MINNESOTA POLLUTION CONTROL AGENCY

Water Individual Permit

National Pollutant Discharge Elimination System/State Disposal System

MN0071013

Permittee:	Poly Met Mining, Inc.
Facility name:	NorthMet Project
Receiving waters:	**Unnamed Wetlands in the headwater area of Unnamed Creek, Unnamed Wetlands in the headwater area of Trimble Creek, and Second Creek**
City or Township:	Hoyt Lakes, Babbitt **County:** St. Louis
Issuance date:	TBD
Expiration date:	TBD

The state of Minnesota, on behalf of its citizens through the Minnesota Pollution Control Agency (MPCA), authorizes the Permittee to operate a disposal system at the facility named above and to discharge from this facility to the receiving waters named above, in accordance with the requirements of this permit.

The goal of this permit is to reduce pollutant levels in point source discharges and protect water quality in accordance with the U.S. Clean Water Act, Minnesota statutes and rules, and federal laws and regulations.

This permit is effective on the issuance date identified above. This permit expires at midnight on the expiration date identified above.

Signature:

This document has been electronically signed.

for the Minnesota Pollution Control Agency

Jeff Udd, P.E.
Mining Sector Manager
Industrial Division

Submit eDMRs
Submit via the MPCA Online Services Portal at
https://netweb.pca.state.mn.us/private/

Submit other WQ reports to:
Attention: WQ Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Questions on this permit?
For eDMR and other permit reporting issues, contact:
TBD

For specific permit requirements please refer to:
TBD

PolyMet Draft Permit general questions, contact:
651-757-2455 or 833-722-9016

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1. Permitted Facility Description

Facility Overview

Poly Met Mining, Inc. (PolyMet) proposes to develop a copper-nickel-platinum-group elements (PGE) mine and associated processing facilities. The proposed mine and processing facilities, known as the NorthMet Project (Project), are described in detail in the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit Application dated July 2016 and updated in October 2017 (collectively, permit application). The Project is located south of the city of Babbitt and north of the city of Hoyt Lakes in St. Louis County, Minnesota, as shown on Figure 2.1.

The Project consists of the Mine Site, the Plant Site, and the Transportation and Utility Corridors that connect them. The Mine Site is a relatively undisturbed site that will be developed into an open pit mine and is located approximately six miles south of the city of Babbitt. The Plant Site is located at the former LTV Steel Mining Company / Cliffs Erie taconite processing facility located approximately six miles north of the city of Hoyt Lakes and will include refurbished and new ore processing and waste disposal facilities. The Plant Site includes the Colby Lake Corridor, which contains an existing pipeline that will be refurbished as necessary and will supply water from Colby Lake to the Plant Site. The Mine Site and the Plant Site are connected by approximately 7- to 8-mile-long Transportation and Utility Corridors, which will include new and upgraded infrastructure to link activities at the Mine Site and Plant Site. The Mine Site, the Plant Site and the Transportation and Utility Corridors are shown in Figure 2.2.

The Project configuration and design may change over time. Before any such changes are implemented, any necessary regulatory approvals will need to be obtained. The following facility description provides background on the Project as currently planned, with the information based primarily on the permit application.

Mine Site

The Mine Site is a relatively undisturbed site that will be developed into an open pit mine. Development of the Mine Site for the Project will include construction of new facilities, including mine pits, ore handling facilities, waste rock stockpiles, an overburden storage area, mine water management systems, an Equalization Basin Area, and supporting infrastructure.

The Mine Site will include the following Project features:

- three mine pits (the East Pit, West Pit, and Central Pit)
- ore handling facilities, including an Ore Surge Pile (OSP) and a Rail Transfer Hopper (RTH)
- Category 1, 2/3, and 4 Waste Rock Stockpiles and the OSP with engineered systems such as liners, covers, and a groundwater containment system, to manage precipitation that will run off of or percolate through the stored waste rock
- an Overburden Storage and Laydown Area (OSLA) to provide space to sort and store unsaturated mineral overburden and peat used for construction and reclamation
- mine water collection systems and an Equalization Basin Area to collect mine water from the mine pits, the stockpiles, the ore handling facilities, OSLA, construction areas, and the driving surface of haul roads
- a Central Pumping Station, Construction Mine Water Pumping Station, and Mine to Plant Pipelines (MPP) to transport mine water from the Mine Site to the Plant Site
- stormwater management systems

The location of the Mine Site and Mine Site features is shown on Figures 2.3 and 2.4.

Mine Pits and Mine Pit Dewatering

Mine Pits

The Project will involve mining from three open pits, the East Pit, the West Pit and the Central Pit. Mining will begin in the East Pit in Mine Year 1 followed by mining in the West Pit. Mining from the West Pit is anticipated throughout the life of the mine. Mining from the East Pit will cease before the end of the life the mine, and thereafter backfilling of the pit with waste rock from the temporary Category 2/3 and Category 4 waste rock stockpiles will begin. Mining from the Central Pit will begin once the Category 4 waste rock stockpile is backfilled into the East Pit. Once backfilling begins, waste rock from the West and Central Pits will be used to backfill the East Pit, as well as the Central Pit, once mining ceases in each pit.

Mine Pit Dewatering

Each of the mine pits will require mine pit dewatering to remove groundwater and runoff from areas within the pits. This water will be directed to sumps within the pits where it will be collected and pumped to the equalization basins for further conveyance to the Wastewater Treatment System (WWTS) at the Plant Site.

Waste Rock Stockpiles

Temporary Category 2/3 Waste Rock and Category 4 Waste Rock Stockpiles and Ore Surge Pile

The Category 2/3 Waste Rock Stockpile and the Category 4 Waste Rock Stockpile will temporarily store higher sulfur waste rock that may generate acidic leachate until the waste rock can be backfilled into the East and Central Mine Pits. The Ore Surge Pile will be used to temporarily store ore, with ore moving in and out as needed to meet mine and plant conditions. Each of these temporary features will include an engineered liner system consisting of a compacted foundation, an underdrain system (if needed), a geomembrane liner over a compacted soil liner and an overliner drainage layer. Drainage from each stockpile will be collected in a sump and pond system and will be conveyed to the equalization basins for further conveyance to the WWTS at the Plant Site for further treatment.

Permanent Category 1 Waste Rock Stockpile

The Category 1 Waste Rock Stockpile will be the only permanent waste rock stockpile on site. Category 1 waste rock is of lower sulfur content and is not expected to generate acidic leachate but may leach heavy metals. Drainage from the Category 1 Waste Rock Stockpile will be collected by a groundwater containment system that consists of a low permeability barrier with a collection system on the inward side that will be operated to maintain an inward hydraulic gradient. The drainage collected by the groundwater containment system will be conveyed to the equalization basins for further conveyance to the WWTS at the Plant Site for treatment.

Overburden Storage and Laydown Area (OSLA)

The OSLA is a temporary storage area for unsaturated overburden and peat that will be used in construction and reclamation. The OSLA will be graded and compacted to direct runoff to a collection pond from where it will be pumped to the Construction Mine Water Basin for further conveyance to the Flotation Tailings Basin (FTB) at the Plant Site via the MPP or, during East and Central Pit filling, for conveyance to these pits.

Mine Water Collection Systems
Mine water will include water that has contacted surfaces disturbed by mining activities including the aforementioned mine pit dewatering and stockpile drainage as well as runoff contacting ore, waste rock and Mine Site haul road surfaces. Mine water will be intercepted throughout the Mine Site by ditches, dikes, stockpile liners, and the stockpile groundwater containment system and routed to the Equalization Basin Area where it will be kept segregated in ponds by waste strength as described in the Plant Site section below. There will be no direct discharge of mine water or other process wastewater to surface waters from the Mine Site.

Internal monitoring points, groundwater monitoring wells and piezometers, and surface water monitoring will be located at or near the Mine Site and are described in the Monitoring Summary section of this permit. Features of the Mine Site are further described in the Fact Sheet.

Plant Site
The Plant Site is located approximately 6-7 miles west of the Mine Site. It is a developed site which includes a former taconite processing facility and tailings basin previously operated by LTV Steel Mining Company (LTVSMC). Redevelopment of the Plant Site for the Project will include refurbishment of former LTVSMC processing facilities and construction of new facilities. Plant Site features will include:

- a Beneficiation Plant
- a Hydrometallurgical Plant
- a Flotation Tailings Basin (FTB) including Seepage Capture Systems
- a Hydrometallurgical Residue Facility (HRF)
- a Waste Water Treatment System (WWTS)
- a Sewage Treatment System
- other ancillary facilities (e.g., Colby Lake water pipeline).

The location of the Plant Site and Plant Site features is shown on Figures 2.5 and 2.6.

Beneficiation Plant and Flotation Tailings Basin
Beneficiation Plant
The Beneficiation Plant will process ore to produce nickel and copper concentrates. Ore will be crushed at the Coarse Crusher Building, ground in the semi-autogenous grinding mill and ball mill at the Concentrator Building, and then sent to the Flotation Building. In flotation, the minerals containing base and precious metals will be separated from the tailings using a combination of flotation reagents.

At current operating design the Beneficiation Plant will process approximately 32,000 tons of ore per day, and produce approximately 660 tons per day of copper and nickel concentrates and approximately 31,340 tons per day of Flotation Tailings, although these rates may vary depending on operating factors, economic conditions or other factors. Copper concentrates will be dewatered and shipped to customers via rail. Nickel concentrates will be dewatered and shipped directly to customers via rail until the Hydrometallurgical Plant is built to process them on-site. Flotation Tailings will be slurried to the FTB.

