FACT SHEET

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

Permittee Name: **Jerritt Canyon Gold LLC**

Project Name: **Jerritt Canyon Mine**

Permit Number: **NEV0000020**

Review Type/Year/Revision: **Renewal 2025, Fact Sheet Revision 00**

A. <u>Location and General Description</u>

Location: The Jerritt Canyon Mine (JCM) is located in north central Elko County, approximately 46 miles north of Elko, in the historic Independence Mining District (also referred to as the Jerritt Canyon Mining District). Jerritt Canyon Gold LLC (JCG), a subsidiary of First Majestic Silver Corp. is the Permittee for the JCM site.

The mine and support facilities are located in the Independence Mountain Range on public land administered by the U.S. Forest Service-Humboldt-Toiyabe National Forest (USFS-HTNF) and Bureau of Land Management-Elko District, Tuscarora Field Office, (BLM-ED-TFO) and private land within portions of:

> Township 38 North (T38N), Range 53 East (R53E), Section 3;
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> T39N, R52E, Sections 1, 2, 11 through 14, and 22 through 24;
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> T39N, R53E, Sections 1 through 24, 26 through 30, and 32 through 34;
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> T40N, R53E, Sections 1 through 36;
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> T40N, R54E, Sections 3 through 8, 17 through 20, and 29 through 32;
>
> T41N, R53E, Sections 9, 13, 16, 17, and 19 through 36; and
>
> T41N, R54E, Sections 19, 20, and 29 through 34; Mount Diablo Baseline and Meridian.

Currently, gold-bearing ore from the JCM underground mining operations provide the largest percentage of feed to the JCM mill and Roaster facilities. In addition, JCM is also authorized by the Nevada Division of Environmental Protection – Bureau of Mining Regulation and Reclamation (the Division) to process off-site ores and concentrates from Nevada-permitted mining facilities on a toll basis.

Mining and waste rock disposal occurs on both public and private lands, while the beneficiation, tailings impoundment, and administrative activities occur on private land. The Permittee is authorized to process up to 3 million tons of ore per year (tpy) at the JCM site using chemicals.

The JCM facilities are designed and constructed to operate and close without any release or discharge from the fluid management systems. Discharges may occur as a result of meteorological events, which exceed the design storm event and exceed the standards established in regulation.

Most of the JCM process components and containment structures pre-date the Water Pollution Control regulations for mining facilities established pursuant to NAC 445A.350 through 445A.447. Many of the containment structures and facilities were constructed and/or installed at a time when minimum design standards, "As-Built" drawings, and quality assurance/quality control (QA/QC) documentation were not required for submittal. This has resulted in the need for a higher level of engineering review and increased inspection frequency for the older components by the Division.

Site Access: The JCM process facility and most of the mining operations (except for the Starvation Canyon Mine) can be accessed from Elko by proceeding north on State Route (SR)-225 approximately 46 miles to the junction of the mine access road and then proceeding west on the access road approximately 6 miles to the mine site.

Although the Starvation Canyon Mine is within the confines of the JCM site, the mine is only accessible by proceeding north from Elko on SR-225 for a distance of 27 miles to the junction of SR-226 and then proceeding northwest for a distance of 19 miles on SR-226 to its junction with an unnamed dirt road. The mine site is reached by traveling east on the dirt road for a distance of 3 miles.

Background/History: Historical records indicate that prior to World War I and up until the end of World War II; minor amounts of stibnite (antimony sulfide [Sb_2S_3]) were mined and shipped from the Burns Basin area of the Independence Range for use in the manufacture of munitions. In 1972, stimulated in part by resurgence in the demand for antimony use in lead-acid battery manufacturing, FMC Minerals Corporation (FMC Minerals) accidently discovered a deposit of finely disseminated gold in the basin.

Encouraged by further gold discoveries within the basin, a joint-venture was created in 1976 between FMC Minerals and Freeport Minerals Company (later renamed the Freeport-McMoRan Gold Company in 1985) to further explore and develop the area. By 1980, active mining commenced at the JCM site.

In 1981, FMC Minerals created a new subsidiary company, FMC Gold, to manage its gold mining interests in Nevada, Idaho, and Montana. Joint-venture partner Freeport-McMoRan Gold later sold its 70 percent interest in JCM to Minorco USA in 1990 with Minorco's wholly owned subsidiary, Independence Mining Company (IMC), becoming the new joint-venture partner and mine operator.

FMC Minerals sold its interest in FMC Gold in 1996 and a new company was incorporated in Canada as Meridian Gold Corporation (Meridian). Two years later, in 1998, Minorco's North American gold assets, including their 70 percent interest in JCM, were sold to AngloGold (Anglo), with Meridian retaining its 30 percent stake. In June 2003, Queenstake Resources USA, Inc. (Queenstake) purchased both Anglo's and Meridian's interests in the JCM.

The June 2007 merger between Queenstake and Yukon Gold Corporation (YGC) resulted in the formation of a new company, Yukon Nevada Gold Corporation (YNGC), with Queenstake operating JCM as a wholly-owned subsidiary. In October 2012, YNGC changed its name to Veris Gold Corporation (VGC) and in January 2013, Queenstake changed its name to Veris Gold USA Inc.

VGC filed for bankruptcy protection on 9 June 2014 in Canada and the United States (U.S.). The Canadian bankruptcy court ordered VGC to sell its assets (including the JCM) and an order to enforce the Canadian sale was filed on 4 June 2015 in U.S. Bankruptcy

Court. Sprott Mining Inc. (Sprott) and Whitebox Asset Management (Whitebox) purchased VGC's assets on 25 June 2015 and in the process created a new LLC (JCG), with Sprott retaining 80 percent ownership and Whitebox the remaining 20 percent. In January 2022, First Majestic Silver Corp. acquired JCG.

Open pit mining at JCM began in 1981 and ended in 1999. During this period, 12 surface mines were developed and operated. Underground mining at Jerritt Canyon began in 1993 and since then a total of 8 underground mines have been developed and operated at one time or another at the JCM site. As of December 2022, five underground mines (Smith, SSX, Steer, West Generator, and Saval 2) were operational. The SSX mine is sometimes referred to as the SSX Mine Complex, with includes the SSX Mine, the Steer portals, and the Saval 4 portals, all of which lead into the SSX underground complex.

Gold-bearing ore was initially processed by conventional heap leach cyanidation, carbon-in-leach (CIL), and carbon-in-pulp (CIP) technology with gold recovery by carbon adsorption and Merrill-Crowe zinc precipitation. Both wet and dry mills operated at Jerritt Canyon: a wet mill for less refractory ores and a dry mill with an ore roasting circuit for ores that are more carbonaceous and refractory. Due to the changing nature of the ores mined and the availability of higher-grade underground ore, the wet mill was shut down in the first quarter of 1997. All surface mining ceased in November 1999 when emphasis was placed entirely on underground development and mining.

On 11 August 2008, financial difficulties and unforeseen mine and mill expenditures, and significant environmental concerns resulted in the "Temporary Closure" of the JCM facility. Combined production rate from the SSX-Steer and Smith at the time of closure was approximately 1,500 tons of ore per day (tpd) and 500,000 tpy. In addition, the JCM Mill and Roaster facilities had been processing off-site ores and concentrates on a toll basis.

Toll milling was suspended to complete repair work on the JCM Mill and Roaster. As a result, the workforce at the JCM was reduced to care and maintenance levels while the Permittee undertook discussions with financial institutions and the Division for a pathway to return to active operations. In order to obtain authorization to restart, the Division required the submittal, review, and approval of plans addressing the many environmental concerns at the JCM.

On 25 March 2009, the Division granted authorization to the Permittee for a return to limited operations at the JCM Mill facility. The Mill processed stockpile ore until 30 May 2009, when it was again placed in Temporary Closure.

On 20 October 2009, following Division approval, the Permittee was able to restart operations under a Consent Decree approved by the Fourth Judicial District Court of the State of Nevada. To address the environmental concerns, the Permittee completed the installation of the calomel emission system on 20 July 2009 for the control of Roaster mercury emissions. In addition, the Permittee overhauled and upgraded the Roaster, CIL circuit, thickener, and other sections of the mill.

In 2009, an underground mine plan was developed and mining recommenced at Smith in late January 2010 using a contract mining service. Underground mining at SSX-Steer Complex recommenced in early October 2012 by JCM staff, until replaced by a mining contractor in March 2014. Mining and construction activities at Starvation Canyon were performed by a contract mining service from 2012 through April 2016. Underground mining at Saval 4 recommenced in early October 2014 by JCM staff and was temporarily suspended in June 2019. New portal developments and underground mining operations at the West Generator and Saval 2 mines commenced in 2022.

In May of 2023, JCG suspended mining and processing operations and the mine once again entered temporary closure status. As of 2025, the JCM had approximately 55 employees and staff executing care and maintenance tasks, including environmental cleanup efforts. Exploration activities are also taking place on site, with JCM planning to re-initiate mining and milling when economically advantageous.

B. <u>Synopsis</u>

Geology/Lithology

The JCM site consists of numerous Carlin-type sediment-hosted deposits. Since 1981, the JCM Mill facility has produced over 8.0 million ounces of gold primarily from ores originating from the JCM deposits.

The Jerritt Canyon Carlin-type deposits occur in a north-northeast trending mineralized belt called the Independence trend. The primary host rock for the JCM Carlin-type deposits is the Silurian and Ordovician Hanson Creek Formation with much less mineralization hosted in the overlying Devonian and Silurian Roberts Mountain Formation. Dike rocks locally contain ore grade gold mineralization but are volumetrically insignificant relative to the sedimentary rock hosted ore materials.

Within the Jerritt Canyon area, gold can locally occur within all sedimentary formations, but is preferentially hosted by the Roberts Mountains and Hanson Creek Formations of the eastern faces in the lower plate of the Roberts Mountain thrust. The Roberts Mountain Formation consists of calcareous to dolomitic siltstones and silty limestones.

The contact between the Roberts Mountain Formation and the overlying Snow Canyon Formation is a regional thrust fault which transported the Snow Canyon eastward over the Roberts Mountains Formation. The contact between the Roberts Mountain Formation and the underlying Hanson Creek Formation is a discontinuity locally known as the Saval discontinuity. The discontinuity may be an angular unconformity of local extent or a thrust fault. Gold mineralization is typically enriched along this discontinuity. The base of the Hanson Creek is gradational into the Eureka Quartzite. Locally, the stratigraphic section has been repeated by thrust faulting as observed at the SSX mine.

The JCM ore deposits are typical of the Carlin-type deposit consisting of micron to submicron-sized gold particles hosted primarily by carbonaceous, Paleozoic calcareous, and sulfidic sedimentary rocks. Lesser amounts of ore are hosted by intermediate to mafic intrusive rock. The deposits often consist of several discrete pods or zones of mineralization whose location is controlled by intersections of major west-northwest and north-northeast structures that cut folded, permeable, and chemically favorable host rocks.

Locally, intrusive dikes that follow the northwest or northeast structures may be important host rocks. The combination of these structural and stratigraphic controls imparts a highly irregular shape to the ore zones, though most have more horizontal than vertical continuity depending upon the orientation of the host rocks.

Gold in the JCM ore deposits occurs as free particles of inter-granular, native gold, on or within pyrite, or in association with sedimentary carbonaceous material. Due to the sulfide and carbonaceous affinities, most of the gold deposits at JCM require fine grinding and oxidation to permit the gold particles to be liberated by CIL.

Ongoing and future exploration plans are focused along well-known mineralized trends defined by previous drilling, mapping, geophysics, or soil/rock surface sampling, with adjacent in-place infrastructure (e.g., underground workings and/or access roads or mining facilities) in an effort add potential new resources and reserves.

Mining Operations

Background: Both surface (open pit) and underground mining are characteristic of the JCM site. Open pit mining at the JCM began with the development of the Marlboro Canyon Pit in 1981 and ended with the completion of the DASH (Dahl-Andersen-Smith-Hofstra) Pit in 1999.

Conventional surface mining methods were utilized with 12 surface mines (open pits) and 16 rock disposal areas (RDAs) developed during the period. Refer to *Table 1A—Active, Inactive, and Reclaimed Surface Mining Operations and Waste Rock/Development Rock Deposition at the Jerritt Canyon Mine* for additional details regarding specific waste rock placement and RDA status.

The surface mining activities did not require dewatering; however meteoric water and perched water collected in the bottom of the DASH Pit, forming a small lake. The lake was backfilled in 2007 with waste rock from the Lee Smith (Smith) underground mine.

Meteoric infiltration into the historic Winters Creek Pit, as well as runoff from surrounding mountain areas has led to seasonal accumulation of waters in the Winters Creek Pit, forming a small pit lake. Plans to reconstruct the stormwater diversions around the Winters Creek Pit to re-direct runoff inflows are in progress as of the 2025 renewal but are not yet solidified. Because the pit lake is seasonal and due mainly to meteoric run-in, a limited version of pit lake monitoring is required for this formation.

Underground mining at Jerritt Canyon began in 1993 at the West Generator Mine. As of the suspension of operations in 2023 the Smith, SSX-Steer, West Generator, and Saval 2 underground mines were operating. Underground mining at the SSX-Steer complex started in 1997, was temporarily stopped in August 2008, and restarted in October 2011 before suspending with the rest of mine operations in 2023. Underground mining at Smith started in 1999, was temporarily stopped in August 2008, and restarted in February 2010, and continued to operate until the general suspension of mining in 2023.

The Steer mine portal, now a part of the SSX-Steer complex, was constructed in 2004. Underground mining at Saval 4 occurred from October 2014 to June 2019. Active mining at Starvation Canyon began in May 2012 and ceased operations in April 2016. New portal developments and underground mining operations at the West Generator and Saval 2 mines commenced in 2022.

During active underground mining operations, mined ore is temporarily stored at each portal entrance area prior to its haulage to the JCM Mill Stockpile Pad. The portal stockpile pads are comprised of graded and compacted development rock, with 5,000-ton ore capacities. As of the suspension of mine operations in 2023, all mill-grade ore stockpiles had been exhausted.

Drainage from these temporary ore stockpiles is collected by sediment sumps, located near the portal areas, and allowed to evaporate. Residence time at the portal areas is typically less than a week. For additional details regarding specific waste rock placement and RDA status at the JCM underground operations, refer to *Table 1B—Active, Inactive, and Reclaimed Underground Mining Operations and Waste Rock/Development Rock Deposition at the Jerritt Canyon and Starvation Canyon Mines.* Sediment collection sumps have been constructed underground to collect minor amounts of water, with flow rates typically less than 50 gpm. These waters have been appropriated through Nevada Division of Water Resources (NDWR) for use as backfill make-up, underground drilling, and haul road dust suppression. Because of the suspended sediments that accumulate in the underground sumps, this water cannot be reinjected. Since this water is appropriated and used at the mine site, the Permittee does not routinely sample and analyze the water.

Historically, the Murray and Smith mines required dewatering. At the time, dewatering water from both operations met either the Profile I water quality reference values or background water quality. At the peak of mining activity, the Murray Mine required the management of approximately 400 gallons per minute (gpm) of dewatering water. The dewatering water was re-injected into the aquifer near the site of the USA Complex, a heavy equipment/off-road vehicle refueling site, pursuant to the Division's Underground Injection Control (UIC) Program (Permit UNEV 93214,). Dewatering of the Murray Mine ceased in 2003 and as of December 2022, no surface expressions have been observed.

At the peak of Smith Mine mining activity, approximately 1,000 gpm of dewatering water required management. The dewatering water was re-injected into an aquifer located east of the DASH Pit, pursuant to UIC Permit UNEV93214. With the cessation of all mining in August 2008, dewatering at Smith ceased and the underground workings were allowed to fill with water. A Schedule of Compliance (SOC) item, in 2008, required that prior to any return to mining at JCM with the potential to penetrate the groundwater table the Permittee is required to submit a dewatering water management plan (DWMP) for review and approval.

Smith Mine Dewatering Treatment: In late 2015, a DWMP utilizing underground injection was submitted to and approved by the Division. The Permittee applied to re-instate UIC Permit UNEV93214, which was approved and authorizes injection of dewatering water meeting Profile I reference values for all constituents back into the aquifer. Since the dewatering water requires treatment due to elevated arsenic and antimony, a dedicated water treatment plant was approved for construction at the JCM site in December 2016. UIC Permit UNEV93214 is maintained and managed by the Bureau of Water Pollution Control – Underground Injection Control Program.

An EDC approved by the Division on 14 December 2016, authorizes the Permittee to treat Smith water to bring the contaminant levels in the water into compliance with the Nevada

Profile I standard. After treatment, the treated water is injected back into the aquifer, pursuant to UIC Permit UNEV93214.

The Smith Water Treatment Plant (WTP) was constructed within the existing DASH treatment facility. No changes were made to the existing containment floor and all existing components were removed except for the fire system, house water system, shower system, and DASH equalization tank with transfer pump. A new concrete chemical containment area was built adjacent to the Smith WTP. The Smith WTP currently treats up to 1,500 GPM of Smith raw water and all water is reinjected into the South Injection Field, which consists of three injection wells and three monitoring wells and is located adjacent to (east of) the East DASH RDA.

Due to extenuating winter conditions and site accessibility, JCG temporarily left the Smith influent pipeline trench exposed until the beginning of the 2017 construction season, at which time a permanent pipe placement was completed.

The treated effluent from the Smith WTP is temporarily stored in an existing above-grade 60,000 gallon tank (i.e., finished water tank) adjacent to the DASH building. Effluent pumps are installed to deliver treated water via a new 12-inch HDPE pipeline to the injection field.

The influent dewatering water from the Smith Mine exceeds Profile I standards for Arsenic and Antimony only. Treatment begins with the addition of Ferric Chloride ($FeCl_3$) for coagulation and iron adsorption, sulfuric acid (H_2SO_4) to lower pH, and sodium hypochlorite (NaOCl) for oxidation. The chemically pretreated water flows through a reaction vessel, then to coagulation/filtration vessels, and then finally through adsorption vessels into the 60,000-gallon finished water tank. Sodium hydroxide (NaOH) is added post-treatment in order to raise pH within permissible levels.

Waste Rock Characterization and Management: The waste rock from the JCM exhibits significant neutralization capacity. A waste rock management plan (WRMP, referred to by the Permittee as the Development Rock Characterization and Handling [DRCH] Program) was first implemented in 1994 at the JCM and last revised and updated in September 2010 to include the Starvation Canyon Mine.

The program implemented through the current WRMP addresses sampling, analysis, and handling of development (waste) rock generated as a result of mining activity. Representative samples of rock are collected and analyzed for their Acid Neutralization Potential/Acid Generation Potential (ANP/AGP) and for Meteoric Water Mobility Procedure (MWMP)-Profile I constituents. Refer to *Tables 1A and 1B* for details regarding current and historic waste rock/development rock deposition and status.

Waste rock/development rock generated from surface and underground mining is comprised of mostly Roberts Mountain and Hansen Creek formation rock. Both formations have high neutralizing potential and very low potential to generate acid. These formations have been mapped extensively and are easily recognized in the field. Portions of these formations are strongly silicified and decalcified and therefore have low ANP/AGP ratios. Further testing of strongly altered rock has shown that they are in general not acid-generating. Altered rocks are readily distinguished in the field due to their contrasting color and physical properties relative to surrounding rock. Visual characterization is confirmed by verification sampling and testing during mining.

Table 1A: Active, Inactive, and Reclaimed Surface Mining Operations and Waste Rock/Development Rock Disposition Sites at the Jerritt Canyon Mine Site.

Name (years active)	Mine Status	Waste Rock/Development Rock Deposition and Status
Marlboro Canyon (1981-1990)	Partially reclaimed and backfilled with development rock from Marlboro Canyon East	Marlboro Canyon Rock Disposal Area (RDA) partially reclaimed
Upper and Lower North Generator (1981-1993)	Previously used as an underground backfill borrow source	Snow Canyon East, Snow Canyon West and Sue RDAs partially reclaimed
West Generator (1986-1993)	Not reclaimed	Myrtle and Gracie RDAs partially reclaimed
Pattani Springs (1988-1990)	Reclaimed	Pattani RDA partially reclaimed
Burns Basin (1988-1998)	Partially reclaimed and backfilled with development rock from SSX underground mine	Burns Basin RDA, haul roads, and backfilled pit partially reclaimed
Alchem (1991-1994)	Pit serves as Class III Waivered Landfill	Alchem C and Sue RDAs partially reclaimed
Mill Creek (1992-1994)	Reclaimed	Mill Creek RDA reclaimed
Winters Creek (1992-1995)	Partially reclaimed	Winters Creek RDA partially reclaimed
California Mountain (1993-1994)	Reclaimed	California Mountain RDA reclaimed
Steer (1994-1997)	Partially reclaimed and backfilled with development rock from Steer/Saval Portal	Steer RDA partially reclaimed
Saval (1994-1997)	Partially reclaimed and backfilled with development rock from Steer/Saval Portal	Saval RDA partially reclaimed
DASH (1996-1999)	Partially reclaimed and backfilled with development rock from Smith underground mine	DASH Northwest, East and West RDAs partially reclaimed

Table 1B: Active, Inactive, and Reclaimed Underground Mining Operations and Waste Rock/Development Rock Deposition at the Jerritt Canyon Mine

Name (years active)	Mine Status	Waste Rock/Development Rock Deposition
Murray Mine (1997-2003)	Inactive. Will need to re-establish drainage.	Murray RDA and West Generator Pit backfill
SSX Mine (1997-2008, 2014-2023)	Active	Development rock used as backfill in the Burns Basin Pit
Smith Mine (1999-2008, 2010-2023)	Active	Development rock placed on the East DASH RDA and used as backfill in the DASH Pit
MCE Mine (1997-2003)	Inactive	Development rock used as backfill in the Marlboro Canyon Pit
Steer Portal (2004-2008, 2014- 2023)	Active	Development rock used as backfill for underground ground support & the Steer Pit
Saval 2 Portals (2022- 2023)	Active	Development rock used as backfill for underground ground support Saval Pits
Saval 3 Portal (2014-2023)	Active. Only used for an emergency escape for the SSX Mine.	Development rock placed as backfill in the Saval Pits

Saval 4 Portal (2014-2019)	*Inactive*	*Development rock placed as backfill in the Saval Pits*
West Generator Portal (2022-current)	*Active*	*Development rock used as backfill for underground ground support & West Generator Pit*
Starvation Canyon (2012-2016)	*Inactive*	*Starvation Canyon RDA*

The acid-generating potential of the various waste rock types to be mined have been determined through the baseline testing program described above. Some waste rock types are known to have a high risk of generating acid and can be visually identified, such as lower-plate intrusives and exhalative units in the Snow Canyon Formation; however, there are no future plans to mine ore deposits within the Snow Canyon formation. Pursuant to the current WRMP/DRCH Program, waste rock to be mined is classified into high risk (e.g. the waste rock has a high potential to form acid in the field), low risk (the waste rock is non-acid generating), and undifferentiated zones.

Waste rock that can be visually characterized as high or low risk is sampled and analyzed under a verification program. The purpose of the verification program is to confirm the high or low risk character of the visually characterized rock types. Undifferentiated waste rock types are sampled and analyzed under a waste characterization program to determine the high or low risk character of the undifferentiated waste rock types.

The objective of the WRMP/DRCH Program is to prevent acid-forming and metal/metalloid liberating materials from degrading the waters of the State. This is accomplished via 1) the selective handling and isolation of potentially acid forming waste rock; 2) the capping, contouring, or drainage control to reduce infiltration; and/or 3) the blending, dilution, and encapsulation of potentially acid-generating materials with neutralizing material.

The Program is designed to isolate acid generating and metal/metalloid liberating materials from continual exposure to air and water through a variety of methods or selectively blending problematic waste with neutralizing waste. The method used in a given area is dependent on several factors, including but not limited to: the geochemical character of the material that is mined; the volume of material that is characterized as acid-forming; the availability of fine textured materials; dump sequencing; mining methods; and other factors.

Acid-generating and metal/metalloid liberating waste is managed by selectively encapsulating it into discrete parts of the dump and/or by dilution and mixing. Segregation of this problematic waste rock is dependent on the volume and lateral continuity of this material. Problematic zones that are discontinuous in nature and smaller than the distance between individual drill holes (15 to 120 feet for underground operations) may not be identified through the sampling conducted in accordance with the WRMP/DRCH Program. The problematic zones and the intrusives typically cannot be distinguished after blasting and are therefore managed though dilution, mixing, and encapsulation.

JCM Waste Rock Disposal and Drainage Issues: The implementation of the approved waste rock disposal area (RDA) design criteria selected in conjunction with 1981

Environmental Impact Statement (EIS) approval, resulted in the construction of RDAs at the JCM that minimized erosion by draining stormwater run-off and snowmelt toward the interior of the RDAs.

An unanticipated result of the RDA design was that four RDAs (Marlboro Canyon East, Gracie, Snow Canyon, and East DASH) all exhibited seepage from the toe of the slope. The quality of the seepage water has been shown to exceed the 500 milligram per liter (mg/L) total dissolved solids (TDS) standard for the South Fork (SF) Owyhee River and North Fork (NF) Humboldt, due primarily to high sulfate and magnesium concentrations. The Division continues to work with the Permittee to address these seepage issues.

- ***Marlboro Canyon East RDA:*** During the mining of the MCE surface and underground mines, waste rock was transported to the MCE RDA for disposal. The MCE RDA is a valley fill dump with multiple benches cut into the dump face; these benches do not appear to promote run-off. The haulage road along the top of the MCE RDA is minimally graded to promote surface drainage. Most precipitation received is snow which infiltrates directly into the MCE RDA. Little evidence of erosion rills have been observed on the surface of the MCE RDA. At the time the MCE RDA was first constructed, natural springs or seeps were observed, and it is believed that additional groundwater seeps may have developed under the RDA after construction.

