FACT SHEET
(pursuant to NAC 445A.401)

Permittee Name:	**Newmont Mining Corporation** **Post Office Box 388** **Valmy, Nevada 89438**
Facility Name:	**Lone Tree Mine**
Permit Number:	**NEV0090058 (Renewal 2014)**

A. Description of Facility

Location: The Lone Tree Mine (LTM) is located in southeast Humboldt County, Nevada, within Sections 1, 2, 3, 11, 12, 13, 14, 15, 16, 17, 23, and 24, Township 34N, Range 42E, Mount Diablo Baseline and Meridian (MDB&M). The LTM is approximately 34 miles east of Winnemucca and six miles west of Valmy. The LTM is situated southwest of Lone Tree Hill in the Pumpernickel Basin.

Site Access: To access the LTM, proceed on Interstate-80, east from Winnemucca or west from Valmy, to *"Exit 212-Stone House."* The LTM main entrance is approximately 1 mile southwest of Interstate-80.

General Description: Since 1997, Newmont Mining Corporation has been the Permittee of record and operator of the LTM. The LTM consists of an open pit, waste rock disposal facilities, a cyanide heap leach facility (HLF), process solution ponds, decant pond, an autoclave and milling facility, a flotation plant, a Caro's acid-cyanide neutralization circuit, refinery, tailings impoundment, and ancillary support facilities. The LTM facility is permitted to process up to 5 million tons of ore annually and is designed and constructed to operate and close without discharge or release in excess of those standards established in regulation except for meteorological events that exceed the 100-year 24-hour storm event.

During prior operations, the LTM maintained a series of rapid infiltration basins (RIBs), located four miles southwest of the main entrance. The purpose of the RIBs was to manage and reintroduce dewatering water from the LTM back into the local groundwater basin. Authority for the design, construction, operation and closure of the RIBs was established under Water Pollution Control Permit (WPCP) NEV2000507. The RIBs entered "Temporary Closure" in December 2006 and reclaimed shortly thereafter. In April 2010, the RIBs were officially "Closed and Reclaimed" and the WPCP terminated.

The LTM is permitted to mine and chemically process up to 5 million tons of ore per year. Beginning in December 2006, all mining and dewatering at LTM ceased and the

mine portion of the facility was placed in Temporary Closure. A pit lake formed shortly after the cessation of the dewatering operations. Refer to the *"Mining"* and *"Dewatering"* sections for additional details. The LTM mill facility continued to operate, processing stockpiled on-site and off-site ores until the stockpiled material supply was exhausted. On 21 December 2007, the Permittee placed the LTM mill in Temporary Closure under a care and maintenance mode and informed the Division of plans to formally decommission the mill. The LTM HLF however, would remain in operation.

In early 2012, the Permittee submitted plans to the Division to refurbish the Autoclave, Carbon Strip Circuit, Electrowinning Cells, and Oxygen Plant in anticipation of restarting the LTM Mill. The mill is utilized to process ore stockpiled at the Permittee's Twin Creeks Mine (TCM) and Gold Quarry Mine (GQM). The existing Flotation Circuit was not included in the start-up; however the Stage 11 Tailings Raise (approved in 2002 as part of the Stage 8 through 11 Tailings Raise expansions) would be slightly modified to accommodate the Stage 12 raise (designs submitted in late 2013).

Current plans indicate that ore will be processed at a reduced rate of about 2,200 to 2,600 tons per day (0.82 to 0.93 million tons per year), in the LTM Mill far less than the processing rate of 8,850 tons per day prior to the temporary mill closure in 2007. A new mercury removal circuit will require cooling of quench water in the Tailings Storage Facility at a rate of 922 gallons per minute (gpm), which will be delivered to the TSF with the slurried tailings and returned to the mill via the return water piping. With the addition of the quench water, the tailings will be delivered to the TSF at a solids concentration of 23 percent.

The Permittee is also proceeding with plans for a small satellite mining operation to be located approximately 1.5 miles south of the LTM HLF. This operation, referred to as the "Brooks Project", is expected to generate 2.3 million tons of leach-grade ore to be processed at the LTM HLF and 8.2 million tons of waste rock over a 3 to 4 year period. The plans will be submitted to the BLM for National Environmental Protection Act (NEPA) review during 2014.

B. Synopsis

Mining: Gold-bearing oxide and sulfide ores were initially mined from two pits: the Lone Tree (Section 11) and Sequoia (Section 13). As mine development continued, the pits merged into a single pit, referred to as the Lone Tree Pit. During active mining operations, ore was either hauled to a prepared ore stockpile pad area near the LTM mill facility or directly to the LTM HLF for placement on the pads. Mining at the bottom of the Lone Tree Pit was completed in November 2006 to a final pit floor elevation of 3,560 feet above mean sea level (amsl), approximately 940 feet below the pit rim at the north edge of the LTM pit and 905 feet below the pit rim at the south edge of the LTM pit, in an area referred to as the Section 13 Sub-Pit or Sequoia Pit. Mining operations continued until mid-December 2006 at the higher pit elevations.

Dewatering: The pre-mining bedrock groundwater elevation in the area of the pit was approximately 4,460 feet amsl and depths between 20 and 100 feet below ground surface (bgs). As mine development deepened and expanded, pit dewatering became necessary and a series of dewatering wells were installed at various sites around the Lone Tree and Sequoia pits. Active dewatering commenced in 1991, with a maximum permitted dewatering rate of 49,000 gpm and 70.6 million gallons per day (MGD).

The Permittee was authorized to discharge water extracted from the dewatering wells for consumptive use at the nearby Marigold Mine (WPCP NEV0088040), Sierra Pacific Power Company-Valmy Power Plant, Trenton Canyon Project (WPCP NEV0095112) in addition to Lone Tree Mill facility and RIBs. Pursuant to the conditions, standards and limitations established in NPDES Permit NV0021962, the Permittee was also authorized to discharge excess dewatering water up to 93,000 gpm (135 MGD) that met discharge standards into the Humboldt River, via the Iron Point Relief Canal. Discharge of dewatering water to the RIBs was limited to 18,000 gpm (25.9 MGD).

Pit Lake Management: With the cessation of mining in the pit bottom in early November 2006, the need for dewatering at LTM was eliminated. Groundwater elevation rebounded at the predicted rate of 40 feet per month and within days a pit lake formed. By the end of November 2006, the resulting pit lake reached an elevation of 3,581 feet amsl and a depth of 21 feet at the deepest pit location. By June 2007, the pit lake elevation reached 3,868 feet amsl and depth of 308 feet at the deepest location. The rebound rate has slowed down significantly since June 2007 to approximately 12 feet per month.

As of January 2014, the lake level was approximately 4,230 feet amsl and contained an estimated 14.7 billion gallons (45,200 acre-feet). The lowest pit elevation is 3,940 feet amsl at the north end (285 foot depth) and 3,560 feet amsl in the middle (665 foot depth) grading slightly upward toward the south end. By 2033, the lake is predicted to be 90% recovered at an elevation of 4,348 feet amsl. The pit lake is expected to reach volumetric equilibrium with an estimated elevation of 4,432 feet amsl in the year 2076.

Exposed sulfide mineralization, found primarily in the Antler and Valmy geological formations within the pit, have contributed to the poor water quality observed during the early stages of groundwater rebounding. Predictive pit lake predictive modeling results continue to show that as the lake elevation rebounds, pH and water quality will improve, as exposed sulfide mineralization decreases and the buffering capacity of the host rock increases.

Until the end of December 2006, pit water pH remained circumneutral, however by early January 2007, pH dropped to about 3.6 standard units (su). By the end of January 2007, pH had spiked to 6.4 su only to drop again to 4.7 su in March 2007. Pit water pH increased sharply and remained circumneutral until the end of October 2007, where it began to exhibit a downward trend. From October 2007 until June 2010, pH remained steady, between 3.0 and 3.5 su. In June 2010, pit water pH began an upward trend, due in

part to the massive buffering reagent additions and less exposed sulfide mineralization. The current (January 2014) measured pit lake pH is 6.5 su. Refer to the subsections *"Pit Lake Amendment"*, *"Temporary Sodium Hydroxide Treatment System"*, and *"Slaked Lime Treatment System"* for additional details.

Pit Lake Amendment: In an effort to reverse the declining trend in LTM Pit Lake pH and alkalinity, the Permittee investigated both short-term and long-term pit lake amendment options. Bench-scale testing of potential pit lake amendments was performed on LTM Pit Lake water samples during the spring of 2008. The lake water samples were incrementally dosed with the potential amendments and the associated changes in pH, alkalinity and dissolved metal concentrations were documented.

Temporary Sodium Hydroxide Treatment System: On 12 August 2008 the Division approved an EDC for the construction, operation and closure of a temporary loadout and distribution system for adding sodium hydroxide (NaOH) to the LTM Pit Lake pending the construction of a permanent slaked lime system. The temporary loadout and distribution system added approximately 300,000 gallons of a 50-weight percent NaOH solution (approximately 1,914 tons NaOH) to the LTM Pit Lake until the lime slaking system was constructed and operational.

Liquid NaOH (50 weight percent) is transported to the LTM site via 5,500 gallon tanker truck to a designated loadout area located on containment near the LTM Pit Lake. The temporary loadout area is a high-density polyethylene (HDPE)-lined basin approximately 20 feet by 20 feet by 3 feet deep. The liner is keyed into a 3-foot deep trench around the perimeter and covered. The containment is provided by an 80-MIL HDPE liner placed over a compacted sub grade (85 percent standard Proctor). The HDPE liner is overlain by a 1-foot layer of minus ½-inch protective material (oxide waste rock), which is then overlain by a 2-foot layer of minus 2-inch road base material (oxide waste rock). A 1-foot high berm surrounds the loadout area and ramps constructed of road base material allow for truck access in and out of the loadout area.

Sodium hydroxide solution is conveyed through a 2-inch diameter standard design ratio (SDR)-11 HDPE pipe, approximately 80 feet in length. The pipeline runs from the NaOH loadout area to an existing 31-inch diameter, steel fresh water pipeline. Flow of the NaOH solution is controlled manually by shut-off and flow control valves installed on the pipe and all mixing with fresh water occurs in the steel pipeline. A quick-connect coupling at the pipe inlet permits the easy attachment of a flexible discharge hose from the tanker truck to the NaOH feed pipeline.

Slaked Lime Treatment System: On September 10, 2008, the Division approved an EDC for the construction and installation of a permanent system to add slaked lime (10 percent calcium hydroxide [$Ca(OH)_2$] suspension in water) to the LTM Pit Lake at a minimum rate of 300 gpm.

