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

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

Project Name: **Twin Creeks Mine – North Project**

Permit Number: **NEV0086018**
Review Type/Year/Revision: **Renewal 2012, Fact Sheet Revision 05**

A. Location and General Description

Location: The Twin Creeks Mine, North Project is located on public and private land within Sections 4, 5, 6, 7, 8, 9, 16, 17, and 18, Township 39 North (T39N), Range 43 East (R43E) and Sections 31 and 32, T40N, R43E, Mount Diablo Baseline and Meridian, approximately 35 miles northeast of Golconda in Humboldt County, Nevada. The facility is located on both patented private land and unpatented public land; the latter managed by the Bureau of Land Management, Winnemucca District Office.

General Description: The Project consists of open-pit and underground mining with ore processing using either conventional heap leaching technology or milling, pressure oxidation of refractory ore and cyanide leaching, with precious metal recovery by carbon adsorption, followed by electrowinning and refining.

Primary process components include the Snowstorm leach pads N-1 and N-2, the Sonoma leach pads N-3, N-4, and N-5, the Izzenhood leach pads S-1, S-2, S-3, and S-4/S-5, the N6 leach pad Phases 1 and 2, double and single-lined ponds, tanks, tailings impoundment (Cells 1-3), process plants, ore stockpiles, and appurtenances such as piping and pumps. Facilities are required to be designed, constructed, operated and closed without any discharge or release in excess of those standards established in regulation except for meteorological events which exceed the design storm event.

B. Synopsis

Gold was discovered in an outcrop at Chimney Creek, now known as the Vista Pit, by Gold Fields Mining Company (GFMC) in 1984. Stripping of the Chimney Creek ore body began in April 1987, and the first gold was poured in November 1987. GFMC subsequently expanded the reserve base to the north and the south. Santa Fe Pacific Gold (SFPG) explored the area in 1986 and drilled immediately south of GFMC's Gold Fields' southernmost drilling campaign on its isolated Section 19. Subsequently, in early 1987, SFPG discovered a large oxide gold reserve, which became the Rabbit Creek Mine. The development of the Rabbit Creek Mine, now known as the Mega Pit, began in 1989 and the first gold was poured in August 1990. In 1991, Hanson Natural Resources Company (HNRC) acquired GFMC. The Rabbit Creek and Chimney Creek Mines operated separately until the exchange of assets by HNRC and SFPG in 1993. The Twin Creeks Mine is the result of consolidation of SFPG railroad fee lands and GFMC mining claims and patents in the 1993 asset exchange. The combination of these gold mines enabled the economy of scale necessary for the development of a large sulfide reserve and resource. In May 1997, SFPG combined with Newmont Mining Corporation (Permittee) in a pooling of interest merger.

The Twin Creeks Mine operates under two Water Pollution Control Permits (NEV0086018 – North; NEV0089035 – South). The line that divides the two Permits is the Midway fueling facility located in Section 18. Because the Mega Pit is located south of the Midway facility, waste rock sampling and pit lake water quality prediction is reported under Water Pollution Control Permit (WPCP) NEV0089035 – South Project. This pit lake study was updated as part of the 2013 renewal of the South Project Permit. The Vista Pit is located in the North Project and all sampling and reporting is transmitted pursuant to WPCP NEV0086018.

In addition to ore mined at the Vista Pit, ores for processing at the Project are received from the Mega Pit. Ore is also received from the Newmont Lone Tree mine and Newmont Carlin area mines as well as ore from the Klondex Midas Mine and the Getchell Mine. These oxide and sulfide ores are characterized for acid generating potential and Profile I parameters. In October and December of 2008, Engineering Design Changes (EDCs) were received, and subsequently approved by the Division, which established the procedure for identification and characterization of mined materials and concentrates from additional outside sources for processing in the Twin Creeks North Area facilities. As of November 2011, Division approval has been granted to the Permittee for blending of concentrates from French Gulch (California), Trafigura (Peru), Minas de Guatemala, MRI Olympias (Greece), Trafigura (Mexico), El Toqui (Chile), Minera el Triunfo (Mexico), Phoenix (Nevada), Minera San Juan (Peru), and Suoir Concentrate (Romania).

Vista Pit Mining

Open pit mining operations ceased at the Vista Pit during 2001. The bottom elevation of the Vista Pit, as of November 2011, is above the pre-mining static water elevation. With the 2011 renewal, resumption of mining in the Vista Pit was proposed and began later in the same year. The renewal included an expansion, referred to as Vista Pit Phase VII, which included mining below the pre-mining water table which will result in a pit lake after dewatering is terminated.

Analysis of the Vista Pit lake hydrology predicted that a steady state elevation of approximately 4,617 feet above mean sea level (ft amsl) will be reached 200 years after cessation of dewatering. In this condition, the study predicted a flow-through condition of approximately 2 gallons per minute (gpm). This study was revised with the 2014 major modification (see below).

To address the future Mega Pit lakes, on 17 January 2001, an investigation coupling field data collection with predictive modeling was conducted by Geomega to predict the nature of the future water chemistry in the South and North pits. These lakes were predicted to form an evaporative sink (no outflow), and low predicted outflow (approximately 2 gpm) from the Vista Pit lake will be captured and ultimately reach the Mega Pit lakes. Comparisons to site-specific risk-based criteria indicate that none of those concentrations are exceeded. With respect to potential ecological risk drivers, the water chemistry is generally improved in the North and South pit lakes compared to the Mega Pit modeling results because the zone of worst background groundwater quality will no longer contribute groundwater to those pit lakes. Additional information relating to model predictions for the Mega Pit lakes can be found in the Fact Sheet for NEV0089035.

Pit lake water, prior to exiting the Vista pit lake, was compared to Division (NDEP) Profile I reference values because it is predicted to be a source of groundwater in the downstream aquifer. The Vista Pit lake water quality model predicted long term (200-years) exceedances of the Division Profile I reference values for arsenic (0.18 milligrams per liter (mg/L)), antimony (0.22 mg/L), mercury (0.009 mg/L), and selenium (0.1 mg/L), with pH of 9 Standard Units (SU). Additional studies by Geomega as a follow-up to the pit lake analysis showed that the Etchart Limestone, through which the 2 gpm outflow must pass, has attenuative properties with respect to arsenic, antimony, mercury and selenium. This results in the reduction of concentrations of these four constituents to below the Profile I reference values in the groundwater exiting the pit lake.

