a pH value of 2.12 standard units (SU). An analysis of the ore via the Meteoric Water Mobility Procedure (MWMP) resulted in significant exceedances of Division Profile I reference values for aluminum, antimony, arsenic, beryllium, cadmium, copper, iron, lead, magnesium, manganese, pH (4.21 SU), selenium, sulfate, and total dissolved solids (TDS). Furthermore, a pre-permitting analysis of process water produced from a bench-scale test yielded a pH of 4.56 SU, TDS concentration of 2,400 milligrams per liter (mg/L), and other Division Profile I exceedances for aluminum, beryllium, cadmium, fluoride, iron, manganese, and sulfate. Therefore, the Division determined that despite the use of a gravity separation circuit without the introduction of chemicals, engineered containment of the ore processing circuit and all process solution is required.

If desired in the future, the Permittee may apply for approval to use specified flocculants if they would not increase the potential for degradation of waters of the State. Such an application may be considered a Permit modification and require the payment of modification fees, but would not remove the facility from the physical separation Permit fee category. Any future application to add neutralizing reagents such as lime, or any other chemical, may move the facility into a chemical processing Permit fee category, require additional application information and fees, and possibly require additional engineered containment.

The mill building measures 50 feet by 100 feet in plan view. The building includes a 6-inch thick concrete slab floor with associated vertical curbing around the perimeter and elevated access ramps to provide secondary containment for all process components and stockpiles. The slab and curb secondary containment structure is constructed independently from, and generally several feet inside, the previously constructed steel building walls. The secondary containment measures approximately 43 feet by 88 feet in plan. Up to 6 feet horizontally of aggregate

base or clean excavated fill lie in between the outer edges of the secondary containment and the inside of the building walls.

The mill floor secondary containment is designed with a drainage and collection system to manage incidental spillage and any fluid upsets. The collection system includes a recessed pre-molded trench drain with galvanized grate in the center of the floor, aligned in a southeast to northwest direction, parallel to the long axis of the building, and a single recessed pre-cast concrete floor sump at the northwest end of the trench drain. The sump is equipped with a pump to return the collected solution to the process water tank. The mill floor is sloped inward to drain to the trench drain and sump. The secondary containment slab is constructed with flexible thermoplastic vulcanizate (TPV) waterstops, and a silicon sealant, in all joints. An acid-resistant coating is applied to the floor, curbs, trench drain, and sump to provide protection from low-pH process solution and stockpiles.

The ore processing circuit includes the following components: ore bin, grizzly, process water tank, trommel, hammer mill, ball mill, jig, concentrating table, sand screw, cyclone, drum filter, and connecting conveyors. Stockpiled ore is loaded into the ore bin through the grizzly. Plus 4-inch material is removed at the grizzly and stockpiled as coarse reject material for return to the mine. Minus 4-inch ore is conveyed to a trommel where water from the process water tank is introduced. Minus 0.25-inch material from the trommel reports to a 12-inch jig where concentrate is separated from tailings reject. The jig concentrate is sent to the concentrating table. The plus 0.25-inch material from the trommel reports to a mill circuit consisting of a hammer mill followed by a ball mill, for resizing the coarse ore fraction before it is also delivered to the concentrating table. At the concentrating table, heavy and light concentrates are separated, and both are shipped off-site for refining and recovery of silver and gold.

All mill components are constructed using carbon steel. The steel 6,000-gallon process water tank is lined with a coal tar epoxy sealant to protect the tank from corrosion. The tank measures approximately 10 feet tall by 10 feet in diameter, and is placed in a 12-foot diameter leak detection pan. Therefore, the mill floor actually represents tertiary containment for the process water tank, secondary containment for the other process components, and primary containment for the ore and tailings stockpiles. However, the tank leak detection pan does not have the required 110 percent capacity to function as a stand-alone secondary containment; therefore, for regulatory purposes, the containment floor is considered the secondary containment for all process components. All components other than the process water tank are skid mounted allowing for easy inspection, repair, and relocation within the building secondary containment as needed.