  In 1990, all surface mining at MCE ceased, and the suspension of underground mining at MCE in 2003 ended any further placement of waste rock at MCE. In accordance with the Plan of Operation/Reclamation Plan in effect at the time, MCE RDA dump lift faces were left at an angle of repose between 30 and 40 degrees, without benefit of a growth media cover or installation of low-permeability membranes. The top of the MCE RDA was left flat in places to promote internal drainage and layered with 1-foot to 2-foot layers of growth media and re-vegetated. In 2004, five clay-lined sumps were excavated along the haulage road transecting the MCE RDA. The sumps are connected by a combination of open "V" and trapezoidal ditches, corrugated metal pipe (CMP), and high-density polyethylene (HDPE) culverts to intercept haul road run-off.

  Seepage emanating from the toe of the MCE RDA appears to be the result of direct meteoric precipitation and run-on from the up-gradient watershed during major precipitation events. The majority of the precipitation in the area occurs between November and May in the form of snow, which is included in the annual precipitation quantity as equivalent water content. Snow accounts for about 75 percent of the precipitation. Site specific data is not available, but reported annual precipitation is between 24 and 48 inches.

  The existing MCE RDA watershed consists of a 234-acre basin in which run-off is captured and conveyed via a network of roadside drainage features. These features are intended to capture storm flow run-on from the tributary area north of the MCE RDA and convey it around the area, discharging it down the slope face to the tributary below.

  Surficial features in the topography of the MCE RDA have resulted in storm water being stored at the top and intermediate benches rather than utilizing conveyances and are believed to be responsible for the storage and consequent infiltration of stormwater into the MCE RDA.

In 2002, the USFS-HTNF and the Division authorized the Permittee to implement their conceptual design for a pilot-scale, sulfate-reducing bioreactor (SRBR) to treat seepage from the MCE RDA. The design consisted of a sulfate removal system (sulfate reduction trench [SRT]) located below the toe of the MCE RDA. Construction of the SRT was completed in 2002, and after several years of operation and design revisions, the Permittee was not able to demonstrate the effectiveness of the passive sulfate reduction system.

An EDC approved 9 December 2011 authorized the Permittee to initiate the following measures to reduce infiltration and water emanating from the MCE RDA: Regrading, recontouring, and compaction of the face of the MCE RDA to promote run-off; Construction of a low-permeability soil zone atop the MCE RDA; Installation of HDPE-lined drainage diversion ditches to capture run-off from the top and conduct it away from the MCE RDA; and Placement of 2 feet of growth media over the capping low-permeability soil layer to serve as a store-and-release cover.

Until 2003, a portal located north of the MCE RDA was used to access the MCE underground workings. Stormwater run-off collected at portal entrance and drained into the existing workings and at the time it is assumed to be the largest contributor of seepage entering and working its way through the MCE RDA. In an effort to eliminate this source of seepage, the portal and drift were sealed with multiple lifts of concrete and once cured, backfilled and graded.

Pursuant to Item 19.b. of the 30 December 2013 Modified Consent Decree, the Permittee was required to submit to the Division by 31 March 2014, a complete EDC application for a rejuvenation plan for the MCE RDA SRT to treat the maximum anticipated seepage flow from the MCE RDA to all applicable water quality standards. In addition, Decree Item 19.d. required the Permittee to commence operation of the approved rejuvenation of the MCE RDA SRT by 31 March 2015 or, if necessary, submit to the Division for approval a complete EDC application to construct a water treatment system for MCE RDA. The rejuvenation plan EDC was approved by the Division on 3 April 2014.

An updated design was completed in 2015 and involved the construction of new SRT and spring box prior to the existing SRT; the installation of flow measurement system; temporary redirection of Marlboro Canyon RDA seepage flow; excavation and inspection of the media within the SRT; and rejuvenation of the SRT by replacing sections or the entire SRT with fresh media. In 2016, JCG completed construction of upgrades to the Marlboro Canyon SRT, including revegetation of the construction disturbance. Due to continued underperformance of the SRTs, JCG initiated hydraulic and biogeochemical evaluations of the SRT systems in early 2022, using the MCE SRT as a pilot study. JCG contracted Piteau Associates (Piteau) to conduct hydraulic evaluations of the SRTs and Enviromin, Inc. (Enviromin) to conduct biogeochemical evaluations of the sulfate-reducing media within the SRTs. The results of each study are briefly summarized below.

In early 2022, JCG contracted Piteau to conduct a hydraulic study of the MCE SRT. Their study consisted of shallow drilling across the SRT cells at multiple depths. The goal of the study was to determine saturation and flow characteristics throughout the SRT. The results of Piteau's investigation of the MCE SRT indicated that the SRT is not constructed or operating as designed. SRT cell elevations did not match as-built drawings and do not support cascading flow as designed. Drilling results also indicated that sulfate-reducing media are not uniformly homogenous, with restrictive slime layers and gravelly layers at different depths, further impeding flow within the cells.

Enviromin, Inc. (Enviromin) collected several media samples from various cells within the MCE SRT and conducted a series of column tests to evaluate the sulfate reducing potential of the media within the system. Results of the study indicated that MCE media was effective for a short period but sulfate reducing potential was quickly exhausted due to insufficient organic carbon to support the metabolism of sulfate-reducing bacteria. Enviromin proposed and tested several organic carbon amendments, including methanol, yeast extract, and acetic acid, to sustain microbial sulfate reduction long-term. Methanol showed the most promise and reduced sulfate to below 500 mg/L by day 42 and continued to reduce sulfate to near-zero by day 63. Sulfate reduction was sustained through at least day 77; however, column tests were terminated before long-term sustainability could be determined.

In 2023, the Division approved a work plan for geochemical and hydrogeologic investigations to better characterize the seepage coming from the Marlboro Canyon, Gracie, and Snow Canyon East RDA's, and to support closure plans for those facilities. The geochemical characterization began in 2023 and concluded that the source of the sulfate seepage at the toe of the facility was caused by the dissolution of gypsum formed as a result of active sulfide oxidation occurring within the RDA's and natural gypsum present in the host rock. Acid created from sulfide oxidation is rapidly neutralized by the dissolution of dolomite present, and thus water seepage at the toe of each RDA is persistently alkaline with high sulfate concentrations. The hydrogeologic investigations were planned to begin in 2025 with the installation of a shallow monitoring well network downstream of the RDA's to determine the quantity and quality of the subsurface water. As part of this plan, seven wells below Marlboro Canyon RDA are proposed, all of which will be advanced to bedrock and screened within the overlying alluvial formation. The specific total depth of each well will be based on site conditions, but the target depth is approximately 30 feet. As of the 2025 renewal this work was ongoing and no wells were yet in operation.

- ***Gracie RDA:*** During the mining of the West Generator Pit, waste rock from the pit was hauled to the Myrtle and Gracie RDAs for disposal. By 1993, all mining in the West Generator Pit and disposal of waste rock at the Myrtle and Gracie RDAs ceased. At the time of the Gracie RDA construction and waste rock placement, the Division did not require the installation of any run-on, run-off, and infiltration controls.

  The faces of the Gracie RDA were left at an angle of repose between 30 and 40 degrees, without benefit of any placement of covering growth media or placement of low-permeability soil. The faces are comprised of relatively coarse mine waste and a series of tension cracks and slumps occur in a 20-ft to 60-ft wide zone along the Gracie RDA crest. Maximum subsidence in the slump zone is approximately 10 feet. Slope stability does not appear to be an issue from a closure standpoint; however, tension cracks and slumps along the crest indicate only a semi-stable condition which could be upset by a small seismic event or foot traffic across the face of the Gracie RDA. The top of the Gracie RDA was left flat in places to promote internal drainage and layered with 1-foot to 2-foot layers of growth media and re-vegetated.

Seepage emanating from the toe of the Gracie RDA is the result of direct meteoric precipitation and run-on from the upgradient watershed during major precipitation events. The majority of the precipitation in the area occurs between November and May in the form of snow, which is included in the annual precipitation quantity as equivalent water content. Snow accounts for about 75 percent of the precipitation. Site specific data is not available, but reported annual precipitation is between 24 and 48 inches.

The existing Gracie RDA watershed consists of a 33-acre basin. Surface features in the topography have created locations in which storm water has been stored at the top of the Gracie RDA rather than utilizing conveyances. These depressions and features are greatly responsible for the storage and consequent infiltration of stormwater into the Gracie RDA. The drainage in the project area is characterized by sheet flow, which is often interrupted by forest debris and rock outcroppings.

Interflow from the upgradient catchment along the colluvium/bedrock contact into the Gracie RDA is also a contributing factor. No natural springs or seeps are known to exist beneath the Gracie RDA, but it is possible that minor groundwater seeps may have developed after the construction of the Gracie RDA. Seepage water quality monitoring of the flow emanating from the toe of the Gracie RDA indicates the presence of excessive levels of metals, salts, and TDS.

An EDC, approved by the Division 3 November 2011, authorized the Permittee to initiate the following measures to reduce infiltration and water emanating from the Gracie RDA: Re-grading and recontouring of the Gracie RDA surfaces and the construction of lined drainage diversion ditches to direct run-off away from the Gracie RDA (as used on MCE), and placement of a 60-mil HDPE liner on the top surface of the Gracie RDA and 3 feet of growth media overliner to serve as a store and release cover.

Following stripping and growth media removal, exposed mine waste was graded to approximately 5 percent to a 60-mil HDPE lined channel at the southwest end of the Gracie RDA to direct run-off along the southwest side of the Gracie RDA face to a rip-rap lined energy pool for energy dissipation. Run-on from the watershed northwest of the RDA is intercepted by a synthetic lined channel and a 60-mil HDPE cover and 3 feet of growth media on top of the Gracie RDA will further inhibit infiltration into the RDA and seepage emanating from the RDA toe.

Although there is no quantifiable flow or characterization data available from flows emanating from the toe of the Gracie RDA, the flow that has been observed appears to be significantly lower when compared to the pre-EDC flows. No adverse effects to downstream stormwater diversion structures as a result of the regrading and recontouring the Gracie RDA have been observed to date. The impacts to stormwater run-off leaving the site due to the addition of impervious surfaces are mitigated by the lined diversion structures and flows and released to an existing drainage course.

Pursuant to the 30 December 2013 Modified Consent Decree, Item 19.c. required the

Permittee to submit to the Division by 31 March 2014, a complete EDC application for the construction of a water treatment system to treat the maximum anticipated seepage flow from the Gracie RDA to all applicable water quality standards.

The treatment system must be capable of treating the maximum anticipated seepage flow from the RDA while achieving compliance with all applicable water quality standards. The system may utilize biological sulfate treatment, provided that the discharge from this type of system will meet the required standard of performance and must commence operation by 31 March 2015. The Division approved the EDC for Gracie on 18 April 2014.

The Gracie sulfate removal system is designed to use biological treatment to remove sulfate from seep water (intercepted groundwater) similar to the MCE RDA SRT. Sulfate-reducing bacteria contained in manure and water in the treatment system will reduce sulfate to hydrogen sulfide and/or elemental sulfur thereby removing sulfate and TDS.

Due to continued underperformance of the SRTs, JCG initiated hydraulic and biogeochemical evaluations of the SRT systems in early 2022, using the MCE SRT as a pilot study. JCG contracted Piteau Associates (Piteau) to conduct hydraulic evaluations of the SRTs and Enviromin, Inc. (Enviromin) to conduct biogeochemical evaluations of the sulfate-reducing media within the SRTs. The results of the MCE studies are assumed to apply to Gracie, but a site-specific evaluation has not been completed as of February 2023.

In 2023, the Division approved a work plan for geochemical and hydrogeologic investigations to better characterize the seepage coming from the Marlboro Canyon, Gracie, and Snow Canyon East RDA's, and to support closure plans for those facilities. The geochemical characterization began in 2023 and concluded that the source of the sulfate seepage at the toe of the facility was caused by the dissolution of gypsum formed as a result of active sulfide oxidation occurring within the RDA's and natural gypsum present in the host rock. Acid created from sulfide oxidation is rapidly neutralized by the dissolution of dolomite present, and thus water seepage at the toe of each RDA is persistently alkaline with high sulfate concentrations. The hydrogeologic investigations were planned to begin in 2025 with the installation of a shallow monitoring well network downstream of the RDA's to determine the quality and quantity of the subsurface water. As part of this plan, five wells below the Gracie RDA are proposed, all of which will be advanced to bedrock and screened within the overlying alluvial formation. The specific total depth of each well will be based on site conditions, but the target depth is approximately 30 feet. As of the 2025 renewal this work was ongoing, and no wells were yet in operation.

- ***Snow Canyon East RDA:*** During the mining of the North Generator (North Gen) Pit, waste rock was transported to the Snow Canyon East (SCE), Snow Canyon West (SCW), and Sue RDAs for disposal. The SCE RDA was constructed with multiple benches cut into the dump face to promote internal drainage. The top surface of the SCE RDA is minimally graded to promote surface drainage. Most precipitation received is snow which infiltrates directly into the SCE RDA and little evidence of erosion rills have been observed on the surface. At the time of the construction, no natural springs or seeps were observed but it is possible that some groundwater seeps may have developed under the RDA after construction.

In 1993, all surface mining at the North Gen Pit ceased and the further placement of waste rock at the SCE, SCW, and Sue RDAs suspended. In accordance with the Plan of Operation/Reclamation Plan in effect at the time, SCE RDA dump lift faces were left at an angle of repose between 30 and 40 degrees, without benefit of any placement of covering growth media or placement of a clay layer or HDPE.

The top of the SCE RDA was left flat in places to promote internal drainage and layered with 1-foot to 2-foot layers of growth media and re-vegetated. No diversion control structures were required, and no significant run-off has been observed from the SCE RDA.

Seepage emanating from the toe of the SCE RDA is the result of direct meteoric precipitation and run-on from the upgradient watershed during major precipitation events. The majority of the precipitation in the area occurs between November and May in the form of snow, which is included in the annual precipitation quantity as equivalent water content. Snow accounts for about 75 percent of the precipitation. Site specific data is not available, but reported annual precipitation is between 24 and 48 inches.

The existing SCE RDA watershed consists of a 42-acre basin with surface features which have created locations in which stormwater has been stored at the top and intermediate benches rather than utilizing conveyances. The depressions and features are largely responsible for the collection and resultant infiltration of stormwater into the SCE RDA.

The existing drainage in the project area on top and on benches of the SCE RDA is characterized by sheet flow, which is often interrupted by cobbles, boulders, and rock outcroppings. Because of the very coarse nature of mine waste exposed on inter-bench faces, no significant amount of run-off is generated on these slopes.

An EDC, approved 13 December 2011, authorized the Permittee to initiate the following measures to reduce infiltration and water emanating from the SCE RDA: Re-grading and re-contouring; Construction of a low-permeability soil zone atop the SCE RDA; Installation of HDPE-lined drainage diversion ditches to capture run-off from the top and conduct it away from the SCE RDA; and placement of two feet of growth media over the capping low-permeability soil layer to serve as a store-and-release cover.

Pursuant to the 30 December 2013 Modified Consent Decree, Item 19.c. required the Permittee to submit to the Division by 31 March 2014, a complete EDC application for the construction of a water treatment system to treat the maximum anticipated seepage flow from the SCE RDA to all applicable water quality standards.

The treatment system must be capable of treating the maximum anticipated seepage flow from the RDA while achieving compliance with all applicable water quality standards. The system may utilize biological sulfate treatment, provided that the discharge from this type of system will meet the required standard of performance and must commence operation by 31 March 2015. The EDC for SCE was approved by the Division on 15 April 2014.

The SCE sulfate removal system is designed to use biological treatment to remove sulfate from seep water (intercepted groundwater) similar in design to the MCE RDA SRT. Bacteria contained in manure and water in the treatment system reduce sulfate to hydrogen sulfide and/or elemental sulfur thereby removing sulfate and TDS.

Due to continued underperformance of the SRTs, JCG initiated hydraulic and biogeochemical evaluations of the SRT systems in early 2022, using the MCE SRT as a pilot study. JCG contracted Piteau Associates (Piteau) to conduct hydraulic evaluations of the SRTs and Enviromin, Inc. (Enviromin) to conduct biogeochemical evaluations of the sulfate-reducing media within the SRTs. The results of the MCE studies are assumed to apply to SCE, but a site-specific evaluation has not been completed as of February 2023.

In 2023, the Division approved a work plan for geochemical and hydrogeologic investigations to better characterize the seepage coming from the Marlboro Canyon, Gracie, and Snow Canyon East RDA's, and to support closure plans for those facilities. The geochemical characterization began in 2023 and concluded that the source of the sulfate seepage at the toe of the facility was caused by the dissolution of gypsum formed as a result of active sulfide oxidation occurring within the RDA's and natural gypsum present in the host rock. Acid created from sulfide oxidation is rapidly neutralized by the dissolution of dolomite present, and thus water seepage at the toe of each RDA is persistently alkaline with high sulfate concentrations. The hydrogeologic investigations were planned to begin in 2025 with the installation of a shallow monitoring well network downstream of the RDA's to determine the quality and quantity of the subsurface water. As part of this plan, six wells below the Snow Canyon East RDA are proposed, all of which will be advanced to bedrock and screened within the overlying alluvial formation. The specific total depth of each well will be based on site conditions, but the target depth is approximately 30 feet. As of the 2025 renewal this work was ongoing, and no wells were yet in operation.

- ***RDA Reclamation Bond and Extension of Construction Completion Schedule:*** Pursuant to Paragraph C, Subparts 6.6 and 6.7, in "Agreement for Adequate Reclamation Bond and Rock Disposal Area Seepage Treatment," the Permittee was required to complete by 30 November 2015, the following items:
  - Rejuvenation and/or construction pursuant to the approved design of the MCE, SCE, and Gracie RDA SRTs;
  - Installation of all necessary monitoring devices;
  - Commence operation of the MCE, SCE, and Gracie RDA SRTs; and
  - Submit an operation, maintenance, and monitoring plan and an as-built report pursuant to NAC 445A.427 for MCE, SCE, and Gracie RDA SRTs within 30 days after completion of construction.

The Permittee initiated rejuvenation and reconstruction of the MCE RDA SRT and construction of the SCE and Gracie SRTs during the third quarter of 2015. Because of deteriorating weather conditions and RDA accessibility issues, only the MCE RDA SRT had been reconstructed and the placement of sulfate-reducing media initiated. While the

Permittee remained hopeful to complete the MCE RDA SRT by 31 December 2015 and maintain safe access to the site throughout winter months, it appeared that this would not occur due to unfavorable weather conditions. Furthermore, because of the significantly difficult terrain and remote locations of the SCE and Gracie RDA SRTs, it was not likely that the Permittee could not maintain safe access to these sites during the winter months and complete construction. Consequently, the ability of the Permittee to meet the 30 November 2015 timeline pursuant to the Agreement was unlikely.

On 23 November 2015, the Permittee requested and the Division approved on 24 November 2015 an extension for the completion of all RDA SRT construction. In the opinion of the Division, since July 2015, the Permittee had demonstrated significant progress and the level of commitment in both effort and resources being applied to construct and complete the SRTs as well as addressing other compliance issues at the JCM site. Because of these circumstances and the good-faith efforts made by the Permittee, the Division agreed to extend the completion date and commencement of operations for the SRTs to no later than 30 June 2016.

On 28 September 2015, the Permittee requested an extension to the 30 June 2016 completion date. The MCE RDA SRT has been completed and the as-builts were approved by the Division on 24 June 2016. The Gracie SRT was expected to be completed soon with the submittal of as-builts to the Division expected in December 2016. Work had stopped at SCE due to the inclement weather including snow accumulation. The Permittee intends to return to work if weather permits. The SCE SRT required the construction of six trenches, however only one was completed. The Permittee anticipates that it will take one month per trench to complete the remaining five trenches. Because of these circumstances and the good-faith efforts by JCG, the Division agreed to extend the completion date and commencement of operations for the remaining SRTs to no later than 30 August 2017.

Due to continued underperformance of the SRTs, JCG initiated hydraulic and biogeochemical evaluations of the SRT systems in early 2022, using the MCE SRT as a pilot study. JCG contracted Piteau Associates (Piteau) to conduct hydraulic evaluations of the SRTs and Enviromin, Inc. (Enviromin) to conduct biogeochemical evaluations of the sulfate-reducing media within the SRTs. The results of each study are briefly summarized below.

In early 2022, JCG contracted Piteau to conduct a hydraulic study of the MCE SRT. Their study consisted of shallow drilling across the SRT cells at multiple depths. The goal of the study was to determine saturation and flow characteristics throughout the SRT. The results of Piteau's investigation of the MCE SRT indicated that is not constructed or operating as designed. SRT cell elevations did not match as-built drawings and do not support cascading flow as designed. Drilling results also indicated that sulfate-reducing media are not uniformly homogenous, with restrictive slime layers and gravelly layers at different depths, further impeding flow within the cells.

Enviromin, Inc. (Enviromin), collected several media samples from various cells within the MCE SRT and conducted a series of column tests to evaluate the sulfate reducing potential of the media within the system. Results of the study indicated that MCE media was effective for a short period but sulfate reducing potential was quickly exhausted due to insufficient organic carbon to support the metabolism of sulfate-reducing bacteria. Enviromin proposed and tested several organic carbon amendments, including methanol, yeast extract, and acetic acid, to sustain microbial sulfate reduction long-term. Methanol showed the most promise and reduced sulfate to below 500 mg/L by day 42 and continued to reduce sulfate to near-zero by day 63. Sulfate reduction was sustained through at least day 77; however, column tests were terminated before long-term sustainability could be determined.

- ***DASH RDA:*** The East DASH RDA was constructed within the valley of Sheep Creek and a southern tributary to the creek between 1996 and 1999. Several permanent diversion structures were designed and constructed to carry stormwater run-off and snowmelt around the DASH pit and RDAs to an under-dump drain system (UDS). The UDS was constructed prior to the dump and is comprised of a rock-filled French drain.

  In 2004, routine sampling of the lower Sheep Creek drainage indicated elevated sulfate, TDS, and magnesium concentrations as a result of seepage emanating from the DASH East RDA UDS. Drainage from the toe of the East DASH RDA into Sheep Creek exceeded the 500 mg/L TDS standard for the NF Humboldt River due to elevated sulfate and magnesium concentrations.

  Pursuant to NAC 445A.1458 and 445A.1462, the segments of the NF Humboldt from the USFS boundary to its confluence with Beaver Creek and from Beaver Creek to its confluence with the Humboldt River (Humboldt), are subject to specific water quality and beneficial use standards. The NF Humboldt and its tributaries are also designated as "trout waters" and are therefore subject to specific dissolved oxygen and temperature standards. No sulfate standards have been established for Sheep Creek and the NF Humboldt, however, they are both subject to a 500 mg/L TDS standard.

  Both Sheep Creek and the NF Humboldt have been incorporated into the State of Nevada 303(d) List of Impaired Waters – Sheep Creek for TDS and the NF Humboldt for total phosphorous and dissolved oxygen.

  Precipitation infiltrating through the angle of repose slope along the lower lift of the East DASH RDA was previously believed to be contributing to the elevated sulfate, magnesium, and TDS concentrations present in the seepage solution emanating from the toe of the East DASH RDA. This seepage discharge entered Sheep Creek which flows through an under-dump drain constructed in the bases of both the Northwest DASH RDA and the East DASH RDA.

  Sheep Creek is a tributary of the NF Humboldt and on occasion, surface flow from the Sheep Creek has reached the NF Humboldt. As a point of reference, flow in Sheep Creek would travel a distance of 7 miles from the toe of the DASH RDA to its confluence with the NF Humboldt.

  Baseline studies of water flux and sulfate profile on the lower lift of the East DASH RDA were undertaken for the purpose of capping, covering, and installing monitoring instrumentation for the angle-of-repose slope at the East DASH RDA. Throughout 2005 and 2006, the presence of elevated sulfate, TDS, and magnesium concentrations within the Sheep Creek drainage continued.

In an effort to reduce the volume of seasonal run-off from the upper Sheep Creek drainage entering the DASH East RDA, reduce the potential of water-waste rock interaction within the UDS, and subsequently reduce the flows of impacted drainage emanating from the UDS into the lower Sheep Creek drainage, the Division authorized the construction of a temporary diversion channel for Sheep Creek in December 2006. The project was completed on December 19, 2006 and an as-built report was submitted to the Division on January 15, 2007.

- ***DASH RDA Seepage Collection System:*** The Dash Seepage Collection system was first installed in 2009 as part of the DASH RDA Water Treatment Plan, pursuant to the 2009 Consent Decree (see *DASH RDA Water Treatment Plan*, below). In 2023 an EDC was approved to upgrade and revitalize the Seepage Collection System and convey the seepage to the new and updated Process Water Treatment Plant (see *Process Water Treatment Plant*, below). The upgraded system collects seepage from the toe of the DASH RDA in a catchment basin, and then conveys the water via a buried pipe-in-pipe to the Evap Pond.

- ***DASH RDA Water Treatment Plant:*** Pursuant to the 13 October 2009 Consent Decree, Item 19.a. required the Permittee to submit to the Division by 13 November 2009, a proposal to perform bench-testing on several potential long-term methods to address all parameters that exceed applicable water quality reference values in the DASH RDA seepage water.

  A final design for the long-term water treatment plant (WTP) was to be submitted by 5 April 2010 and following Division approval, the plant was to be constructed by 1 November 2010. The Consent Decree was later modified, and the submittal date extended to 15 May 2011 and specifically stipulated that the pilot treatment system be designed to treat a flow up to 15 gpm and be operational by 1 November 2011.

  Construction of the DASH WTP was approved as an EDC on 23 June 2011; however, because of delays in meeting requirements from other regulatory agencies, construction was not completed until May 2012.

  Pursuant to the 30 December 2013 Modified Consent Decree, Item 19.a. required the Permittee to commence operation by 31 March 2014, of the approved and constructed pilot treatment system for the DASH RDA seepage. Operation of the DASH WTP commenced on 25 March 2014, however because of a lack of seepage flow and difficulties with the reagent delivery systems, operation of the DASH WTP has been intermittent. Improvements were made to the reagent delivery system beginning in the summer of 2014 and a wet 2014 fall and winter reduced the amount of DASH WTP downtime, although plant operation was intermittent.

