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

PERMITTEE NAME: **ANGLOGOLD ASHANTI (NEVADA) CORPORATION**
460 W. SILVER ST. SUITE 106
ELKO, NV 89801

PROJECT NAME: **BIG SPRINGS MINE**

PERMIT NUMBER: **NEV0087001 (post-closure)**

A. LOCATION AND GENERAL DESCRIPTION

LOCATION:

The Big Springs Mine is located approximately 60 miles north of the town of Elko, in Elko County. The Big Springs Mill Processing Site (MPS) included the mill, heap leach pad, tailings storage facility, and all ponds. The MPS is located at the eastern base of the Independence Mountains within Sections 33 and 34 of Township 43 North, Range 54 East; and Sections 3 and 4, Township 42 North, Range 54 East. The mine itself (pits and rock disposal areas) is located approximately 2 miles due west of the MPS, in the Independence Mountains, along the North Fork of the Humboldt River (NFHR), in Sections 1, 2, 3, 10, 11, and 12 Township 42 North, Range 53 East - Mount Diablo Baseline and Meridian.

GENERAL DESCRIPTION:

The project is in post-closure. The operation was a conventional open pit gold mine with ore processing by both milling and heap leach cyanidation with precious metal recovery by carbon adsorption. The MPS consisted of one heap leach pad, two process ponds, one stormwater control pond, one process solution overflow pond, one tailings storage facility (TSF), and one TSF reclaim pond. The MPS facilities disturbed approximately 193 acres within a 700-acre block of private land owned entirely by the Permittee. The mill and all buildings have been removed. All non-essential ponds have been reclaimed.

The mined area is located several miles to the west of the MPS in the Independence Range. Twelve open pits were mined with two, the 303 and the SWX, becoming pit lakes until the 2006 Aquifer Dewatering Event (ADE). Six Rock Disposal Areas (RDA) also remain together with access roads. The primary crusher (located within the mine area) and all maintenance and ancillary structures have been removed**.** The mined areas (open pits and RDA) disturbed approximately 365 acres of public lands administered by the United States Department of Agriculture - Forest Service (USDA-FS).

B. SYNOPSIS

MINE HISTORY:

The mine was initially permitted to Freeport-McMoRan Gold Company (FMGC), a joint venture with Bull Run Gold Mines, Ltd. (Bull Run), in early 1987. In 1990, Independence Mining Company Inc. (IMCI) acquired both the FMGC and Bull Run interest in the project and the permit was transferred to

IMCI. AngloGold (Jerritt Canyon) Corp. assumed all operating and ownership interest as of November 1999. AngloGold (Jerritt Canyon) Corp. was renamed as AngloGold (Nevada) Corp. in August of 2003. In December of 2004, AngloGold (Nevada) Corporation was renamed AngloGold Ashanti (Nevada) Corporation (Permittee).

Open pit mining was conducted on a seasonal basis until mining operations were discontinued in August of 1993. The haulage of ore from stockpiles in the mined areas to the MPS continued until August of 1994. Initial gold recovery was accomplished from heap leaching. Processing of carbonaceous and sulfide-bearing ore through the roaster/mill began in 1989 and ceased in October 1994. Gold recovery from the heap and tailings was concluded in June 2000. Final reclamation and closure of the mine areas began in 1995 and was completed by 2005.

The initial Water Pollution Control Permit (WPCP) was issued in 1987. The permit was renewed in 1997 and again in 2005. This will be the fourth WPCP issued to this site.

AQUIFER DEWATERING EVENT (ADE):

In 2003, Gateway Gold (USA) Corporation (Gateway), a wholly owned subsidiary of Victoria Gold Corporation, began a five year drilling/exploration program within the existing Big Springs Mine project area. The exploration project is on public lands in the Humboldt-Toiyabe National Forest administered by the USDA-FS. These exploration activities were authorized by the Nevada Division of Environmental Protection/Bureau of Mining Regulation and Reclamation (NDEP) as contained within Reclamation Permit 0218. The USDA-FS also approved an exploration Plan of Operations with Gateway. In the fall of 2006, it was observed that water levels were falling rapidly in the two Big Springs Mine pit lakes (SWX and 303) as well as groundwater levels in adjacent monitoring wells. By March 2007, the two pit lakes were dry.

It was surmised that faulty abandonment of one or more of the deep exploration boreholes completed in 2005 and 2006 by Gateway inadvertently led to the draining of a perched localized aquifer which supported the two pit lakes in addition to effecting other localized aquifers and surface waters. This subsequent lowering of groundwater levels and surface water flows in the Big Springs Mine project area will be referred to in this document as the ADE.

In addition, it became evident that these impacts to the local groundwater system reduced stream flows in the headwater reaches of the NFHR, adjacent to the Big Springs Mine, as well as in Sammy Creek and Water Canyon Creek (tributaries to the NFHR). The NFHR, in the area of the mine, is habitat for a threatened species of fish, the Lahontan Cutthroat Trout (LCT), *Oncorhynchus clarki henshawi*. In late 2010, a Nevada Department of Wildlife (NDOW) fish survey determined that no LCT were present in areas sampled in the upper reaches of the NFHR adjacent to and just downgradient of the mine area compared to pre-ADE LCT surveys that recorded a viable population, which included all age classes. This impact was determined to be a result of a lack of sufficient surface water flow in the NFHR (*USDA-FS; 27 May 2010*).

In 2007, Gateway initiated a comprehensive surface water and groundwater investigative and monitoring program. Gateway borehole investigations and actions begun in 2007 have confirmed that faulty abandonment of several deep boreholes was responsible for the ADE.

The Gateway borehole abandonment difficulties have also impacted the Permittee's Big Springs Mine permanent closure plan and post-closure monitoring as required under WPCP NEV0087001 for some components within the mined areas. Because the ADE has impacted some WPCP responsibilities, Gateway had agreed to assume those responsibilities, and post-closure monitoring, for those ADE impacted components. In February, 2013, Anova Metals USA LLC (Anova) acquired the Gateway interests to include all ADE responsibilities.

In order to confirm the reestablishment of impacted aquifers and LCT habitat, the NDEP has determined that ground and surface water, and biological monitoring, and NFHR flow modeling will continue to be required.

Those closure related activities formally undertaken by the Permittee but now become the sole responsibility of Anova or shared with AngloGold include the following:

Anova sole responsibility:
--303 and SWX pit lakes water quality monitoring;
--Groundwater monitoring in the area of the ADE;
--LCT monitoring (in cooperation with the NDOW); and
--Macro-invertebrate monitoring.

Shared responsibilities:
--Surface water monitoring.

These Anova responsibilities will be detailed within a forthcoming Administrative Order on Consent (AOC) between the Nevada Division of Environmental Protection and Anova.

PITS/MINED AREAS:

The Big Springs Mine is a sediment-hosted disseminated gold deposit, with gold mineralization principally controlled by the intersection of geologic structures. Ore is hosted in a complex sequence of interbedded carbonaceous and marl siltstones, limestone and dolomitic rocks, and syndepositional ash flow tuffs. Multiple periods of faulting and uplifts have occurred. The mine area is extensively faulted.

Seven distinct deposits were mined through eleven open/side cut pits: 131, 219, 303, 401, 701, SWX, North, Lower Sammy Creek, Middle Sammy Creek, Upper Sammy Creek, and Mac Ridge pits. Another pit, the 601 deposit, was stripped but not mined. Numerous additional resource areas of non-economic but anomalous gold mineralization were discovered in the vicinity of the deposits.

All of these open/side cut pits were relatively small, with their entire surface disturbance accounting for approximately 109 acres.

Most of the gold was contained in refractory carbonaceous and sulfide ore that required a pre-oxidizing roasting method to make it amenable to Carbon-In-Leach (CIL) recovery. Due to the nature of the deposits (unoxidized sulfides), extensive acid base accounting (ABA) and neutralization potential/acid potential ratio (NP/AP) testing was conducted to determine the potential for future acid

rock drainage (ARD). Sixty-three grab samples were taken from accessible benches in the various pits. Grab samples were selected from various rock types exposed in the pit highwalls. Of the 63 high-wall samples collected, 48 or 76% had NP/AP ratios greater than 3.0, and 58 (92%) had NP/AP ratios greater than 1.2. Sixty-one (97%) of the samples had positive (neutralizing) ABA values. Although ABA testing also indicated that low to moderate amounts of sulfides (primarily pyrite) are widely disseminated within the mined areas, there is no evidence of high sulfide 'hot spots' or 'hot areas'. It is possible that the oxidation of exposed disseminated sulfides, in contact with meteoric waters within the mined areas, may contribute at least sulfate to local groundwater and potentially the NFHR. Due to the elevated neutralizing capacity of the host rock, neutral pH values and alkaline conditions have prevailed over the active and closure periods of the project.