The slaked lime loadout, treatment and discharge system consists of a lime silo and feed system, water delivery system, a lime-water mixing system and a slaked lime treatment

system located on a concrete containment pad. With the exception of the lime silo, mobile components are utilized within the slaked lime system to allow for the optimization of mixing and treatment performance.

To minimize the potential of scale buildup within the pit lake delivery system pipeline, slaked lime is added in concentrations slightly below the known water solubility limit, at a suspended solution concentration of approximately10 percent. Based on the earlier bench testing results, 886 tons of $Ca(OH)_2$ (670 tons calcium oxide [CaO] equivalent) is theoretically required to a treat the current pit lake volume estimated at 3.8 billion gallons. Because actual pit lake mixing and equilibration rates cannot be simulated on a bench-scale, the slaked lime addition is only an approximation; observed pit lake behavior will be utilized to determine optimum slaked lime addition rates and volumes.

Pebbled CaO is transported to the LTM site and off-loaded into a lime silo. An auger feed system delivers the CaO to a grinder pump at an initial rate of approximately 2.8 pounds per minute (lb/min). The CaO is ground and mixed with well water delivered from a 24-inch diameter steel pipeline at the rate of 2 to 10 gpm, resulting in a slurry between 17.5 to 3.5 percent solids and the hydration of CaO to form $Ca(OH)_2$.

The solution is delivered via a 2-inch diameter steel pipe to a mixing device, referred to as a rotating cylinder treatment system (RCTS-60HS^{TM}) developed by Ionic Water Technologies (IWT) and combined with well water added at a rate between 50 and 300 gpm. Within the RCTS mixing device, aggressive aeration and agitation is utilized to enhance the dissolution of $Ca(OH)_2$, which in theory, should result in faster oxidation reaction kinetics, increased precipitation of dissolved metals, a reduced potential for scaling within the pipelines and optimize $CaO/Ca(OH)_2$ feed requirements. Slurry from the RCTS is then reintroduced to the well water feed line where it is then combined with the well water and discharged to the LTM Pit Lake at a minimum rate of 300 gpm.

Containment of the slaked lime loadout, treatment and discharge system consists of a 40 ft by 60 ft reinforced concrete containment pad and surrounded by a 24-inch high stem wall. A 4 feet by 4 feet by 2 feet deep sump is located in the southeast corner of the containment pad and is plumbed into an 8-inch diameter outfall pipeline and fed back to the 24-inch diameter well feed line. Available containment capacity is in excess of the 110-percent of the largest tank present.

Pit Lake Predictive Modeling: Since October 2008, a considerable amount of data related to pit wall surface mineralogy, groundwater hydrology and water chemistry and pit water chemistry has been collected in an effort to better understand the root cause of LTM pit lake acidity and behavior. The constant stream of new data has also allowed for the continuous refinement of the predictive model. By June 2010, an updated predictive model was developed which could account for 98 percent of the elemental mass production in the pit lake.

Assuming no further lime addition, the LTM pit lake is predicted to stay acidic. However, by significantly accelerating the rate of lime addition, it is possible to raise pit

lake pH to circumneutral levels. Based on the most recent (June 2010) predictive modeling results, at least 11,000 tons of lime will be required to raise pit lake pH to 6.5 and increase alkalinity. As of June 2013, the current pit lake volume was estimated at 9.3 billion gallons with a measured pH of 3.5 su and approximately 2,000 tons of lime had been added to the lake.

EDC for Temporary Lime Slaker Installation: Confidence in the LTM Pit Lake predictive models has increased significantly as more knowledge is gained and data collected from the LTM Pit and Pit Lake. To further accelerate lime addition to the pit lake, on 25 June 2010, the Permittee submitted an EDC for the temporary installation of a second lime slaking system to further accelerate lime addition to the LTM pit lake at a nominal rate of 40 tpd. The EDC was approved by the Division on 1 July 2010.

A "PortaBatch®" portable lime slaker is located at the northwest rim of the LTM pit lake, adjacent to the existing RCTS and at the former site of the sodium hydroxide load-out. The portable lime slaker unit is comprised of a 23,900 gal steel tank on a dual-axle, 40-ft trailer with a dedicated 300-horse power (hp) diesel engine powering the internal impeller for the slaker. The "PortaBatch®" lime slaker requires a nearly level surface for loading and off-loading. As a result, the existing sodium hydroxide loadout containment area was removed and slightly regraded to drain towards the pit lake. A collection trench surrounds the "PortaBatch®" lime slaker and any leaks and/or releases will be captured via a collection trench and piped into the existing slaked lime discharge line to the pit lake.

The lime is pneumatically fed into the PortaBatch® lime slaker at a rate of 15 tph through a pressurized inlet then mixed with well water to form slaked lime slurry. The permanent lime slaker and RCTS are operated at least 30 days per month, discharging slaked lime to the LTM Pit Lake at a rate of 14 tpd and 420 tons per month. Combined slaked lime discharge into the pit lake ranges between 1,300 and 1,530 tons monthly. As of December 2013, total cumulative lime addition to the LTM Pit lake was approximately 60,000 tons (batch plant addition approximately 56,000 tons and RCTS addition approximately 4,000 tons).

EDC for New Water Source: Under the current LTM Pit Lake lime treatment plan, water from WW-27 is pumped to the surface to the Lime Treatment Plant where it is mixed with lime and then discharged to the LTM Pit Lake. Because of potential connectivity issues between WW-27 and the LTM Pit Lake, a Schedule of Compliance (SOC) item I.B.5 in the Permit required Newmont to identify alternative water sources for the lime treatment plant by December 1, 2010. A water source WW-1 (WW-34) was identified as a potential source, however pump test results showed the well was not capable of meeting the 600 gpm discharge criteria. The Division extended the SOC completion date to March 1, 2011 and in the interim, the Permittee was authorized to continue to use WW-27 with WW-22 as backup. Since a suitable replacement water source could not be located, Newmont requested and was authorized to use LTM Pit Lake water to supply the lime treatment plant. The EDC was approved on 14 June 2011.

Pit lake water is pumped from below the lake surface to an elevation of 4,305 feet amsl, via the three submersible 500 gpm pumps. Each pump is installed inside individual 14-inch diameter, SDR-15.5 HDPE conductor pipe, to form an array of three conductors, each approximately 395 feet in length. Each conductor is positioned such that there is adequate submergence for each submersible pump. An intake screen section and end cap has been installed at the lower end of each conductor and the conductors weighted as necessary to overbalance buoyancy.

The conductors are anchored at the collar location within a concrete thrust block. Each of the three pump discharge risers has a check and isolation valve installed within a 12-inch steel header. The steel header has a check valve, air/vacuum valve, pressure gauge, flowmeter, and isolation valve and ties into the 12-inch diameter, SDR-11 HDPE discharge line which has been routed up the high wall, to an elevation of 4,505 feet amsl. Approximate length of pipe run is 565 feet.

A concrete pipeline anchor/thrust block is installed at the 4,505 foot amsl station and at this location, the pipeline transitions to 12-inch diameter, SDR-17 HDPE pipe which passes over the 4,575 foot amsl crest and proceeds along the side of a road and down to the Pit Pond, located at the 4,530 foot amsl elevation. Approximate length of pipe run is 3,512 feet. The system is designed to accommodate the placement of a fourth pump to provide a total of 2,000 gpm water supply for the mine site. In the event of a system upset or equipment failure, the Permittee is authorized to use WW-27 as a backup water supply on a short-term basis.

Pit Lake Monitoring: Pursuant to Section 6.6 of the "*Lone Tree Pit-Lake Optimization Plan*", the Permittee is required to monitor the pit lake and report quarterly the following:

- Groundwater elevation at each site-wide bedrock and alluvial monitoring wells.
- Pit lake elevation
- Surface measurements of temperature, TDS, pH, Eh, DO, and conductivity at two surface locations, one in the northern third and the other in the southern third of the lake.
- Depth sampling from two surface sites on the lake, one in the northern third and the other in the southern third of the lake. A near surface, intermediate depth sample, and near bottom sample will be collected from each site for Nevada Profile I analysis (plus phosphorous).

The Permittee is required to include in the quarterly pit lake reports any information related to pit wall stability, amendment dosing and alluvial and oxide regrading activities. In addition, with each subsequent application for renewal of the Permit or operational and/or facility change that could effect the current pit lake predictive model, the Permittee must re-evaluate the model and provide, based on the evaluation and as necessary, an update or modification of the model and its predictions.

EDC for New Pit Lake Sampling Locations: In February 2011, the LTM Pit Lake access ramp failed and as a result, mine personnel were no longer able to safely access the pit

lake to conduct water column sampling at the north and south compliance points in the pit lake. In order to maintain the required monitoring frequency, the Permittee submitted an EDC to locate two new monitoring points for LTM Pit Lake sampling for use until the lake surface elevation increased to a point where safe pit lake access was possible. In the interim, water samples were collected via submersible sampling pumps housed within HDPE pipe, installed over the pit rim. Field parameter samples (pH, temperature, conductivity, Total Dissolved Solids (TDS) and Oxygen Reduction Potential (ORP)) continued to be collected on a monthly basis. The EDC was approved on 14 June 2011.

Samples are collected on a quarterly basis from the two locations for Profile I plus phosphorus and acidity analysis. Sample results are submitted to the Division pursuant to the monitoring requirements listed in the quarterly Lone Tree Pit Lake report.

The Permittee recently committed to sampling the pit lake water column for all Profile I parameters monthly instead of semi-annually (years 6 thru 10) as required by WPCP NEV0090058. An EDC approved 19 August 2013, authorized the Permittee to continue the monthly sampling but only include the WAD Cyanide constituent a semi-annual basis. The instrumentation the Permittee uses to sample the water column at depth has a fixed sample size which prohibits the collection of duplicate samples when analyzing for all Profile I constituents.

By October 2012, pit lake elevation increased by 60 feet, making pit lake access practical again through the construction of a new access ramp. An EDC (approved 11 December 2012) authorized the construction of a new pit lake access ramp. The ramp construction involved the placement of approximately 24,000 tons of rock into the pit lake, which equated to 0.0002 percent of the existing pit lake volume. This rock contained a small amount of sulfides but no long term impacts are anticipated due to the small volume of material compared to the existing pit lake volume and submerging the sulfides if will cease any oxidation reactions. The ramp was constructed on the southeast side of the pit from the 4260 bench which was the lowest elevation accessible by equipment and personnel in October 2012. The design was based on a 10-percent grade, 30-foot road width, and side slopes of approximately 2H:1V. The ramp was constructed via typical open pit mining methods and required drilling, blasting and pushing (dozing). Safe access to the pit lake was finally achieved by May 2013.

EDC for New Pit Lake Sampling Locations: In anticipation of boat access to the pit lake in May 2013, design work on the Pit Lake Mixing and Lime Slurry Distribution System (PLM-LDS) was initiated in conjunction with the 2013 Screening Level Ecological Risk Assessment (SLERA) performed on the LTM Pit Lake.

