FACT SHEET

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

Permittee Name: **Newmont USA Limited dba Newmont Mining Corporation**

Project Name: **Leeville Infiltration Project**

Permit Number: **NEV2002105**
Review Type/Year/Revision: **Renewal 2015, Fact Sheet Revision 00**

A. Location and General Description

Location: The **Leeville Infiltration Project** is located in the Little Boulder Basin on the west flank of the Tuscarora Mountains, in north-central Eureka County, Nevada, approximately 20 miles northwest of the town of Carlin, Nevada. The facilities are located in portions of Sections 2, 3, 10, and 11, Township 35 North (T35N), Range 50 East (R50E); and Sections 29, 30, and 32, T36N, R50E, Mount Diablo Baseline and Meridian. The facilities are located on both private land controlled by the Permittee and public land administered by the U.S. Bureau of Land Management, Tuscarora Field Office in Elko, Nevada. To access the Project site, travel 23 miles west from Elko (the nearest controlled airport facility) on Interstate Highway 80 to the Central Carlin exit #280, then north 17 miles on State Route 766.

General Description: The Leeville Infiltration Project, Water Pollution Control Permit (WPCP) NEV2002105 (the Permit) is designed for treatment and management of dewatering water associated with the Leeville Mine, an underground gold mining operation that is otherwise regulated under WPCP NEV0090056. The Project consists of several dewatering wells; a single-walled steel dewatering water Surge Tank hydraulically linked to a High Density Polyethylene (HDPE) double-lined and leak detected Surge Tank Overflow Pond; a water treatment plant; four (4) Inflow Settling Basins with primary and secondary HDPE liners, a geonet leakage collection and recovery system (LCRS) with leakage collection sump; three (3) double-HDPE-lined treated water Settling Ponds with LCRSs; a Settling Pond solids pipeline; a treated water conveyance pipeline; and associated tanks, interconnecting pipelines, ditches, pumps, sumps, and containment for the conveyance and control of fluids within the facility. A discharge pipeline system conveys treated dewatering water to the Boulder Valley Infiltration Project (WPCP NEV0089068), currently operated by Barrick Goldstrike Mines Inc., and to the North Block Project (WPCP NEV0091029) mill facilities at the Goldstrike Mine for use as make-up water. The limits for discharge water quality in this Permit are consistent with the discharge water quality limits proposed for the Boulder Valley Infiltration Permit (WPCP NEV0089068).

B. Synopsis

General: Newmont USA Limited dba Newmont Mining Corporation (the Permittee) mines gold ore from the underground Leeville Underground Mine (WPCP NEV0090056), which began construction in 2003. Ore reserves support a mine life of 18 years. To extract ore from the three deposits located 1,500 to 2,000 feet below ground surface (bgs), the Leeville Mine underground workings penetrate the groundwater table and dewatering of the formations peripheral to the mine is required to control inflow into the underground workings in advance of mining. Treatment of dewatering water is accomplished at the Leeville Water Treatment Plant prior to conveyance to the Boulder Valley and Goldstrike projects (WPCPs NEV0089068 and NEV0091029).

Dewatering Wells: Two aquifers, termed the Upper Plate and Lower Plate aquifers have been identified. A total of three (3) wells are approved by the Nevada Division of Environmental Protection (the Division) for use in dewatering the Upper Plate aquifer. A total of fifteen (15) wells, five (5) of which were approved by the Division as an Engineering Design Change (EDC) modification in April 2010, are approved for use in dewatering the Lower Plate aquifer. Data indicate little communication between the two aquifers. The ore deposits are located within the Lower Plate aquifer.

A combined maximum pumping rate of 27,000 gallons per minute (gpm) was anticipated for the first 2 to 3 years. After that time, and once groundwater levels are depressed, the pumping rate has been gradually reduced to 8,000 to 10,000 gpm to maintain the desired groundwater level for the remaining mine life.

Leeville Water Treatment Plant (Leeville WTP): The primary components of the Leeville WTP are a dewatering water Surge Tank hydraulically linked to a double-HDPE-lined and leak detected Overflow Pond, a chemical precipitation water treatment plant, four (4) Inflow Settling Basins, three (3) treated water Settling Ponds, and pipelines for discharge of treated water and precipitated Settling Pond solids. The four (4) Inflow Settling Basins, two for each Settling Pond #1 and #2, were added as an EDC modification approved by the Division 24 March 2004. The design for Settling Pond #3 was included in the original approved design and construction was authorized by the Division on 12 August 2004. Following a series of operational challenges, the original double-lined and leak detected Surge Pond was converted to an emergency Overflow Pond, designated the Surge Tank Overflow Pond (STOP), and an EDC approved by the Division 01 December 2004 authorized the construction of a steel dewatering water Surge Tank south of the pond for use in non-emergency situations.

Based on consistently good treated water quality following five (5) years of treatment plant operation, the LCRS flow limits for the four (4) Inflow Settling Basins and the three (3) treated water Settling Ponds were removed from the

Permit with the 2008 renewal; however, the Permit still requires at least weekly evacuation and flow monitoring of the pond LCRS sumps without flow limits.

Dewatering water is routed through individual pipelines from the dewatering wells to a collection manifold and into a 42-inch diameter HDPE pipeline for discharge into the water treatment Surge Tank located approximately 200 feet upgradient of the water treatment plant. The steel Surge Tank measures approximately 20 feet in diameter by 20 feet high and has a capacity of approximately 38,000 gallons. Water is conveyed from the tank to the treatment plant through a 42-inch diameter, above-ground HDPE pipeline.