The continuous groundwater table was encountered in only two pits, the 303 and SWX. Localized, perched zones were encountered in four pits - the Upper, Middle, and Lower Sammy Creek pits together with the 219 pit. The un-mined 601 pit also encountered a perched zone. Groundwater was not encountered in the 131, 401, 701, North, and Mac Ridge pits.

The 131 and 401 pits were completely backfilled. Partial backfilling was completed in the 701, North, 219, Mac Ridge, and the Upper, Middle, and Lower Sammy Creek pits. The 601 pit was also partially backfilled. All partial and complete pit backfills were completed by 1997.

As a result of the partial and complete backfilling of pits, the following pits have had no record of either groundwater or meteoric waters impounding: 131, 401, 701, Mac Ridge, North, Middle South Sammy, and the Lower South Sammy pits.

The 219 pit does, on an occasion, have a seasonal (spring) surface flow into the Upper South Sammy pit where this meteoric water then infiltrates into the backfill. A review of all 219 pit seasonal flow water chemistry to date (8 samples) indicates a neutral pH (about 8.1 s.u.) with alkalinity averaging 100 mg/l, TDS averaging 450mg/l and sulfate averaging 250 mg/l. Arsenic is the only elevated parameter averaging 0.04 mg/l.

The 601 pit has seasonal flow from a spring in the floor of the reclaimed pit. The 601 spring is an indicator of shallow groundwater conditions in the Water Canyon drainage. A review of all 601 pit seasonal flow water chemistry to date (13 samples) continues to record a neutral pH with alkalinity averaging approximately 100 mg/l. However, beginning in 2008, both pH and alkalinity appear to be declining. Also beginning in 2008, TDS and sulfate concentrations are increasing. Both parameters now exceed Profile I reference values. Magnesium and selenium concentrations are also showing increases over time although both remain below Profile I reference values. It should be noted that this seasonal flow is thought to have been impacted by the ADE, as the spring, since 2007, has dried up by July. The monitoring of this spring will become the responsibility of Anova.

The two pits (303 and SWX) intersecting the pre-mining groundwater table were dewatered during mining operations. Dewatering ceased in the early 1990's. These two pits were not backfilled. The static surface area of these pit lakes, prior to the ADE, was 3.2 and 2.4 acres for 303 and SWX respectively. The maximum water depths were approximately 100 feet in 303 and 77 feet in SWX. Future water quality monitoring of the 303 and SWX pits will become the responsibility of Anova.

Post-closure monitoring of the remaining pits (excluding the 303, SWX, and 601) will consist of designating pit surfaces as dry, damp, or wet (visible flow or ponding). If a groundwater source or large amount of persistent ponded water is present, collect a representative sample and analyze for NDEP Profile I parameters. A field pH and field Specific Conductance (SC) reported as Total Dissolved Solids (TDS), together with photo of the ponded area shall also be taken. All pits, excluding only the 303 and SWX pits, will be evaluated for stability, safety and access restrictions.

Any persistent surface expression (wetland/bog/spring) within the mined area will be noted. A field pH and field SC reported as TDS, together with photos of the area, shall also be taken.

ROCK DISPOSAL AREA (RDA):

There are six RDAs associated with this mine: Dry Canyon, Lower Sammy Creek, Upper Sammy Creek, Mac Ridge, Lower Water Canyon, and Upper Water Canyon. Construction of RDAs has disturbed about 174 acres.

In quantifying the acid generating potential, a total of 72 samples for ABA and NP/AP testing were collected from trenches excavated in all six of the RDAs. In general, all six RDAs contain waste rock with low-to-moderate amounts of sulfide together with a significant neutralization potential due to the high carbonate content of the host rocks. Results also indicate that pyritic sulfur accounts for 85% or more of the total sulfur contained in the waste rock samples.

The majority of the RDAs had at least a few samples with an NP/AP ratio less than 3.0 (33 of 135 samples or 24.4% of all samples), but only 8 out of 135 samples had an NP/AP ratio of less than 1.2. Only 3 of 72 samples (4.2%) had negative ABA values. The average ABA levels indicate that Big Springs Mine waste rock and highwalls have a very low risk to generate acidity.

As part of reclamation of the RDAs, all RDAs have been regraded so that no large surface depressions that could impound water remain.

Diversions have also been installed upgradient of all the RDAs, except the two smallest (i.e., Mac Ridge and Upper Sammy Creek) which are located on upland areas, to intercept and direct runoff around the RDAs. In addition, the RDAs have been seeded to prevent erosion and to transpire meteoric waters.

The Dry Canyon RDA covers approximately 68 acres. A two layer cover system was developed for this dump. The system consists of a 12-inch low permeability layer, covered with 12 inches of growth medium. A surface flow diversion channel was also constructed to divert upgradient surface water around the RDA and to prevent it from interacting with the waste rock.

The Lower Sammy Creek RDA covers approximately 23 acres. A two layer cover was completed in 1995. The 15 acre top surface of the RDA was covered with 24 inches of compacted glacial till. Native soils and glacial till were used for the growth medium layer redistributed to depths of 12 to 18 inches. A diversion channel constructed in 1997 upgradient of this RDA was designed to intercept and divert surface water run-off around the RDA to prevent it from interacting with waste rock.

The Upper Sammy Creek RDA covers approximately 4 acres. In 1992, approximately 12 inches of growth medium was placed on the regraded surface.

The Mac Ridge RDA covers approximately 2 acres. Approximately 12 inches of growth medium was applied to the surface of this dump in 1989.

The Lower Water Canyon RDA covers approximately 43 acres. The western portion of this RDA was armored with about 15,000 tons of coarse and durable rock in 1995. The remaining 25 acres were covered with 18 inches of compacted glacial till material in 1995. Growth medium was applied to a depth of approximately 12 inches on the top of the RDA during 1995 and 1996.

The Upper Water Canyon RDA covers approximately 31 acres. Approximately 14 acres of this RDA have been covered with 12 to 24 inches of growth medium and seeded in 1993. A diversion ditch to route upgradient surface water around this RDA was also completed.

Overall, the risk of acid generation within the RDAs is remote. Grading strategies to eliminate depressions, placement of compacted cover soils and growth medium, revegetation, and diversion of up-gradient surface water have been employed to minimize water-rock interaction at these RDAs. Rock characterization testing indicates that these RDAs contain excess neutralization potential and low metal content. As of this date, no evidence of acid generation has been observed.

The Sammy Creek, Dry Canyon, and Water Canyon RDAs were developed as cross-valley fills that partially covered ephemeral and intermittent drainages. Seasonal flow from Sammy Creek, Dry Canyon, and Water Canyon RDAs contribute to the Sammy Creek (S-110), Dry Canyon (S-115), and Water Canyon (S-120) drainages/monitoring stations. Although the risk of acid generation is low, the interaction of meteoric waters with the sulfide minerals in the waste rock is a significant source of the higher TDS, sulfate, and selenium values as compared to the receiving NFHR.

The Permittee will, quarterly, be required to inspect all rock disposal areas for mass and physical stability. Should a flow be present from any portion of a RDA, a field pH and SC reported as TDS, a NDEP Profile I water quality sample, and photos will be taken.

NFHR – WATER QUALITY STANDARDS AND DESIGNATED BENEFICIAL USES:

The NFHR is subject to regulation provided for under NAC 445A.070 to 445A.2234, inclusive.

Specific water quality standards for this segment are provided for within NAC 445A.1456. In addition, NAC 445A.121 *'Standards applicable to all surface waters'* and NAC 445A.1236 *'Standards for toxic materials applicable to designated waters'* provide additional water quality standards.