  The DASH WTP was designed to treat seepage water in two steps using: 1) lime addition to remove magnesium; and 2) barium carbonate addition to remove sulfate. To remove any large, suspended solids remaining, treated water was passed through a high-rate sand filter system. This system includes two sand/mixed media filters to alternatively backwash each filter while maintaining positive flow through the filter tank. Backwash water and sludge from the clarifiers was piped to the WTP open drain system, which gravity-drains to the Evap Pond. Treated water was also gravity-piped to the Evap Pond for final disposition or stored in a 10,000-gallon tank for use in fire suppression.

The pilot plant was operated in an effort to gain practical knowledge with the barium carbonate precipitation process. Since this is a pilot facility, the Permittee has been provided with flexibility to optimize WTP operation as it sees fit. An evaluation of the analytical data generated from DASH WTP operation indicated that greater than 95 percent of the magnesium, sulfate, and TDS present in the DASH seepage water could be removed consistently and Profile I values met. However, the barium concentration in the treatment sludge generated could not meet the toxicity characteristic leaching procedure disposal limits and required management as a hazardous waste. Operation of the DASH WTP was discontinued on 1 September 2016 in favor of a more robust water treatment system. For additional details, refer to the subsection "Tailings Supernatant Water Treatment Plant."

Mineral Processing Operations

Background: The JCM mill facility was constructed in 1981 to process both oxide and refractory ores, utilizing chlorine-gas/pre-oxidation of the refractory ores (i.e. "wet" or chlorination circuit) to oxidize the carbon constituents present in the ore and make the ores amenable to cyanide leaching. At its peak production in 1992, the mill processed approximately 4.5 million tpy, of which 1.5 million tpy was leached at the JCM heap leach pad (HLP).

With the depletion of the oxide and slightly refractory ore reserves, the wet mill circuit was shut down in early 1997. A third-party integrity evaluation completed in early 2016 stated that the wet mill facility would require major repairs and integrity improvements prior to its return to active operation. Currently, there are no plans to reactivate the facility.

A release during third quarter 2010 at the Mill Facility of approximately 170,000 gallons of process solution (Spill Report #110923-02) required the Permittee to take various actions including, but not limited to, the elimination of the source of the process leakage and any fresh water inflow that could further mobilize contaminants. The Division subsequently found the Permittee to be allegedly in violation of NRS 445A.465.1(a); NAC 445A.424.1(b)(1) and 1(b)(2); Parts I.A.2 and I.A.3 of the Permit; and the Division-approved Emergency Response Plan. A Finding of Alleged Violation (FOAV) was issued to the Permittee on 17 August 2011. For further discussion, refer to the sub-sections *"Mill Area Finding of Alleged Violation (FOAV) and Corrective Action Plan (CAP)"* and *"Groundwater Treatment System for VOC Remediation"*.

- ***Run-of-Mine Ore Haulage and Stockpiling:*** Run-of-Mine (ROM) ore mined at the JCM is transported by haul trucks over mine roads to the JCM Ore Stockpile Pad. Ore mined at the Starvation Canyon is transported by haul truck to a stockpile/staging area off S.R.-226; off-loaded and then loaded into highway dump trucks for transport to the JCM site. Berms surround the stockpile to divert stormwater run-off away from any drainages.

  The ROM Ore Stockpile Pad is adjacent to the primary crushers at the JCM Mill site, where it serves as a temporary storage/blending/staging area for ore prior to its processing through the Mill. Refractory sulfide ore is segregated on the pad according to gold grade and British Thermal Unit (BTU) content in an effort to optimize Mill and Roaster circuit operations.

The ROM Ore Stockpile Pad was originally comprised of a low permeable soil base overlain with a gravel cover material. The pad is graded to an existing collection pipe, which conveys stormwater run-off to the Mill stormwater ponds. The pad was constructed prior to 1989 when QA/QC and permeability testing and reporting were not required. Sub-base permeability data collected in March 2006 from the stockpile pad area suggested a coefficient of permeability in excess of the 1×10^{-5} cm/sec threshold for additional containment, pursuant to NAC 445A.433(3).

In an effort to take advantage of excess Roaster capacity, during the spring of 2006, the Permittee received Division authorization to begin processing small batches (typically 20,000 tons each) of off-site ores, mixed with JCM ores through the Mill and Roaster facilities to determine if the off-site ores were compatible with the Jerritt ores and roasting process and if these off-site ores could possibly supplement, on a toll basis, the Jerritt ores currently being processed.

In order to utilize the existing stockpile pad for storage of off-site ores, the northern half of the existing ROM Ore Stockpile Pad was upgraded in 2006. Existing cover gravels were removed to the sub-base and the exposed area regraded to direct meteoric run-off to a stormwater collection sump located at the eastern corner of the upgraded pad area. The base of the pad was graded to 1 percent to maintain stability for the stockpiled ores and a perimeter berm constructed to prevent run-on and convey run-off to the stormwater collection sump.

In April of 2023 an EDC was approved to upgrade the ROM Ore Stockpile Pad, however as of the 2025 renewal this work had not yet been completed. The rock cover of the original pad will be removed and an 80-mil HDPE liner installed, with a 16 ounce per yard non-woven geotextile and three feet of new protective cover materials. The pad will be re-graded at 1% to drain to the east side, to a collection pipe. The new collection pipe will be an 18-inch HDPE pipe inside a 24-inch HDPE pipe which gravity drains to the existing Mill Concrete Containment. Upgrades to the ROM Ore Stockpile Pad are planned to be completed before the resumption of mill operations.

- ***Primary Crushing Circuit:*** Stockpiled ore is fed via front-end-loader to the Primary Crushing Circuit comprised of a feed hopper/apron feeder and jaw crusher for initial size reduction. Crushed ore is discharged onto a stacker/conveyor for conveyance to the Dry Ore Feed Hopper. The hopper discharges crushed ore onto an apron feeder and conveyor and conveyed to the Ore Dryer for subsequent processing.
- ***Ore Drying Circuit:*** The purpose of the Ore Drying Circuit is to reduce the moisture content of the crushed ore for subsequent secondary and tertiary crushing, grinding, and roasting. Crushed ore is continuously fed via conveyor to the Ore Dryer, a large, slowly rotating steel tube, internally heated to a temperature of approximately 400 degrees Fahrenheit (ºF) for optimum moisture removal. The Ore Dryer is propane fired but is capable of utilizing diesel or fuel oil as backup. Two baghouses and a mercury scrubber

collect particulate emissions and any mercury generated from the primary crushing and ore drying operations.

Warm moist air generated during the ore drying process is directed through a bank of baghouses and then a mercury wet scrubber. This scrubber removes gaseous mercury from the dryer air stream to maximum achievable control technology (MACT) levels by reacting mercury with chlorine gas to form calomel (mercurous chloride [Hg_2Cl_2]).This is done by reacting elemental mercury present in the gas stream with mercury (II) chloride (mercuric chloride, $HgCl_2$) to produce mercury (I) chloride (mercurous chloride or calomel, Hg_2Cl_2). The removed calomel product and any residual mercury (II) ions would then be filtered to remove the calomel solids and then shipped off-site to an EPA-approved calomel disposal facility.

To optimize mercury removal, the water-calomel solution is bled from the scrubber water. The collected baghouse fines are pneumatically conveyed to the Roaster Feed Bin for subsequent oxidation roasting; the elemental mercury is collected and temporarily stored in the Refinery Building until shipment off-site to a U.S. EPA-approved mercury disposal facility.

During active mercury scrubber operations, cooling water from the South Thickener is pumped to the top of the scrubber through two, 6-inch diameter recirculation lines, with a portion of this water diverted to the hot side of a heat exchanger. Pressure present in this recirculation line provides the necessary head to convey scrubber water through the heat exchanger and back into the scrubber. Following heat removal, the cooled water is fed back into the side of the Ore Dryer Scrubber, at a rate of 500 gallons per minute (gpm). At no time do any of the solutions leave secondary containment.

Flow rates through the hot and cold sides of the heat exchanger are independently monitored with a dedicated flow meter and controlled by a manual throttling valve. Pressure and temperature gauges installed on the hot-side and cold-side inlets and outlets monitor Heat Exchanger efficiency, water temperature control, and optimization. The Heat Exchanger and the 6-inch diameter piping feeding the hot side of the Ore Dryer Scrubber are all within Wet Scrubber secondary containment. Water feeding the cold side of the scrubber is fresh water and does not require secondary containment.

- ***Secondary Crushing Circuit:*** Dried ore from the Ore Dryer is discharged onto a reclaim conveyor for conveyance to the Secondary Crushing, comprised of a vibrating screen and cone crusher. Crusher and screen undersize material is discharged directly to a series of conveyors which feed the Tertiary Crusher Feed Bin; oversize material is returned to the crusher for further size reduction. A baghouse collects particulate emissions from the Secondary Crushing; the collected baghouse fines are pneumatically conveyed to the Roaster Feed Bin for subsequent roasting.

- ***Tertiary Crushing Circuit:*** The Tertiary Crusher Circuit is comprised of several conveyors; a crusher feed bin, and a pair of vibrating screens and cone crushers. The crusher feed bin is divided into two chambers (or cells) that independently discharge onto a dedicated vibrating screen and cone crusher. Crusher and screen undersize material is discharged directly onto a pair of conveyors (in series) which feed the Fine Ore Feed Bin;

oversize material is returned to the cone crusher for further size reduction.

A baghouse collects particulate emissions from the Tertiary Crushing Circuit; the collected baghouse fines are pneumatically conveyed to the Roaster Feed Bin for subsequent roasting. The Fine Ore Bin Baghouse collects particulate emissions generated from the Fine Ore Bin Feed Conveyor discharge to the Fine Ore Feed Bin; the collected baghouse fines are returned to the bin.

- ***Dry Grinding Circuit:*** In order to optimize Roaster operations, an extremely fine particle size is required. This is accomplished by grinding performed in a closed-circuit with cyclones and air classifiers. The Dry Grinding Circuit is comprised of several conveyors and air slides (enclosed air-activated gravity conveyors), a ball mill, classifier, and cyclone.

  Material from the Fine Ore Feed Bin is discharged to a ball mill for fine grinding where it is ground to the desired particle size. Ball mill discharge is conveyed via air slide to the air classifier for further size classification; the classifier overflow material (fines) is pneumatically conveyed to the cyclone for fine particle size separation while the underflow (coarse) is returned to the ball mill for additional grinding. Cyclone overflow material is conveyed via air slide and bucket elevator to the Roaster Feed Bin, underflow is returned to the air classifier for additional particle size separation while the overflow is returned to the ball mill for additional grinding.

  A baghouse collects particulate emissions from the Dry Grinding Circuit with the collected baghouse fines pneumatically conveyed to the Roaster Feed Bin for eventual processing in the Roaster. This is discussed further in greater detail in the section entitled *"Roasting Operations"*.

- ***Mill Area Release and Remediation:*** In August 2010, the Permittee reported to the Division (Spill #110923-2), a release of an estimated 170,000 gallons of tailings seepage solution from a ruptured buried pipe located outside of the northwest corner of the inactive Wet Mill. The release was reportedly discovered one month earlier and reported late because it was originally thought to be fresh water. An analysis of the tailings seepage solution prior to the release indicates concentrations above the Profile I reference values for antimony, arsenic, cadmium, chloride, magnesium, manganese, mercury, selenium, sulfate, thallium, and total dissolved solids (TDS).

  The Division required the Permittee to take immediate action including eliminating the source of the process leakage and any fresh water inflow that could further mobilize contaminants, obtaining analyses from nearby monitoring wells to determine if groundwater contamination had occurred, excavating contaminated soil, obtaining analyses to confirm excavation of all contaminated soil, and reporting results to the Division along with proposals for any further work as warranted.

  A review of the analytical data collected indicated that the groundwater in the mill area was degraded by multiple discrete sources of process solution. Data from groundwater monitoring wells located hydrologically downgradient of the release showed that this release was a partial contributor to the groundwater degradation with respect to chloride, TDS, and other constituents (but not WAD cyanide).

The elevated WAD cyanide concentrations observed in several wells indicated a release from a source of cyanide-rich process solution unrelated to tailings seepage solution. Upon further investigation, the source of the cyanide release was determined to be from the secondary containment for the Liquid Cyanide Storage Tank.

An EDC approved in January 2012, modified the secondary containment for the Liquid Cyanide Storage Tank by removing the existing passive drain through the east containment wall and creating a concrete lined sump for removal of collected fluids. A new containment sump, approximately 3 feet by 6 feet by 3 feet in depth was constructed within the existing secondary containment.

Fluids collected in the sump are pumped to CIL Tank #1 via a small-diameter HDPE pipeline, which is piped through to the inactive CIP Circuit. The existing containment drain through the Chlorination Building wall was completely sealed from the rest of the Chlorination Building collection trench/sump network.

- ***Mill Area Finding of Alleged Violation (FOAV) and Corrective Action Plan (CAP):*** As a result of the CAP associated with the 17 August 2011 FOAV, the Permittee was required to address groundwater degradation within the mill area at the JCM, in particular historic and current leakage emanating from the Refinery Main Floor, CIL and CIP sumps.

  The Engineered Containment Assessment section in the CAP required 1) a complete evacuation (water and sediment) of all sumps and floor drains in the mill and refinery area, and any other containment floor areas that routinely contain process solution; 2) a photo-documented evaluation of the containment integrity; and 3) submittal of a report with a map showing all sumps and other areas evaluated, the results of all evaluations (text, photographs, and any other collected data), and a work plan and proposed schedule for any additional actions as warranted to minimize the potential for releases to the environment (e.g., repairs, modifications, replacements, etc.).

  The Permittee was required to submit an EDC application and schedule for the following actions: 1) evacuation and demolishing of the existing sump; 2) representatively sample the underlying soil (Meteoric Water Mobility Procedure-Profile I) to demonstrate the magnitude and extent of contamination; 3) excavate any detected contamination (or if excavation is not possible provide a complete proposal for no further corrective action pursuant to NAC 445A.227.2(a-k)); 4) fill and re-compact the soil sub-base as necessary; and 5) construct a new fully coated sump that is appropriately sealed to the adjacent existing concrete using approved flexible water-stop material. The sump replacement was to occur during the next scheduled refinery down period.

  In July 2013, an EDC approved by the Division authorized the Permittee to repair, reline, and/or replace four sumps: the Main Floor Refinery Sump, the CIL Circuit Area Sumps 1 and 2, and the CIP Circuit Area Sump for the purpose of eliminating sources of process solution escaping sump containment. The EDC also authorized the Permittee to reconstruct the Main Floor Refinery Sump and to repair and reline the two CIL Circuit Area sumps and the CIP Circuit Area Sump.

The EDC eliminated the existing sump with the construction of a new sump adjacent to it. The reinforced concrete sump is 3 feet wide by 3 feet long with a minimum depth of 2 feet. The new sump is lined with AGRUSAFE™ Sure Grip® Concrete Protective Liner System. All new exposed grout or concrete is coated with an epoxy chemical resistant coating.

The two sumps in the CIL area and the one sump in CIP were also lined with AGRUSAFE™ Sure Grip® Concrete Protective Liner System. All new exposed grout or concrete was also coated with an epoxy chemical resistant coating.

- ***Groundwater Treatment System for VOC Remediation:*** An EDC approved in February 2012, authorized the temporary installation of a portable VOC treatment system for groundwater removed from OMW-10 and OMW-18. Submittal of the EDC is in response to the FOAV and Order dated 17 August 2011 and Spill Report #110923-02 with the goal to reduce VOC concentrations present in recovered water to below regulatory action levels. Construction of any long-term or permanent treatment system that is deemed necessary by the consultant and/or the Division will require the submittal of a complete EDC including all applicable engineering designs and calculations. As of February 2023, this system has not been necessary. OMW-10 and OWM-18 are no longer in service as of the 2025 permit renewal, but pumping and treatment continues from OMW-EX1.

  Trichloroethylene (TCE) and chloroform concentrations exceeding the regulatory action levels have been reported in groundwater samples collected from OMW-10 and OMW-18. An EDC approved by the Division on 26 October 2015 authorized the temporary installation of a portable groundwater treatment system (e.g., the Volatile Organic Compound-Water Treatment System VOC-WTS]) to reduce TCE and chloroform to below regulatory action levels. An earlier design of a portable package VOC-WTS at the JCM mill site was approved as an EDC by the Division on 22 February 2012. However, because of financial issues and other concerns at the JCM, the VOC-WTS was not constructed.

  The October 2015 EDC submittal updated the previously approved design, reconfigured the WTS, and expanded monitoring frequency and performance objectives.

  Pursuant to the revised EDC, groundwater will be pumped for treatment from OMW-3. The groundwater pump will operate between high and low set-point switches; the pump will operate until the water level is drawn down to the low set-point, and then will shut off; when the water level rises to the level of the high set-point, the pump will activate and pump water again.

  Pumped groundwater will be conveyed to the pilot VOC WTS through heated-taped polyvinylchloride (PVC) conveyance lines. The water will enter the WTS building and be discharged into an equalization tank (ET). The ET will also be equipped with high and low set-point switches; when the water level in the ET rises to the high set-point, a transfer pump will deliver water from the ET, through a sediment filter set, and through the two granular activated carbon (GAC) vessels installed in series; when the ET water level drops to the low set-point, the transfer pump will deactivate, and water will accumulate again in the ET.

Treated water, discharged from the GAC vessels, will be conveyed out of the WTS building and into the Carbon-In-Leach (CIL) Building via heat-taped PVC conveyance lines. Once inside the CIL Building, the treated water will be discharged into a mine water circuit sump. Once the treated water is discharged to the sump, it will be managed along with the mine water circuit.

VOC WTS performance goals include up-time and water quality. These goals will be achieved by following a routine operation, monitoring and maintenance (OMM) policy, including weekly site visits and monitoring/compliance sampling. The WTS system will be operated full time during the pilot testing period; the system up-time or run-time goal is 90 percent. The system will be monitored on a weekly basis during the pilot testing period to ensure operation and performance, and to identify maintenance needs.

System discharge samples will be collected from the discharge of the lead (mid-point) and lag (compliance point) GAC vessels on a monthly basis; the mid-point sample will be analyzed for VOC concentrations each month in order to prevent break-through to the lag vessel the discharge sample will be put on hold for two months each quarter, and the discharge sample will be analyzed for VOC concentrations once each quarter to support WPC compliance. The performance goals for water quality are to meet or exceed safe drinking water standards for VOCs at the discharge point-of-compliance.

At the time of VOC-WTS start-up, on 8 December 2015, petroleum product was observed in the proposed groundwater extraction well OMW-3, measuring approximately 0.16 feet in thickness. System start-up was delayed in order to gage static product thickness over the course of several weeks. The petroleum thickness diminished to 0.01 feet by 21 January 2016, and system start-up was rescheduled for 26 January 2016. During system start-up, well OWM-3 was pumped dry, and was found to not recharge sufficiently for continuous WTS operation.

An EDC approved by the Division on 3 March 2016 authorized the re-purposing of groundwater monitoring well OMW-18 as an extraction well for the WTS. In order to ensure that well OMW-18 will recharge sufficiently to operate the WTS continuously, it will be deepened to approximately 120 feet below ground surface.

Water extracted from OMW-18 will be conveyed to the WTS via discharge piping routed through the process building. OMW-3 will continue to be monitored for potential performance as a groundwater remediation well. Site groundwater monitoring well OMW-10 will be abandoned at the time of OMW-18 deepening, as it has become a dry well and is not anticipated to recharge again. Groundwater in the vicinity of OMW-10 will be monitored using OMW-18, as these wells are less than 20 feet apart. Pumping and treatment continued until 2021, when a two-year rebound test was initiated. The results of the rebound test indicated that the plume was not migrating downgradient from its current location, but several of the downgradient monitoring wells in the area had gone dry during the rebound testing period due to declining groundwater in the area.

To address the problems presented to the pumping and treatment of the VOC plume presented by declining groundwater, in 2023 the permittee submitted a work plan to install an additional pumping well (OMW-EX1), as well as adding several additional extant downgradient wells to the plum monitoring network. Additionally, it was determined not to completely restart the VOC-WTS, but to have a responsive treatment plan with several triggers for pumping restart. These triggers include downgradient monitoring wells showing an increasing trend of COC's, average concentrations of COC's within the body of the plume showing an increasing trend, or COC concentrations at exterior downgradient wells increasing above the safe drinking water maximum contamination level. As of the April 2025, the VOC WTS is fully operational.

Roasting Operations

Background: As more refractory ores were encountered at the JCM, a roasting process was employed, beginning in 1989. Dried, finely ground ore, mixed with low sulfur coal (less than 1 percent sulfur content) is oxidation-roasted at a temperature between 1,100 and 1,350 ºF. Until March 2014, the Division's Bureau of Air Pollution Control (BAPC) authorized the mixing of minor amounts of petroleum-contaminated soil (PCS) with the coal to improve the coal's BTU content and serve as a disposal method for minor amounts of PCS generated on site. All PCS is now managed pursuant to the Permittee's approved PCS Management Plan.

A Notice of Findings and Order 2008-13A (dated 4 April 2008) issued by BAPC required the Permittee to make improvements to the mercury emission control system. These improvements included the design and construction of a calomel-based mercury emissions control system for each Roaster. Although Order 2008-13A was specific to the Nevada Mercury Control Program administered by BAPC, construction of the calomel system also required changes to the existing fluid management system and the Permit.

For additional details, refer to the sub-section *"Calomel-Mercury Collection, Treatment, and Removal System (CCS)"*.

- ***High-Temperature Oxidation Roasting:*** The JCM Roasters operate in two stages; the first stage of the Roaster converts the sulfur in the ore to sulfates, the second stage removes carbon. The roasted ore is sent to the CIL Circuit for gold extraction; the CIL tailings are thickened for subsequent disposal in Tailings Storage Facility-2 (TSF-2). The Roaster Circuit has design throughput of 6,000 tpd of fine ore; however the mill operation is limited by the 12-inch diameter tailings slurry discharge pipeline, which can convey a maximum 5,050 tpd at 46% tailings solids content. This maximum mill throughput is described in the 2022 EDC to Increase the Daily Tailings Slurry Conveyance. This EDC was approved by the Division 24 October 2022. As stated previously, Roaster feed is often supplemented by material from the subgrade surface mine stockpiles and off-site ores and concentrates approved by the Division for processing on a toll-basis.

  Fine ore is discharged from the Roaster Feed Bin into either the East or West Roaster Feed Circuits via air slides and bucket elevators. The bucket elevators transfer ore to east and west Roaster hoppers via another air slide, then to the Roaster feeders. Crushed coal is added to the ore at the bucket elevators from the coal day bin via air slides. The coal for the Roasters is reduced in the coal crusher and stored in the coal dry bin. Particulate emissions from the west and east Roaster feed circuits are controlled by baghouses. The coal crusher and coal dry bin particulate emissions are controlled by separate baghouses.

Additional oxygen is supplied by an on-site cryogenic oxygen plant to provide a sufficient oxidizing environment. Each Roaster is equipped with oil or propane/diesel fired pre-heat burners (with combustion gasses vented into the Roasters) for startup purposes.

- ***Cooling/Quenching Tank Operations:*** Roasted ore from the Roasters is discharged to a pair of quench tanks (East and West Quench Tanks) where it is cooled and slurried. Typical discharge rates from each Roaster is about 74 tph.

  Recycled Cooling Pond water is injected into the Roaster quench heads at a nominal rate of 2,100 gpm to reduce the slurry temperature to about 110 °F within each quench tank. Typical tank retention time for 25,000 gallons of roasted ore slurry is approximately 11 minutes. The slurry is discharged from the quench tanks and pumped to the Roaster Thickener to reduce the water content of the ore before it is transferred to the CIL tanks. A discussion regarding the design and operation of the Cooling Pond can be found under the subsection *"Cooling Pond"*.

  The 34,200-gallon quench tanks are approximately 18 feet high with a diameter of 18 feet. The sealed tanks are constructed of mild carbon steel and have a series of internal baffles to facilitate cooling of the roasted ore. An agitator allows the Roaster slurry solids (approximately 10 to 12 percent solids by weight) to remain suspended and hatches on the top and bottom of each tank allow for access to remove scale build-up.

  The original Roaster quench tanks had operated regularly since their commissioning in 1989. The repeated temperature cycling resulted in stress corrosion as evidenced by seepage around the tanks. An unsuccessful attempt was made to extend the service life of the quench tanks by spray coating the external tank surfaces with shotcrete. The Permittee replaced the East Roaster Quench Tank during the 2010 annual Roaster maintenance shutdown and the West Roaster Quench Tank with the 2011 annual Roaster maintenance shut down.

- ***Roaster Thickener Operations:*** Cooled, roasted ore is pumped from the quench tanks to the 1,200,000-gallon Roaster Thickener where it is dewatered. The decant water discharges to an adjacent 230,000-gallon Surge Tank (i.e. Overflow Tank). Solution exits the surge tank and is then conveyed through a 30-inch diameter standard dimension (or design) ratio (SDR)-21 HDPE pipeline and two 12-inch diameter HDPE pipelines (i.e. Overflow Pipelines) to the Cooling Pond. Refer to the sub section *"Cooling Pond"* for additional details.

  Thickened solids report to the CIL circuit where sodium cyanide dissolves the gold from the ore slurry. Gold is then collected on activated carbon (charcoal) contained in the CIL process. The gold-laden carbon is processed in the mill refinery where the gold is removed from the carbon, precipitated with zinc and ultimately cast into doré bars. Refer to the section *"Precious Metal Recovery and Refining"* for additional details.

