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

Permittee Name: Manhattan Gulch LLC
Project Name: Manhattan Gulch Project
Permit Number: NEV2009103
Review Type-Year/Revision: Renewal 2019, Fact Sheet Revision 00

A. Location and General Description

Location: The Manhattan Gulch Project (MGP) is a placer mining operation located in the historic Manhattan Mining District within portions of Sections 21, 22, 23, and 24, Township 8 North (T8N), Range 43 East (R43E); and Section 19, T8N, R44E Mount Diablo Baseline and Meridian (MDB&M). MGP is approximately 35 miles (by air) north-northeast of the town of Tonopah and five miles west (by air) of the town of Manhattan in Nye County, Nevada.

The operation is located on private land and public land administered by BLM (Battle Mountain District-Tonopah Field Office). The MGP is comprised of patented and unpatented placer, associated placer, and mill site claims owned by or leased to the Permittee. The facility has been in a care and maintenance mode since May 2015.

Site Access: To access the MGP site, proceed east from Tonopah on U.S.-6, approximately 5.4 miles to the junction of S.R.-376. Proceed north on S.R.-376, approximately 37 miles to the junction of S.R.-377. Proceed east on S.R.-377, approximately 5 miles to the administration building on the north side of the highway. The Project shop-warehouse, gold recovery room and primary mine access are located on the south side of the highway.

General Description: MGP is permitted as placer mining operation and physical separation facility for extracting gold (and minor amounts of silver) from the historic dredge tails and alluvium within Manhattan Gulch. Chemicals are not permitted for use in the process. The facility is required to be designed, constructed, operated, and closed without any discharge or release in excess of those standards established in regulation except for meteorological events which exceed the design storm event. The Permittee operates the MGP Mine and portable wash plant 24 hours a day, 270-300 days a year. Up to 4.8 million tons of ore (placer gravels and historic tailings) are be processed annually. Seasonal closure of the project site occur during the winter months when weather conditions are unfavorable for processing.

The Manhattan Gulch alluvial deposit ranges from a depth of 100 feet to less than ten feet below ground surface (ft bgs) and lies on top of a bedrock base. The most
recent placer mining (dredging) in the MGP area occurred between the years 1938 and 1946; however, the historic dredging operations only worked a portion of the alluvial deposit along the edges of Manhattan Gulch. The Permittee intends to process as much of the dredge tails and alluvium that proves to be economic.

B. Synopsis

**History:** The first documented mining in the Manhattan Gulch area dates back to 1866 with the discovery of silver. The discovery of gold in 1905 began the area’s long history of placer mining, and by 1909, more than 60 small-scale placer operations were dispersed in and around the gulch.

The Manhattan Gold Dredge Company (MGDC), a subsidiary of the Folsom, California based Natomas Company, had the distinction of being the largest and the most significant placer operation in the gulch beginning in 1938. MGDC utilized a steel bucket line dredge (“Natomas”), measuring 180 feet by 60 feet with 105, ten-cubic-foot buckets. The “Natomas” was floated on pontoons in a man-made pond with water piped from Peavine Creek, a distance of 12 miles away. The bucket line was capable of excavating placer gravels up to 75 feet below the surface of the pond at a rate of 37 buckets per minute. Dredged materials were washed in the onboard processing plant with washed waste material directed over the twin tailing stackers at the rear of the dredge or discharged over the stern. The tailing stackers swung horizontally depositing the tailings piles that remain today.

The dredging operation began about one-half mile west of the mouth of Manhattan Gulch. Over its eight-year life, the dredge progressed five miles up the gulch, working in the deep gulch gravels and the bench gravels pushed into the path of the dredge by dozers or other heavy equipment. A six-man crew working three, 8-hour shifts a day and seven days a week operated the dredge.

During World War II, operations were reduced to a single shift as gold mining was determined by the U.S. government to be unessential to the war effort. Dredging in Manhattan Gulch ceased in 1946 and the “Natomas” was disassembled and shipped to Copper Canyon in Lander County, the site of the present day “Phoenix Project” operated by Newmont Mining Corporation (Newmont). The Permittee believes that the MGDC dredging operation was inefficient in its recovery of gold and that a significant portion of the gold (estimated at 50 percent) remains in the gulch and tailings.

