FACT SHEET

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

Permittee Name: **Klondex Gold & Silver Mining Company**

Project Name: **Fire Creek Infiltration Project**

Permit Number: **NEV2013102**

Review Type/Year/Revision: Renewal Permit 2019, Fact Sheet Revision 00

A. Location and General Description

The facility is located in east-central Lander County and westernmost Eureka County, in Sections 9, 10, 14, 15, 22, 23, and 24, Township 30 North, Range 47 East, and Sections 19 and 20, Township 30 North, Range 48 East, Mount Diablo Baseline and Meridian, approximately 4 miles northwest of the town of Crescent Valley, Nevada. The Project is located on a combination of public land, administered by the U.S. Bureau of Land Management (BLM), Mount Lewis Field Office, in Battle Mountain and Tuscarora Field Office in Elko, and private land. To access the facility from Battle Mountain, travel east on U.S. Interstate Highway-80 approximately 30 miles to exit 261. Proceed south on Nevada State Route (SR)-306 approximately 15 miles, then west on Eureka and Lander County Road G-247 (10th Avenue), just north of the town of Crescent Valley, approximately 3.5 miles to the site. The rapid infiltration basins (RIBs) are located on the north side of the road, on public land in Lander County approximately 1.4 miles west and upgradient of the Eureka County line. The rest of the facility is also located in Lander County, except downgradient monitoring well GW-6 is located in Eureka County, approximately 2.4 miles east of the RIBs.

Dewatering water from underground mine workings, and draindown water from a Waste Rock Repository, are generated at the separate Fire Creek Project (Water Pollution Control (WPC) Permit NEV2007104), and are treated in an existing Water Treatment Plant (WTP) before being conveyed via pipeline to either the RIBs or the discharge point permitted by WPC NEV2018104. A separate source of cleaner dewatering water from underground at 5,340 feet above mean sea level is also conveyed to either location. The Permit requires that all water discharged to the RIBs meet all Nevada Division of Environmental Protection (Division) Profile I water quality reference values. The Permit also specifies limits on the discharge rate, the minimum depth of the RIBs, and the maximum water depth within the RIBs, and precludes the formation of new surface seeps or springs. Degradation of waters of the State is prohibited. Monitoring data obtained from the RIBs, groundwater monitoring wells, and piezometers are used to determine compliance with the Permit.

This Permit was first issued on 10 February 2014, effective 25 February 2014. After the Permittee installed required monitoring wells and piezometers, and completed

additional required hydrologic and wetland studies, the Division authorized the commissioning of the RIBs on 10 July 2015.

B. Synopsis

General Background: This Project is operated in conjunction with the Fire Creek Project (FCP) WPC Permit NEV2007104 and the Fire Creek Surface Discharge Project WPC NEV2018104. Within the FCP, dewatering water is pumped from underground mine workings to either of the Dewatering Ponds. Draindown water from the Waste Rock Repository is collected in the Stormwater Pond. The Stormwater Pond may also be used for storage of non-hazardous reject solutions generated in the WTP. Water from the Dewatering Ponds and Stormwater Pond is pumped to the WTP, which uses chemical precipitation, microfiltration, and reverse osmosis processes to remove suspended and floating pollutants (e.g., sediment, petroleum, drilling additives, etc.), and dissolved arsenic, antimony, iron, manganese, sulfate, nitrate, total nitrogen, and total dissolved solids (TDS), as warranted. The treated water is pumped from the WTP to a series of Permeate Tanks for storage. The treated water, which meets all Profile I reference values, then flows via a valved gravity discharge pipeline from the last WTP Permeate Tank to the RIBs.

Once the water enters the RIB discharge pipeline it has left the FCP and is within the (Infiltration) Project. The Project includes the discharge pipeline, the RIBs, piezometers, monitoring wells, and associated valves, air vents, flow meters, staff gauges, and other equipment. The underground workings, Dewatering Pond, Stormwater Pond, Waste Rock Repository, WTP, Permeate Tanks, and interconnecting pipes, pumps, and valves, represent components of the FCP facility, and are operated in accordance with WPC Permit NEV2007104.