NAC 445A.1432 lists the seven beneficial uses associated with this segment of the NFHR: Livestock; Irrigation; Aquatic; Contact; Noncontact; Municipal; and Wildlife. NAC 445A.120 '*Applicability'*, and NAC 445A.122 *'Standards applicable to beneficial uses'* are also pertinent to beneficial uses.

NFHR – INITIAL* WPCP SURFACE WATER MONITORING STATIONS:

** Prior to the 1997 WPCP renewal, surface water monitoring was conducted under the United States Department of Agriculture – Forest Service Plan Of Operations.*

A NFHR surface water monitoring program was developed in 1986, prior to project implementation, and continues to date. Surface water monitoring stations are located both within the NFHR and near the mouth of each major tributary to the NFHR containing mine development. See BIG SPRINGS MINE SITE MAP on page 8.

At the time of the ADE, surface water monitoring of the NFHR and tributaries was conducted at eight monitoring sites: S-100, S-110, S-112, S-115, S-120, S-125, S-140, and S-150. As a result of the ADE, monitoring at some of these stations (those impacted by the ADE) will become the responsibility of Anova. Below is a description of the monitoring sites.

Site S-100 is located in the NFHR immediately upstream from the confluence of Sammy Creek with the NFHR. S-100 is upstream of all mining activities with the exception of a reclaimed haul road. S-100 provides background surface water quality conditions in the upper reach of the NFHR. Water quality at S-100, through 2012, met Profile I reference values and have been consistent with historic data. S-100 will continue to be monitored by the Permittee.

Site S-110 is located in Sammy Creek just above the confluence of Sammy Creek with the NFHR. Monitoring began in 1986. This site is also downgradient of the Sammy Creek RDA. Sammy Creek is perennial in the lower reaches and intermittent in the upper reaches where the RDA is located. This station was established to document any impact that mining would have on Sammy Creek. Anova will now assume the responsibility to monitor S-110.

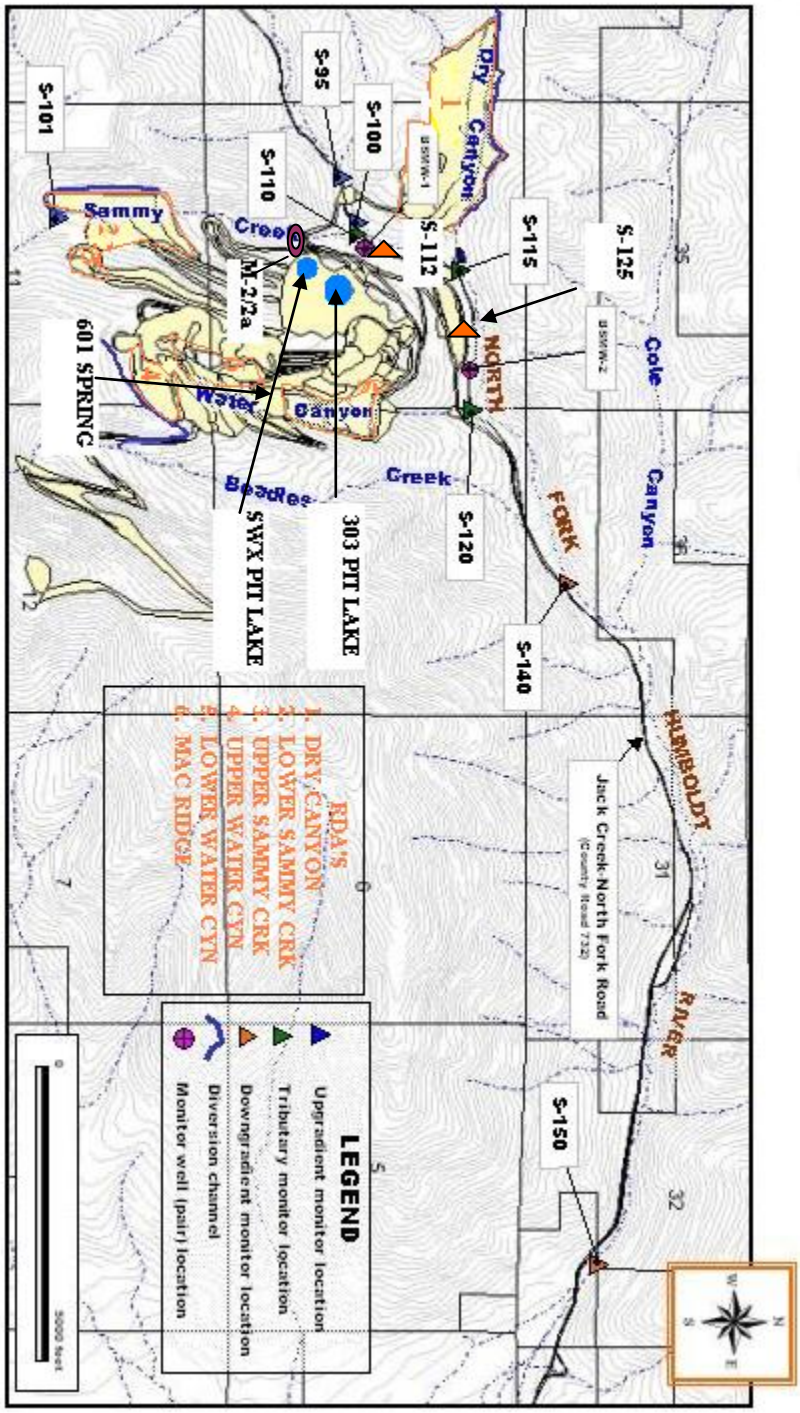
Site S-115 is located in Dry Canyon just above the confluence of Dry Canyon with the NFHR. Monitoring began in 1991. This site was established to monitor any impacts to Dry Canyon from the Dry Canyon RDA. Historically, Dry Canyon is ephemeral with flows during and after the spring snowmelt. The Permittee will continue to monitor S-115.

Site S-120 is located in Water Canyon immediately above the confluence of Lower Water Canyon and the NFHR. This site was established to monitor for impacts to Water Canyon from pits and mining activities located in the Water Canyon drainage. Anova will now monitor S-120.

Site S-140 is located in the NFHR, approximately 100 feet downgradient of the confluence with Beadles Creek. The Permittee will continue to monitor S-140.

Site S-150 is located downgradient of the mining operations at the USDA-FS boundary. This area was selected for the location of a fish barrier (intended to preclude brook trout from the upper reaches of

BIG SPRINGS MINE SITE MAP



the NFHR) and weir that Anova will construct in 2013. The fish barrier/weir will then become S-150 and Anova will monitor.

Beginning in 2005, the Permittee established two additional surface water monitoring stations on the NFHR. The first station (S-112) is located downgradient of Sammy Creek and upgradient of Dry Canyon Creek. Anova will monitor this station. The second station (S-125) is located downgradient of Dry Canyon Creek and upgradient of Water Canyon Creek. The Permittee will continue to monitor this station.

Monitoring of all surface water sites will consist of flow (cfs) and Profile I water quality analysis quarterly.

With respect to the 303 and SWX open pits, once the pit lake reforms, Anova will monitor pit lake elevations, sample for a Profile I water quality, and visually inspect both engineered embankments for surface erosion, overall stability, and for any evidence of leakage quarterly.

NFHR - PRE- AND POST-MINING SURFACE WATER CHEMISTRY AND FLOWS:

Before the mine began operations, surface and ground water in the NFHR, adjacent to the pits and waste rock dumps, was classified as calcium-bicarbonate-type water typical of waters that drain from calcareous bedrock terrain. These waters are characterized by low solute concentrations, with TDS less than 500 ppm. Carbonate and bicarbonate account for about 80 percent of the anions, while sulfate and chloride make up the other 20 percent. Calcium contributes 30 to 50 percent of the cations; magnesium, sodium and potassium concentrations are typically less than 15 percent of the total cations. (*Exponent, 1998*) In addition, elevated background levels of arsenic and occasionally selenium have been recorded in Sammy Creek.

Mining operations in the NFHR drainage has impacted these waters. At several sampling stations down-stream of the pits and RDA's, water composition changed from calcium-bicarbonate type in 1989 to a magnesium-sulfate type by 1997. *(Exponent, 1998)*. In general, due to the sulfidic nature of the mining exposed host rock interacting with meteoric waters and oxygen, several parameters, primarily sulfate and selenium, have had recorded increases over pre-mining background conditions in the surface and ground waters in and below the mined areas. This remains the case to this date.