The original Surge Pond was converted in 2004 into the STOP following numerous maintenance and repair issues. In the event of an upset condition, overflow from the tank reports via a 42-inch diameter HDPE pipeline to the STOP then flows by gravity through the original leak-detected pond outlet drain to the water treatment plant.

The STOP measures approximately 125 feet wide by 245 feet long. The maximum depth of the pond is 18 feet but the operational depth maintains, by design, 3 feet of freeboard. Maximum pond volume is calculated at 1,536,000 gallons (205,348 cubic feet). The pond is constructed of two 60-mil HDPE liners with a geonet LCRS between the liners. The secondary liner rests on a 6- to 12-inch thick Low Hydraulic Conductivity Soil Layer (LHCSL), compacted to 95 percent (%) maximum dry density (Modified Proctor American Society of Testing and Materials (ASTM) Method D1557) and placed over a subbase compacted to 95% maximum dry density (ASTM Method D1557).

Any leakage from the STOP reports to a 60-mil HDPE, single-lined leak detection sump of approximately 3,671-gallon capacity. The sump is filled with washed, minus 6-inch diameter rounded rock and fitted with an evacuation pump in a 10-inch diameter HDPE riser pipe sandwiched between the liners.

An EDC was approved by the Division in October 2009, to extend an existing 1-inch diameter, standard dimension ratio (SDR) 11, HDPE pipeline to convey ferric sulfate directly into the Surge Tank. The buried conveyance pipeline is located within a 3-inch diameter, SDR 11, HDPE pipeline to provide secondary containment. The buried portion of the pipeline is located in a trench four (4) feet below surface with tracer marking tape placed just above the pipeline prior to backfilling the trench. The short surface runs of the pipeline are wrapped with aluminum-clad fiberglass and heat traced. The conveyance pipeline discharges into the top of the Surge Tank. The dewatering water is treated with a 50% by weight mixture of either ferric sulfate or polyferric sulfate to achieve a design dosage of 15 milligrams per liter (mg/L) of ferric iron (Fe^{3+}). This change in point of addition, directly into the Surge Tank, did not perform well for the

Permittee and was changed back to the previous point of addition near the WTP shortly after the new pipeline was installed.

A non-fee modification was approved by the Division in October 2013 for a temporary pilot treatment test to reduce arsenic and antimony concentrations in the treated water to within new Permit limits that went into effect on 10 January 2013 (0.01 mg/L and 0.006 mg/L, respectively). The modification allowed the temporary installation and use of small mixing tanks and connecting piping for treatment of dewatering water with hydrogen peroxide, ferric sulfate, sulfuric acid, calcium hydroxide, and a flocculant on existing secondary containment in the Leeville WTP building. The feed pipeline was the existing, but no longer used, buried, double-walled (1-inch diameter within 3-inch diameter), HDPE pipeline described above for the October 2009 EDC. In its new use, the feed pipeline conveyed dewatering water from the Surge Tank to the pilot test within the Leeville WTP building. The pilot test began in January 2014 and was completed in March 2014. An April 2014 summary report indicated that the pilot test did not consistently meet the 0.006 mg/L Permit discharge limit for antimony. The discharge limit was revised upward with the 2015 Permit renewal, as described below.

Water flows by gravity from the Surge Tank through an above ground, 42-inch diameter HDPE pipeline toward the WTP. Upstream of the WTP the 42-inch diameter supply pipeline is split into two (2) identical 24-inch diameter HDPE treatment pipelines. Magnetic flow meters monitor each treatment pipeline to facilitate reagent dosing rates with a mechanical metering pump. Downstream of the metering pumps, the two treatment pipelines converge into a single 48-inch diameter pipeline, which conveys the solution by gravity to an in-ground, concrete distribution box located on the 60-mil HDPE secondary containment. From the distribution box the flow is split into three individual streams for distribution to the treated water Settling Ponds.

Each treatment pipeline is equipped with an injector downstream of the magnetic flow meter for dosing the untreated dewatering water with ferric sulfate or polyferric sulfate at that point in the treatment stream as an alternative to dosing at the Surge Tank. When the treatment pipeline injectors are used, the dewatering water is still treated with a 50% by weight mixture of either ferric sulfate or polyferric sulfate to achieve a design dosage of 15 mg/L Fe^{3+}. Untreated dewatering water is added downstream of the metering pump at the design rate of 6 gpm. Within approximately 8 seconds following injection of the sulfate solution, an anionic polymer, is added at 0.25% by weight of the treated water. The design polymer dosage is 2.0 mg/L, which is maintained at a constant rate by pacing the chemical metering pump to the process flow. Solution mixing is achieved by an in-line static mixer located downstream of the injectors.

The treatment pipelines are located on 60-mil HDPE secondary containment that is welded to the secondary pond liner. The HDPE liner was placed on 6 inches of sand bedding material and covered with geotextile and a 6- to 12-inch layer of drainage material. Any leakage from the reaction lines or the water treatment building will drain to a low point in the liner fitted with a 4-inch diameter perforated HDPE pipe, collection sump, and evacuation pump, which reports to the treated water Settling Ponds.