  An EDC approved in July 2008 reconfigured the Decant Solution Pipeline to discharge directly from the Roaster Thickener to the Overflow Pipeline and convey solution to the Cooling Pond. The pipeline was placed in a 6-foot wide (at the floor) by 3-foot deep trapezoidal-shaped channel, lined with 40-mil HDPE liner over a layer of 8-ounce geotextile and anchored outside the channel berm.

Concrete berms, approximately 2 feet high, were installed at the concrete base of the Roaster Thickener with water stop material was placed within the berm-base joints. The HDPE liner overlaps a portion of the base pad and is fastened to the base and the concrete berms. Culverts were constructed at all road/pipeline crossings with HDPE liner booted to the culvert walls.

On 7 February 2018, an EDC was approved piping from the Roaster Thickener Overflow Tank to the Heap Leach Carbon Columns (HLCC) Containment. A new 12-inch HDPE pipeline will be installed from the Roaster Thickener Overflow Tank to the HLCC. This pipeline will convey up to 2,500 gpm and will be double-contained in a 16-inch HDPE pipe and routed on an existing elevated pipe rack. In the event of leakage from this 12-inch pipeline, its secondary containment pipe will drain into the HLCC containment which is connected to the Carbon-in-Pulp (CIP) building containment. Process fluid accumulation in the CIP building containment is pumped to either Tailings Storage Facility (TSF) 1 or TSF-2.

- ***Roaster Emission Controls:*** The Roaster's particulate and sulfur dioxide (SO_2) removal systems are permitted through the Division's BAPC Title V Program while the mercury removal system is currently permitted through the Division's BAPC Phase II Mercury Program.

Air flow from both Roasters flows through the East and West Venturi cyclones to the Roaster air emissions control circuit. Particulate emissions from the East and West Roasters are controlled by dedicated Entoleter Dust scrubbers. Gaseous emissions are controlled by a dedicated SO_2 Scrubber, followed by a two-stage Mercury Scrubber, and then the Final Tail Gas Scrubber.

The emission control devices are located within an epoxy-coated concrete pad, surrounded by a 24-inch-high stem wall for secondary containment. Two openings within the stem wall provide ramp access for scrubber maintenance. The containment pad drains into the basement of the Roaster Building; any released solution is collected in a concrete-lined Quench Pit Sump in the basement of the Roaster Building. The contents of the Quench Pit Sump are either returned to the quench tanks or pumped to the effluent tank for subsequent cyanide leaching in the CIL Circuit.

Cyclone underflow is returned to the Roasters, with the overflow and gaseous emissions directed to the East and West Gas Quench Towers where mercury and SO_2 gases are cooled to approximately 200 ºF. Dust and gases exiting the East and West Quench Towers, are vented to the East and West Entoleter dust scrubbers followed by the East and West SO_2, Mercury and Final Tails Gas scrubbers.

The East and West SO_2 scrubbers contain specifically shaped internal "packing" material, designed to maximize contact area between the dirty gas and liquid. Packed SO_2 scrubbers typically operate at much lower pressure drops than venturi scrubbers and are therefore cheaper to operate. They also typically offer higher SO_2 removal efficiency. The drawback is that they have a greater tendency to plug up if excess particulate matter is present in the exhaust air stream.

Exhaust gases exiting the Entoleter dust scrubbers are vented to the SO_2 scrubbers where a sodium carbonate (Na_2CO_3) solution is added to 1) control pH and 2) to chemically react with the SO_2 gases present in the exhaust stream by forming sodium bisulfate ($NaHSO_3$) solution. The sodium carbonate solution is delivered at a nominal rate of 300 gpm from spray nozzles located above the packed bed.

The scrubber water solution is cooled by a tubular heat exchanger with cooling water provided by the Seepage Remediation System (SRS) or fresh water from the water supply wells. Most of the scrubber water solution is recirculated back to through the SO_2 scrubber; however, a portion of the scrubber solution stream is bled-off to the East and West Quench Tanks to 1) optimize SO_2 removal efficiency by reducing sodium bisulfate concentration within the scrubber water; 2) to provide a source of cooling water for the roasted ore; and 3) precious metal recovery from the bleed streams.

During active roasting operations, the Roasters, Roaster quench towers and exhaust trains require up to 1,000 gpm of cooling water. An induced-draft fan boosts the gas stream from the SO_2 scrubber and discharges approximately 5,000 standard cubic feet per minute (scfm) of gas downstream to the Two-Stage Mercury Scrubber System and eventually the Final Tails Gas scrubbers.

The gas entering the first stage of the Two-Stage Mercury Scrubber System is treated with chlorine gas and a sodium carbonate solution to maintain a neutral pH and promote the formation of insoluble calomel (mercurous chloride) instead of soluble mercuric chloride.

The resultant Stage 1 gas stream (with reduced mercury) is directed to the Stage 2 Mercury Scrubber for removal of any residual mercury. The Stage 2 gas stream is directed to the Final Tails Gas Scrubber for final cleaning. The recirculating mercury scrubber solution is cooled by a tubular heat exchanger using cold water from the SRS or fresh water obtained from the water supply wells.

Currently, most of the mercury scrubber water solution is recirculated back to through the Mercury Scrubber System while a portion of the scrubber solution stream is bled-off to optimize mercury removal. The bleed stream containing calomel reports to a dedicated mercury scrubber bleed collection tank and then filtered to remove the calomel solids for shipment off-site to an EPA-approved calomel disposal facility with the clean filtrate solution returned to the Mercury Scrubber System for use as scrubber water. The Permittee is reevaluating the process and bleed streams for optimum operation and recovery and expects to make design changes to the mercury scrubber water circuit.

The “Final Tails Gas Scrubber” is similar in operation to that of the SO_2 Scrubber. The tails gas stream (with mercury removed) contacts a countercurrent flow stream containing a dilute sodium carbonate solution within the packed bed to maintain a slightly basic pH and remove any residual SO_2 gases present in the exhaust stream. The sodium carbonate chemically reacts with SO_2 to form sodium bisulfate liquor which is pumped to the quench tanks.

The final scrubbed gas (e.g. Tails Gas) with the SO_2 and mercury removed is then allowed to exit the Roaster stacks. Condensed mercury is collected at the base of each scrubber unit in enclosed collection pots. Elemental mercury is sent to the JCM Refinery for storage in 80-pound flasks. Long-term storage of the mercury flasks is limited to 90 days by regulation; therefore the flasks must be removed on a regular basis and transported to an off-site, EPA-approved disposal facility.

- ***Calomel-Mercury Collection, Treatment, and Removal System (CCS):*** The Calomel-Mercury Emissions Control System (also referred to as the Boliden-Norzinc Process or Calomel Process) was used for a brief period at the JCM Roaster to treat gaseous mercury emissions. Modification of the mercury emissions control devices and calomel recovery circuit have eliminated the need for the CCS as an integrated unit.

  The CCS was constructed in two phases during 2009-2010 and installed at the tail end of each Roaster gas emission control system for the purpose of collecting into a single location, any calomel generated by the CCS and any bleed solutions containing mercury (II) ions.

  When the CCS was operated, bleed solutions from the East and West Mercury Scrubbers were pumped to the 2,000-gallon Scrubber Bleed Collection Tank, which is constructed of mild steel and lined with a rubber coating. A 750-gpm centrifugal pump transferred the bleed solution via 6-inch diameter HDPE pipe to North CIP tanks 6 and 7.

  Zinc dust was fed to both tanks to chemically react with any residual mercury (II) chloride present in the bleed streams and form calomel. CIP tanks 6 and 7 were equipped with an impeller to enhance contact time and reactivity of the zinc dust with the residual mercury (II) chloride and promote calomel sedimentation.

  The CIP tanks are 25 feet by 23 feet in diameter with a capacity of approximately 70,000 gallons each. Each tank is opened-top, constructed of mild steel and internally coated with an epoxy coal tar coating.

  The calomel slurry from North CIP Tanks 6 and 7 was pumped to either the Calomel Holding Tank (formerly North CIP Tank 8) or to the plate and frame filter press. Decant solution from CIP Tanks 6 and 7 was transferred via diaphragm pump to the CIL Tank Sump and then onto the CIL circuit for recovery of any residual gold. Overflow solution from North CIP Tanks 6 and 7 was pumped via a 6-inch diameter HDPE pipe to North CIP Tank 8.

  The calomel slurry was filtered; the solids removed and then stored in one cubic yard totes for shipment to an EPA-approved calomel disposal facility. Filter press decant solution was collected in the CIL Tank Sump and then transferred to the CIL circuit. All of the estimated 390 tons of calomel generated during the operation of the CCS has been shipped off-site for disposal. As of September 2015, no decision has been made regarding the final disposition of the CCS or the CIP tanks.

- ***Mercury Scrubbing System Conversion:*** In 2022, the Mercury Scrubbing System Conversion was designed and constructed to reduce mercury emissions from the Roaster off gas system. The upgraded system is a Boliden-Norzink mercury removal system. The installed structures and equipment are composed of containment, tanks, piping, and pumps that help the recirculation and sedimentation of the calomel, which is subdivided onto twin east and west systems. All equipment is placed on a concrete containment pad which includes a spillage trench and sump to contain all possible leaks in the pipes or tanks. The sump collection is pumped back to the quench tank sump area in the existing process.

- ***Extended-Plate-Area-Over-Reactors:*** Two Extended-Plate-Area-Over-Reactors (EPA-ORs) were tested as a potential replacement to the CCS in an attempt to further reduce the amount of mercury discharged to tailings.

  The EPA-ORs were designed to remove elemental mercury from Roaster scrubber bleed water via electrolysis. Prior to any bleed solution entering the EPA-ORs, a new continuous filter system was installed to remove any solids present in the bleed solution. Any elemental mercury collected is washed into a mercury pot and then transferred to flasks. The EPA-ORs are located in the carbon regeneration area of the CIP Building and emissions from the circuit reports to a mercury emission control system for capture.

  During the testing of the EPA-ORs, the CCS was by-passed and discharge solution from the EPA-ORs was pumped to the SRS water storage tanks in the CIP Building for use as Roaster process water. Any spills or releases within CIP Building containment reported to the floor sump and were then pumped to CIL Circuit. As of April 2023, the filter presses are still in use, however, the EPA-ORs were deemed ineffective and are no longer in place.

- ***Roaster Dust Investigation:*** Since the initiation of Roaster operations in 1989, a considerable amount of Roaster dust (roasted ore fines) had collected throughout the Mill and Roaster areas off containment. Because of the potential for soil and groundwater degradation, the Division required that the Permittee perform a detailed Roaster dust magnitude and extent summary report for several locations identified by the Division and Permittee at multiple depths. As of December 2022, assessment work and removal of Gold-bearing dust continued, with notable progress in 2024 – 2025.

Precious Metal Leaching, Recovery, and Refining

Background: As stated previously, the Permittee initially processed oxide and slightly refractory ores in the Wet Mill and utilized a chlorine-gas/pre-oxidation circuit to treat the refractory ore component to make it more amenable to cyanide heap leaching. (Refer to the sub-section *"Heap Leach Facility"*, below).

With the depletion of the oxide and slightly refractory ore bodies, the Permittee instituted the practice of grinding the ores finer prior to feeding the chlorine-gas/pre-oxidation circuit. Implementation of the practice had always been problematic due to the tendency to overgrind the ore. The overgrinding often resulted in the creation of preferential flow pathways within the HLP, significantly decreasing HLP performance and precious metal recovery. The practice was discontinued when the Permittee ceased ore placement on the HLP in the mid-1990s.

Since 1997, the CIL Circuit has been used exclusively for precious metal leaching and recovery since it can tolerate finely ground ore. Operation of the CIL is discussed further in the sub-section *"CIL Circuit."*

- ***Heap Leach Facility:*** The JCM Heap Leach Facility was comprised of a Heap Leach

Pad (HLP) and several lined collection ditches. The facility was operated to recover gold and silver from low-grade oxide and oxidized ores by leaching with dilute sodium cyanide solution.

Four contiguous HLP cells (Cells 1 through 4) were constructed during 1985-86. The fluid containment system relies on a composite liner system of 80-mil HDPE overlying a compacted native silt sub-base. Four additional contiguous cells (Cells 5 through 8) were added in 1988. The containment system consists of 12-inch layer of compacted fill, overlain by a 6-inch layer of silt/clay bedding material and a 10-ounce non-woven geo-textile fabric beneath a 60-mil HDPE liner.

The facility was constructed prior to the promulgation of the Nevada Mining Regulations (NAC 445A.350 through 447) and designed to contain all flows resulting from a 100-year, 24-hour storm event. Sodium cyanide addition was discontinued in 1997 and the HLP was rinsed with recirculated HLP draindown solution and decant solution from Tailings Storage Facility (TSF)-1. Closure and reclamation of the HLP began following Division approval of the HLP FPPC in 2014.

Pursuant to the Division-approved FPPCs for the HLP and TSF-1, the Permittee began moving spent HLP material to TSF-1 in November 2014 as cover. This is discussed in greater detail under the subsection “TSF-1 Closure Cover Studies”. Prior to closure, a portion of the HLP was utilized as a PCS bioremediation cell in accordance with the General Mining Bioremediation Facility Permit GNV041995 issued by the NDEP-BMRR. This permit was replaced by a site-specific PCS Management Plan submitted to NDEP-BMRR in July 2009.

The approved 2011 FPPC for the Jerritt Canyon HLP described relocating all spent ore from the HLP for use in TSF-1 interim cover construction. Between 2015 and 2016, the entire HLP (including spent heap material, heap liner, and underliner material down to an approximate 3-foot depth) was completely excavated and hauled to the TSF-1 impoundment during construction of the TSF-1 final closure cover. The PCS material stored on the heap was moved to the PCS Containment Cell constructed on top of TSF-1 as described in the section *PCS Containment Cell*. Since 2017, the footprint below the HLP has been routinely excavated as borrow soil for the multi-year TSF-1 cover construction.

- ***Carbon-in-Leach (CIL) Circuit:*** Slurry underflow from the Roaster Thickener is pumped to the CIL Circuit where liquid sodium cyanide is added to leach the gold and silver. The dissolved gold and silver are collected on activated carbon within the CIL process and then processed in the Refinery where the gold and silver is removed (stripped) from the carbon in a heated stripping column, electro-refined, and ultimately cast into doré bars. The stripped carbon is screened to remove fines and thermally regenerated before it returns to the CIL Circuit. These processes are described in greater detail in the subsections *“Carbon Stripping and Regeneration”, “Electrowinning Circuit”*, *“Mercury Retort System”,* and *“Induction Furnace”*.

  The CIL Circuit is comprised of 6 steel tanks (CIL-1 through CIL-6), with associated pumps, piping, and agitation devices, all placed within concrete containment. Tank volumes decrease from 187,887 gallons (CIL-1) to 146,786 gallons (CIL-6). Thickener underflow (roasted slurry) is introduced to the CIL-1 where sodium cyanide is added to dissolve the gold from the slurry. Carbon is added to CIL-6 and advances counter-current to CIL-1. The CIL tailings discharge slurry is pumped to TSF-2. The entire CIL Circuit is within secondary containment in excess of 110 percent of the largest tank.

The CIL slurry solution component is monitored monthly, and during initial batch testing of new ores received, for Profile I constituents. Since TSF-2 is managed by the Permittee as a single-lined facility, the CIL slurry solids component is also monitored monthly for MWMP-Profile I constituents and NMSP. Refer to the subsection *"TSF-1 and TSF-2"* for additional details.

Corrosion and leakage from the CIL tanks were observed for several years prior to 2009. During 2009, the CIL tanks were taken off-line in the following order: CIL-3, CIL-1, CIL-6, CIL-2, CIL-4, and CIL-5. The CIL tanks were inspected for containment integrity, sandblasted, repaired, and recoated with an epoxy-coal tar coating. By December 2009, all 6 tanks were approved by the Division for return to service. In addition, the concrete containment was cleaned of all collected sediments, inspected for containment integrity and repaired where necessary.

Concrete containment in an area referred to by the Permittee as the "CIL Courtyard", had been compromised and appeared to be allowing process solution escape containment. An EDC approved by the Division in September 2014, authorized the replacement and expansion of the concrete containment and authorized the replacement and/or reconstruction of the collection sumps in the courtyard area. EDC improvements consisted of replacing, modifying and expanding the concrete containment of the CIL Courtyard, and included demolition and removal of existing CIL Courtyard concrete; Construction of two concrete sediment sumps; Installation of a new concrete containment pad within the courtyard; Construction of a new drain sump; and Addition of HDPE piping within the CIP containment to collect and convey flows to the CIP sump. In addition, since early 2016, the CIL tanks have been enclosed to eliminate any release off containment.

- ***Mobile Carbon-in-Leach Circuit:*** The Division approved an EDC 16 May 2019 for the designs for containment areas at two locations at the Jerritt Canyon mill site for operation of the Mobile Carbon-in-Leach (MCIL) Circuit. Depending on process recovery and fluid management needs, the MCIL Circuit will be stationed at either the Evap Pond or TSF-2, where it will recover precious and other metals from solution in these facilities. At either location, the MCIL Circuit will be stationed within the existing HDPE-lined containment of each facility.

  The MCIL circuit consists of a single 340-gallon carbon tank which includes an 8-inch diameter inlet and a 16-inch diameter launderer outlet. The design inflow to the single-tank MCIL circuit is planned to be 1,000 gpm, and effluent from the MCIL Circuit will be directed back into the Evaporation Pond or TSF-2 supernatant pond depending on its location. Load carbon from the tanks will be hauled to the mill for stripping of gold values.

  In October of 2021, the Division approved an EDC for the addition of a second MCIL

Circuit tank and piping to be stationed next to the existing MCIL access pad within the Evap Pond containment. This second MCIL tank is designed with a 340-gallon capacity and will be operated in a similar fashion to the original MCIL tank at this location.

- ***Carbon Stripping and Regeneration:*** Loaded carbon (carbon containing gold and silver) from CIL-1 is screened and washed with sulfuric acid (H_2SO_4) and then heated in a stripping column under pressure. Following the stripping operation, the carbon is washed and neutralized with sodium hydroxide (NaOH), rinsed with soft water, screened to remove undersize carbon (fines) and then thermally regenerated in a rotary kiln before returning to CIL-6. The resulting gold/silver pregnant solution is collected in the Pregnant Solution Tank and then pumped to the Electrowinning Circuit for gold and silver recovery. The entire facility has secondary containment of at least 110-percent of the volume of the largest storage vessel.

  An EDC approved in January 2012 authorized the modification of the existing refinery sump discharge pipeline to fulfill the requirements of the revised CAP submitted to the Division in response to Spill #110923-2.

  Previously, carbon screen undersize material and solution, evacuated from the Pressure Stripping Tank overflow collection sump (located in the Refinery Building), were pumped via a 6-inch diameter HDPE pipeline to the Acid Wash Neutralization Tank and the Carbon Regeneration Tank Circuit located in the adjoining CIP Building. Occasional flooding of the CIP containment sump area often creates safety concerns and pump failure. In an effort to eliminate these problems, the Permittee extended the existing 6-inch diameter HDPE pipeline to bypass the Acid Wash Neutralization Tank. The extended pipeline drains via gravity to the Carbon Regeneration Tank. And all process piping is within secondary containment.

  An EDC approved 16 April 2015 for the CIL Carbon Transfer Process Improvements included the installation of a dewatering screen, three double spirals, and a carbon transfer pump, Also as part of this EDC, an existing seepage water tank was repurposed to increase efficiency of the CIL strip process.

  An EDC approved in March of 2021 authorized the replacement of the existing concrete containment, pump, tank, and appurtenances associated with the sues of nitric acid for the carbon stripping process, and the cleaning of the associated heat exchangers. Specifically, the EDC authorized the construction of a new 20-foot by 25-foot concrete containment, and new 5,000-gallon nitric acid tank and associated pumps, to be located 5 feet from the east side of the mill building. The EDC additionally authorized the demolition of the existing concrete containment and tank, located approximately 200 feet east of the mill building. Construction of the new containment was completed in 2022, but as of the 2025 renewal with demolition and removal of the old containment is still pending.

- ***Electrowinning:*** Until the first quarter of 2012, the Permittee operated a Merrill-Crowe Zinc Precipitation Circuit (Merrill-Crowe Circuit) to recover gold and silver from pregnant solution discharged from the Carbon Stripping Circuit. During active zinc precipitation operations, pregnant solution from the Carbon Washing Circuit entered the Pregnant Solution Tank and then the Merrill-Crowe Circuit located on the third floor of the Refinery Building.

In November 2011, the Division approved an EDC authorizing the Permittee to replace the Merrill-Crowe Circuit outright with a 150-cubic foot electrowinning (EW) cell to be located on the main floor of Refinery Building. An existing 50-cubic foot EW cell was relocated and installed in series with the 150-cubic foot EW cell. Gold-bearing pregnant solution from the Pregnant Solution Tank is fed to the 150-cubic foot EW cell and then enters the 50-cubic foot EW cell. As of the 2025 renewal, the Merrill-Crowe filters and equipment have been removed from site.

Discharge from the EW circuit is directed to the Barren Solution Tank and additional carbon washing. The precipitated gold-bearing "sludge" is washed off the steel wool cathodes (by pressure washer) within the EW cell area, collected and then filtered. The collected solids are directed to the retort and the filtrate pumped to the Pregnant Solution Tank.

The EW circuit requires up to 90 gallons per minute flow rate with up to 1 percent cyanide concentration and 3 percent sodium hydroxide solution. Any spills or release of process solution within the Refinery Building containment is directed to the existing floor launders which run the entire length of the building. The solution is collected in a sump and pumped to the CIL Circuit. Emissions generated during the operation of the EW cells report to and are captured by the MECS. Refer to the subsection *"Mercury Emissions Control System (MECS)"* for additional details.

The Permittee modified the EW solution chemistry by increasing sodium hydroxide addition and reducing cyanide consumption. Concentrated sodium hydroxide is delivered via bulk trucks to a storage tank, where fresh water is added to dilute the solution prior to use. The former Cyanide Batch Tank was integrity tested and refurbished for use as a sodium hydroxide storage tank. The tank is within concrete containment and includes a sump and pump to transfer spilled or released solution to the CIL Circuit.

- ***Mercury Retort System:*** Previously, a 5-cubic foot mercury retort and mercury capture system had operated at the JCM since 1986 and has since reached the end of its operational life. The Permittee replaced the existing retort and mercury emissions control system with a new 15-cubic foot retort, placed within containment in the Refinery Building. Any spills or releases within the Refinery Building are directed to the existing floor launders which run the entire length of the retort room and a collection sump and pump to transfer spilled or released solution to the CIL Circuit. The new installation included a closed loop water chiller; condenser, mercury trap, and sulfur-impregnated carbon pot in place of the existing mercury retort emission control devices. Refer to the subsection *"Mercury Emissions Control System (MECS)"* for additional details.
- ***Induction Furnace:*** A second 500-lb capacity Induction Furnace is installed next to the existing Induction Furnace to serve as a backup. Both furnaces are located within the containment of the Retort Room in the Refinery Building and are prohibited from operating concurrently. Particulate emissions are collected in a bag house, and the remaining flue gases are directed through a Tray Scrubber for mercury removal.

Installation of the second furnace required the installation of a Dry-Air Cooling Tower within the existing CIL containment. Piping modifications included the installation of a freshwater cooling loop from the cooling tower to new Induction Furnace and the installation of a pump and backup pump from the furnace to the water-cooling loop.

Any spills or releases of process solution or solids within the Retort Room containment are directed to the existing floor launders which run the entire length of the retort room, collected in a sump, and pumped to the CIL Circuit. Solution and sludge collected in the launder is directed to a sluice for solids collection and removal prior to entering the refinery building containment area. All cooling tower and water chiller piping is on secondary containment. Refer to the subsection *"Mercury Emissions Control System (MECS)"* for additional details.

- ***Mercury Emissions Control System (MECS):*** The new MECS included the installation of a ventilation system to direct flue-gas streams and vapors to the tray scrubber. The ventilation system includes two main components: 1) a Tray Scrubber to manage and remove mercury from vapors originating in the refinery area; and 2) a Carbon-Bed Scrubber to manage and remove mercury from air flows in the carbon regeneration area.

  The new Tray Scrubber is located east of refinery and west of CIL-1, on existing concrete containment. Ducting is routed to capture gases and vapors from the Electrowinning cells, Retort, Induction Furnaces, and the Pregnant and Barren Solution Tanks. A new Carbon-Bed Scrubber replaced the existing Scrubber located on the 2nd floor of the Carbon Regeneration Area. Mercury-loaded carbon is removed and disposed of off-site by a permitted hazardous waste disposal contractor.

  Both scrubbers are located within existing concrete containment. Any spills or releases of process solution within containment are directed to the existing floor launders which run the entire length of the Refinery Building. The solution is collected in a sump and pumped to the CIL Tails.

Process Fluid Management

Background: Process fluid management at the JCM involves the management of process solution flow rates, pond levels, containment and monitoring systems to prevent fluid losses. Facilities are designed and constructed to operate and close without any release or discharge from the fluid management systems. Discharges may occur as a result of meteorological events, which exceed the 100-year, 24-hour design storm event and exceed the standards established in regulation.

The existing process fluid containment management components of most significance and concern are discussed in further detail under *"Solution Ponds"* and *"Tailings Storage Facilities"* subsections.

Solution Ponds: Active and closed solution ponds at JCM include the following:

- ***Pregnant Pond:*** The Pregnant Pond was constructed in 1985 prior to the Division's mining regulatory program to collect pregnant solution from the HLP. The pond is constructed with an 80-mil HDPE primary liner with leak detection. Although compacted native soil was utilized as secondary containment layer, there is no QA/QC documentation available to demonstrate that the soil layer meets current regulatory design criteria.

Overflow from the Pregnant Solution Pond currently reports to the Emergency Catchment Pond. Any process solution collected in the Emergency Catchment Pond must be removed and transferred to TSF-2 within 20 days.