A Screening Level Ecological Risk Assessment (SLERA) for Vista Pit Phase VII was carried out based on the predicted lake chemistry. No significant hazard to avian or terrestrial wildlife was identified.

The exposed rock in contact with the Vista pit lake water is primarily Etchart Limestone. Less than 1 percent (%) is Valmy Formation which has a potential to produce acid. For this reason, the exposed Valmy Formation, on the western edge of the lake at the final recovery elevation, was proposed to be covered by an engineered system of shotcrete and/or alluvium.

Exposed wall rock above the Vista pit lake elevation is primarily Valmy Formation on the west side. This portion of the pit was proposed to be partially covered with alluvium and graded such that meteoric precipitation is directed to an evaporation basin on the lowest bench above pit lake recovery elevation.

The proposal to cover the exposed Valmy Formation above and below the pit lake surface was determined to be unnecessary considering the results of the pit lake chemogenesis included in the 2014 major modification.

On 24 October 2014 the Permittee submitted a major modification application proposing to expand the Vista Pit by 500 feet to the south, 200 feet to the east, and deepening the final pit floor to reach 4,000 ft amsl. This expansion is referred to as Vista Pit Phase VIII. The expansion will have a footprint of 161 acres on previously disturbed area. This expansion provides approximately 17 million tons of additional oxide ore to the existing leach and mill facilities and has a predicted operational span of five years. Since the pit will extend below the pre-mining water table a pit lake is predicted to develop after dewatering terminates.

Waste rock will primarily consist of oxide and alluvium materials and will be placed on existing waste rock facilities. Approximately 11% of the total overburden is anticipated to be sulfide bearing. These geologic blocks will be identified from blast hole analysis, and handled according to the Permittee's Materials Handling Plan. Certain dewatering wells used to support of the Phase VII project may be terminated due to their location relevant to mining activities to support installation of additional dewatering wells for Phase VIII. Phase VIII expansion is expected to be completed in five years. Once dewatering efforts are terminated, groundwater recovery and infilling of the pit is predicted to begin immediately as the model suggests in the pit lake quality SLERA and Transport Memo. The pit lake is predicted to have a 90% recovery to 4,510 ft amsl after approximately 80 years of infilling, and is expected to be a flow through system. The groundwater model predicts inflow to the pit primarily from the north and east, and outflow towards the west and south sides of the pit through the 20K fault zone. Outflows will travel south and terminate in the North Mega pit.

Dewatering of the Vista VIII pit is planned to continue until mining is completed by the end of 2021. Hence, the water-level in the pit is expected to begin recovery beginning in February, 2022. During the infilling period, a pit lake is predicted to begin forming in the Vista VIII pit. The bottom elevation of the Vista VIII pit is 4,000 ft amsl with a final pit lake elevation of approximately 4,567 ft amsl which is approximately 50 feet lower than the predicted Vista VII pit lake water level.

The model-predicted outflow occurs mainly on the west side of the pit through the 20K fault zone gouge. The predicted outflow from the Vista VIII pit lake will flow toward the North Mega pit. The predicted 90% recovery of the pit lake to 4,510 ft amsl, will be completed by 2101, after 80 years of pit infilling. The predicted Vista VIII pit lake chemistry was completed for 100 years which corresponds with 93% recovery of the pit lake.

Pursuant to NAC 445A.429, diversion channels, sediment basins, and other surface water control facilities are currently in place for Vista VII and will be continued for Vista VIII to control meteoric water run-on and run-off. Where required, these diversion structures and sediment basins have been designed to convey the run-off from a 100-year, 24-hour storm event. The Permittee will maintain these structures until the Project has completed the closure process.

Vista Phase VIII Pit Lake

An investigation coupling field and laboratory data collection with modeling was completed to evaluate the evolution of the water chemistry of the future Vista VIII pit lake at the Twin Creeks mine, Humboldt County, Nevada. The objectives of the investigation were to determine any impact of the evolving pit lake water on local groundwater quality upon infilling, and to determine what effect a pit lake may have on potential wildlife receptors.

The average background groundwater chemistry from four up- and cross-gradient pit dewatering wells was used as the composition for groundwater inflow to the Vista VIII pit. The background groundwater chemistry was an alkaline calcium-sodium-magnesium-bicarbonate (Ca-Na-Mg-HCO_3) type, with all analytes meeting applicable Nevada Department of Environmental Protection (NDEP) Profile I water reference standards except for natural background arsenic with an average of 0.015 mg/L.

Representative samples of the ultimate pit surface (UPS) wall rock were leached in humidity cells under ambient environmental conditions. The temporally varying leachate chemistry was used to define chemical release functions (CRFs) that describe pit wall rock leachate chemistry.

The pyrite oxidation rates in different pit geologic model classes of the UPS, and hence the eventual thickness of oxidized wall rock in those units, were determined using the modified Davis-Ritchie modeling code. The code incorporates oxidation reaction rate limitations (due to the arid environment) and wall rock fracture densities which were a function of depth into the wall rock.

The relative groundwater flows through the UPS, derived from a regional groundwater model, were coupled with the background groundwater chemistry, the surface area, the oxidized thickness of the exposed wall rock, and the CRFs for each geologic model class. These data were used to compute the temporal evolution of the total pit lake water quality (chemogenesis) from a juvenile stage through maturity (100 years), corresponding to 93% recovery of the pit lake by elevation.

The modeled total pit lake chemistry (no precipitates allowed) show that all analytes will meet NDEP Profile III pit lake water reference standards even when evapo-concentration is included in the model. The predicted mature pit lake at 100-years is predicted to have a pH of 8.3 SU. The total chemistry (no precipitates) used in a SLERA resulted in hazard quotients for all solutes of less than 1.

The future Vista pit lake will have a flow through component at a rate that is predicted to be 2 gpm that will exit the west side of the pit through the Valmy Formation. The flow path of the flow through component follows an arching path somewhat to the north within the UPS and under the footprint of the waste rock storage area, Overburden/Interburden Storage Area (OISA) N. The Valmy Formation has two components; an acid-generating greenstone and a carbonate-rich propylitic zone 600 feet downgradient from the pit lake within the UPS. Chemical reactions in the pit lake will create some common solid phases which will be retained even as the soluble fraction migrates through the Valmy Formation into the surrounding groundwater.