The Leeville WTP building is constructed of concrete and houses tanks, vats, pumps, and pipelines for receiving, storing, and dispensing the water treatment reagents. A list of reagents and their chemical properties was provided with the Permit application. The Permit requires Division approval of any other chemicals prior to use. Concrete joints are fitted with appropriate waterstop devices. The building is divided into several smaller compartments to isolate spills and simplify clean-up in the event of an upset. Each compartment can provide containment in excess of 110% of the volume of the largest single container housed, and can be equipped with a collection sump and automatic evacuation pump. Scupper drains, located above floor level in the compartment stem walls, hydraulically link all compartments. A major spill would ultimately report to the treated water Settling Ponds for containment.

Four (4) Inflow Settling Basins, two (2) for each Settling Pond #1 and #2, were constructed as an EDC modification in early 2004. The Inflow Settling Basins are located upstream of each respective Settling Pond and are designed to reduce inflow velocities and provide longer reagent contact time to promote more thorough flocculation. This longer residence time results in creation of larger sized particles, more complete and rapid settling of suspended solids within the Settling Pond, and, therefore, less potential suspended solid load being discharged with the treated water. Settling Pond #3 uses an upstream energy diffuser and a pond inlet structure, constructed within the pond containment system, rather than inflow basins to enhance solids settlement.

The Inflow Settling Basins are roughly irregular polygons in shape and range from 26 to 63 feet in length, 20 to 30 feet in width, and 1 to 5 feet in depth. However, each Inflow Settling Basin has an approximate capacity of 32,000 gallons with a 2-foot operational freeboard. The sizing yields 5 minutes of retention time for each basin at 5,000 gpm.

Each Inflow Settling Basin is constructed as a double-lined and leak-detected pond. Construction consists of a prepared subgrade with a minimum 6-inch thickness of material compacted to at least 95% maximum dry density (Standard Procter ASTM Method D698). Above the subgrade, from bottom to top, the liner system is comprised of a 60-mil HDPE secondary liner, a 200-mil geonet LCRS layer, and an 80-mil HDPE primary liner. The Inflow Settling Basin liner system is welded to the existing Settling Pond liner system. Any leakage between the liners will report to a 30-gallon gravel-filled sump fitted with a 6-inch diameter polyvinyl chloride (PVC) riser pipe.

Flow to each Inflow Settling Basin is through a 30-inch diameter HDPE pipeline from the distribution box to a cast-in-place reinforced concrete channel, approximately 45 feet long, that serves as a header/weir to discharge fluid evenly into the basin. The entire header/weir is cast on top of the liner system with an extra geonet layer and a conveyor belt wear sheet between the primary liner and the base of cast-in-place concrete channel. Treated water flows from the Inflow Settling Basins directly into the Settling Pond distribution system across a compacted earthen weir overlain by the continuous liner system. The weir design provides a minimum 2-foot operating freeboard within the Inflow Settling Basin.

Two (2) treated water Settling Ponds were constructed as part of the original Permit approval. Authorization to construct treated water Settling Pond #3, as approved in the original design, except for a thicker 80-mil HDPE primary liner, was given by the Division on 12 August 2004. Construction of treated water Settling Pond #3 was completed at the end of November 2004.

The treated water Settling Ponds each measure approximately 170 feet wide by 450 feet long at the crest. The ponds are designed for an average flow rate of 8,330 gpm, at a design rise rate of 300 gallons per day per square foot applied to the bottom of the 10-foot clarification zone. The peak hydraulic loading rate is 12,000 gpm when one pond is out of service for precipitated solids removal or maintenance. The Settling Ponds are designed with an overall depth of 18 feet, including 3 feet of freeboard, 10 feet of clarification, and 5 feet of solids storage.

Except for treated water Settling Pond #3, which has an 80-mil HDPE primary liner, each Settling Pond is leak detected and constructed of two 60-mil HDPE liners with geonet between the liners to serve as a LCRS. The secondary liner for each pond rests on 6 to 12 inches of LHCSL material compacted to 95% maximum dry density (Modified Proctor ASTM Method D1557). Any leakage from a pond will report to an individual leak detection sump between the liners filled with washed, minus 6-inch diameter rounded rock encased in geotextile and fitted with an evacuation pump in a 10-inch diameter HDPE riser pipe.

Treated water Settling Pond #2 developed leakage through the primary liner in the third quarter of 2004, shortly after commissioning. Several phases of repair and testing were partially successful but the pond remained off line as of September 2015. Pond #1 developed leakage in 2014, but was repaired in early 2015 and remained in service in September 2015, along with Pond #3.

Settling Pond Solids Removal and Disposal: Groundwater quality data show that arsenic and to a lesser degree, antimony, are the primary constituents requiring treatment in the Leeville Underground Mine dewatering water. The water treatment process selected by the Permittee is designed to reduce dissolved concentrations of arsenic and antimony below Division Profile I reference values. The method selected is a ferric sulfate coagulation process for co-precipitation of dissolved arsenic and antimony, followed by flocculation with a polymer and solid/liquid separation in the treated water Settling Ponds.

Precipitated solids collected in the Settling Ponds, comprised of ferric hydroxide precipitate, are pumped periodically for dewatering and proper disposal to the Leeville De-Sedimentation Project Phase I ('Geotubes'), located at the North Area Leach Project (WPCP NEV0087065), Mill 4 Tailings Storage Facility 2 (TSF 4-2). At the design flow rate of 27,000 gpm during the initial two years of operation and a design reagent dosage rate of 15 mg/L Fe^{3+}, settled solids will be removed from the Settling Ponds about every 90 days with a fixed slurry pump or a floating Settling Pond solids dredge.