As of the end of 2012, sulfate and selenium continue to be the parameters of concern in the waters of the NFHR. In addition, as a result of the ADE, flow in the NFHR tributaries, and the NFHR itself, have been reduced. This reduction in surface water volumes has impacted the LCT. These reduced flows have contributed to the elevated sulfate and selenium concentrations.

NFHR - WATER QUALITY STANDARDS IMPACTS:

Mining activities have introduced additional selenium into the NFHR over pre-mining background values. The selenium beneficial use 'Aquatic Life' acute (0.02 mg/l) and chronic (0.005 mg/l) standards are provided for within NAC 445A.1236. Elevated levels (most present in the dissolved

form) above the chronic, and occasionally acute, standard are continuing to be recorded in all three tributaries (S-110, S-115, and S-120) and in the NFHR at S-140. Neither standard has been exceeded in the NFHR monitoring station above the mine (S-100). Tributary input is considered the selenium source responsible for the NFHR chronic standard exceedances as recorded at S-140. No exceedance of the chronic value has been recorded at S-150 since 2000

The standard for TDS has been exceeded in the upper reaches of the NFHR. Sulfate is a major component of the TDS calculation and is the primary parameter (the significant others being calcium and magnesium) that has caused the overall TDS increases. Table 1 below approximates the recent history of TDS/sulfate values in the area's surface waters.

TABLE 1. TDS/*SULFATE* VALUES (all approximate annual average values in mg/l unless noted)

SURFACE WATER MONITORING STATION	PRE-MINING VALUES Data collected on or before 1987 (note - only very limited data available)		POST MINING VALUES 1997 - 2005		POST MINING VALUES 2006 - 2012	
	TDS	***SULFATE***	**TDS**	***SULFATE***	**TDS**	***SULFATE***
S-100	15	*<10*	75	*10*	80	*15*
S-110	*65 (as SC)	*<30*	570	*350*	**(1)**	
S-115	(Monitoring began in 1991)		2500	*2000*	2500	*1750*
S-120	70	*<20*	1300	*1000*	**(1) (2)**	
S-140	*75 (as SC)	*<20*	750	*400*	900	*600*
S-150	*120 (as SC)	*<20*	320	*160*	250	*100*

*Schafer and Associates, 1996.

(1) Due to a lack of summer flow in years 2007 thru 2012 in the NFHR, the data set is incomplete.
(2) Although data set is incomplete, both TDS and sulfate have a slightly increasing trend over time.

The lack of flow in some tributaries makes an evaluation of sulfate concentrations difficult. However, while concentrations at S-140 have increased, and this may be due to a lack of ‘dilution’ flows as a result of the ADE, concentrations at S-150 have shown no increase over time and have actually decreased since 2005. The lack of groundwater input containing elevated sulfate concentrations from the ADE dewatered aquifers may be the cause of the lower sulfate concentrations at S-150. In addition, the reach of the NFHR between S-140 and S-150 is thought to be a gaining reach receiving input from non-ADE impacted groundwater.

The *'development or recovery of any natural resource'* is included in the definition of an 'Industrial waste' (NAC 445A.089 *“Industrial wastes” defined).*

NAC 445A.121 *'Standards applicable to all surface waters'*; provides that *"…7. Wastes from …industrial…sources…containing arsenic, barium, boron, cadmium, chromium, cyanide, fluoride, lead, selenium, silver, copper and zinc…must provide water quality consistent with the mandatory requirements of the 1962 Public Health Service Drinking Water Standards."* A review of the NFHR water quality data indicates that mining impacts have not caused an exceedance of any of the above 'waste' parameter concentrations above the applicable Drinking Water Standard.

NFHR - BENEFICIAL USE IMPACTS:

NAC 445A.1432 designates the seven beneficial uses to this segment of the NFHR: livestock; irrigation; aquatic; contact; noncontact; municipal; and wildlife. Designated beneficial uses are also regulated under NAC 445A.120 *'Applicability';* NAC 445A.121 *'Standards applicable to all surface waters'* and NAC 445A.144 '*Standards for toxic materials applicable to designated waters'*.

Past water quality data collected from the surface water monitoring sites located on the NFHR and tributaries, prior to the ADE, indicated that mining related impacts to the NFHR have not impaired any designated beneficial use.

Elevated selenium values, as discussed above, have exceeded the aquatic life standards provided for within NAC 445A.1236. Due to the presence of the threatened LCT in the NFHR, a Permittee sponsored biological monitoring program was developed and implemented in 1986 for both fish and macro-invertebrates. Fish have been assessed as to the type and population on a various frequency basis since 1986. Fish tissue samples have also been analyzed. The results of this sampling program indicate that mining has not impacted fish nor is there any parameter within fish tissues that would pose a risk through human consumption. This is true through 2006 (before the ADE). The macro-invertebrate communities have also been assessed as to type and population, also beginning in 1986. Benthic macro-invertebrates, as biological indicators, have proven useful for assessing potential impacts of degraded water quality. Depending on the flow regime, yearly macro-invertebrate assessments (with one to three sample events) have been conducted. Results also indicate that mining has had no detrimental effects on this community. This was also true through 2006.

In late 2010, a NDOW fish survey determined that no LCT were present in the upper reaches of the NFHR adjacent to and immediately downgradient of the mine area. This impact was determined to be a result of a lack of sufficient flow in the NFHR. The USDA-FS had come to the same conclusion earlier in 2010 "*The BA determines that the aquifer drainage event of 2006-2007 had an adverse affect on Lahontan cutthroat trout in the North Fork Humboldt River. In addition, the impacts are ongoing and continue to adversely affect on Lahontan cutthroat trout."* (*USDA-FS; 27 May 2010*)

Prior to the 2006 ADE, the stabilization of both sulfate and selenium values in the NFHR and tributaries documented that the reclamation/closure work done on and around the RDA's, pits, and roads (i.e. diversion channels, backfilling, reclaiming, regrading and capping) was having a positive impact on the waste rock sulfides/meteoric water relationship within the mine site.

The NFHR, due to the ADE, experienced low flow conditions every year beginning in 2007. Only two sites, S-142 (S-142 is a surface water site used only for macro-invertebrate sampling) and S-150 had sufficient flow present for benthic macro-invertebrate sampling in 2007. Only a single site, S-142, had sufficient flow for sampling in 2008. Only sites S-140, S-142, and S-150 had sufficient flows to sample in 2009. Macro-invertebrate samples collected before the ADE in 2005 and 2006 showed macro-invertebrates at all the downstream sample locations (S-140, S-142, and S-150). In summary, since 2007, low flows have impacted the ability to sample macro-invertebrates. However, the presence of numerous sensitive species and high diversity index values indicate that the low flow conditions and the changed water quality conditions did not impact the macro-invertebrate communities in the NFHR downstream of the mined area in 2007, 2008, and 2009 (GEI – draft 2010). **(need updated data)**

The post-closure monitoring program of these mined areas is designed both to identify areas/components that are not responding to reclamation/closure practices and to identify successful mine closure practices. Should an area not demonstrate success, the Permittee may be required to act.

NFHR - WPCP MONITORING PLAN:

The previous post-closure monitoring plan for the mined areas/NFHR consisted of four components: Surface Water Monitoring; Groundwater Monitoring; Biological Monitoring; and a NFHR Flow Model. The major changes to the WPCP monitoring plan will be the elimination of the requirements for Groundwater and Biological Monitoring. These components will now be the responsibility of Anova. Minor changes to the monitoring plan consist of shared responsibilities for surface water monitoring.

SURFACE WATER MONITORING

The Permittee will be required to continue surface water monitoring of the NFHR and tributaries. The following existing surface water monitoring stations (SWMS) will continue to be monitored.

The SWMS will be monitored under the following protocol:

SURFACE WATER MONITORING STATIONS	PARAMETER	FREQUENCY
S-100 S-115 S-125 S-140	Profile I**;** SWMS Profile; Flow Rate (cfs); TSS; Hardness	Quarterly

GROUNDWATER MONITORING

The ADE has impacted all six Permittee established wells. As such, groundwater monitoring will now become the responsibility of Anova.