The Permit was transferred from AU Mines Inc. to Manhattan Gulch LLC in June 2017.

**Geology:** The geologic setting found within the Manhattan Gulch area is comprised of a relatively thin layer of alluvial material covering pre-dominate underlying micaceous schist and to some extent limestone (dolomite). Generally to the north of the gulch area, the rocks underlying the alluvial material are comprised of...
volcanics, while the rocks underlying the alluvial material south of the gulch area are schist and to some extent limestone (dolomite) in the eastern portion of the Gulch.

Manhattan Gulch is approximately 300 feet wide and is composed of alluvial material. The alluvial material in a general sense is composed of fine grain silts, clay, sands, and gravels, with some areas containing small boulders. Within the Gulch, depth of the gravels, range from 10 to 100 feet below land surface. On average their depth is approximately 30 feet. As mentioned above, on the south side of the Gulch, the geologic material is composed of schist and siliceous argillite of the Harkless Formation. The Harkless schist ranges in thickness from a few feet to nearly 1,000 feet. The Harkless siliceous argillite ranges in thickness from a few feet to over 600 feet.

Throughout the entire Manhattan area, thrust faults and normal/reverse faults dominate the geologic setting. In a general sense, the majority of the normal faults trend north and south, while the thrust faults trend mostly northwest-southeast.

The west half of Manhattan Gulch is bounded and underlain by schist, siliceous argillite, limestone, and slate. The Permittee is currently mining this geologic zone exclusively with some incidental mining of bedrock at the base of the alluvial channel where gold-bearing alluvial gravels may have filled fissures and depressions in the bedrock. The Phase I Plant (described in greater detail under the section “Placer Mining Operation”) is located on alluvium adjacent to the Gulch and the waste rock storage area (referred to as the “Residual Alluvium Storage Area” or “RASA”) is located on a shallow weathered schist and argillite ridge.

The eastern half of the Gulch is bounded and underlain by argillite, limestone, quartzite and schist. In the far eastern end of the Gulch, bedrock is composed of breccias and tuffs. The Shop/Warehouse and yard is located on private land above the gulch on an argillite/schist ridge.

**Hydrology:** The hydrogeologic setting for the Manhattan Gulch area is one of faults and fractures controlling the groundwater movement, which is generally east to west from the mountain range and out into Big Smoky Valley. The depth to water within the area varies, however outside of the main Manhattan Gulch containing the existing tailings, depth to groundwater generally exceeds 140 feet.

Manhattan Gulch has a total surface water catchment area of 13,305 acres and is the primary hydrogeologic feature in the Project area and within the defined groundwater model domain. There are no perennial surface water sources or springs in Manhattan Gulch, other than the former Round Mountain Gold Manhattan Pit, located up gradient of the MGP. The Manhattan Pit was mined to a depth below the water table and has formed a pit lake. There are no surface water bodies within one-half-mile downgradient of the MGP.
Ore Characterization:  Meteoric Water Mobility Procedure (MWMP)-Profile I characterization results for the historic Manhattan Gulch dredge tails and alluvium indicate that with the possible exception of arsenic, the mobilization of constituents above any Profile I reference values is unlikely. Acid neutralization potential/acid generation potential (ANP/AGP) results indicate that the historic tails and alluvium have very strong acid neutralization potential.

Storm Water Run-off:  There is very little evidence of recent surface flows in the gulch or from the side channels to the Gulch. Much of the precipitation and snowmelt in this area appears to infiltrate into the ground and/or is absorbed in the alluvium and historic Gulch dredge tails. No flow channels have been observed within the gulch, despite the 60 years since the original dredging activity and several large upgradient watersheds feed into it from the east, south and north. Although it is possible that significant storm events or run-off events from combined snowmelt and precipitation could generate surface flows into the Gulch, these would likely be greater than a 100-year storm event.