The Beneficiation Plant will produce Flotation Tailings throughout the planned 20 years of ore processing. Flotation Tailings will be pumped as a slurry to the FTB, which will be constructed atop

Cells 1E and 2E of the former LTVSMC tailings basin. Water from the Tailings Basin will be recycled back to the Beneficiation Plant and will not be directly discharged to surface waters during operations.

The Beneficiation Plant will require an annual average of approximately 13,800 gpm of water for processing. Nearly all this water will be piped with the tailings to the FTB. Water for Beneficiation Plant processes will come primarily from the FTB Pond. Other minor sources of water will include water in the raw ore, reagents, and gland seals of slurry pumps. Make-up water, as needed, will be drawn from the Plant Reservoir which will be supplied with raw water pumped from Colby Lake at an average rate of approximately 760 gpm under terms of a water appropriation permit from the Minnesota Department of Natural Resources (MDNR). Water will be conveyed from Colby Lake via an existing pipeline, located within the Colby Lake Corridor, previously used by LTVSMC in its taconite operations. PolyMet will refurbish the existing pipeline and pumphouse as necessary for its use.

Flotation Tailings Basin
The FTB is designed to contain Flotation Tailings generated over the planned 20 years of operation. The FTB will be constructed atop the existing LTVSMC tailings basin. The FTB will be constructed in stages, gradually increasing in elevation and size. Initially, flotation tailings will be placed in existing Cell 2E. Eventually, Cell 2E will merge with Cell 1E and flotation tailings will be placed in combined Cell 1E/2E. The FTB perimeter dams will be raised in an upstream construction method utilizing LTVSMC coarse tailings. A bentonite amended layer will be placed on exterior sides of the FTB dams to limit oxidation of the tailings. The FTB dams will be constructed and operated in accordance with Minnesota dam safety regulations administered by the MDNR.

The FTB Pond will receive water from the following sources during operations: process water/tailings slurry from the Beneficiation Plant, captured seepage from the FTB seepage capture systems, treated mine water, filter backwash and clean-in-place wastes from the WWTS, construction mine water/OSLA runoff from the Mine Site, treated effluent from the Sewage Treatment System, and precipitation and runoff from within the FTB dams and tributary to the FTB Pond.

The FTB is designed and will be operated to prevent overflow of the system – there will be no direct discharge from the FTB Pond to any surface waters. Pond water levels will be managed to maintain adequate freeboard by adjusting the relative amount of collected tailings basin seepage routed to the Pond and to the WWTS. Freeboard requirements and other terms relating to the operation of the FTB are established by the MDNR dam safety permit.

FTB Seepage Capture Systems
Historically, seepage from the LTVSMC tailings basin has occurred from water infiltrating through the tailings basin and migrating through the base or external dam faces. As part of the Project, PolyMet will construct seepage capture systems to collect seepage from the FTB. The FTB Seepage Containment System and the FTB South Seepage Management System (collectively known as the FTB seepage capture systems) will collect water seeping from the combined former LTVSMC basin and the FTB (collectively, the Tailings Basin) via surface or shallow groundwater flow.

The FTB Seepage Containment System will surround the western and northern sides and extend to a portion of the eastern side of the Tailings Basin. It will consist of a cutoff wall installed to the top of the bedrock, with a collection trench and drain pipe installed on the upgradient side (Tailings Basin side) of the cutoff wall. The FTB Seepage Containment System will collect water seeping from the Tailings Basin

via surface and shallow groundwater flow, as well as runoff from the exteriors of the dams on the northern, northwestern, western, and eastern sides of the Tailings Basin, and from the small watershed area between the toes of the dams and the FTB Seepage Containment System.

The FTB South Seepage Management System, which currently operates as the Cliffs Erie SD026 pumpback system, consists of a berm, trench, and pumpback system and collects seepage on the southern side of the FTB. During Project operations, PolyMet will upgrade the existing system to enhance the degree of seepage collection as necessary.

Seepage from both the FTB Seepage Containment System and the FTB South Seepage Management System will be routed to the WWTS for treatment prior to discharge to the receiving waters or returned to the FTB Pond for reuse. The amount of seepage to be treated at the WWTS and discharged will depend on operational factors, precipitation, allowable discharge requirements of 40 CFR 440, and requirements of the MDNR water appropriation permit.

Wastewater Treatment System (WWTS)
The WWTS will be located at the Plant Site and will house the process equipment for two separate treatment trains known as the mine water treatment trains and the tailings basin seepage treatment train. The primary components of the WWTS for the Project will include the Equalization Basin Area located at the Mine Site, the Mine to Plant Pipelines (MPP), and the WWTS building and associated Pretreatment Basin.

The WWTS will treat mine water and tailings basin seepage. Mine water flows will be segregated based on projected water quality and treated in two mine water treatment trains. The mine water chemical precipitation train will treat high-concentration mine water and also treat WWTS membrane treatment concentrate. The mine water filtration train will treat low-concentration mine water using membrane separation. Separately, the WWTS will also treat tailings basin seepage using a combination of membrane separation treatment technologies (such as reverse osmosis (RO) and/or nanofiltration).

Equalization Basin Area
In the Equalization Basin Area located at the Mine Site, mine water will be managed based on the projected water quality. Construction mine water and OSLA runoff will be routed to the Construction Mine Water Basin. Mine water from low-volume sources (e.g., temporary waste rock stockpiles) that are expected to have relatively high concentrations of dissolved constituents will be routed to the High Concentration Equalization (HCEQ) Basin. Mine water from high-volume sources, (e.g., mine pits, haul roads and RTH area) that are expected to have relatively low concentrations of dissolved constituents will be routed to the Low Concentration Equalization (LCEQ) Basins.

Mine to Plant Pipelines
Three pipelines (collectively referred to as the MPP) will convey water between the Mine Site and the Plant Site. The Construction Mine Water Pipeline will transport construction mine water and runoff from the OSLA Pond to the FTB. Once pit backfilling begins, runoff from the OSLA pond will be routed to the East and Central Pits, and concurrently water from the WWTS will be conveyed through the Construction Mine Water Pipeline to the East and Central Pits to aid in pit flooding. The Low Concentration Mine Water Pipeline will transport mine water from the LCEQ Basins to the mine water

filtration treatment train at the WWTS. The High Concentration Mine Water Pipeline will transport mine water from the HCEQ Basin to the mine water chemical precipitation treatment train at the WWTS.

Mine Water Chemical Precipitation Train
The mine water chemical precipitation train is designed to treat the low-volume flows from the sources with high concentrations of dissolved constituents. Secondary membrane concentrate (membrane reject water) from the tailings basin seepage treatment train and the mine water treatment trains will also be routed to the chemical precipitation train along with greensand filter backwash solids. Treated water from the mine water chemical precipitation train will be routed to the FTB; it will not be directly discharged to surface waters. The mine water chemical precipitation treatment train will consist of headworks, chemical precipitation, and associated solids handling works and is further described in Volume 3 of the October 2017 permit application.

Mine Water Filtration Train
The mine water filtration train is designed to treat mine water with relatively low concentrations of sulfate and metals and high flow rates, compared to the influent to the chemical precipitation train. Treated water from the mine water filtration will be routed to the FTB; it will not be directly discharged to surface waters. The mine water membrane filtration treatment train will consist of headworks, greensand filtration, primary membrane separation, and secondary membrane separation and is further described in Volume 3 of the October 2017 permit application.

Tailings Basin Seepage Treatment Train
The influent to the tailings basin seepage treatment train will consist primarily of tailings basin seepage collected by the FTB seepage capture systems. The tailings basin seepage treatment train will consist of a pre-treatment basin, greensand filtration, primary membrane separation (such as RO), secondary membrane separation, and permeate stabilization prior to discharge. The tailings basin seepage treatment train is further described in Volume 3 of the October 2017 permit application.

Wastewater Treatment Solids/Byproducts
The mine water treatment trains will produce byproduct streams as a result of filter and membrane cleaning. These streams will be the clean-in-place membrane waste and the greensand filter backwash and will be routed to the FTB. Excess sludge from high-density sludge precipitation, gypsum precipitation, and calcite precipitation will be dewatered in a filter press. Dewatered sludge will be disposed of at the HRF or disposed at a permitted solid waste facility. Filtrate will be routed to the chemical precipitation train for treatment.

The byproducts from the tailings basin seepage treatment train will include waste from filter and membrane cleaning and concentrate from the secondary membrane separation process. Waste from the filter and membrane cleaning will be routed to the FTB pond. Secondary membrane concentrate will be routed to the mine water chemical precipitation treatment train for treatment.

Wastewater Treatment System Discharge
The WWTS discharge from the tailings basin seepage treatment train will be piped to maintain flows in Trimble Creek, Second Creek, and Unnamed Creek. Some seepage will be recycled directly to the FTB Pond for reuse. The fraction of seepage to be treated at the WWTS and discharged will depend on operational factors and precipitation. Effluent from mine water treatment trains (treated mine water) will be routed to the FTB Pond.

Treated tailings basin seepage will be routed to the Treated Water Storage Tank (SD001), where effluent water quality will be monitored. From there the effluent will be pumped to the individual surface water discharge outfalls located in the headwaters of each of the receiving surface waters. Outfalls SD002 and SD003 discharge to headwater wetlands of Unnamed Creek, Outfalls SD004 through SD010 are located in headwater wetlands of Trimble Creek, and SD011 is located in the headwater segment of Second Creek. The WWTS discharge will be distributed to these tributaries in proportion to the flow required to minimize hydrologic or ecologic impacts resulting from the reduction in available source water to the streams from installation of the FTB seepage capture systems. The flow rate to each outfall will be monitored in the distribution box where the treated effluent from SD001 is divided to the individual outfalls. The discharge locations are shown in Figure 2.8.