The Settling Pond solids pipeline is used when necessary to remove accumulated solids from the Settling Ponds and has a design pumping rate of 1,000 gpm. The 8-inch diameter HDPE pipeline is approximately 3,500 feet long, and is contained within a 60-mil HDPE-lined containment ditch. The synthetic liner was placed on a minimum 6-inch-thick compacted layer of bedding sand over a prepared subbase compacted to 95% maximum dry density (Modified Proctor ASTM Method D1557). Samples of the Settling Pond solids were tested by the Toxic Characteristic Leaching Procedure (TCLP) and, based on the results, were deemed to be non-hazardous. In accordance with the Permit, annual characterization of Settling Pond solids includes Meteoric Water Mobility Procedure (MWMP), Profile I, and Acid Neutralization Potential:Acid Generation Potential ratio (ANP/AGP) analyses.

After the Settling Pond solids are allowed to dry within a Geotube at the Leeville De-Sedimentation Project, the Geotube is cut open and the Settling Pond solids are removed and disposed in the Class III waivered North Area Leach Project (WPCP NEV0087065) solid waste landfill.

Leeville De-Sedimentation Project Phase I ('Geotubes'): An EDC approved by the Division in August 2010, authorized construction of the Leeville De-Sedimentation Project Phase I. A second phase may be constructed based on Phase I operational experience, but will require a Permit modification and submittal of appropriate fees. Phase I is located upstream of the existing Leeville Mine Underground Sump Oil/Water Separator System (see description below). The approved and subsequently modified design includes sumps, pumps, and pipelines to convey clarified water directly from the existing Sedimentation Basins and Pump Tank to the Leeville WTP, eliminating the need for discharge of clarified water to the North Area Leach Project (WPCP NEV0087065) TSF 4-2. Although the De-Sedimentation Project is located within the southeast corner footprint of the TSF 4-2, it was incorporated into the Leeville Infiltration Permit, because the clarified water from the De-Sedimentation Project is conveyed to the Leeville WTP.

The Leeville De-Sedimentation Project Phase I is comprised of 12 geotextile filtration tubes (Tencate Geotubes®), known as 'Geotubes', placed on an engineered, HDPE-lined drainage platform with solution collection system. The Geotubes capture the majority of fine sediment contained in the Leevillle Mine Underground Sump water discharge, and most of the petroleum that is commonly contained in the Leeville Mine Underground Sump water. The latter aspect rendered the existing downstream oil/water separator unnecessary; hence it was bypassed with Division approval in 2012.

The flat, Geotube drainage platform, measuring approximately 170 feet in east-west dimension and approximately 750 feet in north-south dimension, was constructed to provide secondary containment and a filtered water collection system for 12 Geotubes. The Geotubes are separated into north and south groupings; Geotubes #1 through #6 comprise the south grouping and Geotubes #7 through #12 comprise the north grouping.

Valves and flexible pipelines direct water from the existing 8-inch diameter Leeville sump pipeline to all 12 Geotubes. Leeville WTP sediment pond dredge water, which does not contain oils and greases, is conveyed from the existing 10-inch diameter pipeline to Geotubes #1 through #4 only. Starting in 2012, underground mine dewatering water is also conveyed to Geotubes #1 through #4, as described below. After emerging from the Geotubes, the filtered water from all Geotubes is conveyed to the Sedimentation Basins, and ultimately back to the Leeville WTP, as described below.

Each Geotube is constructed of high strength geotextile and measures approximately 30 feet wide by 100 feet long. The Geotubes are placed at least 30 feet from adjacent Geotubes and from the edge of the drainage platform. When filled to the planned 50-60% capacity, an individual Geotube will expand to approximately 7.5 feet high. The Geotubes are rated for a 1,000 gpm fill rate but a lower rate increases filtering efficiency. Pilot testing indicates an average of two (2) Geotubes will be filled per week, which equates to approximately 500 tons of collected sediment. When a Geotube is full, the contained sediment is allowed to dry. The drying time varies depending on the time of year, but is generally 4 weeks or more. The Geotubes remain in place on the lined platform while drying. The contained sediment is assayed prior to removal by cutting the Geotube open and removing sediment with a loader. Geotube sediment with recoverable metal grade is transported to the mill, or to the nearby Section 3 ore stockpile, for processing (WPCP NEV0090056). Non-ore Geotube sediment is characterized and placed in an appropriate waste rock disposal facility, except Leeville WTP Settling Pond solids, which are disposed in a Class III waivered landfill. The empty used Geotube bag material is also solid waste that must be disposed in an approved landfill, such as a Class III waivered landfill.

To construct the platform, the existing TSF 4-2 subgrade within the platform footprint was graded to form a surface sloped at a minimum 1% to drain from east to west. The prepared area was covered with a minimum 6-inch thick layer of specified bedding material compacted to a minimum 90% maximum dry density (ASTM Method D1557), followed by placement of an 80-mil textured HDPE liner that is directly covered with a minimum 12-inch thick layer of protective overliner comprised of screened underground backfill reject material with a maximum ⅜-inch diameter particle size.