Storm flow runoff will be controlled by diversion structures around the Phase I Plant site, RASA and the Shop/Warehouse/Yard areas. Once the In-pit process plant is set up, stormwater runoff from the mining area and plant area will be confined to the pit in the gulch. However, a bedrock drain has been included in the Stormwater Plan to manage stormwater.

Placer Mining Operation:  The Permittee has started to mine a 295 acre area, beginning at the west end of the Gulch and eventually terminating at the east end of the Gulch, a distance of approximately 3.5 miles. Areas west and east of the existing mining area have been identified as potential areas for future development work, however, additional study and evaluation is necessary in order to determine the feasibility of mining in those areas.

More than 90 percent of the material currently mined is comprised of alluvial gravels and transported to the MGP Phase I Processing Plant Site for gravity separation of the gold. Where practicable, bedrock and overburden material identified during the mining operation is segregated and either hauled directly to the RASA or backfilled directly into the pit backfill area.

Mining at the MGP site began in 2012 with the excavation of the 2,200-foot by 600-foot Starter Pit. Current pit depth ranges between 10 and 90 feet below ground surface.

Following the completion of the Starter Pit, mining commences with the sequential excavation of panels, approximately 150 feet wide in passes back and forth (alternating from south to north and then north to south) along the upstream (east) face of the pit. Each panel consists of a parallel set of blocks 150 feet by 150 feet, to accommodate two portable in-pit processing plants for Phase II. Panels are
numbered west to east and blocks north to south or south to north when the mining face reaches the end of the dredge tails or mineralized alluvium.

The two portable production plants are operate independently in staggered panels to accommodate mining and backfilling of mined out blocks. As each active block is mined, a mined-out block is backfilled. Backfilling generally place sands and fines at the top of the backfill block and coarse material (plus 3/4-inch) on the bottom in arced piles using a radial stacking conveyor. Articulated, modular "grasshopper" conveyors can be configured in series either on the plant feed side or the backfill side. The configuration of equipment may vary based upon conditions in the particular mining block. This technique creates what are typically referred to as “boulder piles” in placer mining, in this case consisting primarily of the coarse fraction, very similar in appearance to the existing dredge piles. These piles will be re-contoured, regraded and seeded once mining is completed to blend in with the surrounding environment.

The plant begins by processing placer ore from mining Block A1A and the residual alluvium placed via conveyors into a mined-out block in the Starter Pit (or subsequent mined-out blocks) as the operation moves upstream to the east. As the working face of mining moves upstream (up the Gulch) the plant moves with it. The size of these panels and blocks are approximate, as the actual size will depend upon balancing the quantity of ore being excavated from the active cut to the capacity of the previous cut being backfilled with the alluvium.

**Beneficiation:** Run-of-mine placer ore and residual alluvium is transported via a series of conveyors to temporary stockpiles located at the Phase I Plant site or Phase II In-pit Plants for gold recovery via gravity separation. After processing, the residual alluvium and process tailings is conveyed directly to the RASA or returned to the mined-out areas of the pits for use as backfill.

The Phase I Plant Site is constructed on the south side of Manhattan Gulch and is expected to operate at maximum capacity until a sufficient area has been excavated in the mining area to accommodate the In-Pit Processing (Phase II). Once the In-Pit plants have been constructed and are operating, the Phase I Plant operates as needed in parallel with In-Pit processing for the life of the mine. The Phase I Plant serves as support or backup for ongoing Phase II In-Pit Operations.

Ore is segregated into three primary size fractions: material greater than three-quarters of an inch (plus 3/4-inch) (coarse), minus 3/4-inch to 200-mesh (sands and gravel) and minus 200-mesh (fines).

The residual alluvium is processed by both mechanical screening and the hydraulic gravity separation process. The feed material from the run of mine ore stockpile is fed by a wheel loader or excavator to the feed hopper, surge bin. The material is metered by a variable speed apron feeder on the bottom side of the hopper on to the feed conveyor. The feed conveyor raises a controlled volume of run of mine ore to
the wet screen. Water is introduced on the screen to slurry the feed and begins the washing and sizing process. The wetted material on the screen has sufficient high pressure water directed at it to thoroughly wash the ore material, break up any clay, facilitate the sizing of the gravel and produce slurry at approximately 70 percent water and 30 percent solids by weight.