The PHREEQC geochemical code incorporated reactions from the pit lake total chemistry at discrete time intervals to represent the dissolved phase solutes that could migrate as pit lake through flow. Relevant geochemical constraints included variable partial pressure of carbon dioxide, precipitation of gibbsite, gypsum, manganite, calcite, ferrihydrite, metal adsorption to ferrihydrite, and evapo-concentration.

Lower Etchart groundwater was used as an analog for the dissolved pit lake chemistry in a column test using Valmy Formation greenstone as the matrix to assess solute dissolution as the pit lake efflux passes through this matrix. The effluent profile was acidic before becoming alkaline after the soluble acid salts had flushed from the column, reflecting the transitory nature of acid generation as wall rock is subsumed by the pit lake. This effluent was passed through columns of the carbonate-bearing propylitic Valmy Formation which neutralized the acid leachate with a concomitant reduction in solute concentrations. The sequential effluent chemistry was used to determine retardation factors that were then incorporated in the reactive transport model REMChlor to determine the lateral and temporal extent of impacts to surrounding groundwater.

As pit lake water interacts with the sulfides in the greenstone Valmy Formation, several solutes are predicted to exceed NDEP Profile I reference values for a nominal distance of 580 feet. Table 1 lists these exceedances with the number of years that the exceedance is predicted to last. Some solutes will migrate as far as the propylitic Valmy Formation where antimony, arsenic, cadmium, iron, manganese, and zinc immediately react with the carbonate rocks and are removed from solution. Sulfate generates greater than 500 mg/L and migrates approximately 1,300 feet beyond the greenstone Valmy Formation before it dissipates after approximately 20 years to less than 500 mg/L by dispersion. After 140 years, the available sulfides in the greenstone Valmy Formation will be oxidized to the point where the concentrations of the solutes will meet NDEP Profile I reference values with arsenic being the last to diminish at 140 years. It is important to note that these predicted temporary groundwater exceedances will occur only on a limited area between the two pits and only for a limited time of 140 years. This limited area is primarily within the UPS of the Vista Pit Phase VIII with the exception of the sulfate which will dissipate within the footprint of OISA N.

Table 1:

Solute	NDEP Profile I Reference Value (mg/L)	Maximum Concentration in the Valmy Greenstone near the Pit Wall (mg/L)	Maximum Concentration at the Interface of Propylitic Valmy with Greenstone (mg/L)	Years Source Concentration is above NDEP Profile I
Antimony	0.006	0.58	0.29	62
Arsenic	0.01	26	0.003	140
Cadmium	0.005	0.14	0.001	74
Iron	0.6	650	54	100
Manganese	0.1	0.9	0.18	70
Zinc	5	16	0.25	40
Sulfate	500	1900	900	20

Waste Rock Management

Waste rock and overburden material is routinely tested and managed in accordance with the Materials Handling Plan dated June 1996. Characterization of the waste rock and overburden to date indicates that the material has an insignificant potential to degrade waters of the state. Waste Rock that has been determined to be potentially acid generating (PAG) is separated and delivered to a designated location on one of the OISA where it is to be encapsulated in oxide waste rock. The materials handling plan of June 1996, and subsequent amendments, can be found in Division files.

Heap Leaching

Run-of-mine, lower grade ore is dumped on leach pads directly from haul trucks. The authorized heap height is based on stability analyses submitted with the design report, accounting for whether the liner design incorporates earlier 20-mil polyvinyl chloride (PVC) or later 60- and 80-mil double-textured high density polyethylene (HDPE) geomembrane. The Sonoma, Snowstorm, and Izzenhood Phase S-1, S-2, and S-3 pads are approved to be stacked to a maximum height of 200 feet above the liner surface, while the Izzenhood Phase S-4 and S-5 are approved to be stacked to a maximum height of 300 feet above the liner surface.

Leach solutions, containing approximately 80 mg/L cyanide with a pH of 9.5 to 11.0 SU, are distributed over the heaps using sprinklers or a drip system. The normal application rate is less than 0.003 gallons per minute per square foot (gpm/ft^2) but the maximum design rate is 0.006 gpm/ft^2. Total combined solution application rate to the Snowstorm, Sonoma, and Izzenhood heap leach pads is limited by the Permit to 6,000 gpm. Process solution from the Snowstorm and Sonoma heap leach pads (N-1, N-2, N-3, and N4) gravity flows into either the pregnant or intermediate ponds. Process solution from the Izzenhood heap leach pad (S-1, S-2, S-3, and S-4/S-5) gravity flows into either the pregnant or intermediate sumps located within the Minor Events Pond. Process solution from the Sonoma N-5 heap flows into the N-5 pregnant or intermediate ponds.

An EDC, approved by the Division 01 August 2007, authorized construction of two additional sumps as an upgrade to the pumping system at the Minor Events Pond. The sumps, identified as the Pregnant Solution Sump Tank and the Intermediate Solution Sump Tank, allow flexibility to recycle lower grade solution back to the Izzenhood ('L-8') Heap Leach Pad via the Intermediate Solution Pond, to improve the solution gold tenor prior to final transfer to the processing facility. Each sump is a cylindrical steel tank approximately 15-feet in diameter by 15-feet tall, has a capacity of approximately 17,200 gallons (gal) with a 2-foot freeboard, and is equipped with both a 1,500 gpm and a 4,000 gpm vertical pump to allow a maximum average combined flow of 5,000 gpm. The tanks are located on a reinforced concrete pad constructed over a layer of 1-inch-thick conveyor belt placed on the Minor Events Pond primary liner (60-mil HDPE). The Minor Events Pond provides secondary containment for the new sumps, the old sumps remain operational as a back-up system at approximately 2,000 gpm, and the existing operational pond system capacity is more than adequate to handle the new sump design flow rate of 5,000 gpm.

Solution entering the intermediate pond may be returned to the heaps via pumps and distribution lines for further precious metal dissolution. Solutions in the pregnant pond are pumped via pipeline to the gold recovery plant. A Division non-fee approval was given on 01 August 2007, to upgrade the existing Pregnant and Intermediate solution pipelines by inserting a 6-inch diameter HDPE pipeline inside the existing 10-inch diameter HDPE pipelines to provide pipe-in-pipe secondary containment over the entire pipeline transect, which consists of both above- and below-ground sections. Each 6-inch diameter primary pipeline is designed to convey solution at up to 600 gpm, between the process ponds and the Piñon Mill carbon–in-column (CIC) circuit, in either direction.