BIOLOGICAL MONITORING

Post-ADE monitoring by Anova will continue to assess the health of the aquatic communities. Macro-invertebrate monitoring/sampling will continue to occur annually. Consistency year to year in regards to protocol (genus, total abundance, taxa richness, EPT richness, percent mayfly density, and diversity), location, substrate, and time of year sampled will be maintained.

The most recent macro-invertebrate sampling was conducted in September 2012. The samples were collected in accordance with previously established procedures. The 2012 results were not yet complete at the time of this document finalization.

The NDOW, in a letter of 2 June 2010, proposed "*to conduct current and future fish population monitoring on the North Fork Humboldt River*." Currently, the NDOW proposes conducting quantitative sampling utilizing backpack electrofishing units and multiple pass depletion estimates at historic and additional sites at five-year intervals beginning in 2010.

NFHR FLOW MODEL

The Permittee, as part of an ongoing process, will continue to upgrade and refine a site specific ground/surface water flow model of the NFHR. This flow model is required in order to calculate potential mass balance equations, per reach or tributary, relative to mine related chemical parameter input into the NFHR, to include the ADE. The model requires temporal water quality data. The model may require additional sampling/monitoring of the mined areas. A model updated will be provided in the WPCP annual report. Below are the stations, parameters, and collection frequency requirements.

SURFACE WATER MONITORING STATIONS	PARAMETER	FREQUENCY
S-100 S-110 S-112 S-115 S-118 (only monitored if S-120 is dry) S-120 S-125 S-130 S-140 S-150	Field Specific Conductance (SC) reported as Total Dissolved Solids (TDS); pH; SO4; Flow Rate (cfs)	Bi-monthly from June-October

MILL PROCESSING SITE (MPS):

The mill processing site included the mill, heap leach pad, tailings storage facility (TSF), all process/overflow ponds, maintenance and ancillary structures. See BIG SPRINGS MILL PROCESSING SITE MAP on page 15.

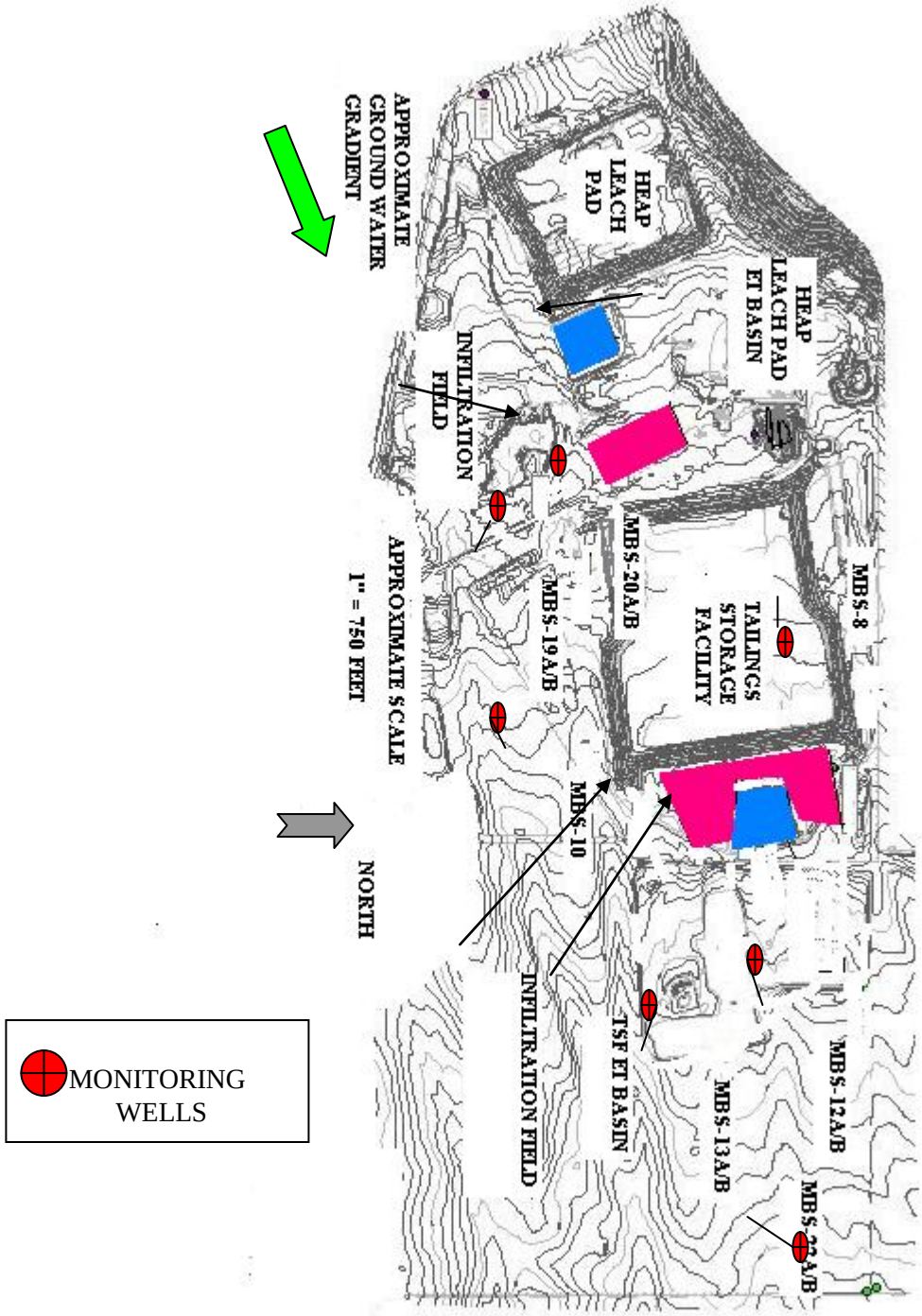
MILL, MAINTENANCE AND ANCILLARY STRUCTURES:

All mill, maintenance and ancillary structures/components were dismantled and removed from the site in 2001 and 2002. Non-hazardous solids that were not salvaged were placed in a Class III landfill adjoining the mill site.

PROCESS PONDS:

All ponds, other than the heap pregnant and the TSF reclaim pond, were permanently closed and backfilled by 2002. Pond sludge from the heap barren and the two carbon fines ponds was excavated and hauled to Jerritt Canyon for gold recovery. The pregnant pond contained very little solids and these were left in place. The lined emergency catchment pond sludge was left in place and buried with the liner. The clay lined emergency catchment pond had only a small amount of solids. These were left in place on the clay liner and the pond was backfilled with clean fill and growth medium. The TSF reclaim pond had only small amounts of solids and these were left in place. All these pond closure activities took place in 2001. The heap pregnant pond was converted into an evapo-transpiration basin in 2003. The TSF reclaim pond was converted into an Evapo-Transpiration (ET) basin in late 2004.

BIG SPRINGS MILL PROCESSING SITE MAP(fix)



HEAP LEACH PAD:

The heap leach pad consists of five cells constructed in three phases during 1987, 1988, and 1992. The pad footprint is approximately 33 acres with 1.59 million tons of ore stacked in two lifts. The leach pad sub-base consists of a 12-inch thick low permeability soil layer (placed in two 6-inch lifts) over a graded and compacted sub-grade. The sub-grade was moisture conditioned and compacted to 95% standard proctor. A single layer of 8 ounce woven geotextile was overlain with a 60-mil HDPE liner. Eight-inch HDPE pipes were placed at the low points in each cell below the liner to provide leak detection ports (since decommissioned). Pad leakage was never detected.

The heap leach pad was regraded, capped, covered with growth media and revegetated in 1999. The cap consists of a 12-inch thick, low hydraulic conductivity, compacted soil layer, placed over the regraded ore, and then overlain by 24 inches of growth medium.

The long-term draindown curve (*HELP model/1999*) for the heap leach pad predicted a 0.6 gpm flow on an annual average basis. With now over 13 years of observations, the model prediction was optimistic. Heap draindown flows approximate 6 gpm on an annual average. Heap leach pad draindown is seasonally quite variable (factors contributing to this variability may include a relatively small, shallow heap leach pad located in a wetter, colder climate) with an average peak of approximately 20 gpm (and exceeding 40 gpm in wet years) during spring runoff. In 2004, the Permittee reshaped the eastern portion of the heap. This area tended to 'cornice' (heap contour causing snow built-up). This action should assist in reducing both annual average infiltration and peak flows.