The wetland headwaters to Unnamed and Trimble Creeks are Class 2D, 3D, 4C, 5, and 6 waters and the headwater segment of Second Creek is a Class 2B, 3C, 4A, 4B, 5, and 6 water. Approximate discharge rates to each of the individual outfalls are shown in Table 2.1.

Table 2.1 Proposed Discharge Rates

Station ID	Discharge Flow Rate Average (MGD)(3)		Discharge Flow Rate Maximum (MGD)(3)		Discharge Frequency	Receiving Waters
	Mine Year 1(1)	Mine Year 10(2)	Mine Year 1(1)	Mine Year 10(2)		
SD002	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Unnamed Creek
SD003	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Unnamed Creek
SD004	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD005	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD006	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD007	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD008	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD009	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD010	0.24	0.39	0.29	0.57	Continuous	Wetlands in the headwater area of Trimble Creek
SD011	0.27	0.40	0.31	0.59	Continuous	Headwater segment of Second Creek

(1) Mine Year 1 will be the first year of discharge from the WWTS, and for the first 15 years of the Project, is expected to be the year of minimal discharge and loading from the WWTS.
(2) Mine Year 10 is expected to be the year of maximum discharge and maximum loading from the WWTS.
(3) MGD = million gallons per day

Hydrometallurgical Plant/Hydrometallurgical Residue Facility

Hydrometallurgical Plant

The Hydrometallurgical Plant will process nickel concentrates from the Beneficiation Plant, extracting a copper concentrate, a mixed nickel-cobalt (Ni/Co) hydroxide, and a gold and platinum-group elements (Au/PGE) precipitate. The Hydrometallurgical Plant may not be built for several years after mining starts. Before the Hydrometallurgical Plant is built, the company will ship the nickel concentrates from the Beneficiation Plant directly to customers. The timing for construction of the Hydrometallurgical Plant will depend on customer requirements and overall Project economics.

The hydrometallurgical process will involve high pressure and temperature autoclave leaching followed by several solution purification steps. Inputs will include the nickel concentrates from the Beneficiation Plant, water from the HRF Pond and the Plant Reservoir, various process consumables, and chemical additives. Waste residues from the hydrometallurgical process will be pumped as a slurry for final disposal to the HRF.

The Hydrometallurgical Plant and HRF will operate as a closed-loop system with no discharge to groundwater or surface waters or to the FTB/WWTS system. Water for Hydrometallurgical Plant processes will include recycled HRF water from the HRF Pond and make-up water from Colby Lake via the Plant Reservoir.

If all nickel concentrate streams from the Beneficiation Plant are processed at the Hydrometallurgical Plant, annual production will total about 113,000 tons of copper concentrate, 18,000 tons of mixed nickel-cobalt (Ni/Co) hydroxide, and 500 tons of gold and platinum-group elements (Au/PGE) precipitate. This will result in generation of approximately 313,000 tons of residue per year to be generated for disposal in the HRF. This will decrease if some flotation concentrates are shipped directly to customers.

Hydrometallurgical Residue Facility (HRF)

The HRF will be designed to permanently store residue from the hydrometallurgical process generated over the life of the Project and may also receive wastewater treatment solids from the WWTS. The HRF will be constructed at the former LTVSMC Emergency Basin (Emergency Basin) near the southwestern corner of the existing tailings basin.

The HRF will function as a large-scale sedimentation basin. Residue will be pumped as slurry to the HRF, where it will settle out. Residue slurry from the Hydrometallurgical Plant will be pumped to the HRF through a pipe with multiple discharge points into the HRF. A pond will be maintained within the HRF such that the solid fraction of the slurry (the Residue) settles out, while the majority of the liquid fraction is recovered by the return water system and pumped back to the Hydrometallurgical Plant for reuse. The water level and dam heights in the HRF will be managed as needed to facilitate Residue deposition at the desired locations within the HRF and to achieve the desired water clarity for process water at the Hydrometallurgical Plant in accordance with Minnesota dam safety regulations administered by the MDNR.

The HRF is designed as a closed system: no water from the HRF will be released to the environment through overflow or outlet structures. The HRF is designed with a double liner with a Leakage Collection System between the two liners to prevent leakage to groundwater. Any leakage collected in the leakage

collection system will be routed back to the HRF pond. The HRF Leakage Collection System is further described in Volume 6 of the October 2017 permit application.

Plant Site Sewage Treatment System
Sewage generated from various buildings at the Plant Site, sewage generated at the Mine Site, and filter backwash from the Plant Site Potable Water Treatment Plant will be collected and routed to a Plant Site Sewage Treatment System (STS). The STS will consist of a stabilization pond system. The STS will be designed for an initial daily flow of approximately 8,500 gallons per day (gpd) and average wet weather flow of approximately 21,500 gpd with expansion up to an average daily flow of approximately 13,750 gpd and average wet weather flow of approximately 26,750 gpd.

Existing piping will be used to collect sewage from existing facilities at the Plant Site and will be refurbished to minimize infiltration and inflow to the collection system. New piping and associated infrastructure will also be added to connect new Plant Site facilities to the collection system and the stabilization ponds. Sewage at the Mine Site will be collected in portable facilities and trucked to the Plant Site STS.

The proposed stabilization ponds will consist of two lined primary ponds and one lined secondary pond with operating depths of approximately four feet. The secondary pond will discharge to the Flotation Tailings Basin (FTB) Pond via a pump station. The controlled discharge will occur in the spring and fall of each year. Each controlled discharge will typically last 10 to 14 days, depending on weather conditions.

Transportation and Utility Corridors
The Transportation and Utility Corridors provide connections between the Mine Site and the Plant Site for ore transport, vehicle traffic, mine water conveyance, and power transmission. These corridors include the existing Dunka Road and utility corridor and existing railroad corridor. A new segment of railroad corridor also will be utilized to construct the Railroad Connection Track for the Project. Runoff from the Transportation and Utility Corridors will be managed under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater General Permit (MNR100001) and the NPDES/SDS Industrial Stormwater General Permit (MNR050000) and is not covered under this NPDES/SDS permit.

Stormwater
The discharge and management of construction stormwater and industrial stormwater for the Project will be regulated under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater General Permit (MNR100001) and the NPDES/SDS Industrial Stormwater General Permit (MNR050000) respectively. This NPDES/SDS permit for the Project does not include provisions regulating the direct discharge of stormwater to waters of the state.

Antidegradation
Changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility may be subject to antidegradation requirements found in Minn. R. 7050.0250 to 7050.0335.

2. Location and Facility Maps

Figure 2.1 - Location of Permitted Facility: Plant Site, Mine Site, and Transportation & Utility Corridor

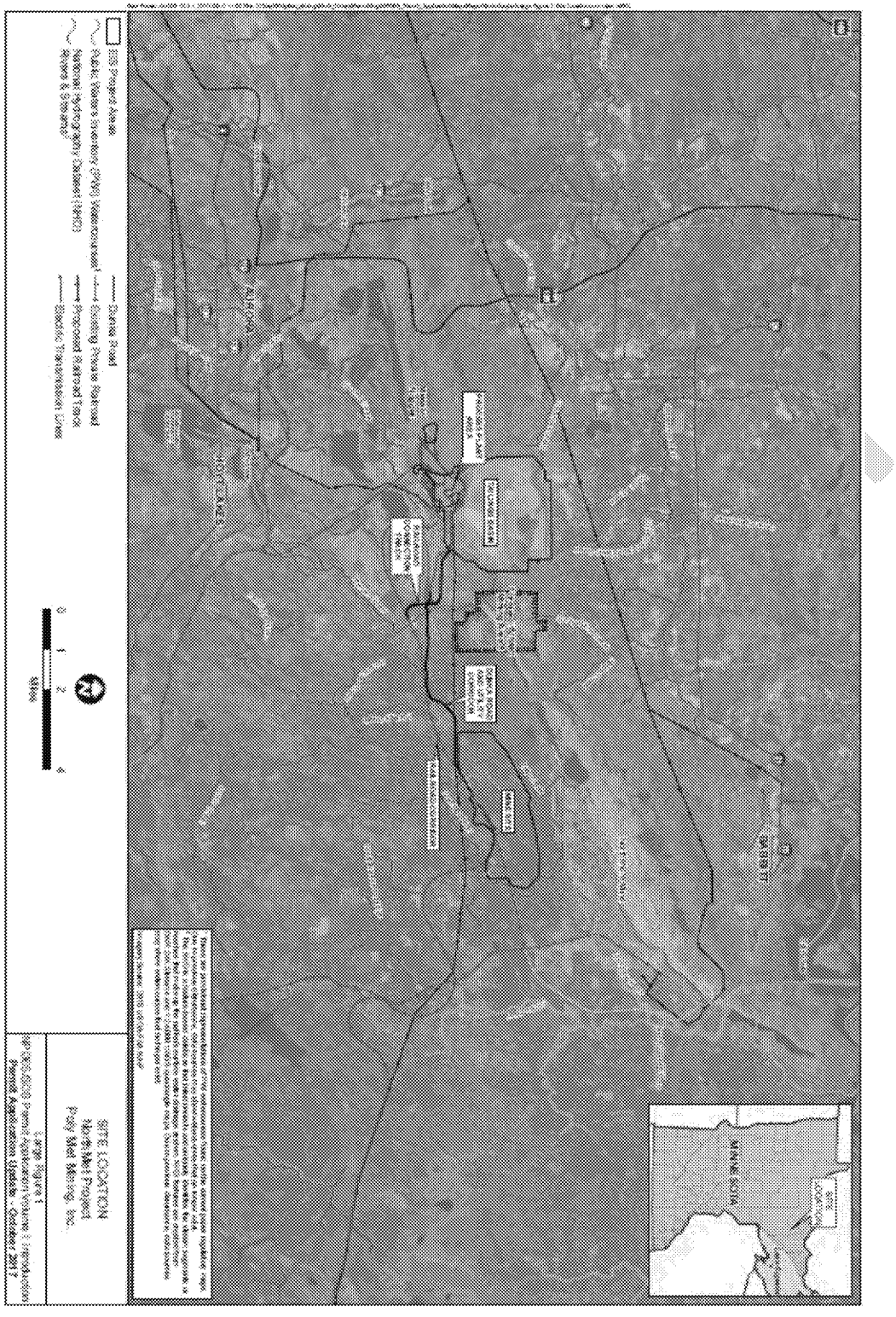


Figure 2.2 - Project Layout of Permitted Facility: Full Buildout at Approximately Mine Year 11