The purpose of the Pit Lake Mixing and Lime Distribution System (PLM-LDS) is to control pit lake surface water quality, protect wildlife, and increase lime addition efficiency.

Several technologies are currently available to stimulate vertical mixing in an effort to overcome the thermal barrier or other stratification controls in lakes. These include "diffused aeration" and mechanical mixing via "up-flow" or "down-flow" circulation. Based on the engineering design consultant's evaluation of the three available technologies, up-flow circulation appeared to have the most promise for the LTM Pit Lake application, due to fact that its intake and discharge design has been demonstrated to promote laminar radial flow, thus making up-flow circulation suitable for distributed lime slurry mixing. In addition, up-flow mixers have the lowest energy consumption and have been proven to give reliable service with solar power and overall efficiency is considered high.

The SolarBee® system is a commercial example of up-flow technology and although many of these units have been successfully operated in the U.S. and other countries, there are no known operating applications of this technology with respect to pit lake mixing.

The SolarBee® PLM-LDS is a two phase program. Phase I is a test program to evaluate the effectiveness of the up flow circulator pumps. Two SolarBee® units will be deployed with 8-foot long intake hoses and a small diameter HDPE pipeline will direct lime slurry from the existing Rotating Cylinder Treatment System (RCTS) (EDC approved, 10 September 2008) to one of the SolarBee® units. The second SolarBee® will be installed by the discharge of the pipe fed by the Portable Batch Plant (EDC approved 1 July 2010).

Phase I testing is currently under way. Depending on the testing results, the Phase II program will be a scaled-up version of the system based on the results of Phase I test work and may include additional SolarBee® pumps, additional pipeline for lime slurry distribution and/or modifications or additions to the existing lime plants (RCTS and Portable Batch Plant).

The operational area of extent of the SolarBee® model selected for the test is estimated at 30 to 50 acres which equates to a radius of 645 to 833 feet. The field parameters are collected at locations to the north and south of each SolarBee® located at distances of 100, 400, 700 and 1000 feet from the pump, resulting in 8 readings for each SolarBee® pump. The field parameters will be measured with continuous profiling equipment which records pH, oxygen reduction potential, conductivity, temperature, dissolved oxygen and depth to determine mixing impacts. Since the Phase I test is designed to mix the top eight feet of the lake, the weekly monitoring will focus on the top 20-foot depth of the lake.

In locations where safe access to the highwall by boat is possible, rock samples will be collected to determine the types of sulfide and to conduct additional static acid base accounting tests. Sediment samples are collected from the LTM Pit Lake floor to identify any accumulation of lime and provide information to verify lime dissolution efficiency. Detailed geochemical profiles are collected as baseline data prior to deployment of the SolarBee® pumps to determine the depth of the epilimnion and identify any chemocline control. Metal speciation of arsenic and iron will also be performed on these samples.

Phase I Test Program: The *"SolarBee® SB 10000 V18 Mixer"* was chosen for use in the Phase I test program. The mixer is float mounted and utilizes axial flow pump technology capable of moving high flow rates and inducing circulation to significant distances away from the mixer site. The SB 10000 axial-flow pump pumps up to 3,000 gpm directly with an additional 7,000 gpm of induced flow for a total projected circulation capacity of approximately 10,000 gpm. The intake design promotes a laminar radial pattern of flow to the submerged hose inlet. Flow is directed up the intake hose and distributed in a radial pattern at the pump discharge just below the lake surface. Total dynamic head is very low with observed head losses due to friction and directional changes in velocity.

To achieve optimum operating conditions, the SolarBee® SB 10000 V18 mixers require installation at 30 to 50 acre intervals. An 8-foot length of intake hose has been chosen for evaluation and use in Phase I in order to better concentrate mixing energy within the volume of lake water influenced by mixer circulation, referred to as the Designated Mixing Zone (DMZ).

Two locations were selected as favorable areas to conduct mixing tests. One mixer (SB1) was placed at a location near the dedicated lime slurry feed from the RCTS lime plant because of the narrower geometry of the lake in that area. The relatively close shoreline serves as a boundary that is more consistent with the 30-50 acre effective area created by the mixer. The second mixer (SB2) will be placed at a location opposite the existing lime slurry discharge from the Batch Lime Plant making it useful in evaluating the potential for a shallow DMZ to improve milk of lime distribution from a single point outfall. The mixer locations may be repositioned during the Phase I program.

Both SolarBee® mixers are anchored using mooring block weights, an anchor line or chain, and a swivel float that serves as a mooring buoy at the surface. Since the mixer does not need to be precisely positioned, the anchor line can be supplied with slack to allow for several months of lake level rise. Additional anchor line can be added periodically to allow for long term level rise. The mixer is tethered to the mooring buoy and can be readily moved (such as to shore or another mooring buoy location) if desired. Preliminary analysis by the manufacturer indicates sufficient solar radiation exposure at the pit lake surface exists for the mixer(s) to operate properly on a continuous basis.

Operation of SB1 required the installation of approximately 2,000 ft of new pipeline from the containment area of the RCTS plant, down the high wall, and across the lake surface to the mixer location. Approximately 1,900 ft of the proposed pipeline is located within the pit crest. The pipeline conveys a dilute milk of lime ($Ca(OH)_2$) suspension of <1 percent solids to 10 percent solids. The normal operating pressure of the pipeline at the mixer discharge (LTM Pit Lake surface) is estimated at 110 pounds per square inch (psi), at a specific gravity (SG) of 1.0 to 120 psi at a SG of 1.065. The pipeline and SB1 mixer may be relocated during the Phase I test program to optimize performance.

The Phase I lime slurry distribution line from the RCTS is supported by floats and terminates near SB1. The end of the pipeline consists of a header to distribute flow into flexible hoses for connection to the mixer nozzles. A selector valve Tee located at the mixer float directs the lime discharge either to the lake or to the eye of the mixer.

The starting lime addition rate for the Phase I test at SB1 is based on the titration results and the corresponding bulk neutralization data obtained from the 2010 report entitled *"Newmont Lone Tree Pit Lake Modeling and Management Plan Update."* Assuming a target pH of 6.5, the dosing rate is calculated at 0.0023 pounds (lbs) CaO per gallon of lake water. This equates to 23 lbs CaO per minute to treat lake water circulating at a rate of 10,000 gpm. Operational experience with the existing RCTS plant indicates the process is limited to quick lime feed rates from about three (3) lbs CaO per minute to a maximum of 19 lbs CaO per minute. Dissolution reaction efficiency in the rotating cylinder has been observed to vary significantly over the range of these feed rates.

Assuming a maximum effective circulation area of the SolarBee® SB 10000 with an 8-foot long intake hose is 50 acres, the corresponding volume of the DMZ is approximately130 million gallons. The time required for the mixer to cycle this volume at 10,000 gpm is about nine (9) days. Approximately 153 tons CaO are required to neutralize the DMZ volume to the target pH of 6.5 su.

Two system design scenarios have been identified and are proposed for testing:

Scenario 1: Operate the RCTS at a quick lime addition rate of 8.33 lbs per minute (6 tons per day) and a slurry suspension of about 2.4 percent to achieve a milk-of-lime addition rate of about 55 gpm. This is within the 45-60 gpm range associated with velocities of 6-8 feet per second (fps) to maintain solids suspension in 2-inch diameter, SDR-9 distribution piping. One treatment cycle will require 153 tons CaO and will take about 26 days.

Scenario 2: Operate the RCTS at a quick lime addition rate of 8.33 lbs per minute (6 tons per day) and a slurry suspension of about 0.6 percent to achieve a milk-of-lime addition rate at about 230 gpm. This is within the 175-235 gpm range associated with velocities of 6-8 fps necessary to maintain solids suspension in 4-inch diameter SDR-9 distribution piping. One treatment cycle will require 153 tons CaO and will take about 26 days.

Lime slurry output from the RCTS plant during process experimentation and upset conditions will be diverted to the Batch Plant lime slurry line for discharge to the pit lake. Lime addition will continue from the Batch Plant during Phase I as necessary based on LTM Pit Lake pH. Operation of the SolarBee® SB 10000 mixer at SB2 will be monitored for possible effects of LDC on the distribution of lime slurry as it is discharged from the Batch Plant outfall. SB2 will also serve as a backup unit to SB1 and will be available for deployment with a dedicated lime slurry feed line (prior to Phase II) if necessary.

Phase II Test Program: The Phase II Test Program will be dependent upon the outcome of test work completed in Phase I. The general concept will be to increase mixing coverage and lime slurry Distribution. Phase II may include addition up-flow mixing pumps, modifications to the existing lime slurry plants and additional lime slurry distribution piping. Assuming a current LTM Pit Lake surface area of 170 acres and a SolarBee® coverage area between 30 and 50 acres, at least four (4) or five (5) SolarBee® units can be deployed. Another option might be to use fewer mixers but move them to operate in other locations based on monitoring results.

Waste Rock and Overburden Management: The LTM Waste Rock Disposal Facility (LTM-WRDF) is comprised of four waste rock disposal dumps, identified as the Section 11, Section 13, Section 14 and Section 23/24 Dumps. The placement of the waste rock in the dumps is managed with PAG material encapsulated within the WRDF to minimize exposure of PAG material to meteoric water.

The initial Waste Rock Management Plan (WRMP) specified placement of a 100-foot thick cover (prior to grading) on the slopes and 10 to 25 foot thick cover on the tops of the LTM Waste Rock Disposal Facility (WRDF). The plan was developed at a time when sufficient acid neutralizing material was available. However, with the deepening of the Lone Tree Pit, the amount of neutralizing material available for cover decreased significantly. In the 2006 LTM Operating Plan (OP) update, the Permittee estimated that 6.6 million cubic yards (cu yd) of acid neutralizing material would be required to complete reclamation of the WRDFs. In January 2007, an assessment of the availability of acid neutralizing material was estimated at 2.3 million cu yd.

In early 2007, the LTM WRDF cover requirements were reevaluated in an effort to develop an alternative to the 100-foot cover placement practice. Results from the additional cover thickness studies and predictive modeling exercises performed during 2007 demonstrated that 1) from a hydraulic perspective, there was little benefit in placing a cover thicker than six feet on the WRDF, however, there may be some benefit to placing a slightly thicker cover (e.g. 10 feet) to allow for slight variations in thickness due to grade control or to account for variations in cover material type; and 2) there was no benefit in placing a cover thicker than 10 feet at the LTM WRDFs. The potential for meteoric water percolating below the bottom of the 10 foot cover is very remote.