Additions of sodium cyanide were discontinued in November 1995 and WAD cyanide concentrations have remained below 0.2 mg/l since 2000. Residual, long-term heap draindown solution chemistry was not modeled. pH remains neutral and alkalinity values are very good with slightly increasing concentrations over time. Past and current draindown chemistry suggests that antimony, arsenic, total nitrate, selenium, sulfate, and total dissolved solids will exceed NDEP Profile I reference values for the foreseeable future.

TABLE 2 below provides long-term water quality for parameters elevated or relevant to this discussion, together with a simple average of water quality data collected from 2002 through 2012 (water quality data collected prior to 2002 showed extreme variability). The term 'Stable' in the table does not recognize seasonal variation (which may be for some parameters significant) but reflects annual year to annual year averages comparison. Average Concentrations are approximate values.

TABLE 2. HEAP LEACH PAD DRAINDOWN CHEMISTRY FOR SELECTED PARAMETERS

Parameter	NDEP Reference Values (in mg/l unless noted)	Heap Leach Pad Average Concentration & (Range) (mg/L unless noted)	Trend
Alkalinity	---	170 (75 – 220)	Slightly Increasing
Antimony	0.006	0.028 (0.008 – 0.049)	Stable
Arsenic	0.01	0.40 (0.15 – 0.70)	Slightly Decreasing
Nitrate + Nitrite, Total (as N)	10	75 (20 – 105)	Stable
pH (in Standard Units)	6.5 – 8.5	7.8 (7.7 – 8.4)	Stable
Selenium	0.05	0.15 (0.02 – 0.22)	Stable
Sulfate	500	1750 (750 – 2,800)	Stable
Total Dissolved Solids	1000	3,100 (1,250 – 4,600)	Stable
WAD Cyanide	0.2	0.06 (0.008 – 0.197)	Stable

Sulfidic ore was not deposited on the pad and ongoing monitoring of the heap leach draindown indicates an excess neutralization potential. Sulfate (and TDS) is elevated in the heap draindown due to the commingling of heap and tailings facility process solutions during operations. The Permittee will be required, quarterly, to record heap effluent draindown flow; pH (field); and to provide a NDEP Profile I analysis.

TAILINGS STORAGE FACILITY (TSF):

Spent mill ore was deposited within the TSF. Constructed in 1988, the TSF occupies 50 acres, of which 15 acres are earthen embankments. Milling included roasting the ore in a fluid bed roaster to remove refractory carbon and sulfide.

The impoundment is lined with an 18-inch layer of compacted clay that has permeability in the range of $5x10^{-7}$ to $5x10^{-8}$ cm/sec. Subgrade materials were silty with permeabilies in the range of $1.3x10^{-7}$ to $6.5x10^{-8}$ cm/sec when compacted to 95% modified Proctor. The facility was constructed with a continuous drainage blanket over the compacted subgrade and a sloping drain over the constructed earthen embankment. The tailings facility was constructed without a leak detection system. TSF leakage was never detected.

The impoundment contains approximately 2.6 million tons of sub aerially deposited tailings. The tailings are predominately silty sand to sandy silt with hydraulic conductivities ranging from $6x10^{-6}$ to $3x10^{-6}$ cm/sec. During operations, TSF solution drained to the synthetically lined tailings reclaim pond outside of the tailing impoundment. The blanket drain/liner routes also flow to the reclaim pond. The storage facility was regraded and a three-foot growth medium/evapotranspiration cover was installed in 2000. Revegetative activities are considered successful. All tailings remain on containment.

Because heap leach pad and milling process solutions were comingled during operations, heap and TSF residual draindown chemistries are similar. Residual, long-term heap draindown solution chemistry was also not modeled. Alkalinity over time averages 85 mg/l and the pH has been neutral. Past and current draindown chemistry suggests that antimony, arsenic, total nitrate, selenium, sulfate, and total dissolved solids will exceed NDEP Profile I reference values for the foreseeable future. WAD cyanide concentrations, since 2005, have demonstrated much more variability then pre-2005 concentrations. In addition, the Profile I reference value of 0.2 mg/l is now being exceeded periodically while 2000 - 2005 concentrations rarely exceeded the reference value.

TABLE 3 below provides long-term water quality for parameters elevated or relevant to this discussion, together with a simple average of water quality data collect from 2002 through 2012 (water quality data collected prior to 2002 showed extreme variability). The term 'Stable' in the table does not recognize seasonal variation (which may be for some parameters significant) but reflects only annual year to annual year averages comparison. Average Concentrations are approximate values.

TABLE 3. TAILINGS STORAGE FACILITY DRAINDOWN CHEMISTRY FOR SELECTED PARAMETERS

Parameter	**NDEP Reference Values** **(mg/l unless noted)**	**Tailings Storage Facility Average Concentration & (Range)** **(mg/L unless noted)**	**Trend**
Alkalinity	---	85 (10 – 200)	Stable
Antimony	0.006	0.050 (0.015 – 0.292)	Stable
Arsenic	0.01	1.10 (0.35 – 2.6)	Variable
Nitrate + Nitrite, Total (as N)	10	20 (5 – 70)	Stable
pH (in Standard Units)	6.5 – 8.5	8.3 (5.8 – 8.6)	Stable
Selenium	0.05	0.37	Stable

		(0.01 – 0.58)	
Sulfate	500	3000 (1100 – 4100)	Stable
Total Dissolved Solids	1000	5000 (2500 – 6600)	Stable
WAD Cyanide	0.2	0.15 (0.00 – 0.37)	Variable

Infiltration modeling (HELP/1999) of the reclaimed TSF indicated an expected annual average draindown flow of 0.2 gpm with a spring peak rate of 6 gpm.

The Permittee will be required, quarterly, to record TSF effluent draindown flow and pH (field); and to provide a NDEP Profile I analysis.

MPS HYDROGEOLOGICAL CONDITIONS:

In examining options for the long-term management of both heap and TSF residual process solution draindown, detailed geotechnical and hydrological investigations, including the use of well logs/data from 33 monitoring wells that have been installed at various times in the mine processing site area, was conducted.

Results indicate this site is located on alluvium comprised of interbedded layers of fine and coarse grained materials. Soil depths range from shallow to very deep. The site is underlain by up to one thousand feet of strongly layered alluvial deposits that include prominent layers of silt and clay.

The overall groundwater system is considered to consist of three separate groundwater regimes. A shallow, perched, localized zone that varies from 8 to 60 feet below ground surface. Beneath this shallow perched zone is a deeper, semi-confined, continuous aquifer from 60-150 feet deep below ground surface. Finally, a regional system typically existing deeper than 150 feet below ground surface. The shallow and deeper units are developed in the upper basin fill and are partially isolated from each other by intervening clay layers. The investigations confirm the presence of very fine grained clay lenses, which effectively separate these shallow perched zones of water from the local, continuous groundwater unit. All installed monitoring wells at the mill site are located in either the vadose (perched) zone or in the semi-confined, continuous groundwater zone. There are no wells located within the deep regional groundwater system.

Data has supported that these fined grained clay lenses might greatly enhanced the possibility that a flow of low volume, permanent, long-term excess heap/TSF draindown solution will not degrade the continuous groundwater table.

Laboratory testing of site soils was conducted. Vadose zone soil attenuation properties, when exposed to draindown solution chemistries, were calculated. These results indicated draindown solution metals will be significantly attenuated within the vadose zone. Data also indicated that natural anaerobic microbiological activity and metabolization of nitrate in the vadose zone will act to decrease the nitrate

concentrations in the vadose zone pore water. Natural anaerobic microbiological activity would also help decrease sulfate concentrations in the vadose zone. In addition, in-situ data from the Jerritt Canyon Mine (located approximately 8 miles south of the Big Springs mill site with similar geological/ hydrological features) was also reviewed and applicable data extrapolated to the Big Springs processing site.

Soil attenuation capacity data were extrapolated to the mass of vadose zone soil calculated beneath the two proposed subsurface infiltration fields. These results indicated that the vadose zone soil mass will be more than adequate to attenuate all elevated parameters, precluding the exceedance of any water quality standard within the continuous groundwater table, for the long term (>100 years). (*Water Management Consultants, 2001*)

LONG TERM PROCESS SOLUTION MANAGEMENT:

In order to both reduce solution inventory and empirically verify the investigative results above, in 2000 the Permittee conducted (per NRS 445A.485) a land application program of the spent TSF process solution.