In the recovery plant, also referred to as the carbon adsorption or CIC circuit, which is provided with 110% secondary containment, pregnant solution is pumped at approximately 3,000 gpm through a series of carbon columns where precious metals are adsorbed onto activated carbon. The solution exiting the carbon columns is piped to the intermediate pond where it is used on the heaps.

The heap leaching circuit is a closed system. Fresh or reclaim “make-up” water is added as needed.

In the carbon adsorption circuit, carbon is advanced in the opposite direction, counter-current, of solution flow, and the loaded carbon is removed from this circuit for stripping. The loaded carbon from the columns is transferred to one of two strip circuits at the Project for metal recovery from the carbon. Metal recovery and refining is described below.

The heap leach pad and pond systems are designed as zero-discharge components. All process solutions are, therefore, contained within the lined pads, solution ponds, collection pipes, lined solution ditches, piping to and from the plant, and tanks. Except for the later Izzenhood Phase S4 and Phase S5 heap leach pad expansion (see below), the leach pads are designed and constructed as composite liner systems consisting of a flexible PVC geomembrane sandwiched between upper and lower layers of compacted low permeability soils.

The ponds (with the exception of the single-lined major events pond and the N-5 construction water/events pond), tanks, and heap leach pads Sonoma (N-3, N-4, N-5), and Izzenhood (S-1, S-2, S-3, S-4, S-5) are equipped with partial leak detection and recovery systems, placed under the main solution collection pipelines where the highest head pressures could develop, that are monitored to detect and collect fugitive solutions. The design details of these systems can be found in documents submitted to the Division. The single-lined ponds are limited to 20 days of use, per event, for containing process water.

The Izzenhood (also known as the ‘L-8’) Phase S-4 and Phase S-5 heap leach pad expansion was approved by the Division as a minor modification to the Permit in August 2007. The phased expansion abuts the earlier Phase S-3 and a small portion of the earlier Phase S-2 located to the east. Construction of Phase S-4 was completed in late 2007 and construction of Phase S-5 was partially completed in 2008 with the remainder scheduled for construction in 2012. The Phase S-4 expansion footprint measures approximately 33.5 acres and the Phase S-5 expansion footprint measures approximately 31.5 acres. The combined phases will accommodate approximately 21 million tons of ore if fully loaded to the maximum approved design height of 300 feet. The increased heap height is due to the use of 80-mil HDPE liner.

Unlike the earlier Project heap leach pad construction, which incorporated a 20-mil PVC geomembrane as the liner, the Izzenhood Phase S-4 and S-5 expansion pads utilize an 80-mil double-textured HDPE geomembrane placed on a prepared 1-foot thick low hydraulic conductivity soil layer (LHCSL) compacted to achieve a permeability no greater than 1 x 10^{-6} centimeters per second (cm/sec). The upper geomembrane surface is protected with a 1-foot thick layer of overliner material with a maximum 1-inch particle size. The protective layer is covered with a 1-foot thick layer of coarse aggregate drainage material containing no more than 5% minus 200-mesh fines. The solution collection pipeline system, located within the layer of drainage material, is comprised of a network of two 24-inch diameter perforated corrugated polyethylene (CPE) smooth interior main solution collection header pipelines placed in vee-trenches cut 12-inches below the overall pad grade. The main headers are fed by nine 12- and 18-inch diameter perforated CPE secondary solution collection pipelines placed in vee-trenches cut 12-inches below the overall pad grade. The secondary solution collection pipelines receive flow from a herringbone network of 4-inch diameter perforated corrugated polyethylene tubing placed on 20-foot spacing where the pad base slope is less than 2% and on 30-foot spacing where the pad base slope is greater than 2% slope. A standard leak detection and recovery system is located beneath each of the main header pipelines and reports to a leakage collection and recovery system (LCRS) evacuation port.

The two main solution collection header pipelines from S-4 and S-5 expansion transition to solid 24-inch diameter HDPE pipelines that report to the S-4/S-5 Solution Transfer Sump located at the southeast corner of the S-4 expansion pad. The Solution Transfer Sump measures 2.7 feet deep, 20 feet wide, and 40 feet long and is constructed with primary and secondary 80-mil, double-textured HDPE liners, which sandwich a layer of geonet that serves as a LCRS. The LCRS sump, which will collect any fugitive solution and is filled with select gravel, may be evacuated to containment through a 12-inch diameter HDPE inclined riser pipe. Within the Solution Transfer Sump the two solution conveyance pipelines converge into a single 24-inch diameter HDPE pipeline that exits the transfer sump within a 30-inch diameter HDPE pipeline, which provides secondary containment over a distance of approximately 300 feet until the pipeline passes onto the existing Phase S-3 PVC liner. The solution is conveyed within a single-wall 24-inch diameter HDPE pipeline approximately 2,650 feet to discharge at the existing Minor Events Pond. An EDC was submitted in May 2009, and subsequently approved by the Division, which removed the Parshall flume from the monitoring requirements. Leak detection monitoring at the ports identified in Parts I.D.2 and I.D.16 will continue however.

The tie-in of the new S-4/S-5 HDPE pad liner to the existing S-3 PVC pad liner was accomplished by carefully exposing the existing PVC liner edge and anchor trench and placing the new HDPE liner into an adjacent anchor trench. A layer of powdered bentonite was placed over both anchor trenches and an HDPE supported Geosynthetic Clay Layer (GCL) was placed over the bentonite to span both anchor trenches and overlap a minimum of 2 feet onto both the existing and new liners. The HDPE portion of the GCL was extrusion welded to the new HDPE liner. Adjacent to the tie-in, the existing S-3 heap leach pad was regraded to a maximum 2 horizontal to 1 vertical (2H:1V) slope. A layer of 80-mil double-textured HDPE liner was then extrusion welded to the new S-4/S-5 HDPE liner and carried up the S-3 slope and placed in an anchor trench a minimum of 50-feet vertically above the existing S-3 PVC liner. To maintain the integrity of the pre-existing PVC liner system, ore must be loaded in a manner to ensure it does not exceed a design maximum height of 200 feet as measured vertically from any point on the PVC liner surface. The HDPE liner system for the S-4/S-5 expansion may be loaded, in approximately 25-foot lifts, to a height of 300 feet.