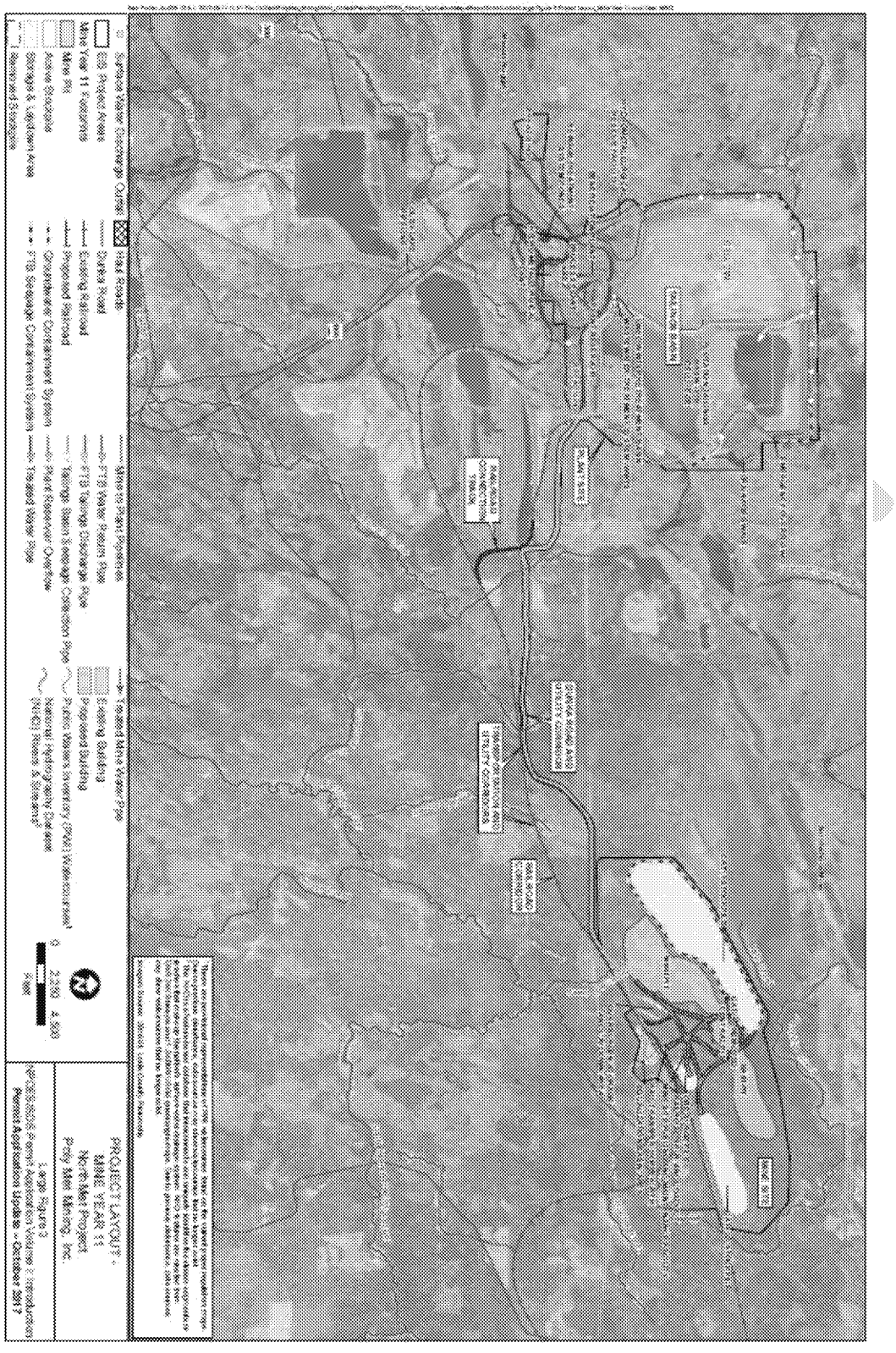


Figure 2.3 - Mine Site Location Map

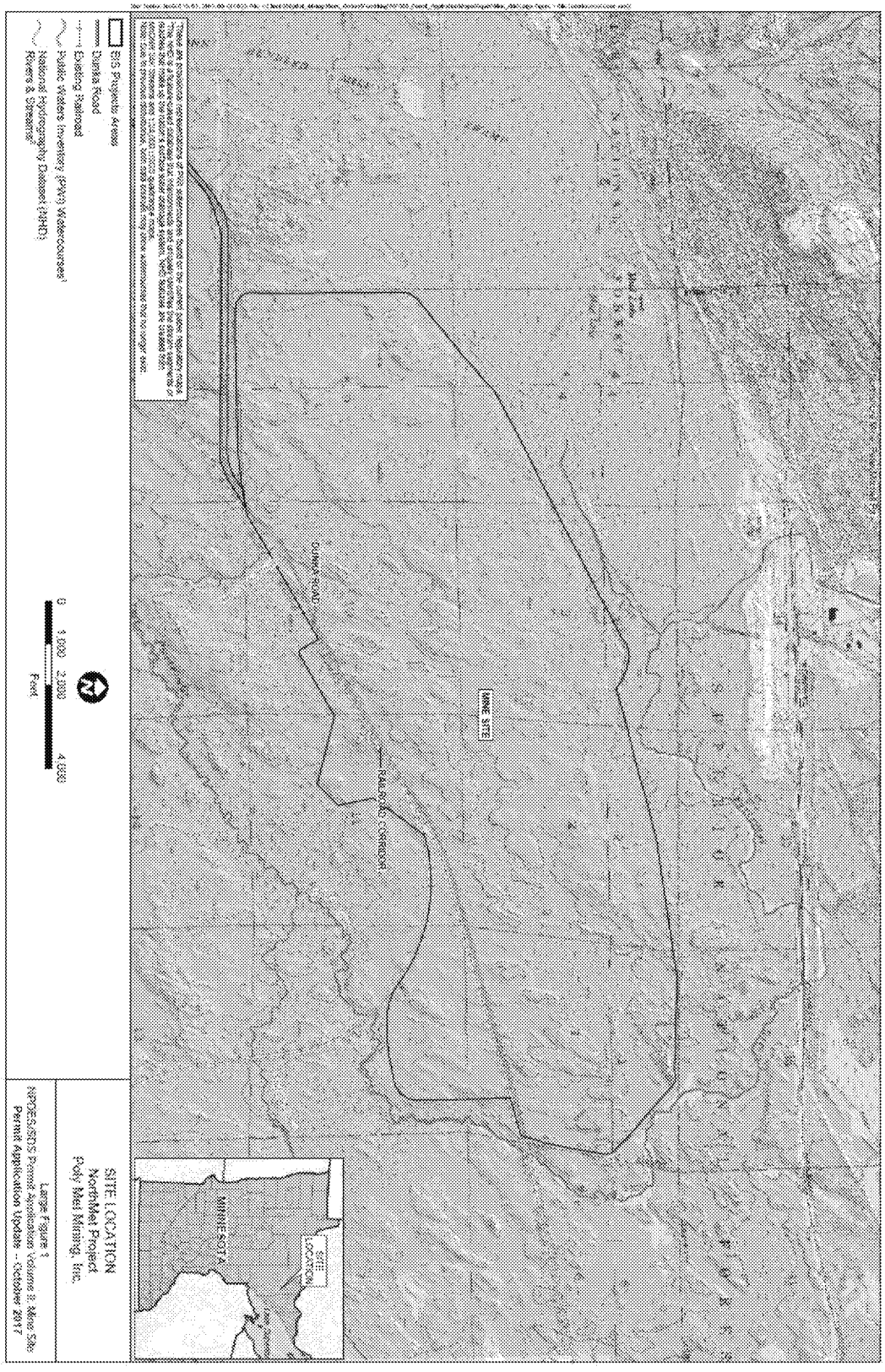


Figure 2.4 - Mine Site Layout: Full Buildout at Approximately Mine Year 11