The revised LTM OP (including the WRMP) was approved as an EDC on 29 February 2008. The revised plan permits regrading the WRDF to a minimum 3H:1V slope prior to placement of a 10 foot (minimum) non-potentially acid generating (PAG) material cover for the final slopes of the LTM WRDF and eliminate the 100-foot thick non-PAG cover requirement prior to recontouring to final grade. The final thickness of neutralizing material placed on the tops of the WRDF will remain between 10 and 25 feet. The total area affected by this proposed WRMP revision is estimated at 69 acres, or about 6 percent of the total existing WRDF area. An estimated 2 million cu yd reduction in the amount of acid neutralizing material required for covering the WRDFs is possible.

Mill Facility: The LTM Mill Facility consists of grinding, autoclave, and carbon-in-leach (CIL) circuits; flotation and carbon-in-pulp (CIP) circuits; tailings delivery pipeline and tailings storage facility (TSF); a tailings seepage collection system; a decant pond and a reclaim water pipeline. As stated previously, the LTM mill has been in "Temporary Closure" and under a care and maintenance mode since December 2007. As a result, the Permittee is required to provide the Division with a 30-day advanced notice of the resumption of processing activities and conduct a thorough inspection of the fluid management system, monitoring network and process components impacted by the operation of the mill facility for containment integrity and functionality. The Division will be notified of the inspection results and what corrective actions/repairs will be taken.

An EDC approved 14 November 2008, authorized the Permittee to re-activate portions of the LTM and process off-site ores. The ores were transported to the LTM site and stockpiled on engineered containment (e.g. the Lone Tree Ore Stockpile Pad) and managed in a manner to preclude the discharge of any meteoric water that has been in contact with stockpiled material.

Processing of the ores through the LTM Mill Facility did not require any design changes or modifications. Prior to any processing, the Permittee provides the Division with written notification of their intent to process the off-site ores not associated with the Permittee and provide tonnage estimates of the ore to be processed, Meteoric Water Mobility Procedure (MWMP), Profile II, and Acid Neutralization/Acid Generation Potential (ANP/AGP) test results.

All tanks, vats and ancillary equipment associated with the gold recovery processes, with the exception of the reagent, barren and pregnant tanks, the Flume Building and the Phase 5/6 Process Tank are located within the Process Building. The floor of the Process Building is constructed of concrete, sloped to provide drainage to a number of floor sumps that report back to the recovery circuit. The entire building is surrounded by a concrete curb to contain process solution in the event of a tank rupture or other large release. The secondary containment within the Process Building has sufficient capacity to contain 110 percent of the largest tank in the building.

Reagent tanks are located in a chemical storage area next to the Process Building. Each of the tanks is located on a concrete slab and surrounded by a concrete stem wall to provide secondary containment. The secondary containment is of sufficient capacity to contain 110 percent of the volume of the largest tank in the storage area. The barren tank, located adjacent to the East Pond, is provided with secondary containment designed to gravity drain to the East Pond. The Flume Building and pregnant tank are located adjacent to the West Pond. The Flume Building is designed to gravity drain to the pregnant tank. The secondary containment for the pregnant tank gravity flows to the West Pond.

Solution piping between the Process Building and Flume Building is buried and housed within a concrete utility corridor (i.e. utilidor) for containment. The utilidor extends

inside each building at an access manhole and slopes downward to a low point in the center of the laydown yard. At the low point, a concrete inspection sump has been installed and is monitored on a weekly basis.

Grinding, Autoclave and CIL Circuits: Stockpiled oxide ore amenable to cyanide leaching, is transported via front end loader and discharged into grizzlies at the head end of the grinding circuit. Following size reduction, the ore is conveyed to the CIL circuit for gold recovery.

High grade gold-bearing sulfide ore not amenable to cyanide leaching is conveyed to the grinding circuit and then the autoclave circuit where it is oxidized. Following oxidation, the ore is conveyed to the CIL circuit for gold recovery.

After leaving the last CIL tank, the tailings slurry is treated with Caro's acid to neutralize the residual cyanide on as-needed basis, passed through carbon screens and then conveyed for discharged to the tailings impoundment. Loaded carbon from the CIL tanks is conveyed to the stripping circuit or off-site where the carbon is acid washed and stripped of gold in a pressure stripping circuit. Stripped carbon is re-generated on or off-site in a carbon kiln prior to its return to the CIL circuit.

Flotation and CIP Circuits: The Flotation and Carbon-in-Pulp circuits have been in Temporary Closure since December 2007 and the Permittee has indicated that there are no plans for reactivation.

The LTM Flotation Circuit consists of grinding, conditioning, flotation, cyanide leaching and concentrate dewatering circuits designed to recover gold from low-grade sulfide ores. All components are located within containment in an enclosed building adjacent to the LTM Mill.

During active operations, the Flotation Circuit generates a concentrate stream that is conveyed to the Concentrate Thickener for thickening and dewatering. The thickened slurry generated is either dewatered further using a pressure filter or processed as slurry in the LTM or TCM autoclaves. The filtered concentrates are loaded into highway trucks and transported to TCM and/or GQM for subsequent processing. Flotation tailings are processed through the CIP circuit prior to final disposal in the tailings impoundment. Loaded carbon from the CIP circuit is processed at the existing carbon facility or shipped off-site for precious metals recovery and carbon regeneration.
The Permittee has indicated plans to return to active ore processing through the existing autoclave circuit, but not the flotation circuit. Ore will be sourced from Newmont's Twin Creeks and Carlin trend mines. The Permittee is in the process of refurbishing and repurposing existing tanks, piping, containment, and will need to replace the Carbon-in-Leach (CIL) tanks, electrical equipment, and selected pumps. The Section 23 TSF was recently modified (Minor Modification approved February 2013) in anticipation of the mill restart to optimize TSF capacity.

A Minor Modification approved 1 May 2013 authorized changes to the existing autoclave and acidulation circuits, acid storage, reclaim water treatment, and new containment for the autoclave exhaust gas mercury abatement and removal system. The mercury emissions control system was recently approved by the Bureau of Air Pollution Control (BAPC).

The Permittee will repurpose existing Carbon-in-Pulp (CIP) and reagent tanks for reclaim water treatment, and will repurpose two existing oxide slurry storage tanks for acidulation. Acid will be stored in a new tank installed in the flotation tailings thickener containment area; containment modifications will be made for acid storage. The new mercury abatement system will require new containment, new air pollution control equipment (quench vessel, venturi scrubber, and carbon beds) that will be incorporated into existing air pollution control equipment; and associated piping, ducting, blowers, and pumps. Detailed changes are as follows:

Acidulation Circuit (LTM Area 244)—The Pressure Oxidation (POX) feed slurry is pumped from existing slurry storage tanks to the new acidulation circuit. The acidulation process re-uses two existing oxide slurry storage tanks that require lining for this purpose. The slurry passes through the two tanks in series for a total retention time of approximately 350 minutes. Sulfuric acid is pumped into the tanks from a new acid storage tank and air is delivered into the bottom of the tanks from two new air compressors (one operating and one standby). The process slurry is agitated with new or re-furbished agitators. Acidulated ore carbonate levels achieve a target sulfide sulfur-to-carbonate ratio of 1:1, by weight. The slurry is then pumped via new low temperature heater feed pumps to the existing low temperature heater.

Acid Storage (LTM Area 244)--The Acid Storage Area is located inside the existing bermed area of the Tailings Thickener. The area is isolated by the installation of two containment walls and is protected with new HDPE liner. The Tailings Thickener Area is an existing bermed area adjacent to the Flotation Building. The containment area is equipped with an existing standpipe which overflows into the CIP/CIL tank area through existing underground piping.

A new acid storage area will be installed in the existing flotation tails thickener area. Acid will be offloaded from the existing off-loading pad adjacent to the existing concentrate storage tanks. One of the tanks will be dismantled down to the "ring" pedestal and a new sulfuric acid storage tank will be constructed on the pedestal. Acid will be pumped to the acidulation tanks in LTM Area 244 using existing pumps that will be re-purposed for sulfuric acid service.

Containment areas are interconnected via wall cut-out openings or underground piping. These existing containment areas are combined to provide adequate containment in the event of any failure of any vessel, tank, or piping within these areas. The combined containment areas are also designed to contain overflows in the event of the failure of the upper shell of the Tailings Thickener.

Mercury Abatement (LTM Area 250)--The Mercury Abatement and Quench Tailings Areas are located between the existing Process Service Cooling Towers and the Flotation Building. The new areas will be constructed with water-tight berms and dedicated collection sumps. The future mercury abatement process will make use of the following equipment to treat the emissions from the LTM Autoclave Circuit:

1. Primary Quench Tank (existing).
2. Primary Venturi Scrubber (existing) and Cyclone Separator Quench Tank.
3. Secondary Quench Tank.
4. Secondary Venturi Scrubber and Cyclone Separator.
5. Humidity Control Heater.
6. Carbon Bed.

Exhaust gases from the autoclave, high temperature heater (HTH), and low temperature heater (LTH) vessels are ducted to the new mercury control system. The autoclave vent is directed to the existing primary quench vessel where the gas undergoes cooling by contact with treated reclaim water. The HTH and LTH vents are directed to the existing primary venturi scrubbers. The gases pass through the venturi for particulate capture, and are cooled in the modified scrubber separator (condenser) with treated reclaim water. The remaining cooled HTH and LTH gases combine with the cooled autoclave gases from the primary quench vessel and enter a secondary gas quench vessel for further cooling and condensation by contact with treated reclaim water.

Gases exiting the secondary quench vessel are directed to a secondary, final venturi scrubber for particulate removal with fresh water. The resulting stream is diluted with heated ambient air in order to maintain a target relative humidity. This is essential to the performance of the final mercury adsorption in the downstream carbon bed. Conditioned gas enters the carbon bed vessel where it first contacts a bed of activated carbon for volatile organic compound (VOC) removal. The gas then passes through a primary and secondary bed of sulfur-impregnated carbon for mercury removal.

Mill water is pumped to the mercury abatement process when treated reclaim water is unavailable. Additionally, quench water normally pumped to the TSF can also be bypassed to the Mill Water Tank. This bypass is intended for short term make-up to the Mill Water Tank if the LTM Pit Lake is unable to meet process water requirements; it is not meant to be operated in conjunction with the mill water backup feed to the mercury abatement process since operating both bypass lines would cause an increase in the temperature of the mill water to the mercury abatement process, resulting in lowered condensation efficiencies and a loss of mercury control performance.

Water Treatment (LTM Areas 248, 285, 441)-- The Water Treatment Areas are located inside the existing bermed area of the CIP/CIL Tank Area. The containment area will be modified to accommodate the installation and operation of new pumps.