A water balance analysis indicates the existing pond system is adequate to manage fluid from the S-4/S-5 expansion, including the runoff from the 25-year, 24-hour storm event. The S-4/S-5 heap leach pad expansion is estimated to provide approximately 10 years of additional capacity.

In March 2013, the Permittee submitted a major modification proposing the construction of the N6 heap leach pad in two phases. The N6 pad will be located directly north of the existing L3/4/5 heap leach pad and will cover an area of approximately 6,834,000 square feet with capacity for approximately 46 million tons at the maximum permitted heap height of 300 feet. The southern portion of the pad will be constructed as Phase 1 and will include Cells 1 and 2. The northern portion, consisting of Cell 3, will be constructed as Phase 2. The major modification was approved by the Division in February 2014.

The N6 heap leach pad was analyzed for structural stability based on the full build-out to the maximum permitted heap height. The minimum factors of safety resulting from the analysis were 1.50 (static) and 1.15 (pseudostatic). Based on these results, significant instability of the heap leach pad during its operating life is not expected.

The base of the N6 heap leach pad consists of, from bottom to top, a compacted subbase, a 12-inch LHCSL with maximum permeability of $1x10^{-5}$ cm/sec, 80-mil HDPE geomembrane liner, and a minimum 24-inch thick free-draining gravel protective layer. The downslope areas and solution collection channel are monitored by a leak detection system consisting of 4-inch or 6-inch diameter CPE pipe, located beneath the LHCSL, which drain laterally to 8-inch diameter PVC riser pipes for inspection and evacuation of accumulated leakage. Three riser pipes are provided: one at the south berm, one at the east berm, and one at the solution pipe channel.

Barren solution is pumped at a maximum permitted rate of 10,000 gpm from the Barren Tank. The solution is initially conveyed in 24-inch diameter steel pipe which transitions to 30-inch diameter SDR 9 HDPE at the entrance of the solution pipe channel, eventually reaching the top of the heap leach pad where it feeds the solution distribution system. The entire length of the barren solution delivery pipe is over concrete or HDPE secondary containment.

Process solution on the N6 heap leach pad is conveyed to the pregnant solution tank by a network of CPE collection pipes placed on the 80-mil geomembrane within the overliner layer. 4-inch diameter CPE pipes convey solution to 8-inch, 12-inch, 15-inch, 18-inch, and 24-inch diameter CPE collection pipes in succession, and finally to 24-inch diameter solid wall HDPE cell outlet pipes, which then converge into single 32-inch diameter HDPE conveyance pipes located in the solution pipe channel, which is lined with 80-mil HDPE for secondary containment of leakage from any of the pipes. Each 32-inch diameter pipe terminates at a Parshall flume (one (1) for each cell), from which solution continues to the process area in a 30-inch diameter HDPE pipe.

The 30-inch diameter HDPE conveyance pipe transitions to a 30-inch diameter steel pipe which delivers solution to the Pregnant Tank. Both the Pregnant Tank and Barren Tank are located on a concrete containment pad which also serves as secondary containment for the CIC trains, the cyanide and anti-scalant tanks, and all pumps and piping associated with the solution delivery and collection circuits. In addition, the concrete pad is underlain by a 60-mil HDPE liner. The HDPE liner slopes to the east and a 4-inch diameter perforated CPE pipe runs the length of the pad at the toe. The pipe is connected to an 8-inch diameter PVC riser pipe for monitoring and evacuation of any leakage. The entire concrete pad is sloped toward the N6 Overflow Pond directly to the east. The face of the concrete slab on the pond side has an embedded HDPE strip to which an 80-mil HDPE sheet is welded to provide a path for major upsets to flow from the concrete pad to the pond.

Pregnant solution will be processed in either of two CIC trains adjacent to the Pregnant Tank. Each train consists of five tanks through which pregnant solution and activated carbon are pumped in a counter-current system to capture precious metals in the carbon. Once the carbon is sufficiently loaded it is removed and taken to the existing refinery for stripping, acid wash, and reactivation. Barren solution is filtered to remove carbon fines and then sent to the Barren Tank for adjustment of pH and cyanide concentration prior to reuse.

The N6 Overflow Pond measures approximately 180 feet by 300 feet at the crest with a minimum depth of 20 feet. The side slopes are 3H:1V and the east embankment includes an overflow weir to the N6 Event Pond 2 feet below the embankment crest. The liner system consists of, from bottom to top, a prepared subgrade, a 12-inch compacted subbase (for structural support), an 80-mil HDPE secondary liner, an HDPE geonet, and an 80-mil HDPE primary liner. Both HDPE liners are textured on both sides. The geonet provides a conveyance path for any leakage to the leak detection sump in the southwest corner of the pond. The sump is filled with free-draining gravel and is penetrated by a 10-inch diameter PVC pipe, perforated within the sump, which daylights at the pond crest to allow inspection and evacuation of solution. The net volumetric capacity of the sump is 1,700 gal.

The N6 Event Pond measures approximately 350 feet by 630 feet at the crest with a minimum depth of 20 feet. The side slopes are 3H:1V and the west embankment includes an overflow weir to the N6 Overflow Pond two-feet below the embankment crest. The liner system consists of, from bottom to top, a prepared subgrade, a 12-inch compacted subbase (for structural support), an 80-mil HDPE secondary liner, an HDPE geonet, and an 80-mil HDPE primary liner. Both HDPE liners are textured on both sides. The geonet provides a conveyance path for any leakage to the leak detection sump in the southwest corner of the pond. The sump is filled with free-draining gravel and is penetrated by a 10-inch diameter PVC pipe, perforated within the sump, which daylights at the pond crest to allow inspection and evacuation of solution. The net volumetric capacity of the sump is 1,700 gal.

Together, the N6 ponds are designed to contain the runoff from the N6 facility resulting from the 100-year, 24-hour storm event, along with the draindown resulting from a 24-hour power outage, and catastrophic failure of the largest tank. The pond volumes of 3.8 million gal (N6 Overflow Pond) and 23.4 million gal (N6 Event Pond), at 2 feet of freeboard, provide approximately 10% excess containment volume. Since barren and pregnant solutions are managed in the tanks, minimal solution inventory will be maintained in the ponds during normal operation.