The oversized (plus ¾-inch) material passes over the screen, and is dewatered by the screening, then transported via a stacking conveyor for stockpiling and later removal to the RASA, or directly into (backfilled) to a completed mining block. The residual alluvium is wet (~10 to 20 percent water by weight).

Undersized material from the bottom of the screen remains in a slurry and continues on to the next stages of processing, the inclined jigging sluice box. Differential settling by gravitational forces and the laws of fluid dynamics causes the heavier particles of gold and heavy minerals to be trapped in the sluice bed while allowing lighter material (alluvium) and minerals to be carried away by the flow. An undercurrent created in the sluice bed allows for the concentration of gold and heavy minerals to be pulled off and sent for further concentration.

The overflow and tails from the sluices are sent to the sand screw where further classification occurs, separating the gravel and sand fraction from the process water. The dewatered sand fraction is fed to a stacking conveyor for stockpiling and later removal to the RASA, backfilled into a completed mining block or used in haul road maintenance. The overflow water from the sand screw is pumped or gravity-fed to the settling ponds for water treatment and recycling. In the next step of the concentration process the undercurrent gold and heavy minerals from the sluice box are pumped to the magnetic separator. Due to the ferro-magnetic properties of some minerals, iron oxides, occurring in the concentrate can be extracted from the slurry stream.

Magnetic black sands and other magnetic minerals are readily removed and concentrated by magnetic separators in this step. Following the magnetic separation, the material flows to the Pan American Jig. The jigging process here is much the same as with the jigging sluice box but much more refined and tuned more precisely for a better separation and concentration of gold and heavy minerals from the gangue minerals. The gangue minerals are carried off by the overflow and report to the sand screw. The hutch product from the jigs, a very concentrated gold and heavy minerals product is drawn off and pumped to the spiral section for further concentration and product separation. Additional water is added to the jig hutch product to bring it back to 30 percent solids by weight and to facilitate pumping to the spirals.

The heavy concentrate from the jigs is pumped to a distributor that equally divides it between the 16 pairs of rougher spirals. The circular flow in the spirals creates centrifugal forces which cause the heavy minerals to spread out into distinct bands distinguished by the specific gravity of the various heavy minerals. The higher
specific gravity minerals migrate to the inside of the spiral and progressively lower specific gravity minerals to the outside edge. The concentrate at this stage of the process is separated into three products of different specific gravities by the use of knife blade cutters at the discharge end of the spiral.

Depending on the minerals of interest and its specific gravity, some or all of the products may be saved for further processing. In this Project all initial spiral products are saved separately. The heaviest of the rougher concentrates are be pumped to the finishing spirals for further concentration. The final heaviest concentrate from the finisher spirals being nearly a pure gold cut. All concentrates from the spirals are sent to the Gold Room for further processing. The de-sanded process water from the sand screw is pumped to the Water/Sediment Settling Basins (WSBs).

Upon entering the quiet water of the ponds the suspended clay particles and silt will settle out. Settling is facilitated by the use of flocculants or ultrasonic precipitation. The decanted return flow is combined with make-up well water to assure that enough water is available to maintain the necessary water balance in the process plant. Due to the physical properties of classified settable materials, the clay and silt will compress and dewater as they are deposited.

Periodically the clay and silt material building up in the bottom of the WSBs will be pumped out with a submersible slurry pump and pumped onto an area of the RASA or into completed mining blocks being backfilled. This material will be covered or mixed with more coarse materials for final reclamation. Mixing fines with coarse material in the RASA will enhance the water holding capacity of the material and improve its growth medium properties.

A Tons-Per-Hour, Inc. 3500 Series Clarifier is currently inactive pending the development of a revised process circuit. The function of the clarifier is to settle and treat overflow from the processing circuit containing fine sediment, typically from the sand screws and/or cyclones (typically minus 200-mesh and 3 percent solids by weight). It is expected that the addition of an approved flocculant to the influent slurry would be necessary before it enters the primary holding tank of the clarifier. The Permittee submitted an Engineering Design Change (EDC) for Division review and approval in September 2011 to incorporate a clarifier into the Phase I Plant process circuit.