Since the Pregnant Pond is no longer needed to manage drain down from the HLP, an EDC approved by the Division 5 July 2016 allows JCG construct a pipeline connecting the Roaster Thickener, Cooling Pond and Pregnant Pond. The design has the overflow from the Roaster Thickener directed to either the Cooling Pond or Pregnant Pond using direct piping connections without valves. The piping connections are designed to be physically interchangeable to re-route thickener overflows to either pond. This prevents accidental diversion of process water into the Cooling Pond during its maintenance and cleaning. The return pipeline from the Pregnant Pond is designed to bypass the Cooling Pond and tie into the existing pipeline from the Cooling Pond connected to the existing pipeline from the Cooling Pond which leads to the Roaster quench heads. The return pipeline from the Pregnant Pond will also connect to the existing pipe network at the Cooling Pond to send water to the cooling towers or directly into the Cooling Pond.

As of the 2025 renewal, the Pregnant Pond is maintained as an empty pond. Meteoric water that collects in winter months is pumped out to the TSF-2. Before the piping system connecting the Roaster Thickener, Cooling Pond and Pregnant Pond is constructed, the HDPE liner within the Pregnant Pond will require repair and or replacement.

- ***Wash Pond (Closed):*** The Wash Pond was constructed during the second phase construction of the HLP in 1988. Because the pond pre-dated the regulations, specifications regarding soil permeability and drainage-net material utilized in construction were not required or documented. During active operations, Wash Pond overflow reported to the Pregnant Solution Pond.

  In accordance with the Consent Decree, the Permittee submitted in October 2009 an FPPC and closure schedule for the Wash Pond. Pond closure was completed during July 2010.

- ***Cooling Pond (and Reconstructed Cooling Pond):*** The original Cooling Pond was built in 1989 for use as a reservoir and heat sink for water (i.e. quench water) used to cool roasted ore. Three cooling towers, numbered 1 through 3, provided the necessary cooling of the water prior to its recirculation back into the process circuit although in recent years cooling is achieved instead by forced spray into the pond through a large nozzle. Overflow from the Cooling Pond reports to the Emergency Catchment Pond via an unlined earthen ditch. Fluids collected in the Emergency Catchment Pond are removed and transferred to TSF-2.

  An EDC approved in July 2005 authorized the reconstruction of the Cooling Pond following the failure of the original liner system in March 2005. The failure was later determined to be the result of the discharge flow wearing a hole in the primary liner and allowing solution to enter between the primary and secondary liners.

The reconstructed pond includes an Intermittent Spring Water Interceptor System, and a Pumping Station. The reconstructed pond occupies the same footprint as the failed pond, with significant design improvements and is designed to contain all flows resulting from a 100-year, 24-hour storm event.

The reconstructed Cooling Pond is approximately 280 feet by 280 feet by 22 feet deep from the crest to the top of the sump. The double-lined system consists of an 80-mil white HDPE primary liner with a 60-mil HDPE secondary liner over a prepared subgrade. A leak collection and recovery system (LCRS), consisting of an HDPE geonet is placed between the primary and secondary liners. In addition, the secondary liner extends under the Pumping Station to provide secondary containment throughout the entire pond. The prepared subgrade consists of two 6-inch lifts of fill compacted to 95 percent maximum dry density (ASTM Method D698).

The white HDPE was expected to allow for easier liner inspection and maintenance and improve the pond's cooling efficiency, however it has failed to meet expectations. The liner extends up the sides of the pond and is anchored in a 3-foot by 2-foot wide anchor trench. The HDPE liner is attached to batten strips embedded in the Cooling Tower foundations to seal the area and ensure containment of process solution. Additional layers of 80-mil liner serve as wear sheets and are installed at all discharge spigot locations and extend down the entire pond slope to prevent damage to the primary liner. The wear sheets are welded on all sides to prevent any sediment from being trapped between the wear sheet and the primary liner. As of April 2023, JCG plans to replace the Cooling Pond HDPE liners prior to restarting operations.

The LCRS sump is constructed in the center of the downgradient side of the Reconstructed Cooling Pond and has floor dimensions of 10 feet by 10 feet with a depth of 6 feet and side slopes of 2H:1V. The LCRS sump has an observation and recovery port constructed of 12-inch diameter Schedule- 40 PVC pipe and is recessed into the embankment wall to provide a smooth finished liner surface and rest on the 60-mil HDPE secondary liner. The bottom 12 feet of the pipe is slotted Schedule-40 pipe with a threaded connection to the top, solid section of the pipe. The observation and recovery port is booted through the 80-mil primary liner and extends 1 foot above the pond crest. The observation and recovery port is fitted with a tight, securable cover. The bottom of the LCRS observation and recovery port is capped.

An underdrain system is constructed beneath the secondary liner to collect spring waters that may seep past the French drain. The spring waters are collected through a network of slotted 4-inch diameter Advance Drainage Systems (ADS) pipe installed in a "herringbone" pattern beneath the pond secondary liner and overlying the 80-mil HDPE liner to direct drainage toward the underdrain sump located beneath the LCRS sump. An 8-inch layer of non-PAG drain rock is placed above the underdrain liner across the pond floor, drain lines and sump walls.

The underdrain collection sump is lined with 80-mil HDPE. A 6-inch diameter solid HDPE pipe is booted to the liner and transects the pond wall at a 0.5 percent grade. The solid HDPE pipe extends 12 inches into the sump; a 6-inch diameter slotted ADS pipe is connected to the end of the solid pipe to extend across the bottom of the sump.

Approximately 12 inches of non-PAG drain rock is placed in the sump. Outflow from the underdrain system is piped to an earthen ditch located between the Replacement Cooling Pond and Emergency Catchment Pond. This serves as the Cooling Pond Underdrain (CPUD) monitoring point in the Permit.

The Intermittent Spring Water Interceptor System consists of a series of French drains along the west and north sides of the Reconstructed Cooling Pond to intercept and drain intermittent spring water upgradient of the pond, plus an underdrain beneath the pad liner system.

The French drains vary in depth from 10 to 15 feet and are approximately 5 feet wide at the bottom. A strip of 60-mil HDPE liner is placed across the bottom of the drain to form a 6-inch deep trough upon which 6-inch diameter slotted ADS pipe is placed in the bottom of the trench and a 6-inch layer of screened and washed gravel placed and compacted around the pipe. A strip of 10-ounce geotextile is placed over the gravel and the remaining portions of the trench backfilled with free-draining non-PAG fill. The top 3 feet of the trench is filled with compacted soil to limit the infiltration of meteoric waters. Outflow from the French drains is piped to an earthen ditch located between the Reconstructed Cooling Pond and Emergency Catchment Pond. This serves as the Cooling Pond Upgradient Interceptor (CPID) monitoring point in the Permit.

A concrete-lined pumping station, approximately 12 feet by 12 feet by 15 feet deep was constructed in the center of the southwest side of the pond to facilitate pump maintenance operations. The pumping station was constructed on 18 inches of select fill that was placed on top of the secondary liner. The select fill is free draining and extends 18 inches beyond the pumping station and 2-inch diameter ADS slotted pipes serve as drainage collection pipes and surround the exterior edge of the pumping station. Any drainage collected is conveyed via the geonet layer to the LCRS sump.

The pumping station floor and walls are 12-inch-thick concrete, with the walls keyed into the floor and water-stop compound used at all joints to form a continuous seal. The interior surfaces of the pumping station are lined with 100-mil white HDPE stud liner embedded into the concrete. Stud liner was also installed on top of the pumping station walls to allow the primary liner to be welded to the stud liner.

Overflow from the reconstructed Cooling Pond reports to the Emergency Catchment Pond. Fluids collected in the Emergency Catchment Pond are removed and transferred to the Roaster Facility for use as cooling water.

Because of its age, poor operating efficiency, and deteriorating concrete foundation, the Division approved an EDC in August 2008 for the replacement of Cooling Tower #2 with a new, more efficient unit and relocation from the south side of the Cooling Pond to a new location adjacent to Cooling Tower #3 on the northwest side of the Cooling Pond.

The new Cooling Tower #2 foundation pad consists of 8-inch thick, steel-reinforced concrete, approximately 35 feet by 23 feet, with an overflow channel graded to drain into the Cooling Pond. A 16-inch high, steel-reinforced stem wall is joined to the foundation and encircles the pad. Where the stem wall and foundation meet, water-stop material is installed. The concrete pad and stem walls are overlain with 80-mil HDPE liner, attached to batten strips on the outside of the stem walls. The concrete pad overlays a 12-inch layer of free-draining gravel, placed over soil, compacted to 90-percent (ASTM Method D1557).

In February 2018, an EDC was approved for piping additions to the Cooling Pond. A new 12-inch HDPE pipeline will be installed from the Roaster Thickener Overflow Tank to the HLCC. This pipeline will convey up to 2,500 gpm and will be double-contained in a 16-inch HDPE pipe and routed on an existing elevated pipe rack. In the event of leakage from this 12-inch pipeline, its secondary containment pipe will drain into the HLCC containment which is connected to the Carbon-in-Pulp (CIP) building containment. Process fluid accumulation in the CIP building containment is pumped to TSF-2. As of 2025 renewal, this has not yet been completed.

In February 2018, an EDC was approved for piping additions to convey process solution from the HLCC to the Cooling Pond. Under this EDC, a new 12-inch HDPE HLCC outflow pipe was installed from the HLCC to the Cooling Pond. The 12-inch pipe from the HLCC has a flow capacity of 2,500 gpm and is double-contained with an 18-inch HDPE pipe. The 18-inch containment pipe connects to the CIP building containment. In the event of leakage from these 12-inch HLCC outflow pipeline outside of the CIP building, its secondary containment pipe will gravity drain into a new reinforced concrete containment box or to the Cooling Pond depending on the leak location. A 12-inch HDPE drainpipe has been installed from the concrete containment box to the existing lined Splitter Box Pond. This will allow accumulated fluids within the concrete containment box to freely drain to the Splitter Box Pond. From the Splitter Box Pond, fluids will be pumped back into the mill circuit or to TSF-2. Under this EDC approval, a second 12-inch HDPE HLCC outflow pipe is designed to double the flow capacity to 5,000 gpm total. This pipeline will be installed at a future date depending on operational requirements.

- ***Washdown Pond:*** The Washdown Pond is designed to function as the end point in the Dry Mill Washdown Circuit. Sediment collected in the Washdown Pond is returned to the Roaster Circuit for reprocessing while decant solution is returned to the Dry Mill for the washdown operations. In an effort to bring the Dry Mill Washdown Circuit into compliance with current process fluid containment standards, the circuit was partially reconfigured and reconstructed in two phases beginning in the fall of 2003 and completed during 2004.

  The Washdown Pond is approximately 190 feet by 190 feet by 14 feet deep with 2.5H:1V side slopes and is located southwest of the Cooling Pond. The pond has a 15-foot by 45-foot-wide inlet to enhance sedimentation by allowing the flow to dissipate energy before entering the pond. The inlet area also has an 80-mil HDPE wear sheet installed to protect the primary liner in this area.

  The pond has a 55-foot wide by 15-foot-long HDPE lined spillway designed to withstand a 100-year, 24-hour storm event. The primary liner consists of 80-mil HDPE with a 60-mil HDPE secondary liner. A 200-mil Geonet layer separates the liners and a layer of 8-ounce Geotextile is installed between the secondary liner and the compacted subgrade, which has a minimum thickness of 6 inches, compacted to 90-percent Modified Proctor (ASTM Method D1557). The bottom of the pond is graded to drain toward the southwest corner of the pond to an LCRS sump. The LCRS is 25 feet by 25 feet by 4 feet deep.

Following the installation of the secondary liner, a layer of 8-ounce geotextile was placed over the LCRS sump area and filled with coarse non-acid generating gravel, followed by a second layer of 8-ounce geotextile placed over the sump gravel. The 200-mil geonet and 80-mil primary liner extend over the sump.

A 10-inch diameter polyvinyl chloride (PVC) pipe is installed in the southwest corner of the pond to provide access to the sump for monitoring and, if necessary, solution evacuation. The portion of the casing that extends into the sump is slotted with the bottom capped to prevent gravel infiltration. Solid PVC pipe extends from the sump to a minimum of about 5 feet above the pond crest. The PVC pipe is placed between the secondary and primary liners and booted through the primary liner at the pond crest. A PVC cap covers the inlet.

Other improvements to the Dry Mill Washdown Circuit included the installation of approximately 1,400 feet of 6-inch diameter HDPE pipe to convey the collected washdown waters and sediment to a new coarse sediment basin. The pipeline was constructed at a nominal 1-percent grade with cleanouts at intervals of approximately 100 feet. Where the pipeline crossed roadways, "pipe-in-pipe" construction was utilized. The 6-inch diameter HDPE pipe was inserted into 10-inch diameter Sch-80 steel pipe, welded together to form a nominal 60-foot continuous pipe. The steel pipe was surrounded on the sides and bottom by a minimum 1-foot-thick layer of compacted fill, as specified in the Phase II EDC submittal. A minimum 18-inch layer of compacted random fill (compacted to 90-percent Modified Proctor (ASTM Method D1557)) was placed over the steel pipe.

An EDC approved in August 2012 authorized the reconfiguration of the existing Washdown Process Solution Pipeline which takes a long, circuitous route around an access road, through the Calcine Carbon Column (CCC) and CIP leaching areas, around the historic Chlorination Building and Roaster Thickener where it enters the Roaster Building. The total run-of-pipe is approximately 1,900 feet, of which 1,200 feet was removed and reconfigured due to the presence of many elbows and road crossings within this length of pipe. Furthermore, evidence also suggested that process water detected in several monitoring wells was most likely due to failure of the secondary containment pipe.

Removal of the circuitous portion of the pipeline and replacing it with a more-direct pipeline resulted in a shorter run with no elbows or potential weak points. Approximately 600 feet of 6-inch diameter HDPE pipe-in-pipe was installed.

- ***Evaporation Pond:*** In August 2006, the Division approved a Minor Modification for the construction of an Evaporation Pond (Evap Pond) and the permanent closure of the Duck Pond (refer to the sub-section entitled *"Duck Pond and Duck Pond Closure"* for additional details).

The initial purpose of the Evap Pond was to improve the evaporative capacity of TSF-1 (currently inactive) by providing additional evaporative surface area, thereby reducing solution inventory in the TSF-1 Supernatant Pond. Fluids present in TSF-1 included process tailings supernatant, SRS water from the wells encircling TSF-1, and meteoric water. Currently, only reclaim water from TSF-2, water from the SRS, Tailings Supernatant (Process) WTP concentrate, and DASH WTP concentrate are being discharged into the Evap Pond.

Eight spray evaporators are installed around the lined "finger" within the Evap Pond and must be operated except during approved winter shutdowns or when prevented by events beyond the Permittee's control. The evaporators are operated in a manner to ensure vapor plume discharge is downwind and within the confines of the HDPE-lined pond area. Evaporation rates are dependent on several factors (e.g., relative humidity, temperature, solar radiation, wind direction, wind speed, water pressure and evaporator design) and maintenance. According to the Permittee, evaporation rates range from 30 to 70 percent of gallons pumped.

The Evap Pond is a double-lined pond designed to contain 450 million gallons of fluid and direct precipitation as the result of the 100-year, 24-hour storm event. The design also incorporates a diversion channel designed to divert run-off around the Evap Pond and an emergency spillway in case the pond capacity is exceeded.

Construction of the Evap Pond required the abandonment and relocation of 1 seepage collection well, 9 monitoring wells, 7 recharge wells, and 1 production well located within the pond footprint. Monitoring wells JCM-20A (subsequently converted to collection well DPS-29) and JCM-20B remained within the pond footprint but were booted through the HDPE liners. An access road allows for continued monitoring of these wells and maintenance of the evaporation units located on the lined "finger" area.

The Evap Pond embankment consists of a homogenous earth-filled structure with 2.5H:1V slopes. The embankment has a 30-foot crest width and a 15- to 16-foot-wide access road along the crest. The access road has an 18-inch thickness of wearing course and 18-inch-high safety berms. Random fill materials for the embankment were obtained from the excavation for the diversion channel construction and from the Evap Pond basin.

The Evap Pond liner system consists of an 80-mil HDPE primary liner with a 60-mil linear low-density polyethylene (LLDPE) secondary liner. The liner system is fitted with an LCRS, consisting of an HDPE geonet placed between the primary and secondary liners and a sump. The liners are hot wedge welded to ensure continuous uninterrupted watertight containment and where hot wedge welding was not possible; the liners were extrusion welded to ensure a positive seal between adjacent liner panels.

The LCRS collection sump is located at the base of the pond and is fitted with a 12-inch diameter HDPE pipe (SDR-11) located between the primary and secondary liners. In the event leaks occur in the primary liner, the solutions will report to the LCRS sump where they can be removed via pumping to minimize head on the secondary liner.

A French drain, referred to in the Permit as the Evap Pond Spring Drain, was installed beneath the Evap Pond to intercept and convey drainage from springs known to exist beneath the pond. The drain is a trench approximately 2 feet wide by 3 feet deep and 1,950 feet in length and lined with 8-ounce non-woven geo textile. A 6-inch diameter perforated CPT pipe is placed in the bottom of the trench and covered with drain rock. The drain exits the toe on the east side of the Evap Pond and discharges close to the axis of a pre-existing natural drainage. The drain is monitored for flow and Profile I constituents if and when flow is present. To date, no flow has been reported from the drain.

Nevada Dam Safety Regulations (NAC 535.240) require that a dam be designed with an emergency spillway unless the design includes a diversion channel to route flood flows around the facility, and sufficient freeboard has been designed into the embankment to accommodate the design precipitation event. The design for the Evap Pond includes a diversion channel sized to convey run-off generated from a 100-year, 24-hour storm event, as well as an emergency spillway.

The elevation of the emergency spillway (6,291 feet above mean sea level (amsl)) is 4 feet above the maximum operation level in the facility (6,287 feet amsl). Overtopping the emergency spillway embankment due to wave oscillation is unlikely due to the pond's large surface area. A 2.5 feet freeboard is required for wave run up, and 0.4 feet of freeboard is required to provide capacity for the meteoric water reporting directly to the facility during a 100-year, 24-hour storm event. There is an additional 1.1 feet of freeboard above the maximum operation level than what is required as a minimum.

If the pond is overfilled or some unforeseeable catastrophic event was to occur that caused the pond level to reach the spillway elevation, a small, controlled release through the emergency spillway would be more desirable than overtopping an embankment with a crest at the same elevation. The spillway ties into the stormwater diversion channel which diverts run-off waters that would otherwise drain into the Evap Pond. The channel is located on the southwest embankment of TSF-1 and runs along the west and south sides of the Evap Pond and then discharges to a Stilling Basin. The channel is armored with turf-reinforced mat (TRM). The Stilling Basin is comprised of a layer of 8-ounce geotextile and covered with a 12-inch layer of riprap. Any release entering the Stilling Basin and/or the diversion channel must be cleaned up pursuant to the Emergency Response Plan.

An EDC was approved by the Division in 2022 for repairing and replacing a portion of this diversion channel and stilling basin that have sustained erosional damage since their construction in 2006. The new 1,200-foot channel sections and stilling basin are located below the Evap Pond spillway and are designed to convey the 500-year, 24-hour storm event. Both channel sections and stilling basin will be armored with HydroTurf™ engineered by ACF Environmental. HydroTurf™ is a three-component system made up of structured high-friction HDPE geomembrane (i.e., 60-mil Agru Super Gripnet® Liner), and engineered turf, and a specialized pozzolanic infill created specifically for bench drains, down chutes, and diversion channels. HydroTurf™ was approved by the Division and installed on the TSF-1 closure spillway in 2022.

During the initial liner integrity testing for the Evap Pond liner system, water was detected in the LCRS in excess of the permitted limits. Difficulties in identifying leakage along with other extenuating circumstances delayed commissioning of the Evap Pond. Although the Permittee commissioned the pond in September 2008, liner integrity issues resulted in the need to evacuate water in the Evap Pond to TSF-1 to identify the source(s) of the leakage. In October 2010, the Evap Pond was pumped again over several months to a level of 6,269.6 ft amsl.

Several documented leakage investigations were performed, the last of which was completed in November 2010. Several holes were found and repaired, but leakage, some of which was below the 6,270 ft amsl level continues to exceed the Permit limits. The Permittee is required to evacuate the Evap Pond LCRS sump and monitor the pond level daily until the Division authorizes otherwise. As of the 2025 renewal, the operating elevation of this pond has been lowered by the permittee to reduce leakage, with an average leakage of approximately 2000 gallons per day to the LCRS sump.

In an effort to reduce freshwater consumption at the mill and reduce process solution inventory, an EDC approved in December 2012 authorized the placement of a second pump barge into the Evap Pond. The recently refurbished barge is equipped with a 75-horsepower pump to provide recycled process solution back to the mill for reuse. The barge is positioned near the existing Evap Pond Pump Barge which is currently used to deliver water to the evaporators and misters. As of the 2025 renewal, the barge pump was still in place and being utilized to move water to the Carbon – in – Column facility located on the north side of the Evap pond, but the pipeline to convey water back to the mill site has been removed.

An EDC approved by the Division in July 2013, authorized the installation and operation of a 150-horsepower booster pump to be located on the northwest corner of the Evap Pond embankment to further enhance process solution delivery to the JCM Mill Facility. An 80-mil HDPE wear sheet was placed over the existing liner followed by a 2-foot layer of clay fill material. In addition, an 8-inch-thick pre-cast concrete slab was placed on top of the fill material. The pump installation required a minimal amount of pipe reconfiguring.

- ***Tailings Pipeline Splitter-Pond:*** The Tailings Pipeline Splitter-Pond was constructed in 2004 to provide containment for spills or leakage that may occur from the tailings pipeline distribution splitter box and pipeline. The splitter-box is a single-lined 80-mil HDPE pond with a capacity of 160,000 gallons at 2 feet of freeboard. Damage to the pond in early 2005 necessitated the re-lining of the pond with 80-mil HDPE during the Cooling Pond reconstruction. Any process fluids collected in the pond must be evacuated to TSF-2 within 20 days of accumulation.
- ***Duck Pond (and Duck Pond Closure):*** The unlined, earthen Duck Pond was constructed in 1989 as part of the Phase III TSF-1 Raise expansion. The pond was designed to collect direct meteoric water, surface run-off, and seepage inflow from the mine access road fill and TSF-1. All inflow into the pond not related to meteoric events and all discharge from the pond was controlled by pumps. Duck Pond discharge water was pumped back to JCM Mill Facility, Cooling Pond, or TSF-1. The pond had a design

capacity of over 20 million gallons at 2 feet of freeboard. Final closure of the Duck Pond was completed in 2011.

- ***Emergency Catchment Pond (ECP):*** The unlined, earthen Emergency Catchment Pond serves as an event pond. Process fluid storage in the pond is limited to 20 days and is only permitted during emergency situations. The 7-million-gallon pond was constructed in 1988 in a compacted depression enclosed by a soil dam.

  This design originally allowed for the capture of excess run-off, which may contain process fluid, in a sequential manner from the Pregnant Pond, the Washdown Pond, and the Cooling Pond. Permeability testing was not performed on the compacted soil. The Emergency Catchment Pond collects stormwater from the mill and pond area, and process solution from any pipe release and any overflow from the Pregnant, Cooling, and Washdown Ponds.

  As of January 2017, monitoring well HL-2, located downgradient of the ECP has not shown any exceedances above the Profile I reference values.

- ***Process Material Drying Pad:*** The Division approved an EDC on 20 July 2022 for the construction of an HDPE-lined Process Material Drying Pad (PMDP) to enable dewatering and drying of process related materials from maintenance and cleanup activities at the JCG mill.

  The PMDP was constructed adjacent to and northwest of the Washdown Pond at the location of the Temporary Geotube Drying Pad (TGDP), originally constructed in 2020 and approved under a Non-Fee Review. To prepare for the new PMDP construction, the existing TGDP liner and berms were removed, and the site was over-excavated to remove unsuitable soils prior to placing compacted soils for the new facility. The overall constructed dimensions of the PMDP containment are 242 feet × 180 feet.

  The lined containment consists of approximately 47,400 square feet of Agru 80-mil HDPE double-sided Micro-spike® geomembrane liner over the prepared PMDP berm and floor surfaces. The geomembrane was keyed-in to a 2-foot wide by 2-foot minimum depth anchor trench. Following geomembrane installation, a 200 mil Agru Geonet geocomposite was installed over the geomembrane followed by a 3- to 5-foot-thick drain rock layer. The top elevation of the drain rock is 1 foot below the crest of the outer PMDP berms.

  Process materials planned to be dewatered and dried within the PMDP containment will include, but not be limited to, dredged sediment and sludge from mill process ponds, Carbon-in- Leach (CIL) materials, and sediments from mill sumps. At no time will petroleum contaminated soils or debris be stored on the PMDP.

  Drainage of fluids from the drying process will gravity drain through an HDPE-lined channel to the Washdown Pond. The PMDP liner is connected and welded to the lined drainage channel and Washdown Pond lined containment to ensure no drainage from drying and dredging operations leaves containment.

- ***Water Storage Reservoirs (WSR):*** An engineering design for the WSR was approved by the Division on 12 July 2011 under a major permit modification. Originally the water storage reservoir (WSR) was designed and constructed to provide lined containment for surplus TSF-1 supernatant solution, reduce TSF-1 supernatant volume and hydrostatic head, and eventually allow closure activities to begin on the TSF-1 impoundment. Since the transfer of TSF-1 supernatant water to the WSR in 2013, the WSR has provided additional water storage capacity for surplus process water while maximizing summer evaporation. For maximum water management flexibility, the WSR was constructed with a divider berm to create an east and west reservoir or basin (WSR-E and WSR-W), each with its own dedicated leak collection and recovery system (LCSR).

On 18 October 2022, the Division approved the conversion of the WSR into a third TSF (to be designated as TSF-3) without any footprint or embankment expansions (See *Tailings Storage Facilities: TSF-3 Conversion* section below).