The N6 facility is protected around the entire perimeter by a system of stormwater diversion channels. The North Diversion Channel intercepts surface water from an existing ephemeral drainage and conveys the water around the facility to the east, releasing the flows into the downstream end of the same drainage. The Southwest Diversion Channel captures flow from the waste rock dump catchment area to the west and wraps around the south toe of the N6 heap leach pad, conveying the flows south where the channel transitions into the Perimeter Diversion Channel.

The South Diversion Channel collects stormwater from a catchment area south of the heap leach pad consisting of the existing haul road and an area of disturbed native soils, replacing an existing channel and culvert. Surface flows are conveyed to the east where the channel converges with the Perimeter Diversion Channel.

The Perimeter Diversion Channel runs along the southwest side of the process area and ponds. Surface flows from the south are conveyed east where they are released into the same drainage as the Northwest Diversion Channel, but further downstream.

All stormwater diversion channels are designed to manage peak flows resulting from the 100-year, 24-hour storm event. Rip-rap is used as appropriate for armoring of channel surfaces and for energy dissipation at the outlets.

The 2014 major modification for the Vista Pit Phase VIII expansion required an additional layback into the Snowstorm leach pad of approximately 200 feet. The material within this layback has been authorized by the division to be used in the construction of the Juniper Tailings Storage Facility (TSF) embankment only within containment (see below).

The Vista Pit Phase VIII expansion also required the entire footprint of the Test Leach Pad located adjacent to the Vista Pit on the east side. The leach pad material had already been removed and used in the construction of the Juniper TSF embankment within containment in accordance with the Final Plan for Permanent Closure approved by the Division 22 August 2012. Considering these issues, the Test Leach Pad was removed from the Permit monitoring section. However, reference to Test Leach Pad was left in the Permit as Part I.D.11 in order to maintain numbering consistency.

Milling of Sulfide Ore

Sulfide mill-grade ore is mined, transported, and then placed on an ore stockpile located adjacent to the Sage Mill. The ore stockpile pad base consists of 1-foot of compacted soil with permeability of $1x10^{-6}$ cm/sec or less. The ore pad is also graded to direct meteoric water to compacted soil-lined sumps where it is pumped into the process circuit as needed. Sulfide ore is fed by front end loader from the ore stockpile to one of two grizzly/hoppers. The apron feeders underneath the grizzlies and a conveyor belt carry ore into the Sage Mill Building to a Semi-Autogenous Grinding (SAG) mill. The ground ore from the SAG mill is screened and the undersize material is pumped to the ball mill grinding circuit. Oversize is conveyed back to the SAG mill.

Slurry from the ball mills is thickened prior to being acidified, if necessary. Using waste steam heat from two flash vessels, the thickened slurry is pre-heated in two heater vessels, and then is oxidized in one of two continuous-feed autoclave vessels. The vessels allow rapid oxidation of the sulfide minerals in the ore, thereby liberating the available gold and making it available for subsequent recovery. The autoclaves require input streams of oxygen, steam and/or cooling water.

The oxygen that is needed for the Sage Mill autoclaves is provided by a self-contained, electrically-powered cryogenic oxygen plant. The Sage Mill oxygen plant draws in ambient air, compresses it and cools it, then enriches the oxygen content using a molecular sieve to separate carbon dioxide gas and water vapor. Heat from the oxygen plant is dissipated with a forced draft cooling tower, while a vast majority of the oxygen is further cooled to a liquid state and stored for use in the event that the oxygen plant is out of service. A natural gas-fired heater is available to reheat the liquid oxygen to the gaseous state. The steam needed for the autoclaves is produced by two natural gas-fired steam generators. Autoclave vent gas is cooled through a system that utilizes non-process water as the cooling medium. The water discharged through the quench system, as well as from the autoclave vent gas venturi wet scrubbers, is cooled using process water and discharged to the Juniper TSF through a pipeline separate from the tailings.

From the autoclave the ore is routed in the form of slurry to the flash vessels where the pressure is reduced, and the heat is dissipated to form the steam that is used in the heater vessels. Additional cooling of the slurry is accomplished in the slurry coolers which dissipate heat through a cooling tower. The slurry is then routed to three neutralization tanks, where it is mixed with ore feed from the Juniper Mill (see the second paragraph under next heading, Milling of Oxidized Ore, for the next step in the process).

Lime is added to the neutralization tanks to raise the slurry pH to around 10.5 S.U. The lime is stored in two silos. The silos are filled by conveyor and bucket elevator from the closed delivery trucks. Lime is discharged from the silos by screw conveyors to the lime mills to create “milk-of-lime”. The milk-of-lime is routed to a storage tank, and then to each of the three neutralization tanks, as needed.

Milling of Oxidized Ore

Oxidized mill-grade ore is mined, transported, and then placed on an ore stockpile located adjacent to the Juniper Mill. Oxidized ore is fed by front end loader from the ore stockpile to one of two grizzly/hoppers. The apron feeders beneath the grizzlies and a conveyor belt carry the ore into the Juniper Mill building to a SAG mill. The ground ore from the SAG mill is screened, and the undersize material is pumped to the ball mill grinding circuit. Oversize is conveyed back to the SAG mill. Slurry from the ball mill is mixed with the Sage Mill autoclave discharge in the neutralization tanks (see above).

The combined neutralized Juniper and Sage Mill slurry is then routed to seven Carbon-in-Leach (CIL) tanks. After leaving the last CIL tank, the tailings slurry is passed over carbon safety screens. Tails slurry is then pumped through the tails pipeline to the Juniper TSF via a pipe-in-pipe or pipe-in-ditch containment system. The loaded carbon from the columns is transferred to one of two strip circuits for metal recovery (see below for the next step in the process).

Metal Recovery and Refining

The loaded carbon from the CIL and CIC circuits is transferred to one of two strip circuits. In the strip circuit, a hot caustic solution is used to strip the gold cyanide complexes from the carbon into solution. This solution is then pumped into the pregnant strip solution tank. The solution is then pumped to the electrowinning cells where gold, silver, and mercury are electroplated onto steel cathodes. The filtrate is now barren strip solution which is returned to the barren strip solution tank or bled to the CIL circuit.