The land applied process solution exceeded primary and secondary drinking water standards for antimony (0.07 mg/l); arsenic (3.40 mg/l); manganese (0.40 mg/l); mercury (0.005 mg/l); nickel (0.13 mg/l); nitrate/nitrite as nitrogen (20 mg/l); selenium (0.50 mg/l); sulfate (3100 mg/l); tds (5,000 mg/l); and thallium (0.003 mg/l) - all approximate values. WAD cyanide was below the groundwater standard of 0.2 mg/l.

This land application program consisted of an above ground application via sprinklers and misters with application rotation through designated areas or plots. Land application occurred during the summer/fall months. The mode of delivery was designed to evaporate, transpire, and ultimately infiltrate solution into the vadose zone, where, migrating laterally along clay-rich layers, solution would ultimately report to one of eight downgradient wells located within the vadose zone for analysis. In addition, seven wells located downgradient within the continuous groundwater table were monitored.

The monitoring of nearby vadose zone wells allowed for the assessment of the vadose zone to attenuate elevated parameters. Additionally, data from wells screened within the continuous groundwater table would provide information relating to any impacts to this groundwater as a result of the land application and to provide information as to whether long-term infiltration fields would be successful in post-closure of the mine.

The year 2000 land application program applied 13.6 million gallons of tailings impoundment solution between August and November of 2000. The land application plots encompassed approximately 8.5 acres.

Results indicate that arsenic is strongly attenuated in the vadose zone. Antimony was also strongly attenuated to very low concentrations at or less than the laboratory detection limit (<0.002 mg/l). Mercury was attenuated to below the drinking water standard (<0.002 mg/l) in the vadose zone. Thallium was strongly attenuated to <0.002 mg/l in all but two samples. Manganese was also attenuated to less than the drinking water standard (0.10 mg/l). Nickel was attenuated to low concentrations (0.03 mg/l or less). Sulfate was only moderately attenuated to lower concentrations (<2,000 mg/l) as was nitrate (generally less than 16 mg/l). Selenium was moderately attenuated (<0.35 mg/l or less).

Monitoring of the continuous groundwater table indicated that process solution was either not able to migrate vertically downward, or was attenuated to drinking water standards by the time it was sampled in the continuous groundwater table wells.

Based upon the success of the initial 2000 land application, the NDEP approved an additional land application of both heap and tailings impoundment process solutions in 2002. The program was similar to the 2000 program (utilizing a rotating application to four plots not used in the 2000 program, followed by a rest period). This land application began on June 3rd and ceased on November 27. The total volume of solution applied was approximately 9.3 million gallons from the tailings reclaim pond and 1.3 million gallons from the heap pregnant pond. The tailings reclaim pond solution chemistry was similar to the year 2000 tailings reclaim pond chemistry. The heap draindown chemistry, in general, was of a better quality, with the exception of nitrate, sulfate, and thallium, which were similar to the tailings reclaim pond chemistry. The land application plots encompassed approximately 17 acres. A total of 12 vadose zone and 7 continuous groundwater table monitoring wells were monitored.

The 2000 land application generally stimulated vegetation growth during the summer and fall months of 2000. Chemical analysis of the mill site vegetative community, both within the land application areas and adjacent undisturbed areas, was conducted in 2002 and 2003. The analysis indicates that vegetation within the land application areas is chemically similar to adjacent undisturbed vegetation.

Observations regarding these two land applications indicate that:

--Attenuation rates in the vadose zone were greatest for the metals (arsenic, antimony, selenium, mercury, thallium, manganese, and nickel). In general, attenuation results were similar between the two programs.
--Arsenic, antimony, mercury, thallium, manganese, and nickel were attenuated to concentrations below drinking water standards in the vadose zone in nearly all water samples.
--Attenuation rates for sulfate and nitrate were much lower.
--Evidence indicated that land applied process solution will eventually reach the continuous groundwater table. Sulfate values in some continuous groundwater monitoring wells did show a mild increase in sulfate (perhaps 15 mg/l over background) from the two land applications.

--The continuous groundwater table has not been affected by the two land applications. The land application programs have not caused an exceedance of any water quality standard within the continuous groundwater table.
--The land application of process solutions has not impaired vegetation or soils.

In order to convert the tailings reclaim pond into an ET basin, reclaim pond and TSF process solution had to be removed. This action required an additional land application approved by NDEP in July, 2004.

This land application program was similar to the two past land applications. Total volume of solution land applied was 4.7 million gallons. Process solution chemistry was similar to the solution chemistry land applied in 2000 and 2002. These application plots encompassed 28 acres. These plots were not located within previous application areas. A total of 21 existing monitoring wells, located upgradient, within and downgradient of the plots were monitored. These wells were screened either within the vadose zone or within the continuous groundwater table.

A Screening Level Ecological Risk Assessment (SLERA), completed in 2004, examined the potential toxicological risks associated with likely routes of exposure to wildlife, livestock, and vegetation resources that may come into direct contact the heap/TSF draindown or heap/TSF solids material, or be exposed, through secondary pathways, to the same materials.

The study concluded that concentrations of arsenic and selenium were the only trace element parameters shown to exceed one or more ecological screening-level benchmark criteria for wildlife or livestock for either the heap/TSF draindown or heap/TSF spent ore. However, based on assumptions and predictions in the exposure assessment, the risks posed by these parameters are considered negligible.

In conclusion, past test and collected data results indicate a high level of confidence in the ability of the proposed long-term management of residual solution draindown (ET basins with subsurface infiltration fields as backup), at the Big Springs mine process site, to preclude degradation of the continuous groundwater table. A significant level of post-closure monitoring of potentially impact groundwater is provided by numerous downgradient monitoring wells.

HEAP LEACH PAD ET BASIN AND INFILTRATION FIELD:

The existing pregnant pond was converted into an ET basin in 2003. The original capacity of this pond was 4 million gallons. This pond has a 60 mil HDPE primary liner overlying 12 inches of compacted native soil material. The pond was backfilled with approximately five feet of permeable material followed by three feet of growth medium from stockpiles and local borrow sources. The basin was seeded in 2004. The liner will remain intact such that heap draindown solution will be routed (gravity fed) into the buried pond for both storage and evapotranspiration. A piezometer was also installed. The leak detection system remains and is monitored.

Heap draindown gravity feeds into the ET basin. Draindown solution that is not evapo-transpired will be diverted, if necessary, into a dosing tank (with dosing counter/sampling port) and subsurface infiltration field adjacent to the heap leach pad. This system consists of a 2,000 gallon dosing tank flowing into a double, central 4-inch PVC header pipe that connects to paired 4-inch perforated pipes in 500-foot trenches that are spaced approximately 50-feet apart. The total area of the infiltration field is 100,000 square feet (500 feet x 200 feet). All piping is buried at least three feet deep.

The following wells (either screened within the continuous groundwater table or screened in the vadose zone) will be utilized in the post-closure monitoring period to both identify the location of the draindown solution within the vadose zone and to ensure that the residual heap draindown solution does not degrade the continuous groundwater table located approximately 65 feet beneath the drain field.

TABLE 4. HEAP LEACH PAD MONITORING WELLS

HEAP LEACH INFILTRATION FIELD VADOSE ZONE MONITORING WELLS			
WELL NUMBER	**TOTAL DEPTH OF WELL (feet)**	**SCREEN INTERVAL (feet below ground surface)**	**WELL LOCATION**
MBS-8	31	10 to 30	These two wells are located approximately 1,500 feet downgradient of the heap subsurface infiltration field on either side of the tailing storage facility. They are upgradient of the tailings facility infiltration field.
MBS-10	30	10 to 30	
MBS-19B	62	20 to 60	Located approximately 400 feet downgradient of the heap infiltration field.
MBS-20B	57	14 to 54	Located approximately 200 feet downgradient of the heap infiltration field.
HEAP LEACH INFILTRATION FIELD CONTINUOUS GROUNDWATER TABLE MONITORING WELLS			
MBS-19A	105	82 to 102	Located alongside MBS-19B.