Water for the mercury abatement process will be supplied primarily as reclaim water treated using the INCO-SO_2 process. Decant water from the TSF (reclaim water) will be pumped to a series of two reaction tanks where it is treated to minimize residual cyanide content. The two tanks are to be converted from existing flotation CIP tanks. Total retention time in the reaction tanks is expected to be approximately 80 minutes; however, either of the tanks can be bypassed to allow for only 40 minutes of retention time. Ammonium bisulfite ([NH4]HSO_4 or "ABS"), copper sulfate pentahydrate ($CuSO_4 \cdot 5H_2O$), and lime (CaO) will be used in the process to reduce cyanide concentration in the water to 0.5 mg/L. The Copper Sulfate and Ammonium Bisulfate Reagent Storage Area is an existing bermed area located within and adjacent to the Flotation Building.

The treated water overflows to a treated water storage tank, which will be another converted flotation CIP tank. The tank provides approximately 40 minutes of water storage at nominal flow rates which can be used to supply a continuous flow of treated water in the event that water supply is interrupted. From the storage tank, water is distributed to the off-gas handling equipment described above and previously existing reclaim water users. This tank also provides additional retention time for water treatment if required; up to approximately 120 minutes of total retention time can be achieved by increasing the level in the tank.

Tailings Storage Facility (TSF) and Seepage Collection System:

Mill tailings are stored in the Section 23 TSF, located about a mile southeast of the ore processing facilities. During active milling, tailings were delivered as slurry and spigoted into the TSF using sub-aerial deposition. The TSF was constructed at the mouth of a shallow valley where the valley opens into a broad alluvial fan. The impoundment was formed by a tailings dam that, in its current configuration, extends around three sides of the impoundment.

The TSF consists of an impoundment area, a Reclaim Pond to collect return water and pump it back to the mill, a seepage collection system to collect and transport fluids from directly above the liner within the impoundment to the Reclaim Pond, a decant system to remove and transport fluids from the impoundment to the collection pond, and environmental monitoring systems to detect if any leakage occurs from the facility.

The design includes dam and a lined impoundment area spanning a shallow north-south trending valley. The interior face of the dam slopes at 3h:1v for Stage 1 construction and 2h:1v for the subsequent stages. The exterior face of the dam was constructed with a 2h:1v slope. The tailings dam is constructed of non-PAG mine waste rock and both the interior slopes of the dam and the valley floor south (upstream) of the dam are lined with a soil liner material (see below).

The tailings impoundment area is comprised of a prepared subgrade overlain by a 12-inch layer of soil placed in two lifts and compacted to a permeability of less than 1×10^{-6}

cm/sec (95 percent Modified Proctor, American Society for Testing and Materials [ASTM] Method D1557). Drain fill (e.g. crushed, non-PAG overburden material) is placed over the soil liner to reduce head on the liner and increase densification of the tailings by promoting downward fluid flow.

The drain fill layer has a minimum thickness of 12-inches with the exception of the tailings impoundment embankments where the minimum thickness is 36-inches. A series of 4-inch diameter N-12 perforated HDPE seepage collection pipes have been placed in the drain fill layer to promote drainage. These pipes drain to 10-inch diameter (SDR-21) solid wall HDPE collection pipes which convey solution flow via gravity through the dam embankment and to the seepage collection pond. A 12-inch layer of liner cover fill is placed over the drainage fill to prevent the infiltration of tailings into the drain fill layer. A network of piezometers has been installed in the drain fill to monitor the hydraulic pressure on the liner and embankment.

With abandonment of the gravity decant riser, the supernatant pool was shifted to the east, the location of the decant siphon. Making use of the existing decant siphon pipeline, a simple, but effective weir was recently installed (EDC approved February 15, 2008) to allow the removal of additional volumes of water from the surface of the tailings pond.

Tailings slurry from the LTM Mill is conveyed from the mill to the TSF in an HDPE-lined ditch, through a 16-inch diameter steel pipeline. The pipeline is approximately 6,300 feet in length with a 750 foot elevation drop from the mill area to the TSF. Approximately 4,100 feet of the current pipeline consists of a new 16-inch diameter, schedule-140 steel pipeline contained within a 24-inch HDPE pipeline (i.e. pipe-in-pipe).

Sub-aerial deposition of tailings slurry is utilized for tailings management at the LTM. The slurried tailings are deposited at the south end of the impoundment. The settling of tailings solids in the impoundment creates beaching from the points of deposition in the south end of the impoundment and ponding against the dam to the north. Ponded water is removed using a decant riser pipe that extends up the interior face of the dam and conveys flow by gravity through a pipeline under the dam to the decant pond north of the dam. However, partial blockage of the decant riser pipe prompted the Permittee to install a siphon system fitted with a priming pump during Stage 8 construction.

Construction of the TSF was first authorized in 1992. Current plans indicate that the TSF will be constructed in a series of 12 stages, with the total capacity of approximately 38.7 million tons at the completion of Stage 12. Stages 1 through 4 were approved by the Division as a Major Modification in 1992 and initially designed for containment of up to 10 million tons of tailings solids. Stages 1 and 2 completed in 1994 and 1995, respectively and Stages 3 and 4 completed in 1997.

Stages 5 through 7 were approved by the Division as a Minor Modification in 1995, and when completed in 2001, increased TSF storage capacity to 20 million tons of tailings solids. Stages 8 through 11 were approved by the Division as a Minor Modification for

construction in 2002, to provide a total capacity of 28 million tons of tailings solids. Stage 8 was completed in 2003 and Stages 9 and 10 were raised concurrently in 2004 and completed in early 2005. The TSF embankment had been constructed through Stage 10 with HDPE liner placed to the Stage 11 limits of the impoundment.

In 2004, the design of the TSF was revaluated for potential expansion beyond the 28 million ton capacity. The evaluation focused on two conceptual alternatives for increasing TSF capacity by an additional 4 million tons and 10 million tons, thereby increasing total TSF permitted capacity to either 32 million or 38 million tons, respectively. In support of the evaluation, a geotechnical field investigation of the existing TSF was performed to determine a preferred design alternative. Design concepts used for the Stage 12 dam and impoundment expansion were largely driven by the following physical constraints which would still constrain any future expansion:

- The south west leg of the dam is constrained by the south diversion channel and the adjacent hill, precluding the use of downstream or centerline construction methods. Moving the south diversion channel further southwest into the existing hill would come at high cost.

- The west leg of the dam is constrained by the Section 22 property boundary to the west and the south leg is constrained by the Section 26 property boundary to the south. These constraints precluded the use of downstream or centerline construction methods for raises of the south and west legs of the dam subsequent to Stage 10. Stages 8 through 10 raises of the west leg of the dam used centerline construction techniques.

- Any expansion of the north leg of the dam further north would require relocation of the Decant Pond.

Further TSF expansion plans were temporarily stopped in January 2005 in anticipation of the LTM's temporary mine closure.

Minor Modification for TSF Stage 11 Design Revisions: On cessation of tailings infilling in 2007, the TSF had been filled to nearly the Stage 10 capacity. Combined with some additional capacity gained from consolidation of the tailings since 2007, the revised Stage 11 Minor Modification (approved by the Division on 25 February 2013) provides an additional tailings capacity of about 1.7 million tons.

The revised Stage 11 expansion retained the following design features first authorized in 2002 for the construction of Stages 8 through 11:

- Both centerline and modified centerline construction methods were used to increase the crest elevation of the dam.
- Tailings are delivered from the LTM Mill to the TSF using the same or similar pipe and containment systems in use prior to the 2007 temporary closure.

- Tailings are deposited around the perimeter of the TSF and into the impoundment using the same or similar manifold and spigot system in use prior to the 2007 temporary closure.
- Water is recovered from the TSF supernatant pool using a barge-mounted pump and then delivered to the existing Decant Pond at the downstream north toe of the tailings dam, then to the mill, using the same or similar pumps, piping systems, and containment systems in use prior to the 2007 temporary closure.

The revised Stage 11 design revisions are intended to take advantage of the current dry conditions of the tailings in the TSF, and allow the surface of the TSF to be shaped more favorably during future filling for surface storm water control in the post-closure period.

Design changes included the following:

- A new Mercury Removal Circuit quench/cooling water discharge line to deliver solution to the TSF with the slurried tailings. Decant water is returned to the mill via the return water piping. With the addition of the quench water, the tailings are delivered to the TSF at a solids concentration of approximately 23 percent.
- The supernatant pool was moved from the historic northwest location to a new location in the northeast limits of the TSF. The new location and configuration slope the tailings surface to the northeast where surface water runoff from a covered tailings surface in the post-closure condition can more readily and reliably be transmitted to the base of the TSF into existing natural drainages.
- A pore water recovery system was installed in the upstream face of the dam around the perimeter of the TSF to reduce head on the liner system of the upstream slope of the existing dam and future dam raises.
- A high density polyethylene (HDPE) geomembrane was installed as the lining system in the Stage 11 basin expansion area of the TSF instead of the soil liner that had been included in the original Stages 8 through 11 designs.
- The Stage 11 dam expansion raises the dam crest to a constant and uniform crest elevation for ease of construction and to allow a larger freeboard in the supernatant pool area. The original Stage 11 design included a crest that sloped down from the south limits of the TSF to the north limits, and that required a uniform 6 ft high raise. The uniform crest required a variable raise height from 0 ft at the south end of the TSF to 9 feet at the north end of the TSF.
- Tailings adjacent to the upstream slope of the south and west legs of the dam were excavated and replaced with engineered fill during Stage 11 construction in order to provide a stable foundation for tailings dam raises above Stage 11.
- Diversion Channel 23E east of the TSF was reclaimed and any additional storm water runoff from the area tributary to Channel 23E is now included in the water balance. The basin upstream of the channel is small with low runoff potential and is better managed during operation through the water balance, and provides more reliable post-closure surface water control through incorporation into the TSF surface water management plan.

Minor Modification for TSF Stage 12 Design Revisions: With the Stage 11 expansion, the TSF total storage capacity increased to approximately 28 million tons of tailings at an average dry density of 67 pounds per cubic foot (pcf). The expansion for Stages 12A and 12B (approved by the Division in March 2014) will provide an additional 11 million tons of storage and increase total tailings capacity to approximately 39 million tons. The Stages 12A and 12B expansion will:

- Increase the height of the dam.
- Add additional lined basin to the southeast of the impoundment, and
- Increase reclaim water surge capacity by removing the existing Decant Pond at the downstream toe of the north leg of the dam and constructing a new Reclaim Pond to the north of the Decant Pond.