Hydrogeologic Setting: The RIBs are located approximately 2 miles east of the FCP facility at an elevation of approximately 5,250 feet above mean sea level (AMSL). Existing monitoring well GW-3 serves the dual purpose of a downgradient monitoring well for the FCP, and an upgradient monitoring well for the RIBs. GW-3 is located approximately 2,500 feet southwest of the RIBs. During the installation of GW-3, 340 feet of Quaternary alluvium were intercepted above 270 feet of Miocene basaltic andesite bedrock. The basaltic andesite varies from solid to moderately fractured, as noted in the drill logs for GW-3 and other monitoring wells. The alluvium intercepted in GW-3 is composed of basaltic andesite and meta-sedimentary clasts set in a fine-grained soil matrix. Two caliche horizons were observed within the alluvium during the installation of GW-3, one near the ground surface and one at a depth of 140 feet below ground surface (bgs).

Five shallow geotechnical boreholes drilled near the RIB location intercepted only alluvium to a maximum depth of 100 feet bgs. Caliche was observed within the

alluvium from the surface to approximately 30 feet bgs, with the uppermost 20 feet being more solidly cemented.

West of the RIBs in the Shoshone Mountains, a sequence of Miocene volcanic rocks over 1,000 feet thick, consisting of basaltic andesite and dacite flows, tuffs, and other volcaniclastic rocks, overlies a thick assemblage of Silurian and Devonian siliceous sedimentary rocks that comprises the upper plate of the Roberts Mountains Thrust. Basalt dikes crosscut the Paleozoic rocks and some of the Miocene volcanic rocks. Faults are present in the Project area, and cut most, if not all, bedrock units.

Prior to Permit issuance, groundwater was not encountered at the maximum drilling depth of 100 feet bgs near the RIBs. However, static water is present in monitoring well GW-3 at an elevation of approximately 4,884 feet AMSL (479 feet bgs), which is within the basaltic andesite bedrock underneath the alluvial section. Groundwater in the Shoshone Mountains west of the RIBs occurs at much higher elevations, at approximately 5,600 to 5,800 feet AMSL. Production well PW-1 at the FCP exhibits artesian flow, which was measured at 120 gallons per minute (gpm). The groundwater gradient near the RIBs was initially thought to be toward the east-southeast, based on groundwater elevation data obtained from monitoring wells GW-3, GW-4, GW-5, and GW-6 and piezometers PZ-1, PZ-2, PZ-3, and PZ-4; however, through RIB operation, testing, and monitoring, this does not seem to be the case. A schedule of compliance item been incorporated in the renewed Permit requiring an updated hydrologic and chemical model of the infiltration mound which includes model assumptions and predicted discharge rates, and is calibrated to fit all available monitoring data from monitoring wells and piezometers in the vicinity of the mound by 1 January 2020. An updated hydrologic study which evaluates the impact of the Project on groundwater depth and quality, and surface water quantity and quality, both within and downgradient of the Project is also required with the renewal application for the Fire Creek Project WPCP NEV2007104.

Monitoring wells GW-4, GW-5, and GW-6, were installed in 2014 to monitor groundwater elevation and quality downgradient of the RIBs. Four piezometers were installed in December 2014 to January 2015 immediately downgradient of the RIBs to monitor water elevations, prior to, during, and after, operation of the RIBs. These monitoring points are described in greater detail in the Receiving Waters section below, but the initial pre-infiltration static water depths (and elevations) in the monitoring wells ranged from 495 feet bgs (4,742 feet AMSL) at GW-4 near the RIBs to 89 feet bgs (4,739 feet AMSL) at GW-6 (the furthest downgradient monitoring well in the Permit).

Fire Creek is located approximately 0.5 mile south of the RIBs. Fire Creek is fed by multiple springs located approximately 2.5 to 3.0 miles west of the RIBs (approximately 1 mile west and northwest of the FCP facility and the Dewatering

Pond). Fire Creek flows perennially past the FCP on its south side, but typically infiltrates into alluvium near the mouth of the canyon south of the RIBs. East of that point Fire Creek flows only ephemerally in response to storm events or snow melt. An investigation, required as a Schedule of Compliance item in the Permit, to determine if any additional surface water bodies are present downgradient of the RIBs prior to the commencement of infiltration, was completed in November 2014 with no additional surface water bodies being found.