The WSR is capable of storing, with 2 feet of free board, 1,337.5 acre-feet (436 million gallons) of process solution to the 6,263-foot amsl (i.e., the elevation of the internal berm bisecting the WSR and maximum operating level). Of this volume, 610.9 acre-feet (199 million gallons) and 726.8 acre-feet (237 million gallons) can be stored in the WSR West Basin and WSR East Basin, respectively (i.e., at 6,263 feet amsl).

Structural fill required for WSR-E and WSR-W construction came from alluvial material excavated within the western half of the impoundment footprint. Fill material was placed in depths of approximately 30 feet near the embankment and the floor of the excavation was scarified, moisture conditioned, and re-compacted to 92 percent of the maximum dry density as determined by ASTM Method D1557.

The embankment foundation was graded by cut-and-fill methods to establish relatively smooth contours without abrupt grade changes. Liquefaction potential for the foundation soils is low since the site soils contain greater than 10 percent fines and are relatively dense and have cohesion. Liquefaction potential of the embankment is also low, since the fill utilized was derived from native soils and will not be saturated.

The WSR-E and WSR-W embankments were constructed in 12-inch lifts. Each lift was moisture conditioned and compacted to a minimum of 92 percent of maximum dry density (ASTM Method D1557). The upstream and downstream faces of the embankment are constructed to 3H:1V and 2.5H:1V slopes, respectively. The embankment crest is constructed with a 40-foot width to provide for the placement and operation of the tailings distribution and reclaim pipelines. This crest width will also provide for vehicle and equipment access for inspection and maintenance as well as safety during construction.

The WSR liner system consists of 80-mil smooth HDPE primary liner over 60-mil HDPE drain liner (e.g. Agru Drain Liner®), eliminating the need for drainage net material. The HDPE liner system is placed over a minimum 6-inch layer of prepared subgrade. The double-liner system is keyed into a 4-foot deep by 2-foot-wide anchor trench within the impoundment perimeter crest.

- ***WSR LCRS*****:** The WSR-E and WSR-W are graded to drain to an LCRS located in the southeast corner of each basin. The trapezoidal shaped LCRS has floor dimensions of

40 feet by 40 feet with a depth of 3 feet and will be filled with D_{50} ¾-inch diameter drain gravel. The northwest and southwest embankments are graded 8H:1V, while the northeast and southeast embankment is graded to 3H:1V. Assuming 20-percent porosity, the sump has an estimated 10,000-gallon solution storage capacity.

The HDPE LCRS intake pipes within the WSR-E and WSR-W both consist of a perforated 12-inch diameter SDR 11 HDPE pipe installed in the LCRS sump drain gravel between the primary and secondary liners. These pipes extend a minimum of 1 foot above the top of the WSR crest where they are booted through the 80-mil primary liner at the WSR crest at the southeast corner of each basin. A 3-inch diameter perforated HDPE pipe was installed alongside each 12-inch LCRS intake pipe to provide observation/monitoring for the operation of each WSR basin. An In-situ Inc. Level Troll 500 transducer was installed into each 3-inch diameter pipeline to monitor the hydraulic head above the secondary liner within the WSR-E and WSR-W LCRS sumps. Both pipes are booted through the 80-mil HDPE primary liner at the crest of each basin. The bottom of the LCRS observation and recovery ports are capped.

- ***WSR-E and WSR-W Operation:*** Currently, a 500-gpm barge-mounted transfer pump is placed in the WSR-E. This pump is connected to an 8-inch diameter, SDR-11 HDPE pipeline which conveys WSR water to the Process Water Treatment Plant (aka Tailings Supernatant Water Treatment Plant) via the WSR Pipe Corridor (see *Pipeline Corridors* section below). In addition, a check valve is installed to prevent the backflow to the WSR.

  A 300-gpm 60-horsepower submersible pump is also installed within the WSR-E. This pump is connected to a 6-inch diameter HDPE SDR 17 pipe which enables transfer of WSR water to the Evap Pond via Pipeline Corridor-4. Prior to exiting the WSR lined containment, the single 6-inch diameter pipeline is housed in a 10-inch diameter, SDR-32.5 HDPE pipe for pipe-in-pipe secondary containment. This configuration continues along the entire length of Pipeline Corridor-4 until it discharges into the lined containment of the Evap Pond. Leakage flow or spillage from this pipeline will be monitored and collected within the secondary containment pipe and conveyed via gravity to either the WSR or Evap Pond.

  As approved by the Division under the 2011 Major Modification for TSF-2 and the WSR, pumps can be mounted on the Evap Pond Pump Barge to allow the transfer of Evap Pond water to the WSR at a flow rate of 2,000 gpm. Prior to exiting the Evap Pond liner surface, a 12-inch diameter SDR 11 pipeline housed in a 16-inch diameter, SDR-32.5 HDPE secondary containment is approved to be installed along Corridor-4. This configuration would continue along the entire length of Corridor-4 until it enters the WSR. Inside the WSR, the pipeline would discharge to either basin. Leakage or spillage from the pipeline would be monitored and conveyed via gravity to WSR-E, WSR-W, or the Evap Pond. This Evap Pond barge and pump and Corridor-4 piping was installed during the initial 2011 and 2012 construction of the WSR; however, it is currently not used and has been disconnected.

  On 11 April 2018, the Division approved an EDC for the temporary raise of the WSR's maximum operating level a total of four (4) feet from 6,261 ft amsl to 6,265 ft amsl.

This temporary raise of the maximum operating level allowed JCG to store an additional 78.8 million gallons of process solution. To accommodate this new operating level, JCG also received Division approval to raise the WSR spillway invert from 6,265.5 ft amsl to 6,267 ft amsl. Included with this EDC approval, JCG received authorization from the Division to temporarily extend tailings deposition into TSF-1 to accommodate an additional 426,800 tons of tailings storage within the interior berm. To enable this additional tailings storage, the TSF-1 interior berm was raised 4 to 6 feet vertically to a maximum of 6,400 ft amsl (see *Tailings Storage Facilities: TSF-1* below).

In July of 2021, an as-built was approved for the installation and operation of three wastewater evaporator units, approximately 20 feet apart, on the Water Storage Reservoir mid-berm, which are supplied with water from the Evaporation Pond (See *Evaporation Pond*, above).

On 6 December 2022, the Division approved an EDC for the removal of the WSR (i.e., Tailings Storage Facility 3 (TSF-3)) spillway, which allowed raising the maximum operating level to 6,264 ft amsl. The removal will consist of removing the existing geomembrane from the existing spillway, then use structural fill to bring the spillway up to the existing crest at 6,268 feet above mean sea level. The filled spillway will be lined, from bottom to top, with an 8-ounce non-woven geotextile and 80-mil textured high density polyethylene geomembrane.

Since EDC approval and entering into temporary closure, JCG has not yet completed the spillway removal. However, the construction required to remove this spillway will be completed prior to resuming milling and processing operations.

- ***WSR Liner Inspection and Repairs:*** During 2014, JCG performed a series of geophysical surveys of the WSR East and West basins in an attempt to locate potential leaks in the primary liners of the WSR-E and WSR-W basins. Potential leaks were suspected from increased accumulations of process fluids in the WSR-E and WSR-W basin LCRS sumps.

  Numerous anomalies were identified in each WSR basin which represented potential leaks in the primary liners. After inspection, each WSR basin was emptied, dried, and inspected. Where actual liner defects could not be verified, large patches ranging from 400 to 17,000 square feet were installed over the center of the anomaly or covered multiple anomalies. Anomalies where visible defects were discovered were repaired with smaller patches. Repairs of the WSR-E Basin were completed in 2014, and repairs of the WSR-W basin were completed in 2014 and again in 2018. After the inspection and repair, reports were submitted and reviewed by the Division.

  In December 2018, another leak detection survey of the WSR-W was completed. A total of 9 anomalies were identified in the WSR-W from this survey. JCG emptied the WSR-W in August of 2022 and investigated the liner for defects or damage at the 9 anomaly locations. In August and September 2022, anomalies 1, 3, 5, and 6 through 9 were patched with 40-foot x 40-foot patches. Smaller patches were used for anomalies 2 and 4, as they were obvious defects located near the crest of the pond. A report on the WSR-W liner repairs was provided to the Division prior to beginning any work to modify the WSR-W to accept tailings slurry (i.e., converting the WSR to Tailings Storage Facility 3) (See *Tailings Storage Facilities: TSF-3 Conversion* below).

JCG conducted an additional leak detection survey of the WSR-E during September 2019. Results of this leak detection survey were provided to the NDEP-BMRR. The anomalies identified in the WSR East Basin during this survey are to be repaired after emptying and prior to converting the WSR East Basin to accept tailings slurry. A report of the WSR East Basin liner repairs will be provided to the NDEP-BMRR prior to beginning this conversion. As of the 2025 renewal possible leaks had been detected but no repairs had yet been initiated. The leak detection is being monitored and pumped and reported quarterly to the Division.

Tailings Storage Facilities: Process components associated with the JCM Tailings Storage Facilities include 3 tailings impoundments (TSF-1, TSF-2 and TSF-3 (formerly WSR)), a seepage remediation system (TSF-1 SRS), and several associated ponds and solution conveyance channels.

- ***TSF-1:*** The design and most of the construction of the 360-acre TSF-1 pre-dates mining regulations and design criteria established in NAC 445A.350 through 445A.447. Although TSF-1 was designed primarily for process tailings and residues, the Permittee was for several years authorized to discharge treated domestic wastewater to the tailings impoundment under Temporary Permit TNEV2010310. Tailings discharge to TSF-1 ceased during the 3rd quarter of 2013 with the commissioning of TSF-2. Other than an emergency situation recognized as such by the Division, the discharge of tailings slurry or process solution into TSF-1 is prohibited. On 12 August 2016, the Division approved an EDC for the temporary discharge of tailings slurry into TSF-1 beginning 1 November 2016 and ending 1 August 2017. This is discussed in greater detail under the subheading "TSF-2 Phase 2 Deferred Construction and TSF-1 Temporary Discharge."

  The TSF-1 is situated on alluvial fan deposits comprised of interbedded lenses of clayey silts, sands, and gravels. Early hydrological and lithological studies suggest the presence of a prominent clay layer at a depth of approximately 100 feet below ground surface (bgs). More recent studies, completed circa 2011-2012, indicate that if any clay layers do exist, they are most likely discontinuous. Hydrological studies indicate that the aquifer beneath TSF-1 is complex and heterogeneous. As of the 2025 renewal a new study was being conducted by the Permittee to better characterize the hydrogeology below TSF-1, including evaluating the efficacy of the TSF-1 seepage remediation system.

  TSF-1 was constructed in a series of 7 phases, beginning in 1981 with Phase I. Phase II (downstream raise) construction commenced in 1982, followed by Phase III (downstream raise) in 1988, Phase IV (upstream raise) in 1991, Phase V (centerline raise) in 1993, Phase VI (upstream-east side and centerline west side) in 1995 and Phase VII (centerline raise) in 1998. TSF-1 does not have an engineered liner system, however the impoundment does have a prepared sub-base comprised of graded and partially compacted soil/tailings mix.

  Subaqueous tailings deposition into TSF-1 was practiced until 1987 when deposition was changed to subaerial in an attempt to 1) reduce the volume of tailings supernatant solution containing high concentrations of chlorine entering TSF-1; and 2) increase compaction of the tails. The high chlorine concentrations were a result of the operation of the now closed Wet Mill (i.e., chlorination circuit). Because of the high chlorine concentrations, recycling of the TSF-1 supernatant solution into the Mill operations was minimal. This resulted in large volumes of TSF-1 supernatant solution requiring evaporation.

Seepage from TSF-1 was detected in the alluvium as early as 1981 when a recharge mound and migration of tailings decant solution were first observed. In addition, chloride concentrations in the decant solution have remained high since seepage was first observed. The highest chloride concentrations are typically found in the upper levels of the aquifer at shallow depths.

In an effort to address the seepage issue and prevent further degradation of the waters of the State, nine trench drains (Northwest, North, Northeast, Main East, Upper East, Lower East, Southeast, Southwest and West) were constructed along the embankment toes in 1988 as part of the TSF-1 Phase III construction to intercept and collect seepage from the impoundment. The trenches lead to sumps from which collected fluid is currently pumped to the mill for reuse or the Evap Pond.

During TSF-1 Phase IV construction (1991), a water reclaim slot (aka, "The Bulkhead") was constructed at the northwest corner of TSF-1 to facilitate the control of and access to the tails supernatant pond and reclaim barges. The slot is comprised of an excavated trench and bulkhead that controls the water intake level. The Bulkhead has remained dry with the cessation of discharge to TSF-1 and the drying of the supernatant pond.

For the TSF-1 Phase V (1993) through Phase VII (1998) raise construction, an internal horizontal perimeter drainage layer was incorporated to enhance drainage and consolidation of the tailings beneath the embankment fill. Drainpipes installed within the drain layer daylight at the downstream face of the embankment raise to transport seepage to the trench drains. In addition, the nine existing trench drains have since been consolidated into five trench drains identified as the Northwest, North, East, Southeast, and West Trench Drains.

During an October 2008 Mine Compliance Inspection, seepage was observed emanating from the southwest toe of the TSF-1 embankment, east of the Duck Pond, in an area of the embankment between the South Trench Drain on the West Embankment and the Chimney Drain on the East Embankment. A 2007 slope stability analysis of the TSF-1 embankment suggested that in the event seepage saturation reached a height of one-third the total embankment height, embankment stability could become a concern.

An EDC approved in February 2009 authorized construction of a seepage collection system (South Seepage Collection Trench) for each embankment seep to intercept seepage at the east-west embankment division point and then convey it in an easterly direction by gravity to the Evap Pond.

Since the observed seepage occurred in an area without embankment drains, the Division required the Permittee to extend the seepage collection trench and piping an additional 400 feet west to "bracket" both the West Seepage Collection Sump and the Chimney Drain. This extension was also recommended by the Nevada Division of Water Resources (NDWR), in a letter dated 5 January 2009.

The collection trench system is comprised of a trench drain at the toe of the embankment with 10-ounce, non-woven geotextile wrapped around a 6-inch diameter perforated CPT pipe (ADS N-12® or equivalent) and covered with drain rock. The covered perorated pipe runs for a distance of approximately 825 feet where it is then replaced with solid pipe. The solid pipe runs southeast for a distance of approximately 558 feet to the Evap Pond.

- ***TSF-1 Seepage Remediation System (SRS):*** The goal of the SRS is to minimize the volume and rate of seepage reporting to the SRS during closure. As of the 2025 renewal, a ring of 88 pumpback wells surrounded TSF-1. Additionally, there is a single pumpback well in the center of TSF-1, screened in the alluvium below the TSF. It is projected that 51 of the 89 available pumpback wells will be fully operational by the end of 2025. As part of an ongoing investigation, many of the non-functional pumpback wells may be decommissioned rather than put back into service. The Permittee is required to operate, maintain, and monitor the SRS at all times to ensure the capture of affected groundwater, to preclude further migration, and to ensure contraction of the overall extent of the TSF-1 seepage groundwater contaminant plume as part of the on-going operation and closure-related activities at the JCM.

  The SRS pumpback wells are each equipped with submersible groundwater pumps that deliver water to the surface at their respective wellheads. Most of the wellheads are connected via small diameter HDPE pipelines to larger diameter pipelines (trunklines) that deliver the solution to the East Lined Pond or the Evaporation Pond. Pumpback wells located adjacent to either of these ponds discharge into the ponds directly through small diameter HDPE pipelines. The East Lined Pond is equipped with a large submersible pump that delivers the solution to the Evaporation Pond. Once the solution enters the Evaporation Pond, it is managed with the other process solutions and either evaporated through passive or active evaporation or returned to the mill as reclaim water and then back to TSF-2 through the tailings line and then evaporated.

  Historical records and correspondence indicate that the SRS was commissioned in 1986 and evolved to its current ring configuration by 1993. The system historically discharged all solution directly to the former TSF-1 supernatant pond or the Duck Pond. From those two ponds, the solution was either used as reclaim water in the process circuit or evaporated through passive and active evaporation.

  In 2011, pursuant to the Consent Decree, the Duck Pond was closed and reclaimed. To maintain operation of the SRS system a new pipeline was constructed to extend the South SRS Trunkline to the mill to deliver solution to storage tanks within the CIP. At this point, seepage from TSF-1 was no longer stored in unlined facilities (i.e. TSF-1 and Duck Pond). This system operated in this configuration until the shutdown of the processing operation in May 2023.

In late 2022, the SRS system was not operational due to failed wellhead and trunkline connections that were prone to leaks and spills. In 2023 a workplan for a phased rehabilitation of the SRS system was approved by the Division and the Permittee began in-kind replacement of leaking components with corrosion and temperature-resistant equivalents. This allowed the SRS to resume operation in a reduced capacity of 31 pumpback wells by the end of 2023, 37 pumpback wells by the end of 2024, and a target of 51 pumpback wells by the end of 2025. Due to the shutdown of the roaster in 2023, the 2023 rehabilitation work included in-kind replacement of a bypass line in the South Trunkline that allowed discharge of the SRS solution to the Evaporation Pond. At this time, the North Trunkline discharged to the Splitter Box Pond, which is pumped to the Tailings Sump and then to TSF-2.

An EDC approved in March of 2025 further modified the existing North Seepage Pipeline (also called the North Trunkline) to direct flows from the North SRS well away from the mill site and downgradient to the East Lined Pond, where it would be further pumped to the Evap Pond. This relieved the stress on the well pumps that resulted from pumping well water against gravity to the mill site, reducing wear and breakage, and more effectively moved water from the SRS system to the Evap Pond. This also added secondary containment and leak detection to the North Trunkline. Leakage flows from the secondary containment gravity drain to the Evap Pond.

In November 2009 and pursuant to the Consent Decree, the Permittee submitted an evaluation of the entire TSF-1 SRS and a proposed seepage remediation plan and schedule to optimize capture of, and ultimately eliminate, the TSF-1 seepage plume to the point where remediation may be terminated pursuant to NAC 445A.22745.

In response to Division comments, the Permittee submitted a revised seepage remediation system plan in April 2010, which included the construction of 8 new seepage collection wells downgradient of TSF-1 (completed in August 2010), plus the conversion of one monitoring well to a collection well, and the conversion of 12 recharge wells to monitoring wells.

An EDC approved in August 2010 allowed for the construction of a French drain near DPE-15 to intercept the seepage and tie-in to an existing toe drain (East Trench Drain) constructed in 1995 as part of Phase VI of TSF-1. The French drain intercepts near-surface seepage in the vicinity of DPE-15 and conveys the seepage a distance of approximately 180 feet to the existing East Trench Drain and ultimately the East Lined Pond.

A mercury release in August 2013 from the TSF-1 South Seepage Return Line occurred along the northeast corner of the TSF-1 embankment. As clean-up progressed, it appeared that mercury in the embankment soils may occur over a larger area than previously thought. The Permittee agreed to and provided a plan in October 2013 to drill a series of 6 bore holes 10 feet below ground surface to further delineate the depth extent of the mercury release. The borings indicated that mercury extended beyond the original spill areal, and the Division required the Permittee to 1) remediate the spill; or 2) demonstrate that the mercury would not migrate over the long-term provided the mercury is managed pursuant to the FPPC.

The Permittee completed the delineation borings and submitted a final report of their findings and requested no further action on 6 March 2014. Based on the characterization results provided, the Division concurred with the Permittee's findings that no further corrective action was warranted at the time and spill clean-up could be stopped. However, the Permittee was reminded that the Division may re-evaluate their decision if conditions at the site change or if new or previously unidentified information becomes available that: 1) alters the results of the site evaluation; and 2) demonstrates a potential detrimental impact on human health or the environment.

In July of 2020 as part of ongoing investigations into the TSF-1 SRS, the Division approved the installation of a pumping well in the center of the TSF, which was completed in October of 2020. Pumping tests of this well in 2020 proved effective, but power problems and closure activities prevented the well from being utilized. In August of 2024 the permittee requested to construct a new pipeline from the well (DPC-1) to the Evap Pond. The pipeline was pipe-in-pipe construction over the areas of TSF-1 which had already received closure cover material, and gravity drained either back to the TSF-1 or to the Evap Pond. Construction on the pipeline was completed and commissioned in October of 2024.

In 2024, the Permittee initiated a study of the SRS pumpback system and its resulting effects on groundwater levels in the region. As part of this, the Permittee may request to close or abandon several pumpback wells in the area to increase the overall efficacy of the system. As of the 2025 renewal this study is ongoing.

- ***TSF-1 Closure Cover Studies:*** In anticipation of TSF-1 closure, the Permittee initiated cover studies utilizing alluvium, East DASH waste rock, and spent HLP solids, previously characterized and determined acceptable over the existing tailings surface. In order to facilitate cover material placement, the perimeter embankment road and the internal access roads and berms within TSF-1 were extended where necessary.

  To evaluate the potential mitigating effect of using DASH waste rock, spent HLP solids, and/or alluvium as an interim cover material, the characterization data for each material was compared to the characterization data for the tailings solids and supernatant solution. The characterization data showed alluvial material to be suitable for use in road construction and as cover material. In addition, the alluvial material appears to have a positive mitigative impact on TSF-1 run-off chemistry and significantly reduce infiltration.

  For the HLP solids, the characterization data showed that the use of this material for construction and cover placement would mitigate existing run-off chemistry from the tailings beaches for pH, cyanide, sulfate, aluminum, antimony, arsenic, copper, lead, mercury, selenium, and thallium. However, the HLP solids do have a slight potential to increase the TDS, chloride, and nitrate concentrations in the supernatant pond.

If used alone, the spent HLP solids will not sufficiently mitigate existing conditions within TSF-1. Therefore, the Permittee is therefore required to ensure that the upper 12 inches of the cover consist of alluvium.

The characterization data show DASH waste rock proposed for use as cover will mitigate existing run-off chemistry from the tailings beaches for pH, TDS, chloride, cyanide, sulfate, aluminum, antimony, arsenic, copper, lead, mercury, selenium, and thallium, and may slightly increase the magnesium concentration in the supernatant pond via stormwater run-off. Magnesium concentrations fluctuate around the Profile I reference value of 150 mg/L, indicating a relatively low risk of groundwater degradation if this material is used.

An EDC, approved in June 2011, authorized the installation of 9 paired piezometers to provide phreatic surface elevation data within the TSF-1 alluvial cover layer and tailings and to demonstrate a reduction in the hydrostatic head driving impoundment seepage.

A revised TSF-1 FPPC incorporating the closure cover study results was approved by the Division in October 2014. The revised FPPC addressed the final disposition of PCS material currently stored on HLP Cells 7 and 8 and the permanent encapsulation of off-spec coal within TSF-1. The Permittee initiated placement of spent HLP material as IWP cover on TSF-1 impoundment area in October 2015.

The final closure cover for TSF-1 is comprised of an interim working platform (IWP) material consisting of alluvium, East DASH waste rock, and spent HLP solids, which is overlain with a 40-mil HDPE synthetic liner. All the East DASH waste rock and spent HLP solids used as part of the IWP are covered with HDPE and/or alluvium. Above the synthetic liner is a final growth media cover consisting of 3 to 4 feet of alluvial borrow and overliner drainage. Stormwater run-off is removed from the TSF-1 surface via an engineered closure spillway, pursuant to the Reclamation Plan.

- ***TSF-1 Temporary Tailings Deposition:*** In 2014, the surplus supernatant inventories in TSF-1 were removed. This volume reduction was accomplished using active and passive evaporation and transfer of TSF-1 supernatant fluids to the Evap Pond and WSR. During the 2nd quarter 2016, the Permittee decided to postpone construction of the TSF-2 Phase 2 expansion and elected to dedicate resources to accelerate the TSF-1 closure. The TSF-1 FPPC, approved by the Division February 13, 2017, was submitted to the presented a design for the final grading plan design for the TSF-1 IWP cover included filling the 'low-point' in the center of the TSF-1 impoundment to create positive drainage away from this area towards the outflow spillway on the south side of the facility.

  While preparing the update to the 2017 TSF-1 FPPC, JCG submitted an EDC in 2016 for temporarily changing the 'Closure' status of TSF-1 to 'Operating'. The goal of this EDC was to build up and 'dome' the TSF-1 low-point area with deposited tailings to create the final regrade topography needed for the FPPC. Furthermore, with TSF-2 Phase 1 estimated to reach full capacity prior to the 2017 construction season, this has necessitated the temporary placement of tailings slurry within the TSF-1 low point area to allow continued operation of the JCM mill through mid-2017, until TSF-2 Phase 2 is constructed. The Division approved this EDC 12 August 2016 which resulted in the construction of a 4-foot-high containment berm (i.e., interior berm) to encircle the TSF-1 low-point area. This interior berm, constructed in 2016, encompassed approximately 79 acres in the center of the TSF-1 impoundment. The top of this contour berm was constructed with a minimum crest elevation of 6,393.75 ft amsl, a top width of 16 feet, exterior side slope of 4H:1V, and interior side slope of 2.5H:1V.

The objective of continuing deposition in 2016 was to raise the TSF-1 central area (i.e., within the confines of the TSF-1 interior berm) to be the high point for TSF-1 by doming the surface to ensure positive outward drainage from the center of the facility. JCG deposited tailings in a manner, so the tailings beach generally sloped toward the reclaim water (i.e., supernatant pool). The reclaim supernatant pool was managed at the southern end of the TSF-1 'low-point' (i.e., interior area) area. To accomplish this, the following temporary process components and facilities needed to be constructed:

- Tailings Slurry Pipeline Extension;
- Tailings Slurry Distribution Header Pipeline;
- Tailings Slurry Deposition Points;
- Reclaim Collection Structure and Pump; and
- Reclaim Water Pipeline.

The Division's approval stipulated the temporary deposition of tailings slurry into TSF-1 was limited to a period beginning November 1, 2016 to August 1, 2017. During 2017, the Division approved two extensions of the deposition period until April 7, 2018. Between November 2016 and April 2018, JCG deposited approximately 1.016 million dry tons of tailings into the TSF-1 interior berm area.