**Water/Sediment Settling Basins (WSBs):** Six WSBs have been constructed at the Phase I Gravity Plant and Gold Room sites. Three basins (WSB-01, -02, and -03) were constructed with a geosynthetic liner; one basin (WSB-08) was constructed with a compacted clay layer. Two basins (WSB-06 and WSB-07) are not lined. The purpose of the lined basins is to prevent water loss through seepage. The basins supply water to the Phase I Plant and settle any suspended sediments in the process water.
Two lined WSBs (WSB-01 and WSB-02) were constructed about 150 feet southeast of the Phase I Plant to store water pumped directly from the water supply well, the Murphy Well, and to settle suspended fines (derived from the alluvium) from the recycled water. Primary settling of suspended fines occurs in WSB-06, -07, and -08 described below, however, and water in WSB-01 and -02 will essentially be clear. The basins WSB-01 and -02 are about 210 by 142 feet at the crest and 12 feet deep. Excavated material is piled adjacent to the excavation to create berms 6 feet high. Total operating depth is about 10 feet, at the spillway crest, with 2 feet of freeboard. Basin wall slopes are angled at 2 horizontal to 1 vertical (2H:1V). The total capacity of each basin at dam crest is about 6.1 acre-feet (2,000,710 gallons) and a total of 12.2 acre-feet or 4,001,420 gallons totaled among both basins. Operational capacity of each basin is 4.8 acre-feet or 1,565,000 gallons per basin.

WSB-01 and -02 cross flow via gravity to the adjacent basin through a 20-inch steel pipe. Overflow and cross flow pipes are constructed with manufactured pipe boots welded into the liner to prevent wicking of water around the pipe. Cross flow pipes are fixed to head walls of 4-foot by 8-foot steel backing plates welded to the steel pipe to provide a smooth surface for welding the pipe boot to the liner. The spillway channel on the northeastern side of the WSBs is lined with coarse and durable rock to prevent erosion.

A third, lined basin (WSB-03) was constructed at the Gold Room located in the southeast portion of the MGP site. WSB-03 is 97 feet by 66 feet at the crest and 7 feet deep with 2 feet of freeboard and an operating depth of 5 feet. WSB-03 is also constructed with a spillway that is lined with coarse and durable rock to minimize erosion. Total capacity of WSB-03 is 0.73 acre-feet with an operating capacity of 0.45 acre-feet, or 145,600 gallons. WSB-03 recycles water from the Gold Room and stores water from the nearby well, the Silver Belle Well (note: historic documents also refer to this well as the Silverbell, Silverbelle, and Silver Bell) for operations in the gold room.

WSB-01, -02, and -03 were constructed with keyed-in fill trenches and all basin floors were excavated a minimum of 24 inches into native ground. Excavated material was used in construction of berms adjacent to the basin to provide additional capacity and height. Constructed berms were wetted and wheel rolled with loaded wheel loaders in 6-inch thick lifts for compaction. All basins were constructed with a minimum 2 feet of freeboard.

WSB-01 and -02 are lined with a 30-mil linear low-density polyethylene (LLDPE) with non-slip textured surfaces keyed into 1-foot trenches along the crest of each basin. Prior to filling, basin liners were carefully inspected for any damage done during installation and repaired by fusion welding in the field.

The 60-mil, high-density polyethylene (HDPE) liner installed for WSB-03 is a single-piece liner, pre-formed without seams. Two unlined WSBs (WSBs-06, -07)
and a lined WSB (WSB-08) were constructed about 500 feet northeast of the Phase I Plant. The basins are constructed within an existing excavation in the historic dredging operations area. The crest of WSB-06, the highest elevation basin, is lower than the Phase I Plant site and facilitates gravity flow from the plant to the basins. The primary function of the basins is to recycle water for operations and settle suspended fines from the processing plant underflow.

Water is added to the lined basins at the beginning of each operating season to provide a sufficient operating balance of water. Once the plant is operational, the recycled water from the plant is pumped into the basins. The basins are set up to flow through in series to allow residual fines in the water to settle in the basins prior to recycling into the plant. It is preferable that the recycled water be clean and free of fines before being reintroduced into the process circuit.