The metal precipitate is removed from the electrowinning cells and transferred to one of four mercury retorts. The retorts heat the precipitate, vaporizing water and mercury. The mercury is collected by condensers for proper disposal. The retorted precipitate is then removed from the retort and put into an induction smelting furnace along with fluxes and melted. The precious metals sink to the bottom and the impurities take the form of slag and rise to the top. The precious metal charge is then poured into molds.

Juniper and Sage Mill/Process Facilities Secondary Containment

The Juniper and Sage Mill process buildings are designed to prevent process solution from entering the environment, especially waters of the State. All tanks, vats, and ancillary equipment with the exception of the reagent tanks, the thickener tank, the CIL tanks, slurry storage tanks and the tails tank, are located within the process buildings.

The process facilities are surrounded by concrete curbs to contain process fluids in dedicated secondary containment areas. The floors of the process buildings are constructed of concrete and sloped to provide drainage to a number of floor drains. The drains lead to sumps and each sump is equipped with a sump pump to recycle solution back to primary containment. The secondary containment systems within the process facilities have sufficient capacity to contain 110% of the volume of the largest container within those dedicated areas.

The reagent tanks, the thickener tank, the CIL tanks, slurry storage tanks and the tails tank, located outside, are located on similar concrete slabs with stem walls and water stops, where appropriate, which provide the required secondary containment.

In April 2012, the Permittee submitted an EDC proposing to reroute the laboratory drain line to a 2,000 gal HDPE double-walled tank, from which it will be pumped to the Snowstorm heap leach pad. The drain pipe will be 2-inch diameter SDR 11 HDPE pre-insulated pipe with heat trace for prevention of freezing and a 6-inch diameter HDPE outer sleeve for secondary containment. The EDC was approved by the Division in May 2012.

Tailings Impoundment, Operation, Supernatant and Underdrain Collection and Reclaim

The tailings impoundment is designed to function as a fully contained and drained facility. Cells 1 and 2 are joined into one impoundment forming a rectangle running north-south. Cell 3 is a separate impoundment directly to the east of Cells 1 and 2. As of November 2011, Cells 1 and 2 are built out, and Cell 3 has been completed up to Stage 5 at an elevation of 5,040 ft amsl. As of April 2013 Cell 3 Stage 6 was completed to an elevation of 5,060 ft amsl. As of August 2014 Cell 3 Stages 7 and 8 are completed to an elevation of 5,076 ft amsl.

During November 2014 a minor modification was approved by the Division to revise the previously approved Stages 9 and 10 and add two new Stages 11 and 12 to a total completed crest elevation of 5,126 ft amsl. These new Stages were replaced with Roman numerals IX through XII. The new Stages will be constructed uniformly around the entire perimeter embankment of Cells 1, 2, and 3. Included in the design is a center causeway permitted separately as an EDC and approved by the Division in July 2014. During construction of the new Stages the supernatant pond will be moved from the westerly side of Cell 1/2 to the center of the impoundment at the end of the causeway. In July 2014 an EDC was approved by the Division to use material from the L1 Snowstorm Heap Leach Facility for the construction of the center causeway and in the impoundment embankment within the Juniper TSF tailings containment system. The Permittee was not allowed to use the L1 Snowstorm material for tailings impoundment construction in areas outside of containment. Stage IX elevation will not allow for gravity flow to the tailings storage facility from the mill and will require the installation of a new external emergency mill flush pond and flush pond channel.

The Mill Flush Pond and Channel are required for emergency containment of process solutions generated from an unanticipated event in the mill primary thickener tank. During an unanticipated release from the thickener tank, solution flows into the existing mill secondary containment, then flows to the tailings corridor containment, ultimately reporting to the lined channel and pond. The as-built containment volume of the new Mill Flush Pond is 4.11 million gal with 3 feet of freeboard, and 5.49 million total gal to the pond crest. The original design required storage volume for the new Mill Flush Pond is 4.00 million gal, providing storage for 110-percent of the thickener tank volume, minus the storage volume available in the mill building secondary containment, plus the contributing run-off water generated during a 100-year, 24-hour storm event.

The new Mill Flush Pond and Channel consists of a new channel and pond lined with a composite liner system that ties-in to the existing tailings and reclaim pipe corridor channel. The pond liner system consist of, from top to bottom, prepared subgrade, 60-mil smooth HDPE geomembrane secondary liner, geonet, and 60-mil textured HDPE primary liner. The collection channel composite liner consists of prepared subgrade and 60-mil textured HDPE liner. The pond and channel were constructed by excavating and placing random fill to construct the rough grade surface, and then placing and compacting a seal zone surface. After seal zone placement was complete, the geosynthetic materials were deployed in the pond and channel. The new channel geomembrane was tied to the existing corridor geomembrane liner with an extrusion weld. A temporary submersible trash pump will be utilized to evacuate the pond as needed. The double lined pond includes a leak collection and recovery sump that has a fluid storage capacity of 1,000 gal. Monitoring of the Mill Flush Pond sump was added to the Permit in Part I.D.2 with the 2014 major modification.

The impoundment is underlain by a LHCSL, referred to as the seal zone, consisting of compacted silts and clays to achieve a maximum permeability of $1x10^{-6}$ cm/sec. This is in turn is overlain by a combination of sand and gravel basin underdrain layers, 12-ounce per square yard, non-woven geotextile, and a retardant layer, depending on the conditions in different areas of the impoundment. The sands and gravels are designed to transmit collected fluids to a herringbone pattern of perforated underdrain collection pipes to collect and carry fluid to an underdrain outlet that passes under the embankment from each cell and discharges into an underdrain collection tank and then pumped to a double-lined reclaim water pond. This fluid is re-introduced into the process circuit as make-up water.

The primary functions of the underdrain system are to relieve pore pressures within the base of the tailings, thereby minimizing the hydraulic head on the LHCSL, as well as promoting drainage and resulting in densification of the overlying tailings consistent with the subaerial deposition approach. Piezometers are located just above the LHCSL within the impoundment to document the hydraulic heads at various locations.