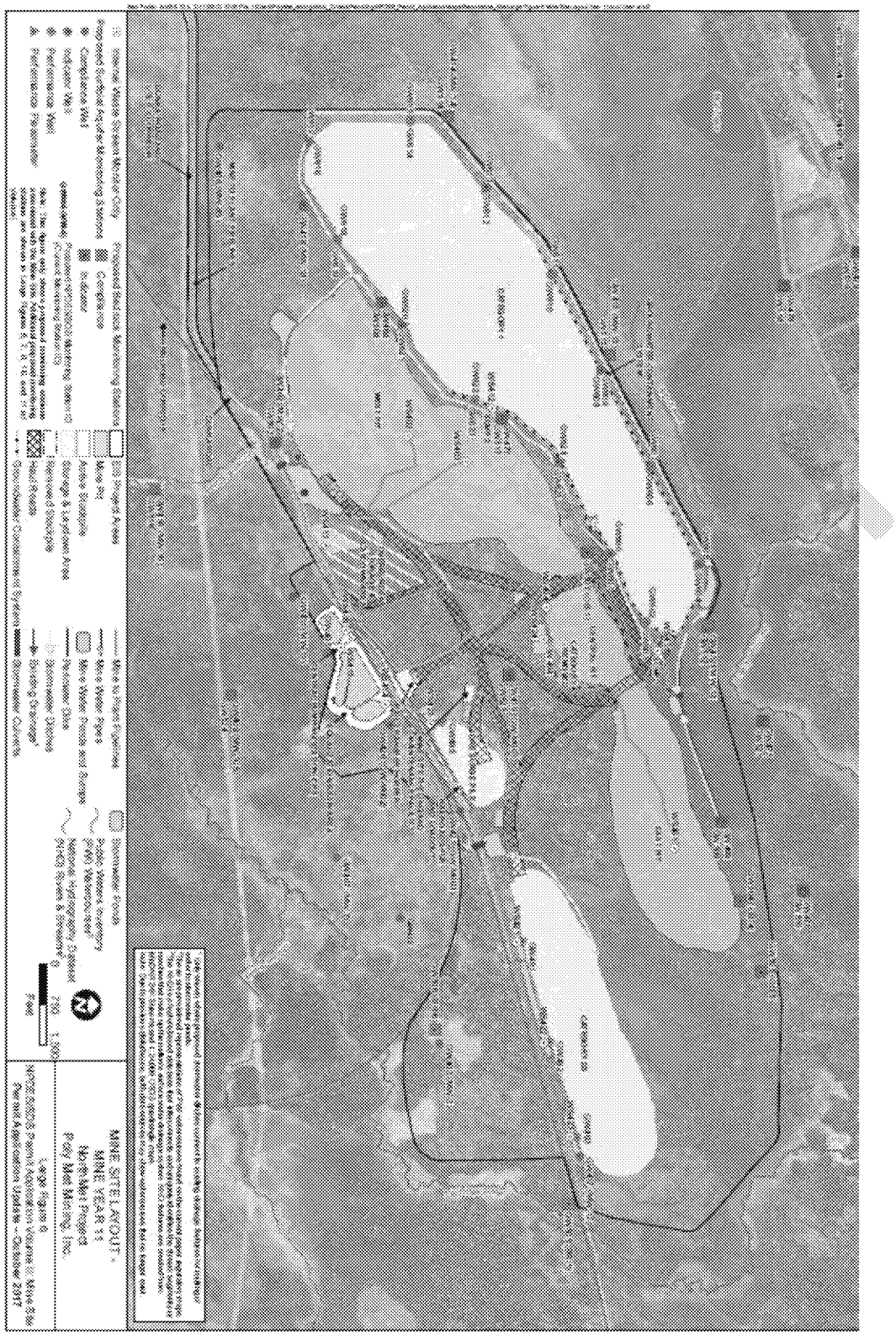


Figure 2.5 - Plant Site Map

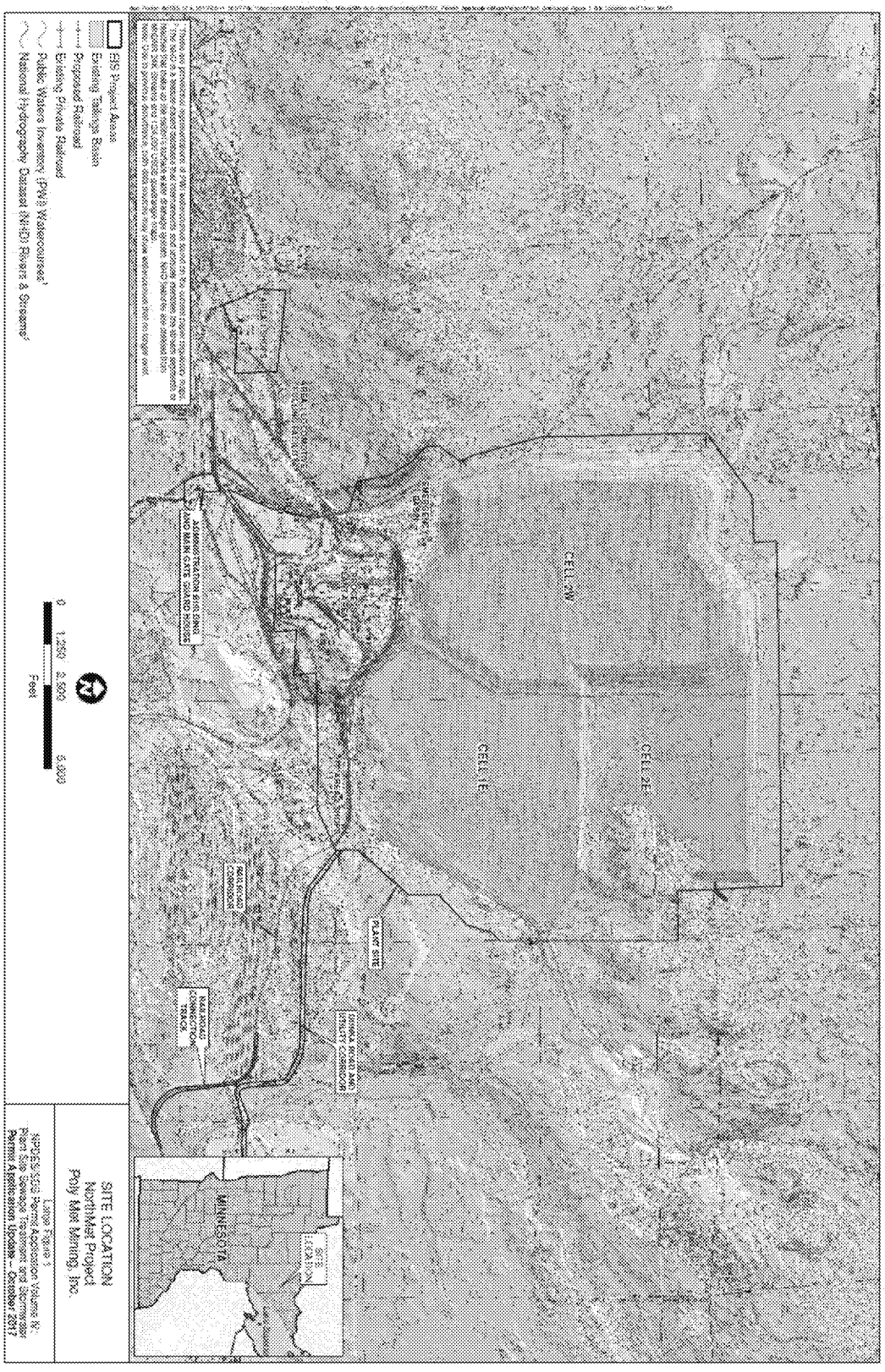


Figure 2.6 - Plant Site Layout: Tailings Basin & Hydrometallurgical Residue Facility at Approximately Mine Year 20