Hydrologic Evaluation: Geotechnical and geochemical field investigations were performed in September 2012 and January 2013 to determine the optimal location for the RIBs, the expected infiltration rate, and the potential for mobilization and attenuation of chemical constituents associated with the proposed infiltration. The preliminary geotechnical investigation in September 2012 included 35 test pits, two small-scale percolation tests, and associated laboratory testing. Based on the findings, the location for the RIBs was selected for its coarser-textured soils with less mineral precipitation and cementation than other areas investigated. The final geotechnical investigation in January 2013 included five borings 30-100 feet deep, two test pits, associated laboratory testing, and one each small-scale and large-scale percolation test.

The geometric mean of the percolation test results yields an average hydraulic conductivity of 6.8×10^{-3} centimeters per second (cm/sec) or 1.9×10^{1} feet per day for the alluvium. The hydraulic conductivity of the basaltic andesite was estimated from bedrock airlift tests performed at the FCP to be approximately 2×10^{-5} cm/sec or 7×10^{-2} feet per day.

To simulate and investigate the development of an infiltration mound of saturation underneath the RIBs and above the ambient water table, a numerical groundwater flow model was performed using the modeling code MODFLOW-SURFACT. The model was run for a simulated time period of 10 years using an average 1,500 gpm discharge rate to the RIBs. This represents a discharge rate greater than the 1,000 gpm maximum 30-day average discharge rate allowed in the Permit, and it is modeled at this higher rate over the entire expected mine life, which means the actual infiltration mound will likely be much smaller than the modeled size. Alternate modeling runs were performed to test the sensitivity of the model results to different input values for alluvial hydraulic conductivity and RIB discharge rate. The modeling results predict the rapid formation of an infiltration mound beneath the RIBs with near-maximum mound elevation attained within 6 days. The maximum predicted mound elevation is 63 feet below the bottom of the RIBs for the base case, and varies from 5 feet to 140 feet below the RIBs when the alluvial hydraulic conductivity and discharge rate are separately varied from 50% to 200% of the base case values. In the base case, at 10 years the alluvial portion of the mound was predicted to extend about 1.5 miles downgradient from the RIBs, with the lower, bedrock portion of the mound extending further downgradient.

Additional modeling was performed to estimate the rise in groundwater levels in areas downgradient of the RIBs, including an area of residential wells located approximately 2.5-4.0 miles east and southeast of the RIBs. Water levels in some of the residential wells were previously measured by the U.S. Geological Survey (USGS). The residential wells are developed in alluvium with static water levels generally 20-100 feet bgs. The same base case average discharge rate (1,500 gpm) and discharge duration (10 years) were used in this additional modeling. The modeling predicted a maximum rise in groundwater elevation of 4.2 feet in the nearest residential well, which is located approximately 13,000 feet east of the RIBs. This maximum rise at the residential wells was predicted to occur 14 years after the RIB discharge begins, which is 4 years after the RIB discharge is expected to cease. The actual water rise in residential wells is expected to be less than the modeled rise, because the permitted maximum 30-day average RIB discharge rate is 1,000 gpm rather than the modeled average rate of 1,500 gpm, and the Permittee expects to discharge at a much lower rate than the permitted maximum. No adverse impacts to groundwater quality are predicted from the RIBs, as described below.

The Permit requires that regular drying cycles, a decreased discharge rate to the RIBs, or other approved measures be utilized as necessary to prevent surface seepage or excessive mounding, which is defined as mounding that rises to less than 10 feet below the bottom of the RIBs or less than 40 feet below the native ground surface.