During the 13 July 2007 WPCP compliance inspection, the Division compliance inspector observed leakage from a PVC piezometer cable conduit in the Cell 3 Tailings Seepage Collection Pond. Analysis of the leaking solution indicated that the PVC piezometer cable conduit was conveying process solution from the tailings impoundment. The Permittee submitted an EDC on 7 December 2007, which was approved by the Division on 8 July 2008, to construct and monitor a sump at the discharge of the conduit including measurement of flowrate and screening of samples for WAD cyanide levels. Construction was completed in October of 2008.

In April 2010, flow ranging from 4 to 8 gpm was observed in the French drain system under the Juniper TSF Underdrain Collection Pond. Analysis of samples of this water showed process signature and the Division responded on 9 December 2010 with a Finding of Alleged Violation (FOAV) and Order requiring the Permittee to investigate and propose corrective actions. A series of test pits were constructed and tailings solution flow to the French drain was identified in the area northeast of the Underdrain Collection Pond. An EDC was subsequently submitted to the Division proposing to construct a cutoff trench with a pumping system designed to intercept the flow and convey all fluid to the Underdrain Collection Pond. The EDC was approved by the Division in April 2011 and construction completed in May 2011. An additional monitoring well, GW-10, was added downgradient of the trench and pond as well.

The Permittee is now required to sample fluids collected in the cutoff trench and report the results, along with flowrates, in the quarterly reports. Investigation of potential sources of the seepage and possible corrective actions are ongoing as well. As of February 2014, analysis of samples from monitoring wells immediately downgradient of the Underdrain Collection Pond, GW-8 and GW-10, have shown no evidence of degradation of waters of the State.

In October 2011, in response to additional field investigation results, the Permittee submitted a second EDC proposing to add a seepage collection well and a second cutoff trench northwest of the first. This expanded the area of collection provides additional data on the source of the seepage. The EDC was approved by the Division in October 2011 and construction was completed in January 2012.

As part of this effort, the piezometer conduit was excavated up to the toe of the tailings embankment to try to locate any fractures which may be allowing seepage to escape into the soil. No conclusive evidence of leakage along the conduit path was found and the point where the conduit was cut was positioned to discharge into a sump for collection. However, due to the geometry of the discharge point, collecting samples is difficult and measuring flow accurately is not possible. Schedule of Compliance (SOC) Item 6 was added to the Permit in June 2012 requiring the Permittee to submit a modification to allow sampling and flow measurement.

SOC Item 4 was added to the Permit in March 2012 which requires an additional monitoring well to be placed to the east of the piezometer conduit collection sump, in the area of geotechnical well BH11A-02 which showed evidence of seepage with process solution signature during the initial investigation. Construction of the new well (GW-11) and submittal of initial sample analysis results were completed in May 2012. SOC items related to the 9 December 2010 Order have been completed and removed from the WPCP.

At the same time, the Permit reporting requirements were updated to include an annual remediation review for the seepage area to summarize monitoring results and evaluate progress. An SOC Item was added to the WPCP requiring the Permittee to obtain written authorization prior to initiation of construction of future lifts on Cell 3. This allows the Division time to consider the status of the seepage collection system and possible impacts due to the proposed impoundment expansion.

Managed rotational tailings deposition will continue to be used to maximize liquid and solid separation which facilitates the recovery of free water from the tailings slurry and optimizes air drying of the tailings beach.

The Cell 1 and 2 supernatant fluids, consisting of tailings process water which bleeds to the surface combining with direct precipitation, collect in a supernatant pond located against the western embankment. The water in the Cell 3 pond, when in operation, will be pumped to Cells 1 and 2 if required to maintain the Cell 3 pond within design limits. The existing reclaim system of Cells 1 and 2 is situated on the divider dike against the western embankment and consists of four decant pans in each cell that drain via two 18-inch diameter steel pipes into two 8-foot diameter corrugated metal pipe sumps. The decant pans operate by skimming a thin layer of solution over wooden slats inserted in the channels of the pans to control flow and supernatant pond levels. The two corrugated metal pipe sumps contain dedicated pumps to pump the reclaim water to the mill water tank via an above-ground pipeline for reuse.

General

All process components are designed to contain flows resulting from the 25-year, 24-hour storm event and designed to withstand runoff resulting from the 100-year, 24-hour storm event. Back-up power is available to return the system to normal operations in the event of utility power loss.

Chemical Storage

Reagent tanks located adjacent to the process facilities are located on concrete slabs which are surrounded by concrete stem walls to provide the required 110% secondary containment of the largest tank volume.

Petroleum Contaminated Soil (PCS)

Management of PCS for the Project is covered by the approved PCS Management Plan for the Twin Creeks Mine – South Project NEV0089035. All testing and disposal activity for the Project is to be included in the report for Twin Creeks Mine – South Project. This includes a hazardous waste determination which must be made prior to shipment of the subject material off-site.

C. Receiving Water Characteristics

The facilities are located in the Kelly Creek drainage area which feeds the Humboldt River system approximately 20 miles to the south. Pre-mining groundwater levels ranged from 225 feet to 425 feet below the site. Water quality beneath the site meets the Division Profile I reference values except for arsenic (up to 0.015 mg/L) generally and antimony (up to 0.05 mg/L) in a few instances. The groundwater generally flows from northeast to southwest.

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 **Humboldt Sun** for publication. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the Permit.

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

See Part I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharges except for those accumulations resulting from a storm event beyond that required by design for containment.

The primary method for identification of escaping process solution will be placed on required routine monitoring of leak detection systems as well as routinely sampling downgradient monitoring wells. Specific monitoring requirements can be found in the Water Pollution Control Permit.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (e.g., by covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Prepared by:	Paul Eckert
Date:	March 2012
Revision 00:	Renewal 2012
Revision 01:	Added update of GW-11 completion; added update for lab drain pipe EDC; misc. minor corrections [PE 06/2012]
Revision 02:	Added PCS management per Twin Creeks South PCS plan [PE – 08-2012]
Revision 03:	Major Mod N6 HLP [PE – 02-2014] Minor revisions [JS – 04-2014]
Revision 04:	EDC Juniper TSF Causeway installation; Minor Modification Juniper TSF expansion Stages IX – XII [JS 11-2014]
Revision 05:	Major Modification for expansion of the Vista Pit, Phase VIII which extends the pit floor below the water table. [SG 10- 2015]