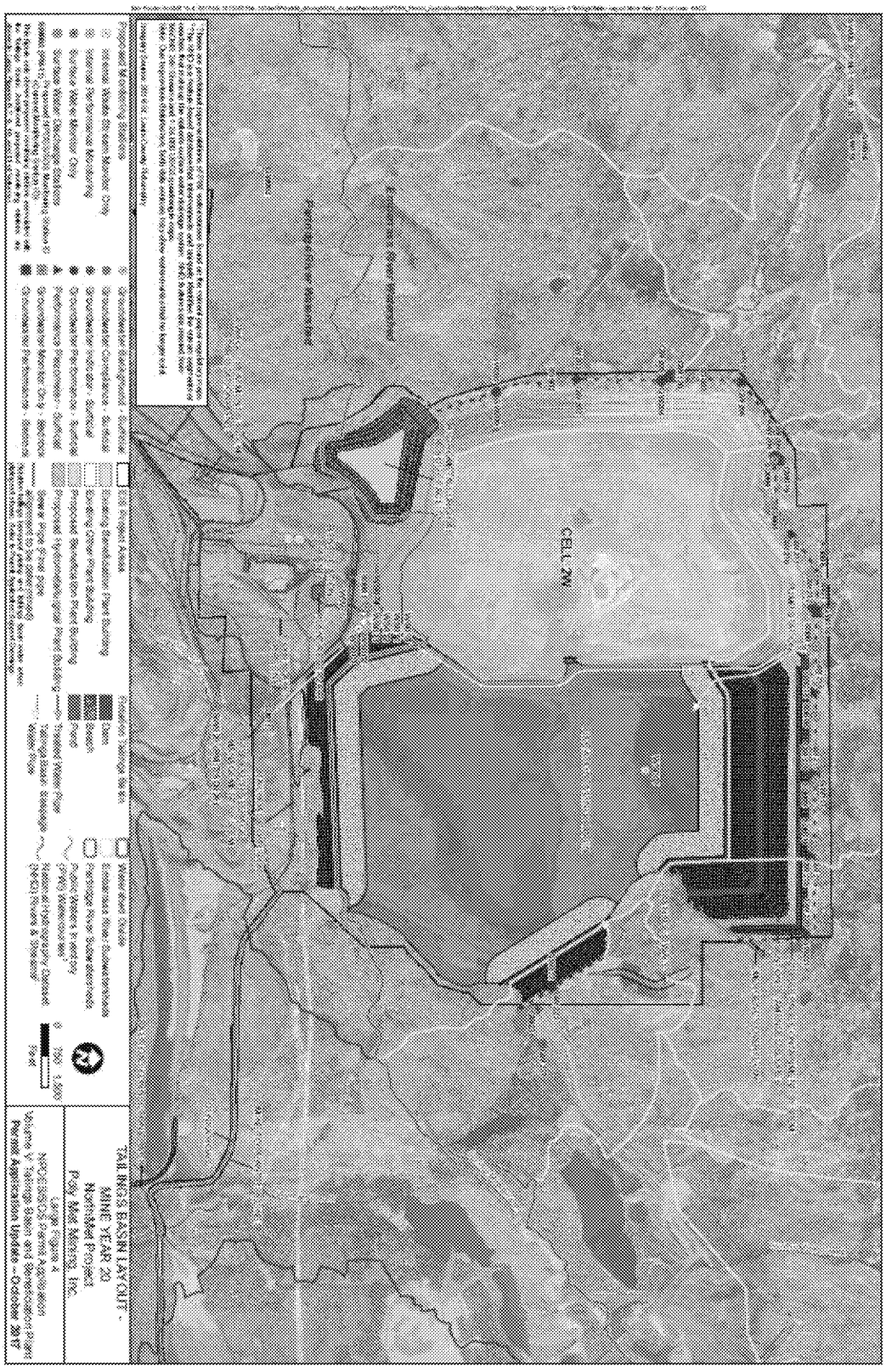


Figure 2.7 - Transportation and Utility Corridors Map

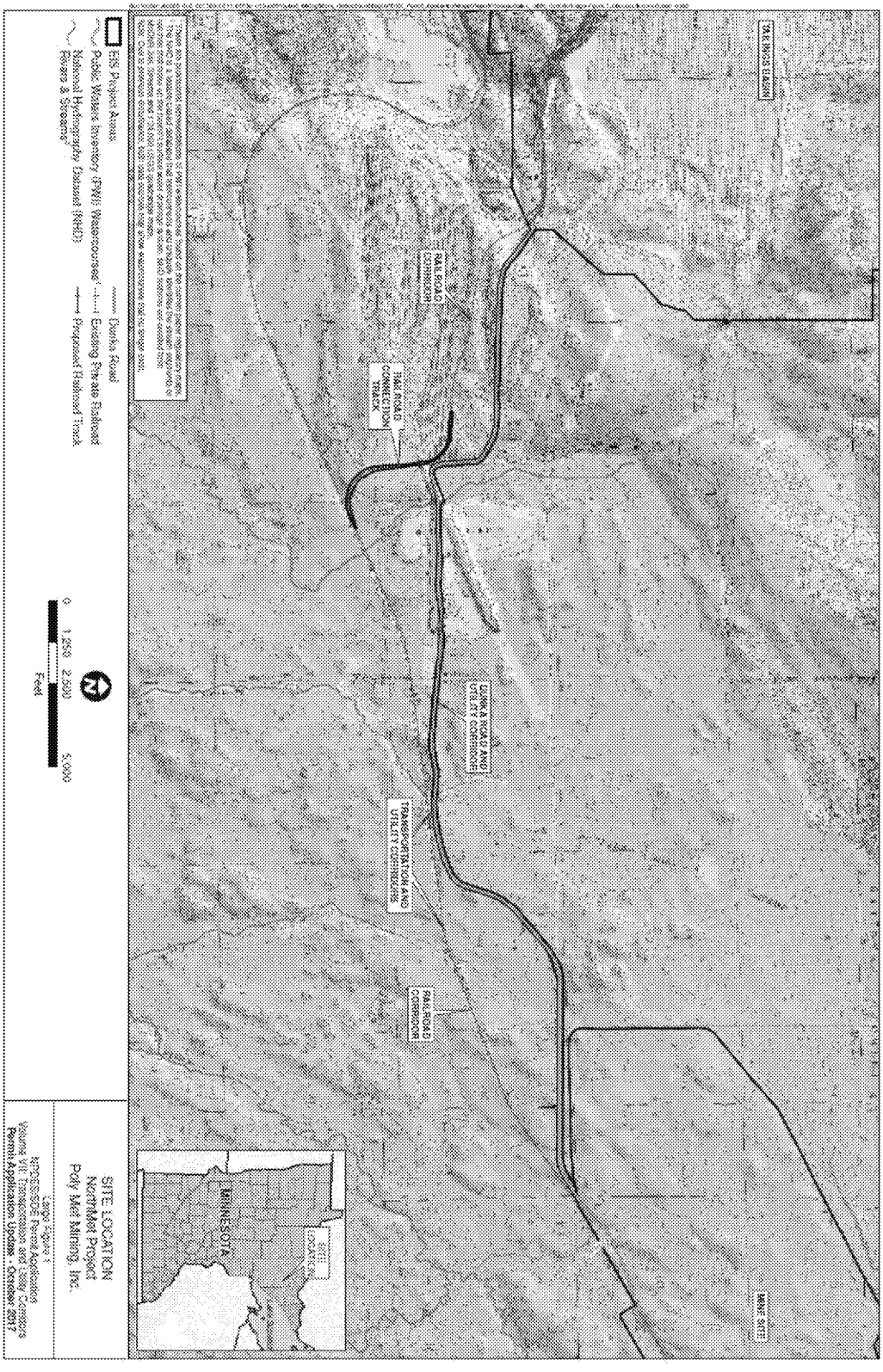
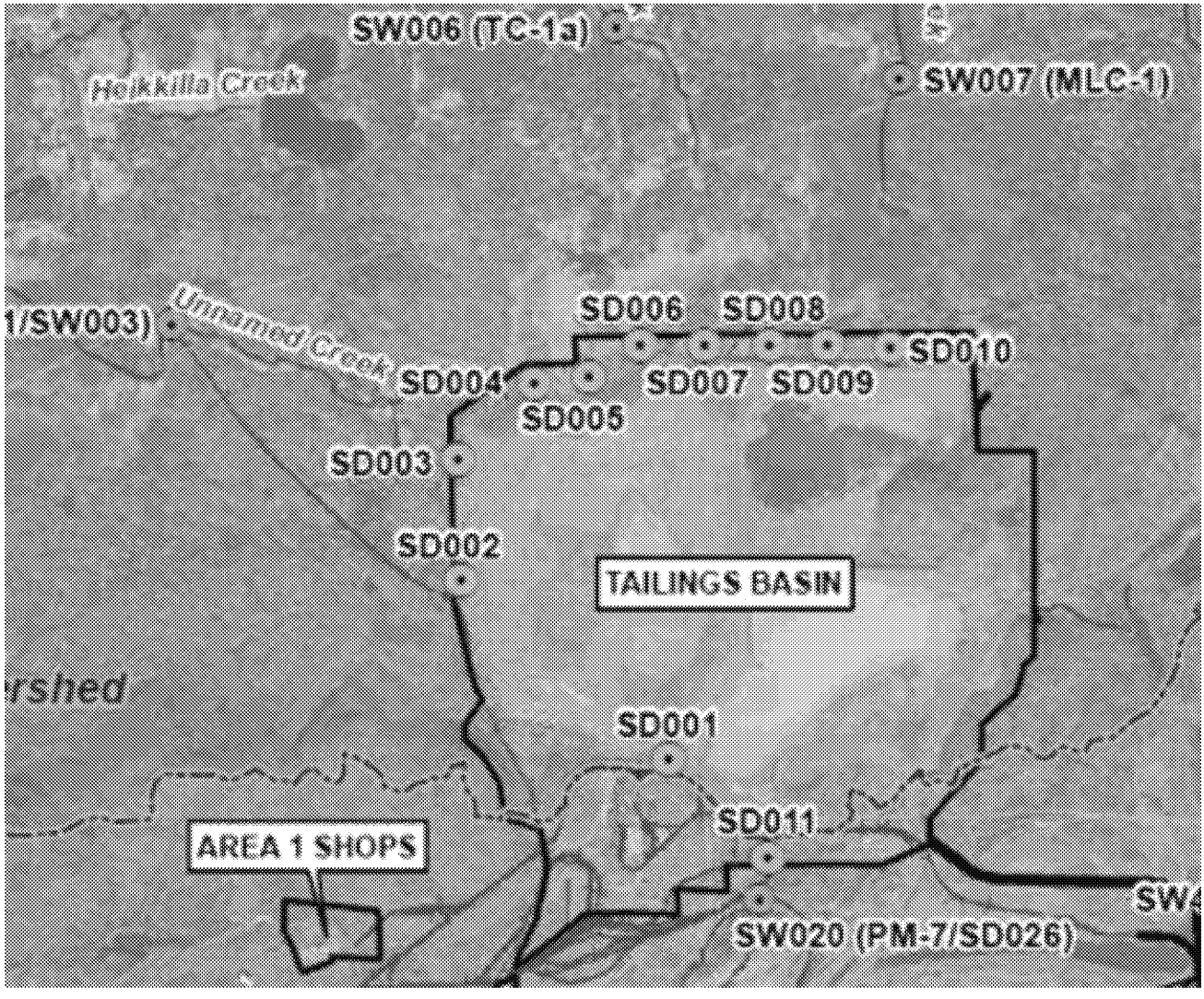