Overflow slurry from the dewatering sand screws flows to WSB-06 via gravity at rates up to 3,000 gallons per minute (gpm). An approved flocculant (Nalco CORE SHELL™ 71301 or similar) may be added, as needed, to the basin water to enhance settling of suspended solids.

Overflow is directed to WSB-06 where the majority of suspended solids begin settling. Basins WSB-06 and -07 are constructed with 12-inch diameter HDPE overflow pipes at the freeboard line to prevent overtopping. Overflow from WSB-06 decants via the 12-inch pipe into WSB-07, leaving the majority of suspended solids in WSB-06. Overflow from WSB-07 will decant into WSB-08. There is no outlet from WSB-08. Water entering WSB-08 has the lowest amount of suspended solids and is pumped back to WSB-01 and -02, at a rate of up to 3,000 gpm.

Sediments accumulated in the basins are removed periodically to maintain operating capacity. Removal is conducted by dragline, slack line excavator, or similar machine on an as needed basis. Vehicles will not be operated on the basin berms. The dragline or other sediment removal equipment would be staged on a prepared area adjacent to the basins. Removed sediments and fines are mixed with coarser overburden/residual alluvium, and placed in the RASA, stockpiled for further processing, or used as cover material or backfill as needed.

The operating capacity of WSB-06, -07, and -08 is approximately 14.05 acre-feet (4,578,174 gallons) and a total capacity of 16.6 acre-feet (5,411,000 gallons) at 2-feet of freeboard.

As stated previously, WSB-06 and -07 are not lined. Native soil was utilized for the basin berms and floors with the soil placed in one-foot lifts and compacted with a sheep’s foot roller and/or vibratory steel drum roller to a minimum 85-percent dry density (American Society for Testing and Materials [ASTM] Method D1557) to minimize water loss from the ponds. The compacted material has a permeability of approximately 2.86 x 10⁻² cm/sec.
In an effort to minimize recycle water loss due to seepage, an engineered fill layer comprised of plant tailings was utilized for the construction of WSB-08. The material was placed in one 6-inch lift and compacted with a sheep’s foot roller and/or vibratory steel drum roller to a minimum 95 percent dry density (ASTM D1557) to minimize leakage from the pond. The compacted material has a permeability of approximately 4.4 x 10^-6 cm/sec.

**In-Pit Mining and Additional Processing WSBs:** WSBs -01, -02, -06, -07, and -08 are expected to serve the Phase I Process Plant for the duration of the project and could potentially serve the In-Pit Plants during Phase II mining and in-pit processing. As mining progresses up the Gulch, new WSBs will be constructed either within the Gulch (downstream of the active mining panels on backfilled panels) or on native ground along the south side of the Gulch. In the event the WSBs are constructed on backfilled residual alluvium in the Gulch, no new disturbance would occur. In the event that they are located on the side of the Gulch, the first set of WSBs would be in an area previously disturbed by the dredging operation. The Permittee will be required to submit Minor Modification of the Permit for review and approval before any new basin construction.

The new WSBs will be constructed with the same approximate dimensions and volumes as they are moved upstream. WSBs will be only partially excavated from the native, undisturbed ground. Excavated material will be piled around the WSBs in berms to increase operating depth and volume. Half or more of each WSBs total depth will be above ground. Total depth of the WSBs will be equal to the height of the berm plus the depth of the excavation into native, undisturbed ground. However, their exact dimensions may be altered to optimize the configuration in relation to topography and pumping needs.

Once a subsequent set of In-Pit WSBs have been constructed and filled with water, the previous set of WSBs will be decommissioned. Liners will be perforated and folded in place to be buried and the basins backfilled and graded to allow drainage with residual alluvium from adjacent berms. In the case of WSBs constructed on the backfilled residual alluvium, the liners will be perforated, folded and buried in place, and the basins contoured to blend in with the backfilled, reclaimed areas.