MBS-20A	118	94 to 114	Located alongside MBS-20B.

These wells will continue to be monitored under the following protocol:

WELL NUMBER	PARAMETER	FREQUENCY
MBS-8/MBS-10 MBS-19A/19B; MBS-20A/20B;	Sulfate; Nitrate; TDS, Arsenic; Selenium; Depth to Groundwater.	Quarterly
	Profile I	Annually

Should the wells indicate an increase in monitored parameters, the Permittee may be required to act.

TSF ET BASIN AND INFILTRATION FIELD:

This pond was constructed with a 40-mil HDPE primary liner over a 12-inch compacted clay secondary liner. The original capacity of this pond was 4.5 million gallons. Similar to the heap leach facility long-term closure plan, the existing TSF reclaim pond was converted into an ET basin. The leak detection system remains and will be monitored. A piezometer was also installed.

TSF draindown will gravity feed into the ET basin. Draindown solution that is not evapotranspired and cannot be contained within the ET basin will be gravity fed into a subsurface infiltration field separate from the heap leach pad subsurface infiltration field.

This infiltration field consists of a 1,000 gallon dosing tank (with dosing counter). This tank flows to a central 4-inch PVC header pipe. Connected to this header pipe are eight, 4-inch PVC piping systems. Each piping system is approximately 400 feet long and is spaced approximately 50 feet apart. Three by six foot infiltration chambers, installed at 40-foot intervals, are located in the piping systems. The total area of the infiltration field is approximately 160,000 square feet. All piping is buried at least three feet deep. Flow to the infiltration field will be limited to 4 gpm (passive restriction valving).

The following wells (either screened within the continuous groundwater table or screened in the vadose zone) will be utilized in the post-closure monitoring period to ensure that any residual tailings storage facility draindown solution does not degrade the continuous groundwater table located approximately 60-70 feet beneath the infiltration field.

TABLE 5. TSF MONITORING WELLS

TSF VADOSE ZONE MONITORING WELLS			
WELL NUMBER	**TOTAL DEPTH OF WELL (feet)**	**SCREEN INTERVAL (feet below ground surface)**	**WELL LOCATION**
MBS-22B	30	10 to 30	Located approximately 3,000 feet downgradient of the tailings facility infiltration field.
MBS-23B	35	15 to 35	Located approximately 300 feet downgradient of the tailing facility infiltration field.
MBS-24B	40	18 to 38	Located approximately 300 feet downgradient of the tailing facility infiltration field.
TSF CONTINUOUS GROUNDWATER TABLE MONITORING WELLS			
MBS-22A	120	95 to 115	Located alongside MBS-22B.
MBS-23A	95	75 to 95	Located alongside MBS-23B.
MBS-24A	110	90 to 110	Located alongside MBS-24B.

As with the heap leach pad draindown infiltration field monitoring wells, these wells will continue to be monitored under the following protocol:

WELL NUMBER	PARAMETER	FREQUENCY
MBS-22A/22B; MBS-23A/23B; MBS-24A/24B;	Sulfate; Nitrate; TDS, Arsenic; Selenium; Depth to Groundwater.	Quarterly
	Profile I	Annually

Eleven years of monitoring both the heap leach pad and TSF ET basin and infiltration field systems yields the following observations:

--Heap leach pad flows into the ET basin, and out of the ET basin to the infiltration field, are seasonally controlled (heap leach pad draindown flows are greatest during the spring thaw).

-- Groundwater and vadose zone monitoring data since 2000 have demonstrated that attenuation process in the alluvium of the vadose zone reduce parameter concentrations to below the NDEP Profile I reference values for the water that reaches the continuous groundwater table.

Should any continuous groundwater table well indicate an increase in monitored parameter, the Permittee may be required to act.

C. RECEIVING WATER CHARACTERISTICS

The MPS is located approximately 6,500 feet above mean sea level (amsl). The upper portions of the operation (pits and RDA) are located at between 7,200 and 9,600 feet amsl.

The annual average precipitation at the MPS is 10 to 12 inches. Pan evaporation is estimated to be between 30 and 50 inches at the mill site. The annual average precipitation in the upper portions of the mine is 25 to 30 inches. The majority of the precipitation at the entire site occurs as snow during the winter months.

There are two receiving waters associated with this site. The MPS (heap and tailings impoundment) is located within the Owyhee River drainage basin at the upper most ephemeral reaches of the Jacks Creek drainage. Jacks Creek is a tributary of the East Fork of the Owyhee River that empties into Wildhorse Reservoir. Surface water monitoring of Jacks Creek has never been necessary due to storm water controls onsite and the lack of surface flows in the vicinity of the MPS. A perennial surface flow in Jacks Creek can be located approximately 3-4 miles northeast of the MPS.

Only limited groundwater resources are located within the MPS. Process water was supplied by wells located five miles downgradient from the process area and two wells located approximately 2,000 feet upgradient from the MPS. Domestic wells in the area consist of a well located three miles downgradient from the MPS and wells located three to four miles east of the sites associated with residences along state Route 225.

Background groundwater within the shallow localized aquifer and the local, continuous confined aquifer meet all federal and state primary and secondary drinking water standards.

The upper portions of the mine are located within ephemeral and intermittent drainages that are tributaries of the NFHR. The NFHR is a perennial stream with the maximum average monthly surface flows typically occurring in May as a result of snowmelt at the higher elevations. Surface water monitoring site S-150 is located on the national forest boundary.

D. PROCEDURES FOR PUBLIC COMMENT

The Notice of the Division's intent to issue a permit authorizing the facility to close, subject to the conditions within the permit, is being sent to the **ELKO DAILY FREE PRESS** for publication. The Notice is being mailed to interested persons on the 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 proposed permit.

F. PROPOSED EFFLUENT LIMITATIONS, SCHEDULE OF COMPLIANCE, SPECIAL CONDITIONS

See Section I of the permit.

G. RATIONALE FOR PERMIT REQUIREMENTS

The mined area continues to mobilize parameters (sulfate and selenium) whose concentrations in some portions of the NFHR exceed water quality standards. The NFHR, in the area of the mine, is habitat for a threatened species of fish, the LCT. Pre-ADE monitoring and sampling indicated that the Permittees' mining operations had not impacted fish nor macro invertebrates, nor was there any parameter within fish tissues that would pose a risk from human consumption. Post-closure monitoring will continue to assess the health of the aquatic communities and will provide data relative to the success (or failure) of any of the reclamation/closure completed activities.

The Permittee's long-term heap leach pad/TSF spent process solution draindown management plan is to continue to direct the spent process solutions into two lined ET basins. ET basin excess solution will continue to flow into the environment via two subsurface infiltration fields.

Monitoring within the MPS is designed to demonstrate that the subsurface flow of process solution into the environment will not degrade the continuous aquifer (60-150 feet deep below ground surface) nor the regional system typically existing deeper than 150 feet below ground surface. Continued monitoring will also help demonstrate the effectiveness of evapotranspiration (ET) basins.

Except for excess accumulations that are a result of a storm event beyond that required by design for containment, all process components must operate under a standard of performance that authorizes a flow to the environment only through two subsurface infiltration fields.

H. FEDERAL MIGRATORY BIRD TREATY ACT

Under the Federal Migratory Bird Treaty Act, 16 U.S.C. 701-718, it is unlawful to kill migratory birds without a license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50CFR10, April 15, 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with state permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife. Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of 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 U.S. Fish & Wildlife Service, 1340 Financial Boulevard Suite 234, Reno, NV 89502-7147; (775) 861-6300 for additional information.

Prepared by:	*Kurt F. Kolbe*
Date:	*July 25, 2005*
Permit Revision 00 and New Fact Sheet:	*Renewal - and now into Post-Closure*
Prepared by:	*Kurt F. Kolbe*
Date:	*November 20, 2008*
Permit Revision 01 and Fact Sheet Revision 01:	*Replace two sets of existing monitoring wells (MBS-12A & 12B; MBS-13A & 13B) with two sets of new monitoring wells (MBS-23A & 23B; MBS-24A & 24B)*
Prepared by:	*Kurt F. Kolbe*
Date:	*===June, 2013*
Permit reissuance:	*Many changes to WPCP/Fact Sheet due to ADE*

Document date: 20130909 - DRAFT