A drainage layer, at least four (4) feet thick and constructed of well-graded gravel with a maximum 2-inch diameter particle size, provides a high permeability layer that protects the underlying collection pipeline system from damage during loading and off-loading activities. The filtered water collection pipeline system incorporates 4-inch diameter perforated corrugated polyethylene (CPe) pipelines placed at 30-foot spacing in a herringbone pattern on the surface of the overliner layer. The collection pipeline system is divided into a north and south section, corresponding to the Geotube groupings within the platform, with the pipelines in a respective section reporting to a dedicated 8-inch diameter perforated CPe collection pipeline placed in an east-west orientation at the north-south midpoint of the platform. The two (2) 8-inch diameter collection pipelines drain to a trapezoidal collection channel, located along the west edge of the platform.

The collection channel is lined with a continuation of the single 80-mil textured HDPE platform liner. The channel collects flow from the 8-inch diameter collection pipelines in addition to flow conveyed through the drainage and overliner layers within the lined platform rather than the collection pipeline system. The collection channel measures approximately 3 feet wide at the base and ranges from 2 to 6 feet in depth to direct collected solution flow from both the north and south ends of the platform to a pair of collection risers located at the combined low point and midpoint of the channel and the platform. A berm is constructed across the channel at this point to separate the north flow from the south flow and direct the segregated flows into the two (2) vertical 24-inch diameter HDPE collection riser inlets.

The south and north collection risers are identified respectively as Collection Riser #1 and Collection Riser #2. Each riser is equipped with a top grate and a bottom blind flange. The 80-mil HDPE platform and collection channel liner is welded to a 6-inch wide HDPE ring around the top of each riser. Collected water is conveyed from each riser through a 10-inch diameter HDPE pipeline to the existing Sedimentation Basins (see below). Valves on the pipelines at the basin inlets allow regulation of flow between the basins or isolation of flow to a single basin when one of the basins is being cleaned or repaired.

In order to eliminate the need for direct discharge of underground mine water to the TSF 4-2, an EDC was approved by the Division in January 2012 for construction of the Leeville De-Sedimentation Project Truck Station. The Truck Station was constructed to accommodate discharge of mine water from both large (30,000 gallon) mine water haul trucks and smaller (3,000 to 4,000 gallon) drill water trucks into a collection and conveyance system for treatment in Geotubes #1 through #4 only. After exiting the Geotubes, the filtered mine water is comingled with the water from the other Geotubes.

A gravel roadway at the De-Sedimentation Project Truck Station provides access to a reinforced concrete pad and apron. The western portion of the pad, designed to accommodate the smaller trucks, is enclosed with a 2-foot high reinforced concrete containment wall and the eastern portion of the pad, designed to accommodate the larger trucks, is enclosed with a 2-foot, 4-inch high containment wall. Both discharge areas are sloped to a valley pan in the middle of the pad to convey discharge water to a 5-foot wide concrete launder, screened with a 2-inch by 2-inch welded wire mesh, and into a partially buried steel Truck Station Tank. The pad is equipped with a fire hose that can be used to wash heavier solids to the tank.

Discharge water exits the launder by gravity into the 35-foot diameter by 12-foot deep, 80,000 gallon steel Truck Station Tank. The internal and external surfaces of the tank are coated with epoxy or rubber sealants to prevent corrosion. A 2-foot thick by 7-foot tall concrete ring was poured around the base of the steel tank to address buoyancy concerns and anchor the tank when empty. Four (4) high-pressure nozzles located along the inside circumference of the tank floor can be used as needed to agitate solids and keep them suspended in solution.

Two (2) 700 gpm submerged pumps, with float sensors to determine water level, operate automatically to evacuate the Truck Station Tank. Only one (1) pump is required to evacuate the tank; the second pump provides redundancy in the event of pump outage or maintenance. Water is pumped from the Truck Station Tank through a 6-inch diameter flexible hose that transitions to a 10-inch diameter HDPE pipeline equipped with a flow totalizer, densitometer, and a connection to the existing flocculation system. A new 10-inch discharge manifold, similar to the pre-existing manifold, connects the new conveyance pipeline to Geotubes #1 through #4. The Truck Station Tank is also equipped with an overflow that conveys water by gravity through an 18-inch diameter, above ground, HDPE pipeline to the existing Sedimentation Basins in the event of upset conditions at the tank.

Leeville Mine Underground Sump Oil/Water Separator System: An EDC modification was approved by the Division in December 2007 to upgrade the oil/water separator system for improved treatment of Leeville Mine underground mine sump water prior to discharge to the TSF 4-2. The original separator system (located east of the county road and west of the Leeville Mine access road) was bypassed with installation of the new system. The new system was originally permitted and monitored in accordance with the Mill 5/6-Gold Quarry-James Creek Project (WPCP NEV0090056) but was transferred as a non-fee action in April 2009, to the North Area Leach Project (WPCP NEV0087065) where the clarified water was physically managed until late 2010. Monitoring and reporting for the component was transferred again in August 2010, to the Leeville Infiltration Project (the current Permit), following approval of an EDC to construct the Leeville De-Sedimentation Project Phase I (see description above). With the latter construction, clarified water is conveyed to the Leeville WTP, and monitoring and reporting are performed in accordance with this Permit. However, closure of these components, based on their physical location, will likely be completed in conjunction with WPCP NEV0087065.

The Leeville Mine Underground Sump Oil/Water Separator System is designed to manage average inflow rates of 800 gpm during an average 5-minute cycle twice per hour. The system is comprised of a pair of Sedimentation Basins (East and West) with secondary containment and a pre-fabricated oil/water separator tank with leak detection. The oil/water separator tank was bypassed as part of an EDC approved by the Division in January 2012.