Where possible, expansion design incorporated many of the design components used for previous stages including the Stage 11 Expansion revision. The following Stages 12A and 12B Expansion design features and concepts are similar to Stage 11 Expansion design features:

- The supernatant pool will remain in the northeast area of the TSF requiring only minor changes to the tailings delivery line and the reclaim water line to account for future dam raises for Stages 12A and 12B.
- Tailings will be delivered from the existing mill to the TSF using the same or similar pipe and containment systems used during Stage 11 deposition.
- Tailings will continue to be deposited into the TSF from around the perimeter of the TSF using the same or similar manifold and spigot system that is in use for Stage 11. Additional valves and piping may be installed along the inside crest of the dam to replace portions of the manifold and spigot drops as needed.
- Water will continue to be recovered from the supernatant pool in the TSF using a barge mounted pump, then delivered to a proposed steel Reclaim Tank at the downstream toe of the north leg of the dam. The Reclaim Tank will be constructed coincident with the new Reclaim Pond, and pumps mounted on a concrete slab adjacent the Reclaim Tank will pump reclaim water back to the mill.
- The pore water recovery system installed during Stage 11 into the upstream face of the dam around the perimeter of the TIF will be extended up during Stages 12A and 12B construction to the new dam crests. The system will continue to lower fluid pressure on lining systems on the upstream slope of the existing dam and proposed raises.
- An 80-mil HDPE liner will be installed in the Stages 12A and 12B basin expansion area of the TSF and will connect to the existing Stage 11 HDPE basin liner system.
- The Stages 12A and 12B expansions will continue to raise the dam crest to a constant and uniform crest elevation for ease of construction and to allow a larger freeboard in the supernatant pool area. This is consistent with the Stage 11 design.

The design concepts being proposed for the Stage 12A and 12B Expansion which are different from the Stage 11 design are as follows:

- Stage 12A will consist of an expansion to contain an additional 5.2 million tons of tailings solids. Both centerline and downstream construction methods will be used to increase the crest elevation of the dam to a final elevation of 4909 feet amsl.
- Stage 12B will consist of an expansion to contain an additional 5.8 million tons of tailings solids.
- Centerline construction methods will be used to increase the crest elevation of the dam to a final elevation of 4925 feet amsl.
- The existing Stage 11 Haul Ramp will no longer be used. A new 100-foot wide Haul Ramp will be constructed with Stage 12A and continued to the crest for construction of Stage 12B.
- A new steel Reclaim Tank and adjacent HDPE-lined Reclaim Pond will be constructed to contain fluids pumped from the tailings supernatant pool and drained from the face drain and underdrain systems in the TIF. Reclaimed water in the Tank/Pond will be pumped to the mill. The Reclaim Pond will serve as emergency overflow storage for the Reclaim Tank.
- The existing Decant Pond will be kept in service until the completion of the proposed Reclaim Pond. Once the new Reclaim Pond is constructed the existing Decant Pond will be abandoned along with various components of the pond. Existing face drain and underdrain pipes, which currently drain to the existing Decant Pond, will be extended to the new Reclaim Tank/Pond prior to decommissioning of the Decant Pond.
- Both the existing East and West Seepage Collection Vaults, and pipes feeding the vaults, will be relocated outside of the proposed downstream toe of the dam during Stage 12A.

Tailings Seepage Collection System: Minor seepage of tailings water from the downstream toe of the west ("west seep") and east ("east seep") dam embankments was first observed in November 2000. An evaluation performed by Golder and Associates has indicated that the seepage is most likely due to a distinct zone in the soil liner that had been damaged during or after construction and before the placement of tailings; or a discrete zone of poorly compacted soil liner or a discontinuity in the soil liner (at a construction joint) on the upstream slope of the dam that occurred during construction.

A seepage collection system has been constructed to collect and convey water from the seeps to the lined decant pond (see below). The collection system is designed to permit monitoring of seepage flowrates and water chemistry sampling for discrete portions of the system. The system is also designed for future expansion in the event seepage is discovered along other external portions of the dam and staged expansion of the tailings impoundment.

The collection system consists of a shallow seepage cutoff and collection trench installed

parallel and adjacent to the exterior toe of the Stage 5 1/2 dam. The trench is fitted with a 6-inch diameter N-12 perforated HDPE seepage collection pipe, surrounded with gravel and lined with impermeable GCL liner on the base and downstream side of the trench.

Each 200 foot segment is coupled to 6-inch diameter solid-wall HDPE pipe and manifold system which conveys solution to the east seep and west seep vaults, each made of pre-cast concrete. Observation risers and collection sumps have been installed in 200 foot intervals within the collection trench and consist of 6-inch diameter HDPE pipe (SDR-21). Solution collected in the vaults is sampled; west vault solution is pumped to the decant pond and east vault solution is pumped into the tailings impoundment. The system was expanded during Stage 8 construction and the observation risers and collection sumps are now located at the exterior toe of Stages 8-11.

The tailings groundwater monitoring well S23MW5 went dry in 2001 due to mine dewatering pumping. The water level in the well has recovered but the Permittee is unable to safely access the monitoring well to sample for water quality because the top of the well casing of S23MW5 is located in the western embankment of the Section 23 tailings impoundment, and only accessible by foot. In order to collect a sample, the Permittee needs to install a dedicated pump in the well but is unable to safely build a road to access the well and build a road that would not impact the stormwater diversion around the tailings impoundment. The well is also too deep (635 feet total depth) to bail by hand. An EDC approved 19 August 2013 authorized abandonment of S23MW5.

The Permittee is currently sampling other tailings downstream groundwater monitoring wells S23MW2A, S23MW3, and S23MW4 that have been completed in the bedrock and have similar well construction. These three wells are sampled quarterly for Profile I constituents, field parameters, and water elevation. When the water table recovers in groundwater monitoring well S23MW1, the Permittee will also resume collecting annual samples from that well. All of these wells are located directly down gradient of the tailings impoundment to detect any seepage from the impoundment and therefore should provide comparable monitoring data to S23MW5.

Reclaim Pond and Reclaim Water Pipeline: The Reclaim Pond is located at the north end of the tailings impoundment and is designed to contain (without release) all flows accumulating as a result of a 25-year, 24-hour storm event falling within the impoundment and the pond, the accumulation as a result of a 20-hour power outage and 2 feet of freeboard. Total pond depth at freeboard is 18 feet; total capacity at freeboard is 37.9 million gallons.

The pond is comprised of a 4-inch (minimum) layer of fine grained soil bedding material, overlain by 60-mil HDPE primary and secondary liners. A layer of geonet is installed in between the liners to collect leakage that may pass through the primary liner. Leakage collected within the geonet flows by gravity to a sump in the corner of the pond. The sump (approximate capacity 1,700 gallons) contains a 3-foot layer of free draining material and an 18-inch diameter PVC riser pipe extends from the base of the sump to the

crest of the pond where the presence of fluids may be checked, sampled or measured on a weekly basis.

Reclaim water from the LTM TSF is returned to the mill via an 18-inch diameter, SDR 17 HDPE pipe and placed inside a 24-inch diameter HDPE pipeline for secondary containment (pipe-in-pipe). The reclaim pipeline is located adjacent to the tailings delivery pipeline within the earthen ditch.

Heap Leach Facility (HLF): The LTM HLF was initially comprised of two independent HDPE-lined heap leach pads (HLP-North and HLP-South) which were constructed in six phases. A Minor Modification (approved 31 January 2011), authorized the construction of Phase 7, to be located between HLP-North and HLP-South. Refer to the subsection *"Heap Leach Pad Design"* for additional details.

The LTM HLF also has lined solution collection ditches, three solution ponds (East Pond, West Pond and the Phase 5 Pond), and a processing and recovery plant. All have been constructed with leak detection, collection and recovery systems.

Run-of-mine (ROM) oxide ore and oxide ore crushed at the mill facility designated for placement on the leach pads is pretreated. ROM ore is conditioned with measured amounts of lime added to the beds of the haul trucks or with milk-of-lime added once the ore is placed on the leach pad. Cyanide leach solution percolates down through the ROM ore, solubilizing the gold. A new technology for applying solution to the HLPs is also being tested at the LTM. This technology (Hydro-Jex Injection) is principally directed at heap leach pads that have been leached previously using conventional methods and are progressing toward reclamation and closure. Refer to the subsection *"Hydro-Jex Injection"* for additional details.

Heap Leach Pad Design: HLP-South (Phases 1 through 4) encompasses approximately 5.2 million square feet of lined surface; HLP-North (Phases 5 and 6) encompasses approximately 3.7 million square feet of lined surface. Phase 7 encompasses a footprint of 1.5 million square feet. Each phase is further divided into cells with individual pregnant solution collection systems. Phases 1 through 6 cells have individual leak detection, collection and recovery systems; Phase 7 has its own unique process component monitoring system. Refer to the subsection *"HLP Leak Detection Systems"* for additional details.
Phase 1 (8 cells) and Phase 2 (8 cells) were constructed in 1991. The heap leach pad liner system consists of a 60-mil HDPE primary liner overlying a minimum 6 inches of soil, compacted to provide an in-place permeability of no greater than 1×10^{-6} cm/sec (95% Modified Proctor, ASTM Method D1557). The compacted soil was placed over a natural soil subgrade that had been scarified and reworked to a minimum depth of 6 inches. The height of stacked run-of-mine (ROM) ore is limited to 200 feet above the liner surface.

Phases 3 and 4 (7 cells each) were constructed in 1993. The heap leach pad liner system consists of an 80-mil HDPE primary liner overlying a minimum 6 inches of soil,

compacted to provide an in-place permeability of no greater than 1 x 10^{-6} cm/sec (95 percent Modified Proctor, ASTM Method D1557). The compacted soil was placed over a natural soil subgrade that had been scarified and reworked to a minimum depth of 6 inches. The height of stacked ROM ore for Phases 3 and 4 is limited to 250 feet above the liner surface.

Phase 5 (16 cells) was constructed and completed in 2001; Phase 6 (4 cells) was constructed in 2004 and completed in 2005. The liner system consists of an 80-mil HDPE primary liner overlying a minimum 12 inches of soil, compacted to provide an in-place permeability of no greater than 1 x 10^{-6}cm/sec (95 percent Modified Proctor, ASTM Method D1557). The compacted soil was placed over a natural soil subgrade that had been scarified and reworked to a minimum depth of six inches. The height of stacked ROM ore for Phases 5 and 6 is limited to 250 feet above the liner surface.

Ore placed during the active loading of HLP-South Phases 1 through 4 contained significant sulfide mineralization. This resulted in lower than anticipated gold recoveries and acid drainage emanating from the spent HLP, due to the low pH. In an effort to improve gold recoveries and increase the pH of the spent ore, the Permittee proposed to off-load the Phase 1 through 4 ore and re-leach the material on a newly constructed HLP (Phase 7), to be located between the North and South HLPs.