Per regulation, the minimum capacity of the mill building concrete secondary containment must be 110 percent of the largest primary vessel. The largest vessel

is the 6,000-gallon process water tank; therefore the minimum required secondary containment floor capacity is 6,600 gallons, not including the volume occupied by the process components, stockpiles, and other equipment. As designed, the mill floor will actually accommodate approximately 7,700 gallons of liquid with the ore and tailings stockpiles in place. The Permit includes limits on the size of the stockpiles to preserve the required capacity for any spillage.

Concentrate will be collected in five-gallon buckets at the concentrating table. The buckets will be stored in a secured location within the mill building until sufficient volume has been generated for an off-site shipment. The application lists Global Metal Technologies, LLC, located in Bellevue, Washington, as the off-site refinery, but other refineries may also be used. If the concentrate is shipped to a refinery located in Nevada, it must have an active Water Pollution Control Permit, unless otherwise approved by the Division.

Tailings Management: Tailings reject material from the jig and concentrating table report to the dewatering circuit, which includes a dewatering sand screw, Krebs cyclone, and drum filter. At the sand screw, heavy material is directed back to the mill circuit for reprocessing, while lighter material moves to the cyclone. A further separation occurs at the cyclone, with heavy material returning to the sand screw. The lighter material in the cyclone is passed to the drum filter where it is dewatered to an estimated gravimetric moisture content of 6 to 10 percent. For comparison, the maximum gravimetric moisture content of the tailings at field capacity is calculated to be 17 percent; therefore, the tailings leaving the drum filter will be dry enough that a separate process water phase will not drain from it when it is placed back in the dry mine workings. Accordingly, the Permit requires monthly analyses of tailings returned to the mine to ensure that its gravimetric moisture content is no greater than 15 percent. From the drum filter, the tailings will have the consistency of a friable filter cake. Up to 10 tons of tailings will be stockpiled in a designated location on the mill floor prior to being returned to the mine workings.

As part of the pre-permitting evaluation, a bench-scale test was used to produce a representative sample of material that would physically and chemically resemble the tailings material that will be returned to the mine during routine production. An acid-base accounting analysis of the bench-scale tailings included in the Permit application indicates an ANP/AGP ratio of 0.432, as compared to the ANP/AGP ratio of 0.002 for ore noted above. An MWMP-Profile I analyses of the bench-scale tailings indicates exceedance of Division Profile I reference values for aluminum, cadmium, lead, manganese, and pH (4.41 SU). Therefore, while the tailings is PAG and would have the potential to mobilize toxic constituents if it contacted water when it was outside of engineered containment, it is important to note that the tailings has much less potential to generate acid, and much less potential to liberate toxic constituents, than the ore it is derived from (see ore characterization summary in the ore processing section above).

This is apparently due to most of the metal-bearing sulfide minerals contained in the ore being removed in the concentrate stream, and soluble sulfur species and associated metals being removed in the process solution. Provided that the tailings material returned to the mine is dry enough that no process solution seeps from it, as indicated above, and the tailings is placed in an area of the mine that remains dry throughout the year, there will be no potential for the tailings material to degrade waters of the State. These tailings management requirements are incorporated into the Permit.

Ancillary Facilities: In addition to the mill building, the facility includes a security station, shop, administration building, and a dirt parking lot near the portal area. The facility maintains a mobile backup generator for use in the event of a power failure, and an emergency communication system.

No fuel, motor vehicle lubricants, or antifreeze will be stored on-site. All fueling and vehicle maintenance will occur outside of the facility area. Small quantities of lubricants used for non-motor vehicle maintenance will be stored on-site in fireproof cabinets within the mill building secondary containment. Petroleum-contaminated soil (PCS), if generated at the Project, will be excavated and managed for off-site disposal in accordance with applicable regulations and operating plans.