The initial modeling of the infiltration mound did not include caliche or other low permeability layers in the alluvium, because the presence of such layers below the bottom of the RIBs was uncertain prior to the installation of monitoring well GW-4 immediately downgradient of the RIBs in 2014. Weak caliche layers were intercepted in GW-4 at 110-135 feet bgs and 190-205 feet bgs, but these layers were not detected further downgradient in GW-5 and GW-6. The upper caliche layer is slightly shallower than the caliche layer intercepted in upgradient monitoring well GW-3 at approximately 140 feet bgs. In response to the discovery of the caliche layers in GW-4, and in accordance with a Schedule of Compliance item in the Permit, the Permittee submitted a revised hydrologic model in January 2015 for the purpose of evaluating the potential impact that the caliche layers will have on the development of the infiltration mound once the RIBs are commissioned, and what effect this may have, if any, on the predicted magnitude of groundwater rise in residential wells downgradient of the Project.

The 2015 revised hydrologic model incorporates the conservative assumption that a 25-foot thick low permeability layer extends continuously throughout the model area at a depth of 140 feet bgs and has a hydraulic conductivity of 3×10^{-6} cm/sec (0.01 feet /day), compared to a hydraulic conductivity of 7×10^{-5} cm/sec (0.2 feet/day) in adjacent layers above and below the caliche layer. The revised model assumes the same continuous discharge rate to the RIBs of 1,500 gpm for 10 years as in the original model. As stated above, this is much greater than the anticipated

actual discharge rate. The revised hydrologic model was also expanded to look a total of 5 miles downgradient of the RIBs (rather than 2.5 miles for the original hydrologic model) and incorporates slightly different model boundary assumptions. Because the revised hydrologic model includes these other changes from the original hydrologic model, in addition to the presence of the caliche layer, a new no-caliche layer model was run for comparison.

The results of the 2015 revised hydrologic model indicate that the presence of the caliche layer increases the predicted maximum rise in groundwater elevations in residential wells by up to 1.4 feet over the predicted groundwater elevation rise in the new no-caliche layer model. However, the other changes to the 2015 revised hydrologic model also increased the predicted maximum rise in groundwater elevations, such that the maximum predicted groundwater rise in residential wells downgradient of the RIBs as a result of the infiltration mound with the modeled caliche layer is 9.3 feet (7.9 feet in the no-caliche layer model) at year 16, compared to 4.2 feet at year 14 in the original hydrologic model. Most residential wells downgradient of the RIBs on the west side of highway SR-306 are predicted to see a maximum groundwater rise of 3-8 feet as a result of the Project, whereas residential wells on the east side of highway 306 may see 0-4 feet of groundwater rise. The actual maximum groundwater rise is expected to be less than these model results, because the actual discharge rate to the RIBs is expected to be much lower than the modeled rate.

Geochemical Evaluation: Modified meteoric water mobility procedure (MWMP) analyses were performed on alluvium samples collected at depths of 13-15 feet and 15-25 feet bgs in the RIB area, using dewatering water which met all Division Profile I reference values. Profile I analyses performed on the dewatering water after the MWMP extraction indicate that the alluvium at 13-15 feet bgs has a potential to contaminate the infiltrating dewatering water above Profile I reference values with respect to arsenic (0.10 milligrams per liter (mg/L)), chloride (560 mg/L), sulfate (1,800 mg/L), and TDS (3,800 mg/L). However, the alluvium at 15-25 feet bgs has less potential to contaminate the infiltrating dewatering water above Profile I reference values, and only with respect to arsenic (0.048 mg/L) and TDS (1,200 mg/L). Other testing indicates that the electrical conductivity of the alluvium decreases significantly with depth until about 30 feet bgs, after which it remains at a low value to at least 100 feet bgs.

MWMP testing performed in December 2014 on drill cuttings collected while installing monitoring well GW-4 (prior to any water being discharged to the RIBs) confirms that the deeper alluvium and bedrock below the RIB area have a lower potential than the shallow alluvium to contaminate infiltrating water. The MWMP results from GW-4 exceed Profile I reference values only for pH (up to 8.93 Standard Units (SU)), aluminum (up to 0.34 mg/L), antimony (up to 0.012 mg/L), and arsenic (up to 0.040 mg/L).