Approximately 300,000 tons of spent ore is being off-loaded from the Phase 1 through 4 HLP down to a height of 30 feet above the HDPE liner surface. The ore was first relocated to an area of the Phase 6 HLP with unused capacity. The ore is conditioned with lime and re-leached with sodium cyanide leach solution. Each lift is leached for approximately three months prior to the construction of a new lift.

In order to accommodate the remaining ore from Phases 1 through 4 for re-leaching, the Permittee expanded the existing leach facility by combining HLP-North and HLP-South into a single pad through the construction of the Phase 7 HLP. Combined with the remaining capacity of the Phase 6 HLP, this area allows for an approximately three month residence time for leaching during lift placement to allow for continuous operation. Lime will be added to the haul trucks during relocation of the Phase 1 through 4 ore to the Phase 7 HLP for conditioning prior to leaching.
The Phase 7 HLP expansion ties into the Phase 6 collection channel. Assuming a dry ore density of 1.5 tons per cubic yard, the Phase 7 Expansion has a design capacity of approximately 13.8 million tons ore at a final closure height of 300 feet above the lowest point of the HDPE liner surface. Ore is placed on the leach pad in 30 to 40 foot lifts at a 3H:1V slope.

The Phase 7 liner system consists of an 80-mil HDPE primary liner (double-textured) welded to the existing 80-mil HDPE Phase 3 and Phase 6 liners. The primary liner overlies a minimum 12 inch thick soil layer, compacted to provide an in-place permeability of no greater than 1 x 10^{-6}cm/sec (95 percent Modified Proctor, ASTM Method D1557). The compacted soil is placed over a natural soil subgrade that had been

scarified and reworked to a minimum depth of six inches. A 2-foot thick layer of 100 percent passing, minus 2-inch drain rock will placed on top of the liner as an overliner to protect the surface.

HLP Solution Collection System: The pregnant leach solution is collected by a series of 4-inch diameter corrugated polyethylene (CPE) drain pipes laid transversely to the pad slopes. The CPE drain pipes are spaced at 50 feet for Phases 1 through 4; 40 feet for Phases 5 and 6; and 30 feet for Phase 7 to minimize head on the HLP liners. The CPE pipes feed intermediate header pipes (10 or 12-inch diameter CPE) which feed 18-inch diameter SDR 32.5 CPE solution collection header pipes which tie into solid 24-inch diameter HDPE conveyance pipelines, placed in the HDPE-lined solution collection channels. The solution collection channels discharge to the lined solution conveyance channel located along the downgradient edge of the pads. The solution collection channels are designed to accommodate storm water run-off from the leach pads, ponds, and processing area.

The Phase 7 HLP expansion required a reconfiguration of the existing pipework. Solution from each cell in Phases 3 and 4 were combined into two 18-inch diameter solid HDPE conveyance pipes, placed within the Phase 3 and 4 solution collection channel.

The solution collection header pipes convey pregnant leach solution to one of three solution ponds: East Pond, West Pond and the Phase 5 Pond. The East and West solution ponds are designed and constructed to accommodate the Phase 1-4 HLP; the Phase 5 Pond is designed and constructed to accommodate Phases 5-7. The East and West ponds were constructed with primary and secondary liners of 60-mil and 40-mil HDPE, respectively. A layer of geonet lies between the primary and secondary liners to collect leakage that may pass through the primary liner. Leakage collected within the geonet flows by gravity to a gravel-filled collection sump located in the corner of each pond. Solution collected in the sumps is conveyed via pipeline to a manhole, shared by both the East and West solution ponds. The capacity of the manhole at the pipe invert is 106 gallons.

The pond system has been sized and constructed to retain without release the combination of a working volume of solution, the draindown volume from the 25-year 24-hour storm event, the volume of draindown attributable to a 24-hour power outage, and 2 feet of freeboard. The total capacity of the ponds' system is approximately 9.5 million gallons. Pregnant solution from the West Pond is pumped to a Lamella Tank where lime is added to raise pregnant solution pH. The preg solution is then pumped to the East Pond where additional lime is added to the preg solution to precipitate the solid component. Following precipitation, the preg solution decant is pumped to the carbon-in-column (CIC) circuit for gold recovery. Barren solution generated from the CIC circuit is pumped to a surge tank and if necessary, additional sodium cyanide is added. The barren solution is then returned to the Phase 1through 4 HLP. Solids collected in the ponds are removed by dredging and transported to the TSF.

The Phase 5 Solution Pond was constructed in 1997 with an 80-mil HDPE primary liner and 60-mil HDPE secondary liner overlain on a compacted 12-inch soil layer constructed to exhibit permeability no greater than 1 x 10^{-6} cm/sec (95 percent Modified Proctor, ASTM Method D1557). The pond was also constructed with a leak detection, collection, and recovery system. A layer of geonet lies between the primary and secondary liners to collect leakage that may pass through the primary liner. Leakage collected within the geonet flows by gravity to a gravel-filled collection sump (approximate capacity 840 gallons) located in the corner of the pond. A 12-inch diameter HDPE standpipe extends from the sump up the interior of the pond to serve as a leak detection port.

Pregnant solution from the Phase 5 Solution Pond is pumped to a Lamella Tank where lime is added to raise preg solution pH. The pregnant solution is then pumped to the East Pond where additional lime is added to the preg solution to precipitate the solid component. Following precipitation, the preg solution decant is pumped to the carbon-in-column (CIC) circuit for gold recovery. Barren solution generated from the CIC circuit is pumped to a surge tank and if necessary, additional sodium cyanide is added. The barren solution is then returned to HLP Phases 5, 6 and/or 7, depending on their operational status. Solids collected in the pond are removed by dredging and transported to the TSF.

HLP and Solution Collection Channel Leak Detection Systems: Phase 1 through 6 HLPs have been constructed with a leak detection, collection and recovery system (LCRS) consisting of 2-inch diameter perforated pipes placed at the base of the phase and cell separation berms. The pipes travel north to the lined solution collection ditch. The solution collection ditch leak detection system consists of a 2-inch diameter perforated pipes placed beneath the synthetic liner at the invert of the ditch.

For Phases 1 through 4, both sets of perforated pipes tie into a 4-inch diameter solid pipe that drains to the West Pond entering near the top of the pond. For Phases 5 and 6, both sets of perforated pipes tie into a 4-inch diameter solid pipe (the Phase 5/6 pipe) that drains to the Phase 5 Solution Pond. At the ponds, the pipes daylight at a point where they can be visually inspected and where any flow from the pipes can be collected.

The leak detection, collection and recovery system (LCRS) for the solution collection channels consists of 2-inch diameter perforated pipes placed beneath the HDPE liner at the invert of the ditch. Both sets of perforated pipes tie into a 4-inch diameter solid pipe that drains to the West Pond, entering near the top of the pond.
The Phase 7 HLP expansion has a process component monitoring system (PCMS) for leak detection under the primary solution conveyance channel internal to Phase 7. Leak detection systems for the Phase 1-6 systems were unaffected with the Phase 7 construction; however 12 leak collection sumps associated with Phases 3 and 4, required removal and relocation outside the Phase 7 footprint.

New, replacement sumps were installed outside the footprint of the Phase 7 Pad. The five western-most sumps for the Phases 3 and 4 LCRS were removed and the flow from these sumps diverted to convey to the existing eastern sump located outside the Phase 7 pad,

through the existing 4-inch diameter overflow pipe.

The Phase 7 PCMS utilizes a 4-inch diameter perforated CPE pipeline placed in the bottom of an 80-mil HDPE-lined trapezoidal trench cut beneath the solution collection channel. The trench is backfilled with clean drainage gravel and encased in 10-ounce non-woven geotextile. The geotextile limits fines migration into the system and protects the HDPE trench liner. This system is designed to transmit any seepage to a PCMS sump (approximate capacity 90 gallons), located on the pad perimeter berm within the geotextile-lined area and has the ability to flow back into the solution channel. The sump consists of a vertical HDPE riser pipe fed by a 6-inch diameter solid HDPE pipe coming from the termination of the PCMS.

Hydro-JEX Injection: Hydro-JEX Injection is a new technology for applying solution to heap leach pads, developed and patented by the Permittee. The name "Hydro-JEX" is derived from water chemistry (**Hydro**)-lixiviant solution injection and metal **ex**traction. The technology is principally directed at heap leach pads that have been leached previously using conventional methods and are progressing toward reclamation and closure. Hydro-JEX is used to recover gold and other metals not recovered during conventional heap leaching. This technology may also provide heap leach pad chemical stabilization benefits for closure.

Use of the Hydro-JEX Injection technology at the Lone Tree Mine was approved as an EDC in February 2009 and incorporated into the 2009 Permit Renewal. Phases 1 through 6 of the LTM heap leach facility were approved for Hydro-JEX Injection, however only Phases 1 through 4 were actually tested.

Hydro-Jex holes are drilled using standard dual-rotary methods and 6-inch diameter steel casing, which is advanced as the drilling progresses. The holes are located a minimum 100 feet from the edge of the pad and are spaced approximately 100 feet apart. Drill hole depths vary based on the height of the heap leach pad but all holes are bottomed a minimum 50 feet above the pad liner system. Once in place, the casing is perforated at 2-foot intervals to create screened zones spaced approximately 30 feet apart. A cement plug is placed in the bottom of the casing to prevent fluid flow from the bottom of the well. The top of the casing extends approximately 4 feet above the surface of the pad and is equipped with a bolted flange for attachment of the stimulation or rinse solution piping.

The Hydro-JEX wells are initially stimulated by pumping barren solution or barren solution mixed with reagents to benefit the leaching process, such as ammonium hydroxide or a mixture of milk-of-lime and sand as examples, into selected screened zones. The selected zones are isolated with inflatable casing packers and stimulated at pressures up to 500 pounds per square inch for approximately three hours per zone. The stimulation creates micro-fractures that radiate up to 50 feet horizontally from the well.

Once the well has been stimulated, a removable plug is raised and lowered within the casing to direct leach solution by gravity flow to specific screened fracture zones.

Solution may be applied to a specific zone for a period ranging from days to months, depending on the material type, depth to liner, etc. The application rate to any Hydro-JEX well will not exceed the permitted heap leach pad application rate per area.

Stability analysis indicates that the permitted Hydro-JEX Application does not reduce the heap leach pad static or pseudo-static factor of safety below that calculated for non-Hydro-JEX Application models. Based on the design parameters, potential for slope failure is further reduced by requiring that no two adjacent wells be operated simultaneously, that solution not be applied if standing solution is observed in a well at an elevation above the lowest screen zone, and that the wells be operated in a random pattern rather than, for example, a sequential north-to-south or east-to-west pattern.