Figure 2.8 – Location of Outfalls



3. Flow Diagrams

Figure 3.1 – Overall Flow Schematic

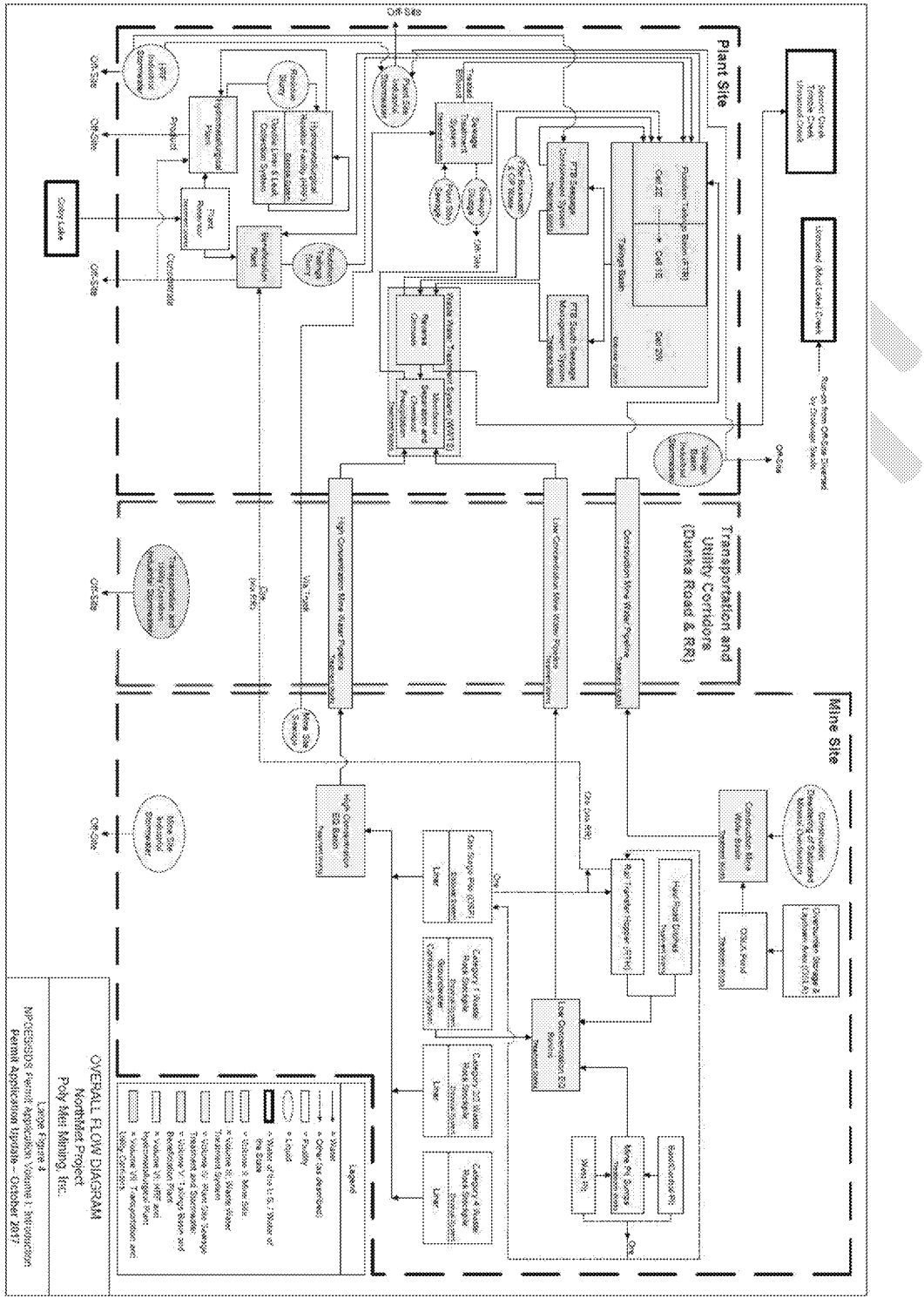
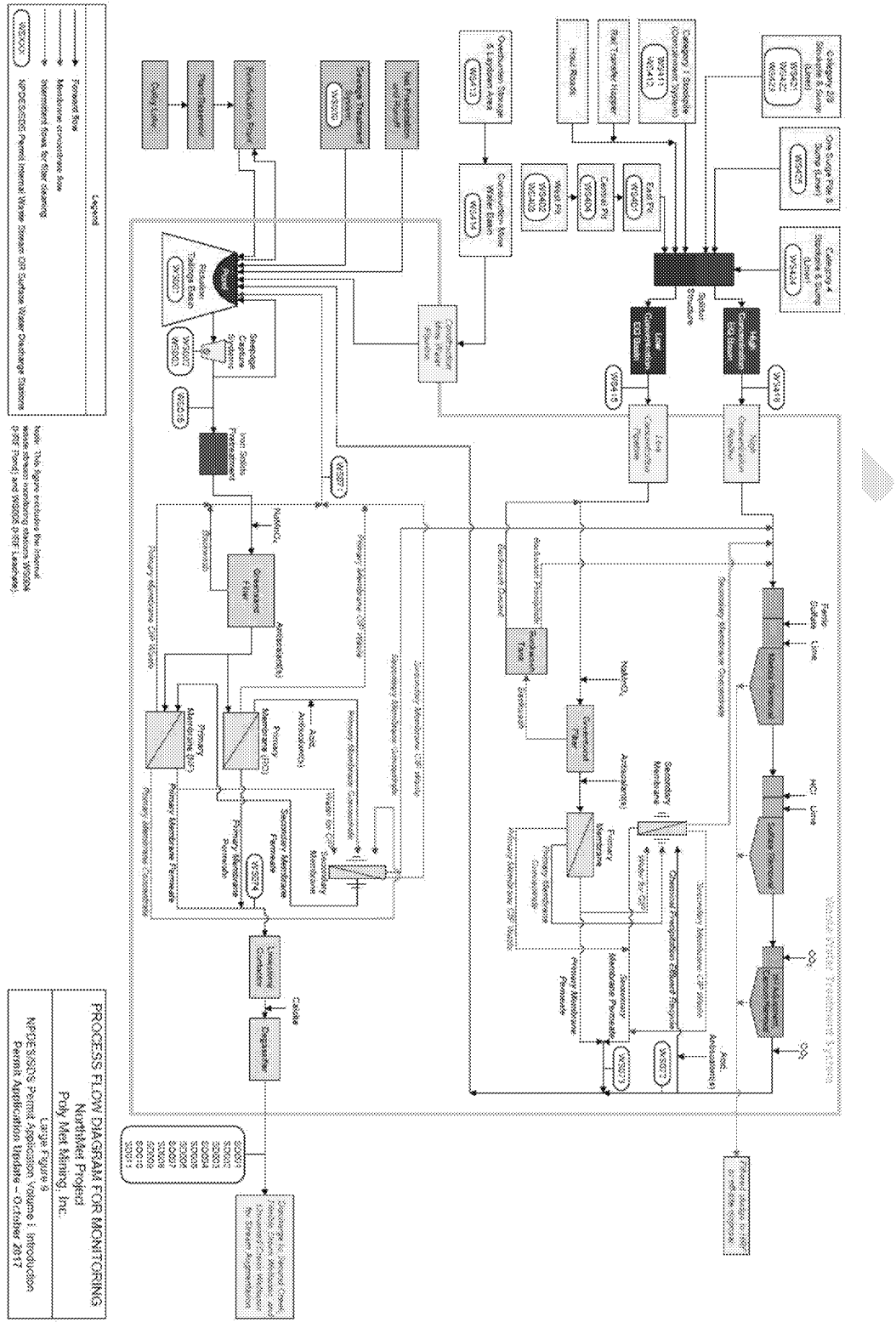