Filtered water is conveyed to the Sedimentation Basins from the Leeville De-Sedimentation Project Phase I collection risers through a pair of 10-inch diameter HDPE conveyance pipelines. The East and West Sedimentation Basins are located on the southeast side of the TSF 4-2 within the limits of the impoundment basin. The Sedimentation Basins consist of two (2) rectangular-shaped concrete chambers, placed side by side. Each basin measures approximately 125 feet long by 25 feet wide and has a maximum depth of about 6.5 feet. The initial 80-foot length of each basin is sloped down from ground surface at about 10% to provide access by a front-end loader to remove sediment. Based on operational experience, the Sedimentation Basins are designed for a minimum 30-day clean-out frequency per basin.

The basins have a rectangular, 1-foot deep by 1.5-foot wide, inlet channel on top of their outer walls that is equipped with a series of thirteen (13) gated weirs spaced on 6-foot centers. Flow from the 8-inch diameter conveyance pipelines to the inlet channel is regulated by a system of valves. An 80-foot long effluent launder, measuring 2 feet wide by 1 foot high, sized to handle 800 gpm flows, is located centrally between the two basins. Overflow from the basins passes into the launder through a series of 3-inch-deep v-notch weir, which originally discharged (see January 2012 EDC modification description below) from the launder through a 12-inch diameter HDPE pipeline into the oil/water separator tank.

An EDC was approved by the Division in January 2012 to authorize a pipeline modification to bypass the oil/water separator tank due to problems with solids build-up in the separator tank baffles. In addition, operating experience following construction of the De-Sedimentation Project demonstrated that very minor quantities of hydrocarbons remained in the water reporting to the Sedimentation Basins following Geotube filtration and that continued use of the oil/water separator was unnecessary. The EDC included installation of a pair of floating, closed-loop oil skimming plastic tubes to recover small amounts of hydrocarbons from the surface of the water within the basins. Any collected hydrocarbons are conveyed from the outer surface of the tubes to a 55-gallon drum located adjacent to each basin. The basin outflow launder was connected to a new 12-inch diameter HDPE pipeline to convey clarified water directly to the Pump Tank (see below).

The oil/water separator tank is a pre-fabricated, horizontal cylinder-shaped unit measuring approximately 8 feet in diameter by 26 feet in length. The entire unit is buried below grade immediately north of the Sedimentation Basins within a common LCRS sump (see below) excavated into the TSF 4-2 seal zone. The unit is equipped with internal baffles and monitoring and clean-out access ports. Due to limited access to the tank unit and the LCRS shared with the Sedimentation Basins, the unit could not be removed once bypassed as part of the January 2012 EDC. However, the unit was isolated with blind flanges on all pipelines and drained of fluid. LCRS monitoring will continue but the final disposition of the separator tank will need to be addressed as part of final closure of the facility.

A shared LCRS sump for the Sedimentation Basins and the oil/water separator tank (identified in the Permit as LVOWLD) is comprised of a trapezoidal-shaped trench excavated at the deep end of the Sedimentation Basins with the long axis of the excavation constructed perpendicular to the long axis of the basins. The base of the trench is covered with a Geosynthetic Clay Layer (GCL), which has a permeability of less than 1×10^{-9} centimeters per second (cm/sec) and is keyed into an anchor trench beneath the concrete Sedimentation Basins. The tank is placed in the trench within approximately 4 feet of pipe backfill material covered with random fill. To preclude ingress of meteoric and surface waters, the entire random fill area is covered with reconstructed TSF 4-2 basin seal zone material. Any fugitive solution from the Sedimentation Basins or the tank reports by gravity to a gravel-filled, 80-mil HDPE-lined LCRS sump excavated beneath the centerline of the tank. The LCRS sump may be inspected and evacuated through a 20-inch diameter HDPE vertical observation port that daylights on the surface adjacent to the tank. Any collected solution can be evacuated with a portable pump to the Sedimentation Basins for flow quantification and treatment if necessary.

The Pump Tank is a steel, 10,000 gallon tank measuring 14 feet in diameter by 12 feet tall. The tank is designed to handle feed rates of 200 to 1,000 gpm and is mounted below grade on a concrete ring foundation in a backfilled trapezoidal excavation. The tank is equipped with a pair of vertically-mounted, variable-drive pumps rated at 1,000 gpm each. Only one (1) pump is required for operation and the second provides a back-up. A 12-inch diameter HDPE pipeline, placed in the existing synthetic-lined conveyance ditch, connects to the 12-inch diameter pipeline from the East Sedimentation Basin with a wye fitting to convey water back to the Leeville WTP flow distribution box through a single 12-inch diameter HDPE pipeline. The wye fitting is equipped with check valves to prevent backflow of water from one pipeline to another. Water is sampled for Profile I and total petroleum hydrocarbon analyses at the distribution box discharge point.

A non-fee modification was approved by the Division in December 2013 for use of Watertech, Inc. antiscalants CWT-254® (sodium hypochlorite) and CWT-280® (containing sodium polyacrylate) in dosing rates of 20 mg/L and 106 mg/L, respectively, in cooling water in the heat exchangers at the Leeville-Turf Vent Shaft Freeze Plant. The spent cooling water was conveyed via a 6-inch diameter HDPE drain pipeline on the surface to the Leeville De-Sedimentation Project Pump Tank. As of September 2015, the Leeville-Turf Vent Shaft Freeze Plan had been taken out of service, dismantled, and removed.