During the Hydro-JEX injection of the Phase 1 through 4 HLP, excessive scaling in the bore holes was observed, resulting in poor operating performance and recoveries. In an effort to recover additional gold values from the Phase 1 through 4, the Permittee submitted an EDC on 9 August 2010 to bypass the Lamella Tank and use a mixing tank (F3) and Tailings Thickener to improve solution treatment. This allowed for increased retention time, improve de-scaling, solids precipitation, and potentially allow the bypassing of the East Pond. All modifications occurred on existing containment; no additional containment construction was necessary. Lime is added on an as-needed basis to the F3 Tank and Tails Thickener to manage pH. A flocculant is added to the thickener utilizing the existing flocculant delivery system to facilitate solids precipitation. Underflow solids from the Tails Thickener are conveyed via existing piping to the TSF.

Gold Processing and Recovery: Gold is recovered from the pregnant solution using conventional carbon-in-column (CIC) adsorption circuit, located at the processing plant. Solution not amenable for recovery by CIC is processed through a lamella filter system for neutralization and removal of solids before being returned to the CIC plant. Loaded carbon is processed on site (or off-site) through pressure stripping and electrowinning. Stripped carbon is loaded directly back into the columns or regenerated and reused in the processing plant.

New CIC Circuit and Containment Upgrades: An EDC approved 27 September 2011, authorized installation of a new, skid-mounted five-tank CIC circuit at the Lone Tree Mine within the existing containment of the Phase 1 through 4 Heap Leach Pad (HLP) liner. The site is adjacent to the existing Barren Tank and Pregnant Solution Pond and is located on the first bench of the HLP, approximately 35 feet above the HDPE liner surface. A set of CIC tanks previously operated at this location; however the tanks were decommissioned and removed several years ago and only the concrete containment remains in place.

The remaining concrete containment slab was demolished and disposed of prior to the construction of a new containment slab. The concrete slab is 100 feet long by 20 feet wide with a 12-inch high stem wall around the periphery of the slab. The CIC structural steel skid, tanks and equipment is located at least 3 feet horizontally from the inside of

containment curb on all sides. The slab is designed with a 0.5 percent slope that directs any overflow, leakage or storm water toward the west end of the slab.

The new slab is designed as a 12-inch thick mat with reinforcing steel on top and bottom. Approximately 4 feet of heap leach material was removed and recompacted to provide a consistent subgrade layer and minimize the potential for differential settlement. Frost heave is not considered to be an issue since the heap material is well drained. At the low end (west) of the slab, a precast concrete drop inlet box collects any flow or run-off and route the flow through an 18-inch diameter pipe to the inside edge of the leach pad berm where it would be contained within the leach pad liner and ultimately flow into the pregnant pond.

The CIC tank volumes remain unchanged from the previously permitted tanks and the new containment volume is 143 percent of the largest tank volume. The CIC Circuit is capable of handling a maximum flow of 3,500 gpm and the overflow system and barren solution lines are sized to accommodate 4,000 gpm as an additional factor of safety and to allow minor surges in the system.

The proposed design also includes a pipeline for directing flow from the barren box at the outfall of the CIC Circuit into the barren tank adjacent to the pregnant pond. The design also allows the pregnant solution supply line to tie into the launder structure at the head of the CIC Circuit.

The piping system for the Lone Tree Mine CIC circuit is designed to supply and return 4,000 gpm. An overflow inlet and pipe conveys 4,000 gpm and used as a secondary return system.

The pregnant solution feed line is sized as a 14-inch diameter HDPE pipe to accommodate 4,000 gpm. The resulting velocity in a SDR-21 pipe is 10.3 feet per second (fps). Based on an approximate pregnant pond level, the pumping system delivers approximately 90 feet of head.

The Barren Solution Pipeline is sized as an 18-inch diameter steel pipe and is connected to the Barren Box located at the outfall of the CIC tanks. The line is vented to allow gravity flow in the pipeline leading to the existing barren tank. The new line transitions from steel to HDPE outside of the concrete slab and then ultimately connects to the existing 12-inch steel line inside of the edge of the leach pad berm.

A 36-inch square concrete drop inlet with a steel grate inlet has been installed to convey overflow from the CIC Circuit. The grate inlet capacity is designed to convey 4,000 gpm without allowing overflow solution to overtop the proposed 12-inch high curb wall that borders the CIC concrete slab.

Diversion Structures: A network of diversion structures have been constructed around the LTM, Process Facility, TSF, HLF, and WRDF. The diversion structures are designed

to divert run-off resulting from a 100-year/24-hour storm event.

Petroleum Contaminated Soils (PCS) Management: On 10 June 2013, the Division approved and incorporated the LTM PCS Management Plan into WPCP NEV0090058. Pursuant to the Plan, the Permittee will construct and operate a temporary holding pad at the LTM for the interim management of PCS. The purpose of the temporary holding pad is to hold new or unknown PCS source types while screening analyses are being performed, and to dry maintenance and wash bay sump sediments before final disposal. The temporary holding pad will have two separate cells in order to segregate the PCS source types. Once the wash bay material is dry and has passed the screening analysis the material will be removed from the temporary pad and hauled to the provisional/final disposal area on the LTM Section 13 Waste Rock Facility. Unknown or new source types must first pass the screening analysis before it will be removed for final disposal.

The Temporary PCS Storage Pad (EDC approved November 2012) will hold PCS material from new source types as well as wash bay sediments. The pad system consists of an apron (PCS Pad Apron, nominally 70 feet wide by 35 feet long) graded away from the pad and divided into two cells (PCS Material Cell and Wash Bay Material Cell).

The PCS Material Storage Cell is comprised of the PCS Material Ramp (approximately 40 feet wide by 20 feet long with a 10-percent negative grade to the cell floor) and the PCS Material Storage Cell (approximately 40 feet wide by 50 feet long with a 2-percent negative grade toward the east corner of the cell floor).

The Wash Bay Material Storage Cell is comprised of the Wash Bay Material Ramp (approximately 20 feet wide by 20 feet long with a 10-percent negative grade to the cell floor) and the Wash Bay Material Storage Cell (approximately 20 feet wide by 50 feet long with a 2-percent negative grade toward the east corner of the cell floor). A 6-foot high berm will surround PCS and Wash Bay material cells and each cell will be separated by a 3-foot high berm.

The Wash Bay Material Storage Cell of the PCS Pad will store wash bay material, and will be used for the treatment (dewatering) of the maintenance and wash bay sump sediments before analytical screening and final placement in the final PCS disposal area located on the Section 13 Waste Rock Disposal Facility (WRDF). The PCS Material Storage Cell will be utilized to store new sources of PCS material that require analytical screening before final placement. Pad capacities are listed below in Table 1.

The PCS Pad has been designed as an engineered containment using an integral lining system of a liner bedding, geomembrane liner, protective cover, and operations layer fill. Each layer serves a design or operational purpose to assure Newmont that the PCS Pad provides effective containment during operation. From the bottom progressing upward, the liner bedding provides suitable bedding for the geomembrane liner to prevent damage from the underlying subgrade.

The geomembrane liner (80-mil HDPE) over a 6-inch prepared bedding surface provides a hydraulic barrier to prevent liquid from infiltrating into the underlying soils and meets the permeability requirements. The protective cover above the geomembrane liner protects the liner against puncture from the operations fill layer and promotes drainage to a sump. The operations layer fill provides additional cover above the geomembrane liner to protect it from equipment loads and equipment damage. This operations fill layer must be maintained to protect the integrity of the liner. The integrity of the PCS Pad will be maintained throughout implementation of the Operating Plan.

Storm water falling on the PCS Pad, as well as water originating from the wash bay cleanout operation, will be managed through a fluid retrieval sump in the east corner of the PCS Pad. This sump consists of an 18-inch HDPE pipe riser that extends from the PCS Pad liner to above the Operations Layer, a height of 7 feet. The sump is perforated to allow water to enter the sump and be removed. The sump is covered with a removable cap, and a portable submersible pump and generator is used to remove the water. Stormwater around the pad will be conveyed away with grading of the area, construction of berms, and a storm water swale cut into the berm in the west corner of the PCS Pad Apron.

On 22 April 2013, the Division authorized the temporary use of the reinforced concrete Flotation Concentrate Storage Pad area for drying wash bay sediments and after several weeks of use, the Permittee determined the area to be a good alternative to constructing a new temporary holding pad. The wash bay sediments were removed on 16 July 2013.

An EDC approved 19 August 2013, authorized the Permittee to use the concrete containment area adjacent to the flotation plant as the permanent option for the PCS Temporary Holding Pad. The flotation containment area was previously designed to store flotation concentrate during a pilot test for the Filter Press. Once the Filter Press Circuit was constructed at the LTM, the containment area was no longer considered necessary for concentrate storage.

In addition to using the Flotation Concentrate Storage Pad area for PCS storage, The Permittee has retained the option of constructing the previously authorized HDPE-lined Temporary Holding pad in the event mining and processing activity increases at the LTM. The LTM PCS Management Plan has been updated to include both options for the temporary holding pad and to include sampling and screening level analysis of the sediments prior to their placement on the temporary holding pad.

To ensure wash bay sump sediments will meet screening level analysis and does not exhibit any hazardous waste characteristics before it is handled, the Permittee was authorized to change the sampling requirements prior to any material being placed on the Temporary PCS Holding Pad.

C. Site Hydrology and Background Water Quality

The Lone Tree Mine is located near the border between two hydrographic basins, the Pumpernickel Valley Basin and the Clovers Area Basin, and lies within the Pumpernickel Valley Basin. In the area of the tailings impoundment, the pre-mining potentiometric water surface (measured in condemnation borings) ranged between approximately 4,500 feet to 4,420 feet amsl. Continuous pit dewatering since 1991 has lowered the potentiometric surface to levels that currently range between 4,110 and 4,140 amsl. Current groundwater elevations in the area of the impoundment range between 580 and 697 feet below the topographic surface. Upon completion of mining dewatering, it is anticipated that groundwater levels will eventually recover to near pre-mining levels.

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** 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.

E. Proposed Determination

The Division has made the tentative determination to issue a renewal of this water pollution control Permit.

F. Proposed Effluent Limitations, Schedule of Compliance and 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 that authorizes no discharge(s) except for excess accumulations that are a result of a storm event beyond that required by design for containment.

The primary emphasis for identification of escaping process solution will be placed on routine inspection of the leak detection systems, monitoring wells, and other monitoring devices as required by the permit and operating plans.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 United States Code (USC) 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 [CFR]10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with state permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife. Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of 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:	*Rob Kuczynski, P.E.*
Date:	*XX Month 2014*
Fact Sheet Revision 00:	*Permit Renewal, 2014 also incorporates Minor Modification for*
(Permit Revision 00)	*Tailings Stage 11 design revision and Stage 12 expansion, submitted to the Division on September 20, 2013.*