Operating and Closure Plans: The Permittee intends to operate the facility year round. In the event of an unplanned temporary closure, stockpiled ore and tailings will be returned to the mine, and process water may be removed and properly disposed off-site. Resumption of operation after at least six months of temporary closure requires prior Division approval, likely including a site inspection by the Division.

C. Receiving Water Characteristics

The Project is located on the south side of Cedar Hill Canyon, which is an ephemeral to intermittent creek that typically flows only in response to precipitation events. An unnamed intermittent spring is located within Cedar Hill Canyon approximately 0.4 miles upgradient to the west of the Project. No other surface water bodies are identified within 0.5 mile of the Project. Cedar Hill Canyon is a tributary to Seven Mile Canyon, which is a tributary to Virginia Creek/Six Mile Canyon, which in turn, is a tributary to the Carson River. The Carson River between the Dayton Bridge and Weeks, and all tributaries thereof, including Cedar Hill Canyon, are subject to the water quality standards at NAC 445A.121, 445A.1236, and 445A.1822; however, surface water monitoring is not required in the Permit, because the facility is not located near the bottom of Cedar Hill Canyon, and stormwater is diverted around the facility.

Upgradient stormwater is diverted around the process building by a diversion berm on the northwest side of the building, and a vee-ditch on the southwest side of the building. The vee-ditch connects to an 18-inch diameter buried culvert that discharges to Cedar Hill Canyon just southeast of the building.

Production well PW-1 (Nevada Division of Water Resources [NDWR] well log 120903), from which makeup water is obtained for the Project, is located approximately 100 feet northwest of the process building and is collared at approximately 6,080 feet above mean sea level (AMSL), which is approximately the same elevation as the process building. PW-1 was deepened in July 2014 to a depth of 500 feet bgs. Formerly the well was open to 395 feet bgs. The static water depth in PW-1 is approximately 200-250 feet bgs. Groundwater quality analyses indicate that the groundwater in PW-1 is good quality, meeting all Division Profile I reference values except for manganese, which is present at naturally elevated background concentrations up to 0.71 mg/L. Approximately 12 gallons per minute (gpm) was pumped from well PW-1 via airlifting during installation.

Two other groundwater wells are located within 0.5 mile of the Project, and both contain groundwater at much shallower depths than PW-1. The Tode well (NDWR well log 112169) is located approximately 750 feet east of well PW-1 at an elevation of approximately 6,120 feet AMSL on an adjacent hillside. Static water was only 52 feet bgs in the Tode well when it was installed in 2010. The Tode well and property is owned by the Permittee. The Tyson Ranch well (NDWR well log 78536) is located on private property not controlled by the Permittee approximately 0.5 mile downhill to the southeast of PW-1 at approximately 5,840 feet AMSL in Seven Mile Canyon. Static water was encountered in the Tyson Ranch well at 45 feet bgs when it was installed in 2000. Based on measured static water levels in PW-1, the Tode well, and the Tyson Ranch well, the groundwater gradient in the Project area would appear to be downward to the southwest, but the sharp groundwater gradient between PW-1 and the Tode well, and other geologic information, suggest that the north-trending Comstock Fault may lie between PW-1 and the Tode well. The Comstock Fault may represent a hydrologic barrier, and thus the actual groundwater gradient direction is uncertain in the area, but the topographic and surface-water gradient is downhill to the southeast.

As proposed, the Project does not have the potential to degrade surface water or groundwater during routine operations, or as a result of the 25-year, 24-hour design storm event, because the underground workings are dry, the ore and tailings stockpiles and all processing components are located on concrete containment within a building, no waste rock is removed from the mine, and the tailings material is dry enough prior to being returned to the mine that there will be no tailings drainage solution in the mine.

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 **Nevada Appeal** 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 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 process building floor for containment integrity and capacity, monitoring of tailings material for moisture content to ensure that it will not seep process solution, and periodic site compliance inspections performed by the Division. 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: Thomas E. Gray
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Revision 00: Effective Month Year; New Permit.