**Residual Alluvium Storage Area (RASA):** Residual alluvium from the gravity separation circuits is conveyed to temporary stockpile areas on the Phase I plant site and then hauled by scraper to the RASA or hauled directly to the excavated pits for use as backfill. The disposition of the residual alluvium will depend upon the phase of the project. During Phase I, this material is placed into a permanent Residual Alluvium Storage Area (RASA). During mining in the mining panels and in-pit processing, residual alluvium is placed directly into backfill blocks.

Stability of the RASA slope was evaluated using a computer assisted limit equilibrium analysis procedure performed by the Slide5 software package. The RASA facility has been planned with inter-bench slopes of 3H:1V, 60-foot wide
benches to facilitate concurrent reclamation at the end of the operations, and a maximum height of 120 feet above ground surface. For the stability assessment, potential failure modes only included circular (rotational) failure surfaces since known geological conditions at the site have not identified linear weak strata or bedding planes that would necessitate using a block or wedge failure analysis.

The factor of safety (FOS) is broadly defined as the ratio of the mobilized resisting forces and the driving forces at limiting equilibrium (all points along the failure surface assumed to reach a failure state at the same time). For conservancy, the Permittee elected to utilize minimum FOS for the RASA of 1.5 for static conditions and 1.2 for pseudostatic conditions. The minimum FOS utilized by the Division for waste rock dumps is 1.2 and 1.05, respectively.

Slope Stability Analysis Results, provides a summary of the results of analysis for the pseudo-static circular failure. The critical failure surface was a shallow, long radius circle mimicking an infinite slope type of failure mechanism. Calculated factors of safety for circular failure modes for the static and pseudostatic cases were 1.62 and 1.38 respectively. The FOS exceeded the minimum target values of 1.5 and 1.3 for static and pseudo-static respectively.

For circular failure analysis, the slope failure tends to a planar manner or infinite slope failure mechanism for both the static and pseudostatic analyses. The FOS for the circular analysis are well above the target values of 1.5 and 1.2. Therefore, based on the assumptions used in the RASA stability assessment, the planned slope configurations are inherently stable.

**Ancillary Facilities:** Ancillary facilities are constructed on a patented mining claim owned by Peavine Ranches LLC and leased to the Permittee. Because all of the facilities will be retained for future ranch use these will not be demolished upon completion of mining. These facilities include the following:

- an administration building and parking lot;
- maintenance shop, warehouse and yard (work) area; and
- a gold recovery building with containment.

Prior to their turn over to Peavine Ranches, these facilities will have to be evaluated for any residual contaminants and if present, will need to be mitigated.

**Fuel Receiving, Storage and Dispensing Area:** Two 10,000-gallon diesel fuel tanks for off-road diesel, one 1,000-gallon diesel fuel tank for service vehicles and one 1,000-gallon tank for gasoline are used at the MGP site. The tanks are within reinforced concrete secondary containment, with 11,000 gallons of secondary containment capacity (110% of the largest tank). Fueling is conducted immediately adjacent to the tank area on a lined and bermed service pad for outside fueling and fuel transfer. Fueling and equipment servicing at the Shop/Maintenance facility is performed on a reinforced concrete slab within the maintenance Shop with a spill
containment sump. All mining equipment is operated and stored within the plant or pit areas. All fueling and servicing equipment in the mining area is performed by mobile service vehicles and tank trucks on appropriate containment. These may either be double lined tanks on trailers or on pre-fabricated, portable containment structures.

C. Receiving Water Characteristics

**Surface Water:** There is very little evidence of recent surface flows in the Gulch or from the side channels to the Gulch, suggesting that much of the precipitation and snowmelt in this vicinity infiltrates into the ground and/or is absorbed in the alluvium and dredge tails of the Gulch.

No flow channels were observed in the Gulch in spite of the fact that they have been there for more than 60 years and several large upgradient watersheds feed into it from the east, south, and north. The points at which the large watersheds join Manhattan Gulch show no evidence of flow channels or flow debris. Areas in the Gulch just at the confluence show no evidence of erosion from surface flows, again in spite of being there for over 60 years. Though it is possible that significant storm events or run-off events from combined snowmelt and precipitation could generate surface flows into the Gulch, they are likely greater than 100-year events.