Discharge Pipeline System: Treated water from the water treatment plant is conveyed via the Northern Discharge Pipeline system (this Permit) to the Goldstrike Mine pump station "601 Tank," which is managed as part of the Boulder Valley Infiltration Project (WPCP NEV0089068) and the North Block Project (WPCP NEV0091029). Treated water that is not used for make-up water in the mills associated with the North Block Project (WPCP NEV0091029) is conveyed within the discharge pipeline (WPCP NEV0089068), along with Goldstrike Mine dewatering water, to a lined cooling channel and coffer dam, and discharged to the environment at the TS Ranch Reservoir or the rapid infiltration basins (RIBs) in Boulder Valley (WPCP NEV0089068). The discharge concentration limits in this Permit are the same as those proposed for WPCP NEV0089068, because the ultimate points of discharge to the environment are the same.

The Northern Discharge Pipeline to the 601 Tank is approximately 21,000 feet in length. The pipeline inlet at the water treatment plant is at an elevation of approximately 5,915 feet above mean sea level (AMSL) and the pipeline outlet at the Goldstrike Mine pump station 601 Tank is at an elevation of 5,520 feet AMSL. The pipeline corridor skirts the Section 3 Ore Stockpile on its south side and then follows the existing north-south haul road. The pipeline maintains a nearly constant gradient. The pipeline is designed to accommodate average flow rates from 8,000 gpm to 27,000 gpm. Velocity in the pipeline was originally calculated to be 3 feet per second (fps) at 8,000 gpm and 10 fps at 25,000 gpm.

The Northern Discharge Pipeline is constructed of 36-inch diameter, SDR-17 (100 pounds per square inch), HDPE pipe. The design required no thrust blocks. Approximately 7,000 feet of the single-wall pipeline is buried adjacent to waste rock dumps to prevent damage from material rolling off the dumps. The pipeline is contained in steel sleeves and buried under road crossings. Earth anchors were installed where necessary.

Hydraulic head pressure on the Northern Discharge Pipeline is maintained by the NEV0089068 and NEV0091029 systems. Sufficient head pressure is available to allow both the Permittee of this Permit and the Permittee of those permits to draw water from the system.

The Northern Discharge Pipeline is designed with flow measurement devices. In the event of an inlet/outlet flow rate imbalance of approximately 5%, as measured by the automated flow meters, an alarm will trigger in the Leeville Mine hoist house, which is occupied 24-hours per day. The alarms will not initiate automatic shutdown of the pipeline system but the hoist operator will contact the supervisor who will take action in accordance with the Emergency Response Plan (ERP) once the severity of the situation is determined. The action taken could include shutdown of the dewatering wells, Surge Pond management, and shutdown of the water treatment plant, as may be necessary.

The water management system is designed to remain fully functional and contain all process fluids and run-off accumulations resulting from the 24-hour, 25-year storm event. Diversion ditches located upgradient of all facility components divert storm flow from the 24-hour, 100-year event.

C. Receiving Water Characteristics

The Leeville Infiltration Project is located on the west flank of the Tuscarora Mountains within the Boulder Flat hydrographic area. The water treatment plant and associated facilities are situated within Little Boulder Basin on the drainage divide near the headwaters of Rodeo Creek and Sheep Creek, both of which are ephemeral to intermittent drainages. Flow occurs in these creeks in response to significant precipitation events and snowmelt runoff in wet years, but neither supports sufficient flow to maintain a defined channel to the Humboldt River.

Historic groundwater flow in the Project area was generally to the southwest. This flow direction has not been significantly affected by the dewatering at the Goldstrike Mine to the north (WPCP NEV0091029) or the Permittee's Gold Quarry Mine to the south (WPCP NEV0090056), because the mine site is situated between the two cones of depression. Some faults in the area also appear to act as barriers to groundwater flow. However, records collected since 1993 indicate that aquifer water levels in the Project area have generally been declining in response to those regional dewatering activities.

Two groundwater aquifers with limited intercommunication have been identified in the area of the water treatment facilities. The "Upper Plate" aquifer lies at a depth of 660 feet bgs and the "Lower Plate" aquifer lies at a depth of approximately 1,150 feet bgs. The original depth to water in these aquifers, prior to dewatering activities at the Goldstrike Mine to the north and the Gold Quarry Mine to the south, were 510 feet bgs and 660 feet bgs respectively. The Upper Plate aquifer is considered a low- to moderate-volume water producer. The Lower Plate aquifer is considered a high-volume water producer. Production from an individual test well drilled into each aquifer resulted in flows of approximately 550 gpm and 2,600 gpm, respectively. The Leeville Mine required dewatering at a maximum rate of up to 27,000 gpm during the first two to three years of development and is expected to require dewatering at an average rate of 8,000 gpm for the remainder of the mine life.

The Upper Plate aquifer water quality meets all Division Profile I reference values except for arsenic and antimony. Arsenic in the Upper Plate aquifer ranges from 0.097 mg/L to 0.572 mg/L in test well samples. The Lower Plate aquifer water quality also meets all Division Profile I reference values except for arsenic and antimony. Arsenic in the Lower Plate aquifer averages 0.06 mg/L in the test well samples. Analyses through the end of 2014 from the combined dewatering water (both aquifers) indicate that pre-treatment concentrations of arsenic range from 0.11 mg/L to 0.48 mg/L, and pre-treatment concentrations of antimony range from approximately 0.009 mg/L to 0.03 mg/L.