Under the Division's approval, dated 11 April 2018, temporary deposition into TSF-1 was again extended to accommodate an additional 426,800 tons of tailings storage within the interior berm. To accommodate this additional tailings storage, the TSF-1 interior berm was raised 4 to 6 feet vertically to a maximum of 6,400 ft amsl. Tailings deposition continued within the TSF-1 interior berm until 10 December 2018, when TSF-2 Phase 2 embankment raise was completed and approved for operation. At that time, tailings slurry deposition was switched back to TSF-2. JCG is no longer operating the temporary Reclaim Water System for TSF-1 which was approved by the Division under the 2016 EDC. Since the cessation of tailings deposition in TSF-1, JCG has continued construction of the final closure cover as previously described, and no additional direct inflows from the mill or process have been allowed into TSF-1.

TSF-1 PCS Containment Cell: An EDC approved by the Division on 14 October 2015, authorized the construction of a PCS Containment Cell (PCS Cell), designed to contain 31,000 cubic yards (cu yd) of PCS and off-spec coal. The PCS and off-spec coal was hauled to the PCS Cell soon after its approved construction. The dimensions of the PCS Cell are 860 feet long by 150 feet wide with 4-foot-high containment berms. The PCS Cell was constructed on top of the IWP cover constructed to facilitate TSF-1 closure.

The PCS Cell containment berms and 12-inches of subgrade below the base of the cell were constructed with alluvial material sourced from a local borrow area east of the heap leach pad. During construction, the berms and subgrade material were compacted in accordance with the Technical Specifications included in the EDC submittal.

Full containment of the PCS Cell is accomplished with a synthetically lined system consisting, from bottom to top, of 60-mil single-sided textured high-density polyethylene (HDPE), followed by a drainage geocomposite, comprised of a layer of geonet heat-laminated on one side with 8-ounce per square yard (oz/sq yd) layer of non-woven fabric. This geocomposite layer is designed to provide protection for the underlying 60-mil HDPE liner during placement and storage of the PCS.

The PCS material and off-spec coal were placed in the PCS Cell in maximum 4-foot thick lifts to a maximum height of 8 feet. Each lift was compacted with haulage equipment to a non-yielding surface. The final top surface of the placed material was graded to drain at a slope of 1.5 percent to the south toward the center of TSF-1. The east, north, and west side slopes of the placed material are graded to drain at a grade of 3.0 horizontal:1.0 vertical (3H:1V).

After the PCS Cell is filled to capacity, the PCS material and off spec. coal will be covered and fully encapsulated with 12-oz/sq yd non-woven geotextile, followed by 60-mil single-sided textured HDPE geomembrane and drainage geocomposite. This final geocomposite layer will be installed with the fabric side up. The 60-mil HDPE cover liner will be extrusion welded to the 60-mil HDPE of the cell containment. Currently, the PCS Cell has available storage for additional PCS. JCG will continue to dispose of PCS material within the PCS Cell until it is filled to its design capacity. As of the 2025 renewal, this cell was still open and in use.

The final HDPE geomembrane cover liner for TSF-1 will be extended to tie into the cover and containment liners of the PCS Cell. After extending the PCS Cell liner as shown, the entire PCS Cell will be covered with a minimum of 3 feet of growth medium to match the same thickness required by the design of the surrounding TSF-1 closure cover. Between the PCS Cell's north containment berm and the TSF-1 crest, two, 1-foot deep by 40-foot wide drainage swales will be constructed during the final placement and installation of the Interim Working Platform and 40-mil low-density polyethylene (LLDPE) cover. These swales will prevent infiltrating snowmelt and stormwater from flowing toward the TSF-1 crest and embankment, but will direct it away from the TSF-1 crest towards the south at a 0.5 percent gradient. The liner from the PCS Cell will be extended through the swales to assist the transport of infiltration above the liner surface.

In summary, implementation of the TSF-1 final closure activities began in 2015 and are ongoing. Table 3 lists the TSF-1 closure and reclamation progress by year between 2015 and 2022 based on the constructed acreage of each closure cover component. No reclamation work was completed between 2022 and the 2025 renewal, due to the mine being in temporary closure status.

Table 3: TSF-1 Closure Cover Progress (2015 – 2022) (Acres)

Closure Activity	2015-2016	2018	2019	2020	2022	Total to Date	Remaining Area[2]
IWP Const	170.0	0	0	27.5	86.6	284.0	16.0
Liner Installation	86.9	0	42.9	67.7	0	197.4	102.6
Growth Media Placement	4.8	0	54.2	49.2	0	108.2	191.8
Spillway Construction	0	0	0	1.0	0	1.0	0

1 – No closure activities conducted on TSF-1 during 2017 & 2021
2 – Total acreage based on a 300-acre impoundment area. Outer TSF-1 embankment reclaimed prior to 2015.

The anticipated timeframe for completing the remaining TSF-1 decommissioning and closure is expected to be another 4 to 5 years from the 2025 renewal. After completing geomembrane liner installation over the entire impoundment area, another 1 to 2 years will be needed to install remaining growth media over the TSF-1 middle area. This schedule is dependent on the amount of additional fill needed to compensate for the continued tailings settlement to maintain positive surface in the foreseeable future.

The Permittee is currently monitoring the TSF-1 potentiometric surface by conducting static water level measurements of the TSF-1 piezometers. These measurements are conducted on a monthly basis and are reported quarterly pursuant to the Permit.

- ***TSF-2:*** The 2009 Consent Decree and the 2010 Permit renewal required the Permittee to submit engineering designs for the construction of a new tailings storage facility (TSF-2) at the JCM site. To meet the SOC submittal deadline, the Permittee submitted a Major Modification in December 2010 (approved in July 2011) to replace TSF-1 with a new double-lined and leak detected tailings facility (TSF-2).

  To manage surplus winter water inventory and to maximize the amount of summer evaporation to meet the required reduction of TSF-1 supernatant volume and hydrostatic head, the Major Modification included engineering designs for double-lined and leak detected Water Storage Reservoir (WSR). The WSR was constructed with two basins (WSR-E and WSR-W) separated by a mid-pond embankment which connects their contiguous liner systems. The design storage capacity of the WSR, which includes WSR-E and WSR-W is 386.3 million gallons. Both TSF-2 and the WSR are located south of the existing Evap Pond.

  TSF-2 was designed and constructed in four phases. The initial TSF-2 construction (signified as Phase 1) was completed in December 2012 and enabled storage, with 4 feet of free board, for 2,297 acre-feet (748 million gallons) of tailings slurry and supernatant solution. This is equivalent to approximately 4 million tons of tailings solids based on a solid to liquid ratio (by weight) of 40:60; a dry tailings density of approximately 75 pounds per cubic foot (pcf); a rate of tailings rise low enough to allow consolidation of solids under their own weight; and a consistent removal of supernatant water to prevent excessive surface accumulation and re-saturation of the tailings solids.

JCG received approval on 29 September 2015 for a Minor Modification for the Phase 2 expansion of TSF-2. The Minor Modification design consisted of a 32-foot vertical embankment raise using downstream construction methods. Subsequent EDC approval by the Division on 13 March 2018 allowed for the construction of a 10-foot vertical embankment raise in lieu of a 32-foot vertical raise. The 10-foot vertical raise, designated as TSF-2 Phase 2, was constructed in 2018 which increased the embankment crest elevation to 6,382 feet amsl. The TSF-2 Phase 2 expansion provided approximately an additional 1.2 million tons of tailings storage at an estimated average dry density of 75 pcf. Together, TSF-2 Phase 1 and Phase 2 enabled the storage (with 4 feet of free board) of 3,203 acre-feet (1.04 billion gallons) of tailings slurry and supernatant to the 6,378-foot elevation amsl for a total of 5.2 million tons. The steeper inside slope of the Phase 2 embankment of 2.65 H:1V (compared to the Phase 1 inside slope of 3H:1V) was designed to accommodate a 6-foot-wide horizontal bench along the inside slope of the Phase 1/Phase 2 transition. This 6-foot bench provided a horizontal surface to safely weld the Phase 2 liner system to the existing Phase 1 liner system and ensure drainage to the existing TSF-2 collection sump.

The TSF-2 Phase 3 Expansion was approved for construction by the Division in a letter dated 20 November 2020. The TSF-2 Phase 3 was constructed as an interim, short-term, 8-foot vertical downstream raise to crest elevation of 6,390 feet amsl. The Phase 3 expansion provided storage of an additional 1.1 million tons of tailings storage or 3,869 acre-feet (1.26 billion gallons) of tailings slurry and supernatant to the maximum operating elevation of 6,386 feet amsl. Construction of the Phase 3 embankment and associated facilities was completed on April 23, 2021.

JCG received approval to construct TSF-2 Phase 4 from the Division on June 16, 2021. The 12-foot-high Phase 4 embankment raise increased the final embankment crest elevation to 6,402 ft amsl and created a maximum embankment height of 105 feet (measured vertically from the embankment's downstream toe). The TSF-2 Phase 4 expansion allows JCG to contain an additional 1.8 million tons of tailings solids from mill operations for a total of 8.1 million tons of tailings solids (at a dry density of 75 pcf) to the maximum operating elevation of 6,398 feet amsl. This equates to volume of 4,941.7 acre-feet at this elevation, and a total capacity of 5,319.4 acre-feet to the Phase 4 crest elevation of 6,402 feet amsl.

The Phase 1 and Phase 2 secondary liners consist of a 60-mil HDPE drain liner (e.g., Agru Drain Liner®) eliminating the need for drainage net material. The primary liner for all TSF-2 phases (1-4) consists of an 80-mil HDPE Agru Microspike® textured liner. For all four phases, the liner systems were placed over a minimum 6-inch-thick layer of prepared subgrade. The liner systems at each phase were keyed into their respective embankment crests with the liner placed in a 3 to 4-foot deep by 2-foot-wide anchor trenches.

The TSF-2 tailings slurry pipeline is sized to convey a maximum of 4,300 to 5,050 tons per day solids. Assuming 24 hours per day and 365 days per year operation, and an anticipated 40 weight-percent solids concentration, this corresponds to a tailings slurry design flow rate of 1,275 gpm. The slurry conveyance system can handle a slurry density from 40 to 46 weight-percent solids which results in conveyance of 4,300 to 5,050 tons per day of tailings. The Division modified the Permit to an annual deposition limit of 1,496,500 tons per year of tailings to allow for the operational flexibility to the operator. A 12-inch diameter standard dimension ration (SDR)-11 HDPE pipeline will be utilized to convey tailings slurry. Structural fill required for each phase of the TSF-2 construction came from alluvial material excavated from nearby borrow sources. The Phase 1 embankment foundation was graded by cut-and-fill methods to establish relatively smooth contours without abrupt grade changes. Liquefaction potential for the foundation soils and embankment is low since the site soils contain greater than 10 percent fines and are relatively dense and have cohesion.

Embankments for each of the TSF-2 phases were constructed in 12-inch lifts. Each lift was moisture conditioned and compacted to a minimum of the 92-percent of maximum dry density (ASTM Method D1557). The upstream and downstream faces of the embankment are constructed to 3H:1V and 2.5H:1V slopes, respectively. The final Phase 4 embankment crest was constructed with a 30-foot width to provide for the placement and operation of the tailings distribution and reclaim pipelines. This crest width also provides for vehicle and equipment access for inspection and maintenance as well as safety during construction.

- ***TSF-2 Tailings Underdrain Collection System:*** A Tailings Underdrain Collection System (TUCS) installed during the Phase 1 construction collects TSF-2 underdrain solution and recycles the solution to the TSF-2 supernatant pool for management within the reclaim collection system or conveys it to either the WSRs or Evap Pond. The TUCS consist of a network of 4-inch diameter slotted ADS® drainpipes placed along the drain centerlines within 4-foot-high, trapezoidal-shaped berms built over the floor of the TSF-2 Phase 1 impoundment. These berms consist of a 1½-inch-minus diameter drain filter sand/gravel mixture. A layer of geotextile placed over the 4-inch drainpipes prevents filter sand/gravel from plugging the TUCS drainpipes. The drainpipes convey the collected tailings drainage to the Underdrain Collection Intake Pipe (UCIP) located along the eastern impoundment slope.

  The UCIP is a 14-inch diameter HDPE pipe with a perforated section installed within the filter sand/gravel. The remaining length of UCIP is solid and extends up the eastern impoundment slope to the Phase 4 crest. During the Phase 2 construction, the UCIP was reduced to a 12-inch diameter, which was continued to the Phase 4 crest. The UCIP is designed to remove collected TUCS drain water using a small submersible pump. The pumping capacity from the UCIP is approximately 46 gpm which has maintained the phreatic surface within the TSF-2 tailings at approximately 50 feet (6,370 feet amsl) above the low point of the impoundment (6,320 feet amsl), which is approximately 30 feet below the Phase 4 crest elevation (6,402 feet asml). The TUCS piping and the UCIP do not penetrate the TSF-2 liners or the embankment.

  TSF-2 is designed to drain to the east side of the impoundment to a leak collection and recover system (LCRS). The trapezoidal shaped LCRS sump has floor dimensions of

40 feet by 40 feet with a depth of 3 feet and was filled with D_{50} ¾-inch diameter drain gravel. The north, south, and west embankments are graded 8H:1V, while the west embankment is graded to 3H:1V. Assuming 20-percent porosity, the sump has an estimated 10,000-gallon solution storage capacity. A 12-inch diameter HDPE leak detection intake pipe within the LCRS sump allows for the monitoring and pumping of any solution.

- ***TSF-2 Leak Collection and Recovery System:*** The HDPE LCRS intake pipe, consisting of a perforated 12-inch diameter SDR 11 HDPE pipe, was installed in the LCRS sump drain gravel between the primary and secondary liners and extends to the top of the Phase 4 crest. A 3-inch diameter perforated HDPE pipe was installed alongside the 12-inch LCRS intake pipe to provide observation/monitoring for the TSF-2 operation. An In-situ Inc. Level Troll 500 transducer was installed into the 3-inch diameter pipeline to monitor the hydraulic head above the secondary liner within the sump. the LCRS intake pipe and observation pipe were booted through the primary liner during Phase 1 and Phase 2 construction. During Phase 3 and Phase 4 construction, these pipes were extended up the impoundment slopes on top of the primary liner. The bottom of the LCRS intake and observation pipes are capped.

- ***TSF-2 Tailings Slurry Deposition and Reclaim Water Collection*:** The tailings slurry is transported via pipeline and pumped in a 40:60 (by weight) solid-to-liquid ratio for deposition into the TSF-2 impoundment via point deposition pipes. Multiple slurry deposition points have been installed at 300-foot intervals along the Tailings Slurry Deposition Pipeline (TSDP) that encircles the TSF-2 crest. Each deposition point consists of an 8-inch by 12-inch diameter tee on each discharge leg with a valve installed to isolate the deposition point and provide flexibility for single- or multiple-point deposition. A slotted 8-inch diameter pipe extends from the discharge leg down the impoundment slope. Valves installed at 600 or 900-foot intervals along the slurry header pipeline enable the TSF-2 operators to isolate one or more of the 600 or 900-foot sections of header pipeline for maintenance. Reclaim water is used to flush the tailings slurry as needed.

  Tailings slurry is deposited around the perimeter of TSF-2 to create a perimeter beach to cover the underdrain within the impoundment toe. Once the underdrain structures are covered, tailings slurry is discharged subaerially from deposition points along the southern TSF-2 crest, to create a beach sloping in a south to north direction and place the supernatant pool along the north impoundment slope.

  Reclaim Water Collection Structures (RCS) (aka Penstocks) are installed at the northwest corner of TSF-2 to collect the supernatant reclaim water and pump it at a maximum rate of 800 gpm to either the mill for make-up water or to the WSRs or Evap Pond, depending on mill make-up requirements, time of year, supernatant pool size, and pond inventories.

  The RCS consists of two parallel 24-inch diameter HDPE reclaim intake pipes installed on the inside impoundment slope. The RCS pipes house a submersible pump to evacuate the water via the 8-inch diameter HDPE SDR 11 reclaim pipeline. Only one reclaim intake pipe will be operated at a time. Each intake pipe is slotted to allow the entry of decant water at specific water elevations.

- ***TSF-2 Tailings Delivery and Distribution System**:* The tailings slurry pipeline extends along Pipeline Corridor-2 from the Mill and is routed along the top of the TSF-1 impoundment inside of the TSF-1 perimeter access road until it reaches the southwest embankment crest of TSF-1 where it connects to Pipeline Corridor-1 (see Pipeline Corridors section below). The tailings slurry pipeline continues along Pipeline Corridor-1, which spans between the southwest embankment of TSF-1 and the northwest end of TSF-2. Once the tailings slurry pipeline reaches the northwestern perimeter of TSF-2, the pipeline is routed through a tee and series of valves into numerous deposition points installed along the tailings slurry deposition pipeline that encircles the TSF-2 crest. Both pipeline corridors -1 and -2 consist of a 12-inch diameter HDPE SDR 11 tailings slurry pipeline and the 8-inch diameter HDPE SDR 11 reclaim water pipeline.

- ***TSF-2 Reclaim Solution Pipeline:*** Reclaim solution from TSF-2 is pumped from the Reclaim Collection Structure via an 8-inch diameter HDPE SDR-11 pipe to the mill via Pipeline Corridor-1 and Pipeline Corridor-2 (see Pipeline Corridors section, below). This 8-inch diameter pipeline is placed inside a 12-inch diameter HDPE SDR-32.5 secondary containment pipe along Pipeline Corridor-1. At the north end of Pipeline Corridor-1, the 8-inch diameter reclaim pipe continues northward along Pipeline Corridor-2 to supply reclaim make-up water to the mill.

- ***TSF-2 Liner Integrity Concerns:*** Authorization to impound tailings slurry into TSF-2 was granted by the Division in July 2013 and almost immediately, the 150 gpd permitted allowable leakage rate for the TSF-2 LCRS was exceeded, approaching a factor of 40 by the end of third quarter 2013. The Permittee believed that the specific cause of the exceedance was unknown but it was assumed to be puncture(s) in the primary liner system and/or “squeeze-out” from meteoric waters entering the system during liner repairs before operation began. Furthermore, the Permittee and their consultant were of the opinion that that the liner would “heal itself” and eventually reduce if not eliminate any leakage from the liner system.

  The Division did not consider any of these to be valid arguments since any reduction in leakage rate would be the result of tailings fines infiltrating and depositing within the LCRS, slowly eliminating leakage flow pathways by blinding off the system and eventually reducing the effectiveness of the LCRS to a level where it is no longer functional. The Permittee was therefore provided with the option of 1) locating and repairing the puncture(s) in the primary liner or 2) managing TSF-2 as a single-lined tailings impoundment.

  After several unsuccessful attempts at addressing the leakage, the Permittee opted to manage TSF-2 as a single-lined facility and agreed to install vadose zone wells outside the periphery of TSF-2. The Division approved the location of eight vadose wells in January 2014 with installation completed in June 2014.

  As stated previously, TSF-2 was constructed as a double-lined facility (Phase 1 and Phase 2) with a LCRS; however, the leakage rate through the primary liner has never fallen below the permit limitations of 150 gpm. The Permittee had chosen to continue the use of 2 layers of HDPE to construct the TSF-2 Phase 2 raise up to the crest elevations to monitor and collect leakage out of the base of the impoundment

The construction of the Phase 2 through Phase 4 embankment raises required the abandonment and relocation of groundwater monitoring wells GW-50 and GW-83 and vadose zone piezometers PZ-3, PZ-7, PZ-6, and PZ-8. These wells within the Phase 2, Phase 3, and Phase 4 embankment footprints were plugged and abandoned in accordance with applicable rules and regulations. The new relocated wells and piezometers, constructed outside the Phase 4 embankment toe, were constructed to the same designs as the existing wells and labeled GW-50A, GW-83A, PZ-3A, PZ-7A, PZ-6A, and PZ-8A, respectively. Piezometer well PZ-2, also within the Phase 4 embankment footprint, was left in place, but its casing was extended approximately 8-feet vertically to accommodate the Phase 4 embankment.

- ***TSF-3 Conversion:*** The Division approved an EDC on 18 October 2022 for the conversion of the WSR to Tailings Storage Facility 3 (TSF-3). The design of TSF-3 allows JCG to dispose of and contain a maximum of 2.4 million tons of tailings solids from the Jerritt Canyon mill operations. Within TSF-3, tailings will be primarily deposited from the east, west and north crests to create a supernatant pool in the southern center of TSF-3. For this operation, JCG will establish the supernatant pool (liquid) elevation at or below a maximum operating level of 6,264 feet amsl. JCG will also deposit tailings solids up to a maximum elevation of 6,266 feet amsl along the east, west, and north embankments. No modifications to the WSR embankment or containment systems are needed for the conversion of the WSR to TSF-3 and its subsequent operation except the planned removal of the WSR spillway on the south embankment crest of WSR-W.

  Under the EDC approved by the Division on 6 December 2022, JCG will remove the spillway at the southern crest of the WSR during its conversion to TSF-3. The removal will consist of removing the existing liner from the existing spillway, then using structural fill to bring the spillway up to the existing embankment crest elevation of 6,268 feet amsl. The filled spillway will be lined, from bottom to top, with an 8-ounce non-woven geotextile and 80-mil textured HDPE liner. The geotextile and liner will be keyed into the TSF-3 crest with a 2-foot by 2-foot anchor trench. The anchor trench will be excavated 8 feet from the impoundment crest to match the original embankment. The maximum operating elevation for the supernatant pool of 6,264 feet amsl will provide adequate freeboard of 4-feet below the embankment crest for wave run-up and surcharge needed to store the probable maximum precipitation rainfall depth.

  As of 2025, partial conversion of the WSR West Basin has been completed to include installation of the overliner drain (i.e., TSF-3 Underdrain Collection System). JCG will complete the conversion process prior to resuming milling and processing operations.

- ***TSF-3 Tailings Slurry Distribution:*** Tailings will be pumped to TSF-3 from the mill, around the western perimeter of TSF-1 and southward along the Pipeline Corridor #1 until it connects into the Corridor-1 Concrete Containment Box (CCB). At this point, the tailings slurry pipeline will be routed eastward through the WSR Pipe Corridor to the north side of the TSF. The tailing slurry pipeline from the mill to the TSF-3 is a 12-inch diameter HDPE SDR 11 pipe. Between the southwest corner of TSF-1 and the CCB, this pipeline is contained in a 16-inch diameter HDPE SDR 32.5 outer pipe. From the CCB to TSF-3, the tailings slurry pipeline transitions to a single-walled 12-inch diameter HDPE SDR 11 pipeline located within the HDPE-lined containment of the WSR Pipe Corridor. Leakage from the tailings slurry pipeline along Corridor-1 would gravity drain to the CCB through the outer 16-inch diameter containment pipe. Leakage of the tailings slurry pipe within the WSR Pipe Corridor would gravity drain to TSF-3.

Where the tailings slurry pipeline from the WSR Pipe Corridor connects with the north side of the TSF-3 impoundment crest, the pipeline will be routed across the northern TSF-3 impoundment crest, where the bulk of the TSF-3 tailings deposition will occur. If supernatant water can be adequately removed during operations, the tailings beach will slope toward the south side of the impoundment, where the supernatant pool will be managed in both the East and West basins.

Along the TSF-3 impoundment crest, the tailings delivery pipeline will transition to a slurry header pipeline, where up to 28 deposition points may be installed. Similar to TSF-2, the deposition points will be installed approximately 300 feet apart. Each deposition point will consist of a 12-inch dia. × 12-inch dia. × 8-inch dia. IPS tee. On the 8-inch diameter discharge leg of each tee a pinch valve will be installed to isolate the deposition point to enable the flexibility of single or multiple point deposition. The 8-inch dia. discharge pipe extending from each deposition point will extend down the TSF-3 impoundment slope and will be slotted to allow tailings slurry discharge.

Valves installed at 600 or 900-foot intervals along the slurry header pipeline enable the TSF-2 operators to isolate one or more of the 600 or 900-foot sections of header pipeline for maintenance. Reclaim water is used to flush the tailings slurry as needed. The number of tailings deposition points operated at any one time will be dependent on the tailings flow through the main tailings slurry pipeline.

- ***TSF-3 Reclaim Collection:*** A supernatant water collection system consisting of either penstock pipes with submersible pumps or floating barge pumps will be installed within TSF-3 in both the west and east basins along the south impoundment slopes. The pumps are designed to collect decanted tailings slurry water (supernatant solution) and pump this water to the Evap Pond, Process Water Treatment Plant, or mill.

  The design of each penstock pipe system consists of a 24-inch diameter HDPE supernatant intake pipe installed on the inside impoundment slope from crest to toe. The intake pipes for each penstock system have 3-foot long by 6-inch wide slots cut into the pipes on 6-foot centers.

  TSF-3 reclaim (supernatant) water will be pumped through an 8-inch diameter HDPE SDR 11 pipeline installed along Corridor-4 or within the WSR Pipe Corridor depending where solution is pumped to (i.e. mill, Process Water Treatment Plant (WTP) or Evap Pond). Pipe sections outside of lined containment will be dual-contained within a 12-inch diameter HDPE SDR 31.5 outer pipe (pipe-in-pipe).

- ***TSF-3 Underdrain Collection:*** The TSF-3 tailings underdrain collection systems consist of a network of drains constructed on top of the impoundment floor's primary liner to provide an above-liner drainage system to collect and remove entrained tailings fluids which gravity-drain from the tailings over time. The above-liner drainage system (i.e. tailings underdrain) is designed to convey collected fluids (i.e. draindown) to the low points of the TSF-3 east and west basins. The underdrain collection system for TSF-3 is designed using DRAINTUBE™ 340P FT1 D20 geocomposite manufactured by Afitex-Texel Geosynthetics Inc. (ATGI).