Column attenuation testing was performed to evaluate more precisely the potential for the infiltrated dewatering water to degrade groundwater. Tests that used shallow alluvium collected from 4 to 12 feet bgs in the RIB area indicates significant potential for degradation of groundwater with respect to arsenic, chloride, magnesium, sulfate, and TDS. However, a test that used deeper alluvium intercepted from 20 to 100 feet bgs in borehole B-5 shows that all Profile I parameters except for arsenic remained below Profile I reference values at all tested rinsing rates (up to six pore volumes of rinsate). Arsenic exhibited only a slight exceedance (0.011 mg/L) of the 0.010 mg/L Profile I reference value, and only during the first pore volume rinse. Subsequent rinsing progressively decreased the arsenic concentration in the test effluent below the reference value, indicating that any arsenic exceedances are likely to be transient, low in magnitude, and probably limited to the infiltration mound in the immediate vicinity of the RIBs.

Therefore, the testing indicates that groundwater will not be degraded by the RIBs, provided that the upper alluvium is removed during RIB construction and the discharge water is not allowed to rise up and come into contact with the upper alluvium surrounding the RIBs. The Permit requires that the RIBs be excavated to at least 30 feet below the surrounding native ground surface, and that the infiltration mound is not allowed to rise to less than 10 feet below the RIBs, as determined by piezometers installed below the RIBs, or to less than 40 feet below the native ground surface. The Permit also requires that the water in the RIBs shall not be allowed to exceed 3 feet in depth above the RIB floor to prevent inundation of the shallower alluvium in the RIB side walls.

Facility Design: An approximately 10,860-foot long, high-density polyethylene (HDPE) RIB discharge pipeline conveys dewatering water via gravity from the last WTP Permeate Tank to the RIBs. The first approximately 10 feet of the pipeline from the last Permeate Tank is 3-inch diameter, standard dimension ratio (SDR)-11, HDPE, and includes a gate valve to shut off the flow of treated water to the RIBs and a flowmeter to monitor the flow of treated water conveyed to the RIBs. The remaining approximately 10,850 feet of the HDPE RIB discharge pipeline is 8-inch in diameter. At 3,480 feet from the North RIB outfall, the pipeline transitions from thinner walled SDR-11 to thicker walled SDR-9 to accommodate the higher pressures likely in the downstream segment of the pipeline.

The pipeline is designed to handle flows up to 1,500 gpm. It operates under a gravity flow regime for flows up to 350 gpm and under a pressure flow regime for flows exceeding 350 gpm. The pipeline is designed to withstand the pressure when both RIB valves are closed, as well as the pressure surge during operation of the valves. The actual RIB discharge flow rate is expected to be much lower than the pipeline design limits. The average mine dewatering flow rate for the first 6 months of 2013 (pre-RIB construction) at the FCP facility was 26 gpm and approached 70 gpm in 2018. The average RIB discharge rate is expected to be no more than 500 gpm. However, the Project was designed to handle the higher flow rates to include

a factor of safety and to take into account a significant uncertainty regarding the quantity of dewatering water that will be encountered.

Because the RIB discharge pipeline maintains a constant downgradient slope, without sags or low points, air release or air relief valves are not required. The RIB discharge pipeline is constructed predominantly below the native ground surface, but is constructed above ground in some locations to maintain a constant downhill grade for gravity flow. Compacted native backfill is used locally (e.g., at a drainage crossing) to elevate the pipeline above existing grade to maintain the constant downhill grade. At one location, approximately 2,065 feet from the RIBs, a 31.5-foot section of the pipeline is elevated up to 3.5 feet above a natural drainage via a structural steel I-beam supported by concrete footings.

An approximately 3,000-foot middle segment of the pipeline is aligned directly underneath the county access road to avoid archaeologically sensitive areas; the pipe is buried a minimum of 3 feet under the road for structural stability. Because the discharge water must meet all Profile I reference values, and therefore has very little potential to degrade waters of the State, the buried pipeline segments are not double walled or leak detected. Buried pipeline segments are underlain by a minimum 6 inches of compacted, minus ¾-inch, pipe-bedding material and overlain by a minimum 12 inches of the same compacted pipe-bedding material, which is overlain, in turn, by approximately 0-10 feet of compacted, 3-inch minus, well-graded, native backfill material up to the surrounding grade. All pipe-bedding material and native backfill are placed in maximum 12-inch loose lifts and compacted to 90 percent maximum dry density (Modified Proctor, ASTM D1557).