As noted above, the points of discharge to the environment for any treated dewatering water that is not used as make-up water in the mills associated with the North Block Project (WPCP NEV0091029) are the TS Ranch Reservoir and the RIBs in Boulder Valley (WPCP NEV0089068). Near the TS Ranch Reservoir and RIBs in Boulder Valley, groundwater occurs primarily in Tertiary volcanic units, currently at approximately 200 to 360 feet bgs. Pre-infiltration depths to water near the infiltration sites were approximately 50 feet lower than current levels. Boulder Valley groundwater typically meets all Division Profile I reference values, except for elevated background arsenic concentrations occasionally up to 0.017 mg/L.

Monthly analyses indicate post-treatment arsenic values have consistently been reduced to between 0.005 mg/L and 0.035 mg/L. From January 2012 to July 2015, post-treatment arsenic values were all less than or equal to 0.017 mg/L, except for one anomalous value of 0.031 mg/L in July 2013. Post-treatment antimony values have consistently been reduced to between 0.003 mg/L and 0.013 mg/L. See the section below entitled, "Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions," for further details on discharge water quality and related Permit requirements.

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 **Elko Daily Free Press** for publication. The Notice is being mailed to interested persons on the Division's 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

The Permit requires monitoring of average pumping rates for dewatering wells, untreated water quality and total dewatering flow rate at the Surge Tank, treated water quality and discharge flow rate at the inlet to the discharge pipeline, and LCRS flow rates for all ponds. The Permit also requires periodic quantification and characterization of Geotube solids, Sedimentation Basin solids, and Settling Pond Solids. In addition, the 2015 Permit renewal includes existing groundwater monitoring wells located near the TS Ranch Reservoir in Boulder Valley. These monitoring wells are also included in the Boulder Valley Infiltration Permit (WPCP NEV0089068).

Treated water from the Project met the Permit discharge limits for arsenic and antimony until 2013, when the arsenic discharge limit in the Permit was lowered from 0.05 mg/L to 0.01 mg/L and the antimony discharge limit in the Permit was lowered from 0.146 mg/L to 0.006 mg/L for consistency with federal drinking water standards. From 2013 to 2015, treated water from the Project commonly exceeded the lowered Permit limits for arsenic and antimony; however, groundwater degradation has never been observed at monitoring wells in Boulder Valley (WPCP NEV0089068) as a result of these Permit exceedances.

To bring the facility into compliance with the lower Permit limits for antimony and arsenic, a Schedule of Compliance was added to the Permit in January 2012 requiring the Permittee to implement approved water treatment methods or controls by 10 January 2013. From 2012 to 2014, the Permittee performed studies, bench tests, and a pilot test to investigate possible modifications to the treatment process. The Permittee determined that such modifications would be expensive, but could be successful for arsenic; however, no modifications were discovered that would consistently lower the antimony concentration to the 0.006 mg/L antimony discharge limit. In 2014, the Permittee redirected its focus on achieving compliance to a demonstration that higher discharge limits for arsenic and antimony would not lead to groundwater degradation in Boulder Valley.

As part of the 2015 Permit renewal, the Division approved a proposal to raise the Permit discharge limits for arsenic and antimony to 0.017 mg/L and 0.040 mg/L, respectively, based on a 2015 demonstration that the new limits would not create the potential to degrade groundwater at the Boulder Valley discharge points. The new 0.017 mg/L arsenic discharge limit was derived from the mean Boulder Valley groundwater background arsenic concentration of 0.008 mg/L, plus three standard deviations.

For antimony, the Boulder Valley groundwater background concentration is less than 0.003 mg/L. The new 0.040 mg/L antimony discharge limit is based on a 2015 attenuation study supported jointly by the Permittee and Barrick Goldstrike Mines Inc. The attenuation study demonstrates that if the antimony concentration in the discharge water does not exceed 0.040 mg/L, there is sufficient attenuation capacity in the rock mass beneath the TS Ranch Reservoir and above the pre-mining groundwater elevation to prevent groundwater degradation above the Profile I reference value for antimony (0.006 mg/L) for at least 14 years, and possibly as long as 245 years, depending on the actual volumes and concentrations of future discharge water from both this Project and the Boulder Valley Infiltration Project (WPCP NEV0089068).

The 2015 renewed Permit requires continuing investigations, with each subsequent Permit renewal and with any Permit modification that may impact the discharge water quality, to determine if any additional controls will be necessary in the future to prevent degradation of groundwater in Boulder Valley.

G. Rationale for Permit Requirements

The facility must not discharge a pollutant that would result in the degradation of existing or potential underground sources of drinking water, or that would cause an exceedance of an applicable surface water quality standard or regulation.

The primary methods for ensuring compliance are required routine monitoring and reporting of leak detection systems; monitoring of untreated water and treated water pumping for water quality and pumping rates, analyses of groundwater samples from downgradient monitoring wells in Boulder Valley; and Division site inspections. Specific monitoring requirements can be found in the 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 15 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 (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
Date: Day Month 2015

Revision 00: Month 2015; Renewal, plus revision of discharge limits for Boulder Valley, addition of Boulder Valley monitoring wells, and boilerplate revisions.