  The DRAINTUBE® geocomposite installed over the floor of the TSF-3 east and west basins collects tailings draindown and transmits these fluids to a network of collection header pipes which allow for pumping these fluids out of TSF-3. DRAINTUBE™ geocomposite consists of two 5-ounce per square yard (oz/SY) geotextile layers comprised of synthetic stable fibers of 100% polypropylene needle-punched together. Between the two geotextile layers, 3/4-inch diameter perforated and corrugated polypropylene pipes (i.e. mini-pipes) are installed at the factory on approximately 3-foot spacing. The mini-pipes within the DRAINTUBE™ geocomposite system will connect to 6-inch diameter collection header pipes. These collection header pipes will convey draindown solution via gravity to 12-inch diameter underdrain collection intake pipes located near the LCRS sumps within each of the TSF-3 east and west basins.

  Each 12-inch diameter intake pipe will allow collected draindown solution to be pumped out of the underdrain system via a submersible pump. The discharge pipelines of these pumps will consist of one– to two-inch diameter HPDE pipes which extend up the intake pipe to the impoundment crest. The discharge of this pipe will be directed back onto the TSF-3 impoundment to allow collected underdrain solution to flow into the supernatant pool, where it will be managed within the reclaim water collection system.

  To enhance the collection of draindown solution from the tailings solids, 3- to 5-foot-high berms consisting of a sand/gravel filter material are designed along the east and south impoundment toes (low-points) of each TSF-3 basin. The filter material overlaps the down-gradient edges of the DRAINTUBE™ geocomposite and 6-inch header pipes.

  To monitor the hydraulic head on the TSF-3 primary liner from gravity-drained tailings fluids and to monitor the piezometric surface elevation within the deposited tailings, a 3-inch diameter HDPE pipe will be installed inside both the east and west basins on top of the primary HDPE liner. Similar to the original WSR LCRS designs, these pipes will extend into the lowest point of each basin and will each house a Level Troll 700H pressure transducer.

Pipeline Corridors and Transfer Pipelines

To facilitate the decommissioning of TSF-1 and the commissioning of TSF-2, four HDPE-lined pipeline corridors (Corridor-1 through -4) were constructed to convey slurry and supernatant solution between TSF-1, TSF-2, the WSR, and the Evap Pond. Corridors-1 and -2 serve TSF-1, TSF-2, and the CIL Mill; Corridors-3 and -4 serve TSF-2, the WSR, and the Evap Pond. All pipelines are constructed of HDPE and any pipes outside the lined corridor utilize pipe-in-pipe for secondary containment.

- ***Pipeline Corridor 1:*** Corridor-1 contains the TSF-2 Tailings Slurry and Reclaim Water pipelines. The corridor extends from the southwest embankment of TSF- 1 to the west end of TSF-2 for the purpose of transferring tailings slurry between TSF-1 and TSF-2 and reclaim water from TSF-2 to the mill. Reclaim water not used as mill make-up water is transferred to the Evap Pond (or the WSRs until the TSF-3 conversion is completed) where it is removed from the system via evaporation.

  A 12-inch diameter, SDR-11 HDPE pipeline conveys slurry at a maximum 5,050 tpd at 46% tailings solids, which corresponds to a tailings slurry design flow rate of 1,275 gpm to TSF-2. Once the tailings slurry pipeline reaches the western perimeter of TSF-2, the pipeline is routed through a series of valves into separate header pipelines. Refer to the sub-section "*TSF-2 Tailings Slurry Deposition and Reclaim Water Collection"* for additional design and operational details.

  The Corridor-1 embankment crosses the east-west access road to the Evap Pond. In order to construct the 50-foot high Corridor-1 embankment, the westernmost section of the access road between the paved Jerritt Canyon Mine Road and the Evap Pond required abandonment. In order to maintain continued accessibility to the Evap Pond, an EDC, approved June 2011, revised the current design by reconfiguring Corridor-1 inlet at TSF-1 and its outlet to TSF-2 and an access ramp and a road overcrossing of Corridor-1.

- ***Corridor-1 Containment:*** The Concrete Containment Box at the low-point of Pipeline Corridor-1, approved with TSF-2 Phase 2 design, maintains secondary containment for the tailings and reclaim pipeline drain valves and piping at the Corridor-1 low-point. The Concrete Containment Box was constructed with a gravity-drain pipe to drain potential leaks or discharges from the Concrete Containment Box directly to the Evap Pond via an HDPE pipeline with diameters of 16 inches, 12 inches, and 8 inches. The inlet of this drain pipeline was installed through the Concrete Containment Box wall using a 16-inch diameter HDPE anchor ring with water stops. From the anchor ring, the drainpipe transitions to a 12-inch diameter HDPE pipe using a 16-inch × 12-inch HDPE reducer. Where this 12-inch diameter drainpipe is buried across the Pipeline Corridor-1 access road fill, it is sleeved inside a 16-inch diameter HDPE SDR 31.5 containment pipe. The 16-inch diameter containment pipe is sleeved through a 40-foot-long section of 24-inch diameter HDPE SDR 11 pipe beneath the access road for further protection from traffic. Outside of the Pipeline Corridor-1 fill, the 12-inch diameter drainpipe reduces to an 8-inch diameter HDPE SDR 17 single-walled pipe installed on the surface to gravity-drain into the Evap Pond containment.

- ***Pipeline Corridor-2:*** Corridor-2 extends from the TSF-1 northern embankment crest to the southwest corner of TSF-1 and connects with the north end of Corridor-1. Corridor-2 contains the Tailings Slurry and Reclaim Solution pipelines. Corridor-2 is entirely on the approved containment of TSF-1, and therefore does not have secondary containment or leak detection.

- ***Pipeline Corridor-3:*** Corridor-3 is designated for transferring TSF-2 reclaim water to either the WSRs or the Evap Pond. Corridor-3 is designed on a continuous downward gradient to allow the Reclaim Pipeline to be drained toward the Corridor-3/Corridor-4 junction when flows through this pipeline are shut off and/or transferred to the JCM Mill Facility. During the TSF-2 Phase 2 construction, Corridor-3 piping was removed and to date has not been re-established.

- ***Pipeline Corridor-4:*** Corridor-4 contains three separate pipelines: 1) WSR to Evap Pond Pipeline; 2) Evap Pond to WSR Pipeline (currently not in use); and 3) the Reclaim Pipeline from the Concrete Containment Box to the Evap Pond and WSR (currently not in use).

- ***Pipeline Corridor –5:*** Pipeline Corridor-5 was approved by the Division us an EDC on 16 April 2015. The Corridor-5 design consisted of a 6-inch diameter and a 2-inch diameter pipeline that extended from the top of the eastern TSF-2 Phase 1 embankment and discharged into the West Basin of the WSR. The Corridor-5 piping was disconnected and removed during the TSF-2 Phase 2 embankment raise construction in 2018 and to date has not been re-installed nor operated.

- ***TSF-2 Pipeline Emergency Containment Basin (ECB):*** The ECB was designed and permitted in the initial stages of the TSF-2 Phase 1 design. It was planned to be located along an alternative pipeline corridor that was not constructed nor is planned for in the future.

- ***WSR Pipeline Corridor and Concrete Containment Box (CCB):*** An EDC for the Pipeline Corridor-1 Containment Box was approved by the Division 24 September 2018 for the construction of a proposed pipe corridor connecting the Corridor-1 low-point and the WSR. The WSR Pipeline Corridor was constructed in 2018 as well as the Concrete Containment Box. The WSR Pipe Corridor is designed as a 4,250-foot-long trapezoidal channel lined with 80-mil HDPE (single-sided textured) to serve as secondary containment for the three corridor pipelines. The channel is designed to contain and drain pipeline leakage via gravity to the WSR. The WSR Pipe Corridor route begins at Pipeline Corridor #1 Concrete Containment Box near the northwest corner of TSF-2 and continues along the south side of the Evaporation Pond and stormwater diversion channel. At the southeast corner of the Evaporation Pond, the WSR Pipe Corridor turns southward to the WSR. This WSR Pipe Corridor enables JCG to:

  1. Transfer process water from the WSR to the Process Water Treatment Plant (WTP);
  2. Convey future tailings slurry from Corridor-1 to the WSR after it is converted to TSF-3; and
  3. Transfer future reclaim water from the converted TSF-3 to the mill, WTP, or Evap Pond after tailings deposition begins.

  Under this EDC, the Corridor-1 Concrete Containment Box design was modified to connect the WSR Pipe Corridor pipelines into the Pipeline Corridor-1 pipelines. Two additional pipe penetrations were designed in the Containment Box's north wall for the

Process WTP raw water pipeline and Process WTP clarifier underflow pipeline, Three new pipe penetrations were included on the Containment Box's east wall for the three WSR Pipe Corridor pipelines. The new containment pipe penetrations through the Concrete Containment Box walls each include HDPE anchor rings and water stops.

From the Concrete Containment Box, the 16-inch diameter HDPE SDR 32.5 WSR Pipe Corridor containment pipes are extended under the Corridor-1 access road/ramp fill. Each of these containment pipes are sleeved through a 40-foot-long section of 24-inch diameter HDPE SDR 11 pipe beneath the access road for further protection from traffic.

- ***WSR Transfer Pipeline:*** In March of 2025 an EDC was approved that would add a transfer pipeline between the WSR and TSF-2, via the WSR Pipe Corridor. This was constructed to facilitate easier water management between the WSR and TSF-2. The WSR Pipe Corridor provides leak detection and secondary containment, and any leaks gravity drain back to the WSR Concrete Box and from there to the Evap Pond.

Process Water Treatment Plant

An EDC approved by the Division on 6 December 2016 authorized the design, construction, and operation of a WTP to treat surplus process water and reclaimed TSF supernatant from any of the facilities (including the DASH RDA seepage) so that it meets Nevada Profile I reference values for groundwater discharge. As of 2025, this includes treating solution from the WSR and the DASH RDA seepage. The Evap Pond will remain dead-end water storage for WTP concentrate and is not intended to contribute to the Process WTP influent.

Sampling has indicated that blended water quality from all ponds exceed the Profile I reference values due to high levels of antimony, arsenic, cadmium, chloride, manganese, mercury, nitrogen, selenium, sulfate, thallium, and TDS. Bench and pilot testing has resulted in the development of a process that will remove the contaminants contained in the storage facilities. The Permittee intends to discharge the treated effluent (i.e., permeate) into injection wells located several miles from the WTP pursuant to UIC Permit UNCEV93214 or use the treated permeate water as make-up water for the mill operations.

Process Description: Raw water from the DASH RDA seepage and the WSR will be pumped through separate double contained pipelines to a polyethylene reaction tank. Upstream from the reaction tank, sodium-dimethyldithiocarbamate (NaDTC), sodium hydroxide (NaOH), ferric chloride ($FeCl_3$), and sodium hypochlorite (NaOCl) will be added to the raw water through an inline mixer for chemical pretreatment, pH adjustment, coagulation, and oxidation respectively. The process water will then be pumped to an inclined plate settler (IPS) for solids separation. The solids will laden underflow from the IPS and be pumped back to TSF-2. The clarified effluent from the IPS will be gravity fed to the ultrafiltration (UF) feed tank.

The clarified process water will then be pumped by Variable Frequency Drive controlled feed pumps through pre-strainers, and then through a UF system for suspended solids removal. Antiscalant (Vitec 3000) and $FeCl_3$ will be dosed into the UF feed tank for scale control and coagulation of fugitive suspended solids. H_2SO_4 will also be added for pH adjustment. HCl may be substituted as the acid depending on cleaning characteristics during operation. After filtration, the UF filtrate will flow to another polyethylene tank for sea water reverse osmosis (SWRO) feed. The process water will then be pumped through three parallel SWRO units for removal of dissolved solids. Bisulfite and antiscalant will be added to the SWRO feed for chlorine removal and scaling control. These chemicals are added through an inline mixer into the SWRO feed pipe.

UF and SWRO cleaning waste and SWRO concentrate will be sent to one of two sump chambers inside of the plant that will gravity drain to the Evap Pond. JCG can maintain the option to divert SWRO concentrate to TSF-2, but revised designs will be required prior to this disposal. Water from periodic UF flushes will contain particulate solids and be sent to the other sump chamber which will be recirculated to the reaction tank. SWRO permeate will be sent to ion exchange (IX) vessels for final polishing. Backwash water from the IX vessels will be sent to the same sump chamber as the SWRO and UF cleaning waste. The treated water from the IX vessels will then be sent to a 60,000-gallon existing tank located next to the Smith WTP. This water will comingle with the treated effluent from the Smith WTP and will be pumped through HDPE pipelines to injection wells or to the mill as make-up water.

Stormwater Diversion Structures at JCM

To manage stormwater run-on as a result of the 100-year, 24-hour storm event, diversion structures and ditches are constructed throughout mine site. Using the flows established from the run-off analysis, the diversion channels were sized using predictive computer models for open channel flow. The diversion channels typically have a trapezoidal cross section with varying floor widths, side slopes, depths, and typically include 1-foot freeboard.

The methods for controlling storm flow run-off from watersheds upgradient of the various process components include the construction of localized stormwater ditches. Typical ditch construction is site specific due to the varying flows expected.

Ancillary Facilities

Ancillary facilities at the JCM site include fuel and lubricant delivery, storage, and dispersal areas, truck wash bays, maintenance shops, laydown and staging areas, sewage and septic facilities, chemical reagent and explosive storage areas, and administrative facilities.

West Generator Batch Plant

In January of 2023, the Division approved an EDC for the construction of a Cement Rock Fill Batch Plan near the West Generator Underground portal, within the boundary of the West Generator open pit. The new plant will consist of a hopper, silo, mixer, and belt conveyor. The plant will process aggregate, cement, and water to produce Cement Rock Fill for use in the West Generator Underground. As of the 2025 renewal, this plant is partially constructed, with construction scheduled to resume when the mine resumes active operations.

Mill Site Petroleum, Oil, and Lubricant (POL) Storage and Dispensing Facility FPPC:

On 4 April 2016, JCG submitted a FPPC for the POL Storage and Dispensing Facility southwest of the lower truck shop at the mill site, which was approved by the Division on 25 April 2016. The POL Storage and Dispensing Facility was constructed in 1980s and predated the water pollution control regulations for mining facilities established pursuant to Nevada Administrative Code (NAC) 445A.350 through 445A.447. A significant petroleum release attributed to the use of this facility occurred in 2001. To avoid impacts to critical infrastructure and utilities in the area of the release, complete removal of impacted soil did not occur during the excavation clean-up activities that followed.

Due to the different standards regarding containment requirements and material requirements during its initial construction, JCG determined in 2016 that the containment liner of the POL Storage and Dispensing Facility had exceeded its design life, and the need for a new fuel and lube station was apparent. JCG installed two new fuel dispensing stations in order to begin closing the POL Storage and Dispensing Facility. One of the new stations is used to fuel heavy equipment and is located off the DASH Haul Road and includes three red 10,000 gallon, double-walled, red-dyed diesel tanks. The second fuel dispensing station is located southwest of the PMDP (west of Washdown Pond) and is used to fill light vehicles. This second fueling station includes two 10,000-gallon, double-walled, fuel tanks. One tank contains gasoline and the other contains clear diesel.

Closing and removal of the POL Storage and Dispensing Facility was conducted by JCG between November 2019 and October 2020. Closure activities included:

- Removing above ground storage tanks and associated equipment;
- Excavating petroleum impacted soils:
- Collecting confirmation soil samples;
- Analytical testing of soil samples; and
- Backfilling of excavation with clean soils.

Petroleum impacted soils excavated during closure were hauled to the PCS Containment Cell on TSF-1. Based on field observations and analytical results, most of the impacted soils were removed. However, soils with residual TPH concentrations above 100 mg/kg remain. As a result, JCG evaluated site conditions indicating remaining contamination does not cause any current or potential threat to human health or the environment considering factors listed in NAC 445A.227(a)-(k) (A-K Evaluation). A final closure report (FCR) for the POL Storage and Dispensing Facility which included information from this A-K Evaluation was provided to the Division on 15 September 2021. This FCR was approved by the Division 27 September 2021.

C. <u>Receiving Water Characteristics</u>

Hydrographic Basins: The JCM operations are located on both the east and west side of the Independence Range. Mining activity on the east side of the range is in the sub-basin or Hydrographic Area (HA) referred to as the NF Humboldt River Sub-Basin, HA-44. Mining activity on the west side of the range is in the Hydrographic Area referred to as the South Fork (SF) Owyhee River Sub-basin, HA-36. Milling, roasting, and tailings operations are located on the east side of the Independence Range in Sub-Basin HA-44.

Surface Water: Surface waters nearest to the JCM operations include the following tributaries to the SF Owyhee River: Snow Canyon, Jerritt Canyon, Smith, and Burns creeks. Other surface waters include Mill and Italian Spring creeks, which are tributaries to Burns Creek. In addition, there are several unnamed perennial tributaries to the SF Owyhee River near the JCM.

The nearest surface water to the JCM mill site is Foreman Creek, a perennial stream approximately 2,000 to 3,000 feet east of the Mill and TSF-1. California, Stump, and Winters creeks flow into the project area and are tributaries of Foreman Creek. Foreman Creek flows into the North Fork Humboldt River, approximately six miles east of the Mill site. Other nearby waterbodies include Sheep, Jim, and Mahala creeks, which are also tributaries to North Fork Humboldt River. At least 83 seeps and springs have been identified within a one-mile radius of the Jerritt Canyon Mine facility.

Surface waters near the Starvation Canyon Mine include Taylor Canyon Creek, a tributary of the SF Owyhee River. Badger, Starvation Canyon, Thomas Jose Canyon, and Water Pipe Canyon creeks are all tributaries to Taylor Canyon Creek. In addition, several unnamed perennial tributaries to the SF Owyhee River have been identified near the Starvation Canyon site. At least 6 seeps and springs have been identified within a one-mile radius of Starvation Canyon Mine.

Surface Water Quality: The following generalizations can be made regarding surface water quality at the JCM and SCM sites. (For additional details, refer to the quarterly and annual monitoring reports.)

- Foreman Creek, Stump Creek, and Winters Creek are characterized by good water quality and all currently meet the NF Humboldt TDS reference value.
- Jerritt Canyon Creek monitoring site JC-2 is approximately 5,000 feet upgradient from the USFS boundary and is characterized by consistently elevated TDS above the SF Owyhee TDS water quality standard. Monitoring site JC-3 is at the Jerritt Canyon Mine-USFS boundary and is also characterized by consistently elevated TDS above the SF Owyhee TDS water quality standard. An unnamed tributary to Jerritt Canyon Creek, located downgradient of the Gracie Canyon RDA (GDSP-10) but upstream of the confluence with Jerritt Canyon Creek and an unnamed tributary downgradient of Gracie RDA (GD-1) are also characterized by consistently elevated TDS above the SF Owyhee TDS water quality standard.
- Burns Creek monitoring point BC-2 is located at the point of discharge from sediment pond standpipe. Monitoring point BC-3 is located on Burns Creek at the USFS Boundary. BC-2 is characterized by TDS concentrations above the 500 mg/L SF Owyhee TDS water quality standard. BC-3 has on occasion exceeded the 500 mg/L TDS and 0.1 mg/L phosphorous water quality standard for the SF Owyhee.
- Mill Creek monitoring point MC-1 is located below the Mill Creek RDA and monitoring point MC-2 is on Mill Creek at the Jerritt Canyon Mine-USFS Boundary. Until recently, both locations regularly exceeded the 500 mg/L TDS water quality standard for the SF Owyhee. MC-2 has on occasion exceeded the 0.1 mg/L phosphorous water quality standard for the SF Owyhee.

- Snow Canyon Creek monitoring site SC-100 is downgradient of the Snow Canyon RDA. Analytical results for the site have always shown an exceedance of the 500 mg/L TDS water quality standard for the SF Owyhee River. Monitoring site SC is downgradient of SC-100 at an approximate elevation of 6150 feet and has on occasion shown exceedances of the 500 mg/l water quality standard for the SF Owyhee River.
- The Sheep Creek upgradient monitoring site (SHE-15) meets the 500 mg/L TDS water quality standard for the NF Humboldt River when flowing. Monitoring site SHE-10 has always exceeded the 500 mg/L TDS water quality standard for the NF Humboldt River.
- A comprehensive evaluation of background surface water quality for the SCM Project area was performed in 2007 at the following sample locations:
    - STV: Starvation Canyon Creek Monitoring Site, located approximately 8,800 feet upstream of confluence of Starvation Canyon Creek and Taylor Canyon Creek and approximately 6,200 feet upstream of surface water monitoring point STV-10.
    - STV-10: Starvation Canyon Creek Monitoring Site 10, located approximately 2,600 feet upstream of confluence of Starvation Canyon Creek and Taylor Canyon Creek.
    - TC-2: Taylor Canyon Creek Monitoring Site 2, located approximately 5,590 feet upstream of confluence of Starvation Canyon Creek and Taylor Canyon Creek, on south side of S.R.-226.
    - TC-3: Taylor Canyon Creek Monitoring Site 3, located approximately 5,435 feet downstream of confluence of Starvation Canyon Creek and Taylor Canyon Creek, on south side of S.R.-226.
    - WP-1: Water Pipe Canyon Creek Monitoring Site 1, located approximately 8,200 feet upstream of surface water monitoring point WP-2.
    - WP-2: Water Pipe Canyon Creek Monitoring Site 2, located approximately 2,500 feet upstream of confluence of Water Pipe Canyon Creek and Taylor Canyon Creek.

  The evaluation showed slightly elevated TDS, sulfate, magnesium, arsenic, and antimony concentrations, but all waters within the project area meet the 500 mg/L TDS water quality standard for the SF Owyhee River. On occasion, TC-2, TC-3 and STV-10 have shown slight exceedence of the 0.1 mg/L phosphorous water quality standard value for the SF Owyhee.

Groundwater: Depths from the surface to groundwater vary across the mine site. At the Mill site, groundwater depths vary from less than 30 ft to greater than 150 ft. The depths vary based on natural conditions. Anthropogenic activities have locally raised and lowered the natural groundwater elevation.

Groundwater depths in the mine areas vary from greater than 1,200 ft bgs along the crest of the Independence Mountains to less than 100 ft bgs near the front of the range. Depths to groundwater appear to be dependent on the topographic elevation and the geological controls affecting the aquifers. Dewatering and groundwater injection activities near the Smith Mine (and historically near the Murray Mine) have resulted in localized lowering and raising of groundwater elevations, respectively.

TSF-1 is located southeast of the Mill and is the process component furthest out on the alluvium (i.e., furthest east of the range front). Groundwater beneath TSF-1 occurs at multiple depths, either in identifiable discrete sedimentary lenses or in less discrete alluvium, with the shallowest groundwater occurring at depths ranging from 8 to 75 ft bgs. In the TSF-1 area, groundwater flows in an east southeasterly direction -- from the mountains outward into the basin. Four mill water production wells, constructed to depths ranging from 800 to 1,220 ft bgs, are located within two miles downgradient of the Mill facility.

The Jerritt Canyon mining operations are located in an aquifer dominated by calcium-magnesium bicarbonates typically associated with dolomite and limestone. Regional groundwater quality generally meets the Nevada Profile I reference values. Background Profile I analyses of groundwater from water supply wells and from upgradient monitoring well JCM-1, in the TSF-1 area indicate that these waters are of good quality and meet all Profile I reference values.

Contamination from TSF-1 leakage has degraded groundwater in the immediate vicinity with respect to chloride and TDS (and in some cases with antimony, arsenic, cadmium, magnesium, manganese, mercury, nitrate, selenium, and WAD cyanide). This contamination is collected by the SRS. Groundwater sampling during exploration and mine dewatering programs has shown naturally elevated metals and occasionally elevated dissolved solids in the gold-bearing strata associated with the underground mines and the unmined gold resource areas in the Independence Mountain Range, but not in the mill area.

Elevated levels of antimony and arsenic are due to their common occurrence as the sulfide minerals stibnite (antimony sulfide), orpiment (arsenic sulfide), and/or realgar (arsenic sulfide) at trace levels in the bedrock associated with gold mineralization and hydrothermal alteration. Because of the well-known association of arsenic-antimony-mercury with respect to gold mineralization, increased metal concentrations in groundwater have been frequently used as an exploration tool throughout the Jerritt Canyon Mining District.

Baseline groundwater within the area of the Murray underground workings commonly exceeds the 0.006 mg/L Profile I reference value for antimony. Antimony concentrations ranged between 0.034 and 0.4 mg/L, and averaged 0.09 mg/L, during the Murray dewatering program.

Baseline groundwater data within the area of the Smith underground workings has exceeded the 0.01 mg/L arsenic Profile I reference value and the 0.006 mg/L antimony Profile I reference value. Arsenic concentrations ranged from 0.095 to 0.36 mg/L and have averaged 0.17 mg/L during the Smith dewatering program. Antimony concentrations have ranged from 0.036 to 0.37 mg/L and have averaged 0.13 mg/L during the Smith dewatering program.

D. <u>Procedures for Public Comment</u>

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate and close, subject to the conditions within the Permit, is being published on the Division website: https://ndep.nv.gov/posts/category/land. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date the public notice is posted to the Division website. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

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

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

E. <u>Proposed Determination</u>

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

F. <u>Proposed Limitations, Schedule of Compliance, Monitoring, and Special Conditions</u>

See Section I of the Permit.

G. <u>Rationale for Permit Requirements</u>

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance, which authorizes no discharge(s) except for excess accumulations, which are a result of 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 well(s) and surface water. Specific monitoring requirements can be found in the Water Pollution Control Permit.

Groundwater adjacent to the Mill site is of good quality except for the area of influence of the TSF-1 seepage, which is undergoing an approved monitoring and remediation program. The contaminated groundwater of this area is withdrawn by a series of seepage collection wells and recycled to the Mill or Evap Pond. For the remaining process components, the primary emphasis for the detection of escaping process fluids will be accomplished by routine inspections of the leak detection and containment systems.

H. Federal Migratory Bird Treaty Act

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

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

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