At the RIBs, a wye in the pipeline with valves on both branches allows separate delivery of dewatering water to each RIB; however, under normal circumstances only one RIB will be operated at a time. At the pipe outlet in the bottom of each RIB, an energy dissipater consisting of a tee with 90-degree elbows on each end is anchored to a thrust block and encased within a 10-foot square riprap apron to protect the floor of the RIB from scour. Each riprap apron features a 6-inch thick sub-grade base of riprap bedding material with a D_{50} of 3 inches, upon which the discharge pipe rests, and a 2-foot thickness of coarse riprap with a D_{50} of 18 inches surrounding and covering the pipe outlet tee. The Permit requires daily monitoring of the volume of water discharged to each RIB and the depth of water, if any, present in the bottom of each RIB.

The floor of each of the two earthen RIBs measures 170 feet long by 60 feet wide, and is excavated a minimum of 30 feet deep. The side slopes are constructed at a 2:1 horizontal to vertical (H:V) angle. The RIB bottoms are ripped to a depth of 3 feet below the finished grade to facilitate infiltration. An earthen ramp cut into the side slope of each RIB provides access to the RIB floor for maintenance and wildlife escape. The discharge pipeline also runs down the ramp (buried at least 3-feet deep) to the bottom of each RIB. A gated fence around the RIBs restricts access

to the site. A drainage ditch just west of the RIBs diverts upgradient stormwater to a natural drainage south of the RIBs to minimize stormwater capture in the RIBs.

C. Receiving Water Characteristics

At upgradient monitoring well GW-3, approximately 2,500 feet southwest of the RIBs, groundwater is present within basalt bedrock at a depth of approximately 479 feet bgs and an elevation of 4,884 feet AMSL. The groundwater at GW-3 meets all Division Profile I reference values except for naturally elevated manganese, which occurs in concentrations up to 0.5 mg/L.

Downgradient monitoring well GW-4 was installed in 2014 approximately 300 feet east of the center of the North RIB. The baseline static water level measured at GW-4 during 2014, prior to the beginning of discharge to the RIBs, was approximately 495 feet bgs (4,742 feet AMSL). This is below caliche layers that were intercepted in GW-4 at between 110 and 135 feet bgs and 190 and 205 feet bgs.

As at GW-3, the groundwater at GW-4 occurs within basalt bedrock and has good quality, meeting all Division Profile I reference values except for slightly elevated manganese (0.15 mg/L in June 2014). Concentrations for manganese met all Profile I reference values in 2018.

Downgradient monitoring well GW-5 was installed in 2014 approximately 1.4 miles east-southeast of the RIBs and 1 mile west of the nearest residential wells, near the site access road at the Lander/Eureka County line. Downgradient monitoring well GW-6 was also installed in 2014, south of the site access road, but in Eureka County, approximately 2.4 miles east of the RIBs and just west of the nearest residential wells. In both wells, groundwater was encountered within a broken basalt/quartz lithological unit that underlies an upper layer of alluvium. Baseline static water levels measured in GW-5 and GW-6 during 2014, prior to the beginning of discharge to the RIBs, were approximately 218 feet bgs (4,741 feet AMSL) and 89 feet bgs (4,739 feet AMSL), respectively. The initial groundwater analysis from GW-5 (July 2014) met all Division Profile I reference values except for an elevated pH (9.42 SU). The initial analysis from GW-6 (July 2014) also met all Division Profile I reference values except for manganese (0.12 mg/L); however, analysis of both wells in 2018 met all Profile I reference values.