The Project operation shall not produce excess sedimentation or discharges that may impact surface water.

**Groundwater:** Groundwater occurs in the bedrock adjacent to the Gulch. There is little to no static groundwater in the dredge tails of the Gulch, though there are probably periods of interflow during high precipitation and/or snowmelt periods. The native gravels and dredge tails are both very porous, so both interflow from surface infiltration of meteoric water and inflows from bedrock geology move down the Gulch relatively rapidly. Groundwater occurs in the bedrock adjacent to the Gulch at depths ranging from 42 feet to 72 ft bgs.

The Cole Well (CW), Nevada Division of Water Resources (NDWR) Permit #58652, serves as an upgradient groundwater monitoring well for the MGP; The Hot Well (HW), NDWR Permit #53101, serves as a downgradient groundwater monitoring well for the MGP.

Background groundwater quality for arsenic, manganese, sulfate, and TDS concentrations are slightly elevated above their corresponding Profile I reference values.

**Make-Up Water:** Make-up water is obtained from the Permittee’s wells (Murphy and Silver Belle wells) and Water Well (WW)-8, owned by Round Mountain Gold Corporation (RMGC). An agreement with RMGC grants the Permittee exclusive use of WW-8 but limits total monthly volumetric flow to 9,936,000 gallons.
The Murphy Well (NDWR Permit # 53102) is located on the Manhattan #1--NMC 115212, Associated Placer Mining Claim, within Section 22, T8N, R43E, MDB&M. The Silver Belle Well (NDWR Permit #49369) is located on the Silverbell unpatented lode claim, located in Section 24, T8N, R43E, MDB&M. WW-8 is located within Section 24, T8N, R43E MDB&M on unpatented claims owned and controlled by RMGC.

Water is pumped from the wells to the WSBs and then from the WSBs to the process plant via pipelines laid on the ground surface alongside of or adjacent to the access roads. Anticipated water demand and usage are estimated to be 3,300 gpm. Greater than 90 percent of water demand is met by utilizing water from the WSBs. When sufficient return flow is established to the WSBs, a re-cycle circuit will be established requiring about 390 gpm of make-up well water to meet the total water demand.

WW-8 is located outside the current permitted MGP boundary. A Right-Of-Way (ROW) grant was approved by the BLM (issuance number N-92247), allowing connection of the well to the project area. The Permittee constructed a four-inch HDPE water pipeline within the granted ROW to transport water from WW-8 to the MGP site.

When utilized, water is pumped from WW-8 at a rate of about 200 gpm with a maximum rate of about 240 gpm occurring intermittently. Water is piped to a tank near the Murphy Well in the central project area from where it is then distributed to the project. The primary use for water from WW-8 is in the processing circuit however it may also be utilized for road dust suppression. Potential impacts of pumping at 200 gpm for a minimum of 20 years was modeled with Aquiferwin32 and MODFLOW software based on a 72-hour constant discharge pumping test conducted in April 2014. It was determined there would be minimal change in the aquifer under these conditions.

**Potential Impacts—Town of Manhattan and Neighboring Mining Operations:**
Nye county maintains a drinking water well for the residents of Manhattan, approximately 5 miles east and upgradient of the MGP site. Also upgradient of the MGP site are the Goldwedge Mine, Water Pollution Control Permit (WPCP) NEV2002107, Goldwedge Rapid Infiltration Basins, WPCP NEV2008101, and the now closed Manhattan Mine, WPCP NEV0088013. Independent hydrological studies (including predictive modeling) performed by SRK (Reno NV), Todd Engineers (Alameda, CA), and Aqua Hydrogeologic Consulting (Reno, NV) during 2013 and 2014 did not indicate any decrease in groundwater elevation or evidence of groundwater degradation at any of the above sites resulting from the continued withdrawal and consumption of well water at the MGP site.
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 published on the Division website: [https://ndep.nv.gov/posts/category/land](https://ndep.nv.gov/posts/category/land). 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 the public notice is posted to the Division website. 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 or 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 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 is placed on visual component inspections and routine sampling of the production well and ponds. 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 (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 (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.

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