Grouted vibrating wire piezometers PZ-1, PZ-2, PZ-3, and PZ-4 were installed in December 2014 and January 2015 immediately downgradient (east) of the RIBs. The piezometers were installed in shallow/deep pairs, with PZ-1 (sensor depth 98 feet bgs) and PZ-2 (sensor depth 141 feet bgs) located approximately 200 to 250 feet east of the North RIB, and PZ-3 (sensor depth 98 feet bgs) and PZ-4 (sensor depth 147 feet bgs) located approximately 200 to 250 feet east of the South RIB. The shallow piezometers monitor water levels above the upper caliche layer that was intercepted in GW-4 at 110-135 feet bgs, and the deeper piezometers monitor

water levels just below the upper caliche layer. Initial readings (pre-infiltration at the RIBs) indicated water levels above the upper caliche layer in PZ-1 and PZ-3 at 89-93 feet bgs (5,144-5,150 feet AMSL). Below the upper caliche layer, PZ-2 was initially dry, and PZ-4 indicated water at 145 feet bgs (5,094 feet AMSL).

The Permit requires regular monitoring of water quality and static water elevation in the monitoring wells and piezometers. The piezometers will be used to monitor the elevation of the top of the infiltration mound beneath the RIBs to check model predictions and to verify compliance with Permit limitations. GW-4, GW-5, and GW-6 will monitor the static water elevation and the water quality in the groundwater under the infiltration mound to ensure that it is not degraded by the infiltration mound, and to check model predictions regarding the magnitude of water rise. The Permittee has also stated the intention to negotiate with downgradient residents for permission to periodically monitor water quality and static water elevation in selected residential wells, but this is not required by the Permit.

The Permit and associated regulations prohibit the degradation of groundwater or surface water. A potential for groundwater degradation posed by salts contained in the shallow alluvium is eliminated by Permit limits requiring that the RIBs are excavated at least 30 feet below the surrounding ground surface and that the water depth in the RIBs must not exceed 3 feet above the RIB floor. Attenuation test results performed by the Permittee indicate that these requirements will prevent the RIBs from degrading groundwater. Finally, although groundwater degradation is not expected, the Permittee has updated the Emergency Response Plan, which is part of the WPC operating plans incorporated into the Permit, to include a plan to address groundwater degradation, if it occurs, in such a way as to protect and minimize any adverse impacts to waters of the State.

Based on the information provided in the Permit application, as amended by subsequent submittals, and subject to the limitations in the Permit, the Project will not adversely impact the water quality in the downgradient residential wells, located approximately 2.5-4.0 miles downgradient (east) of the RIBs, but may raise the static water level at the nearest residential well a maximum of 9.3 feet, occurring 16 years after infiltration begins. Actual infiltration rates are expected to be much lower than those modeled, so the rise in groundwater at the residential wells is expected to be less than the modeled maximum. Monitoring data from monitoring wells, piezometers, flow meters, and depth gauges will be used to determine if operational changes need to be made at the RIBs or if additional modeling is needed.

The nearest known surface water is Fire Creek, approximately 0.5 mile south of the RIBs. Fire Creek is located cross gradient from the RIBs and is not expected to be affected by the Project. A required investigation for other surface water bodies (e.g., springs, seeps) was completed in a large area generally downgradient (east and

southeast) of the RIBs to establish baseline conditions prior to the commencement of infiltration. The investigation found no additional surface water bodies.

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** newspaper 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 renewed Permit.

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

See Section I of the Permit.

G. Rationale for Permit Requirements

The discharge must not degrade waters of the State. The Permittee shall treat the dewatering water prior to discharge, as necessary, to meet Division Profile I reference values. The application demonstrates that groundwater will not be degraded when the RIBs are excavated a minimum of 30 feet below the surrounding ground surface, the water depth in the RIBs is maintained at less than 3 feet above the RIB floor, and the discharge is not allowed to exceed the flow rate limits in the Permit. Upgradient and downgradient monitoring wells are used to detect any changes in receiving groundwater quality and monitoring wells and piezometers

are used to verify the predicted development of the subsurface infiltration mound. The facility is required to withstand flows from the 100-year, 24-hour storm event, and contain the 25-year, 24-hour storm event. Specific monitoring requirements and Permit limits may 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 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service (the 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: Michelle Griffin
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