Figure 3.2 – Process Flow Diagram



4. Summary of Station Locations

Station	Type of station/description	Local name	PLS location
WWTS	**Wastewater Treatment System - Surface Water Discharge Monitoring Stations**		
SD001	WWTS Discharge		NW ¼ of SW ¼ of Section 9, T59N, R14W
SD002	Discharge – Headwater wetlands of Unnamed Creek		SW ¼ of SW ¼ of Section 5, T59N, R14W
SD003	Discharge – Headwater wetlands of Unnamed Creek		NW ¼ of NW ¼ of Section 5, T59N, R14W
SD004	Discharge – Headwater wetlands of Trimble Creek		SW ¼ of SE ¼ of Section 32, T60N, R14W
SD005	Discharge – Headwater wetlands of Trimble Creek		SE ¼ of SE ¼ of Section 32, T60N, R14W
SD006	Discharge – Headwater wetlands of Trimble Creek		NW ¼ of SW ¼ of Section 33, T60N, R14W
SD007	Discharge – Headwater wetlands of Trimble Creek		NE ¼ of SW ¼ of Section 33, T60N, R14W
SD008	Discharge – Headwater wetlands of Trimble Creek		NW ¼ of SE ¼ of Section 33, T60N, R14W
SD009	Discharge – Headwater wetlands of Trimble Creek		NW ¼ of SW ¼ of Section 34, T60N, R14W
SD010	Discharge – Headwater wetlands of Trimble Creek		NE ¼ of SW ¼ of Section 34, T60N, R14W
SD011	Discharge – Second Creek		NW ¼ of NE ¼ of Section 16, T59N, R14W
WWTS	**Wastewater Treatment System – Internal Waste Stream Monitoring Stations**		
WS074	Internal WWTS Performance Monitoring		NW ¼ of SW ¼ of Section 9, T59N, R21W
WS015	Influent to WWTS – (FTB Seepage Capture Systems)		NW ¼ of SW ¼ of Section 9, T59N, R14W
WS415	Influent to WWTS (Low Concentration Mine Water) (Located at Mine Site)		NE ¼ of SE ¼ of Section 10, T59N, R13W
WS416	Influent to WWTS (High Concentration Mine Water) (Located at Mine Site)		NE ¼ of SE ¼ of Section 10, T59N, R13W
WS072	WWTS Mine Water Treatment Effluent (Chemical Precipitation Treatment Train)		NW ¼ of SW ¼ of Section 9, T59N, R21W
WS073	WWTS Mine Water Treatment Effluent (Membrane Filtration Treatment Train)		NW ¼ of SW ¼ of Section 9, T59N, R21W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Internal Waste Stream Monitoring Stations – Mine Pit Dewatering**		
WS401	East Pit Dewatering		SW ¼ of NE ¼ of Section 2, T59N, R13W
WS402	West Pit Dewatering		SW ¼ of NW ¼ of Section 10, T59N, R13W
WS403	West Pit Dewatering		NE ¼ of NW ¼ of Section 10, T59N, R13W
WS404	Central Pit Dewatering		SE ¼ of SE ¼ of Section 3, T59N, R13W
Mine Site	**Internal Waste Stream Monitoring Stations – Waste Rock Stockpiles, Ore Surge Pile**		
WS411	Category 1 Stockpile Groundwater Containment System		SE ¼ of NE ¼ of Section 3, T59N, R13W
WS412	Category 1 Stockpile Groundwater Containment System		NW ¼ of NW ¼ of Section 10, T59N, R13W
WS421	Category 2/3 Waste Rock Stockpile Drainage		SE ¼ of SE ¼ of Section 2, T59N, R13W
WS422	Category 2/3 Waste Rock Stockpile Drainage		SE ¼ of SW ¼ of Section 1, T59N, R13W
WS423	Category 2/3 Waste Rock Stockpile Drainage		SW ¼ of SE ¼ of Section 1, T59N, R13W
WS424	Category 4 Waste Rock Stockpile Drainage		SE ¼ of SE ¼ of Section 3, T59N, R13W
WS425	Ore Surge Pile Drainage		SW ¼ of NW ¼ of Section 11, T59N, R13W
Mine Site	**Internal Waste Stream Monitoring Stations – Overburden Storage & Laydown Area (OSLA), Construction Mine Water Basin**		
WS413	OSLA Runoff		NW ¼ of SE ¼ of Section 10, T59N, R13W
WS414	Construction Mine Water Basin		NW ¼ of SW ¼ of Section 11, T59N, R13W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Groundwater Monitoring Stations – Category 1 Stockpile Groundwater Containment System Performance**		
GW600	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW600-GW601)		NW ¼ of SE ¼ of Section 3, T59N, R13W
GW601	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW600-GW601)		NW ¼ of SE ¼ of Section 3, T59N, R13W
GW602	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW602-GW603)		NE ¼ of SE ¼ of Section 3, T59N, R13W
GW603	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW602-GW603)		NE ¼ of SE ¼ of Section 3, T59N, R13W
GW604	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW604-GW605)		SW ¼ of NE ¼ of Section 3, T59N, R13W
GW605	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW604-GW605)		SW ¼ of NE ¼ of Section 3, T59N, R13W
GW606	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW606-GW607)		SE ¼ of NW ¼ of Section 3, T59N, R13W
GW607	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW606-GW607)		SE ¼ of NW ¼ of Section 3, T59N, R13W
GW608	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW608-GW609)		SE ¼ of NE ¼ of Section 3, T59N, R13W
GW609	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW608-GW609)		NE ¼ of SE ¼ of Section 3, T59N, R13W
GW610	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW610-GW611)		SW ¼ of SE ¼ of Section 4, T59N, R13W
GW611	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW610-GW611)		SW ¼ of SE ¼ of Section 4, T59N, R13W
GW612	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW612-GW613)		NE ¼ of NW ¼ of Section 9, T59N, R13W
GW613	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW612-GW613)		NE ¼ of NW ¼ of Section 9, T59N, R13W
GW614	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW614-GW615)		SW ¼ of NW ¼ of Section 9, T59N, R13W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Groundwater Monitoring Stations – Category 1 Stockpile Groundwater Containment System Performance**		
GW615	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW614-GW615)		SW ¼ of NW ¼ of Section 9, T59N, R13W
GW616	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW616-GW617)		NW ¼ of SW ¼ of Section 9, T59N, R13W
GW617	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW616-GW617)		NW ¼ of SW ¼ of Section 9, T59N, R13W
GW618	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW618-GW619)		NE ¼ of SW ¼ of Section 9, T59N, R13W
GW619	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW618-GW619)		NE ¼ of SW ¼ of Section 9, T59N, R13W
GW620	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW620-GW621)		SE ¼ of NE ¼ of Section 9, T59N, R13W
GW621	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW620-GW621)		SE ¼ of NE ¼ of Section 9, T59N, R13W
GW622	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW622-GW623)		NW ¼ of NW ¼ of Section 10, T59N, R13W
GW623	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired wells (GW622-GW623)		NW ¼ of NW ¼ of Section 10, T59N, R13W
GW624	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW624-GW625)		SE ¼ of SW ¼ of Section 3, T59N, R13W
GW625	Surficial Aquifer – Category 1 Stockpile Groundwater Containment System performance monitoring paired piezometers (GW624-GW625)		SE ¼ of SW ¼ of Section 3, T59N, R13W
Mine Site	**Groundwater Monitoring Stations – Surficial Aquifer**		
GW402	Surficial Aquifer – Downgradient of West Pit	MW-2	SW ¼ of SW ¼ of Section 10, T59N, R13W
GW403	Surficial Aquifer – Downgradient of Category 2/3 Waste Rock Stockpile	MW-3	SE ¼ of NW ¼ of Section 12, T59N, R13W
GW405	Surficial Aquifer – Downgradient of Equalization Basin Area	MW-5	NE ¼ of SE ¼ of Section 10, T59N, R13W
GW407	Surficial Aquifer – Downgradient of OSP, along property boundary	MW-7	NW ¼ of SE ¼ of Section 11, T59N, R13W
GW408	Surficial Aquifer – Downgradient of Category 1 Stockpile Groundwater Containment System	MW8S	SW ¼ of SW ¼ of Section 9, T59N, R13W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Groundwater Monitoring Stations – Surficial Aquifer**		
GW409	Surficial Aquifer – Downgradient of Equalization Basin Area, OSLA, Category 4 Waste Rock Stockpile, and Central Pit	MW-10S	SW ¼ of SW ¼ of Section 11 T59N, R13W
GW411	Surficial Aquifer – Downgradient of OSLA	MW-11	SE ¼ of SE ¼ of Section 10, T59N, R13W
GW412	Surficial Aquifer – Downgradient and northeast of Category 1 Stockpile Groundwater Containment System	MW-12	SE ¼ of NE ¼ of Section 3, T59N, R13W
GW414	Surficial Aquifer – Downgradient and west of Category 1 Stockpile Groundwater Containment System	MW-14	NW ¼ of NW ¼ of Section 9, T59N, R13W
GW415	Surficial Aquifer – Downgradient and north of Category 1 Stockpile Groundwater Containment System	MW-15	NE ¼ of SE ¼ of Section 4, T59N, R13W
GW416	Surficial Aquifer – Downgradient of West Pit and Category 1 Stockpile Groundwater Containment System	MW-16	NE ¼ of NW ¼ of Section 15, T59N, R13W
GW417	Surficial Aquifer – Downgradient of Category 2/3 Waste Rock Stockpile	MW-17	SW ¼ of SE ¼ of Section 1, T59N, R13W
GW418	Surficial Aquifer – Downgradient of Category 1 Stockpile Groundwater Containment System and west of West Pit	MW-18	NE ¼ of SW ¼ of Section 11, T59N, R13W
GW419	Surficial Aquifer – Downgradient of Category 4 Waste Rock Stockpile and Central Pit	GW-M001	NW ¼ of NW ¼ of Section 11, T59N, R13W
GW420	Surficial Aquifer – Downgradient of Rail Transfer Hopper/Ore Loading Area	GW-M002	SW ¼ of NW ¼ of Section 11, T59N, R13W
GW421	Surficial Aquifer – Downgradient of OSP	GW-M003	SE ¼ of NW ¼ of Section 11, T59N, R13W
GW422	Surficial Aquifer – Downgradient of Category 2/3 Waste Rock Stockpile		SE ¼ of NE ¼ of Section 11, T59N, R13W
GW468	Surficial Aquifer – Downgradient of the West Pit and Category 1 Waste Rock Stockpile		SW ¼ of NE ¼ of Section 9, T59N, R13W
GW491	Surficial Aquifer – Category 2/3 Waste Rock Stockpile underdrain system (if underdrain is installed)		SE ¼ of SE ¼ of Section 2, T59N, R13W
GW492	Surficial Aquifer – Category 2/3 Waste Rock Stockpile underdrain system (if underdrain is installed)		SE ¼ of SW ¼ of Section 1, T59N, R13W
GW493	Surficial Aquifer – Category 2/3 Waste Rock Stockpile underdrain system (if underdrain is installed)		SW ¼ of SE ¼ of Section 1, T59N, R13W
GW494	Surficial Aquifer – Category 4 Waste Rock Stockpile underdrain system (if underdrain is installed)		SE ¼ of SE ¼ of Section 3, T59N, R13W
GW495	Surficial Aquifer – OSP underdrain system (if underdrain is installed)		NW ¼ of NW ¼ of Section 11, T59N, R13W
Mine Site	**Groundwater Monitoring Stations – Bedrock**		
GW501	Bedrock – Downgradient and southeast of Category 2/3 Waste Rock Stockpile	BR-1	SE ¼ of SE ¼ of Section 1, T59N, R13W
GW502	Bedrock – Downgradient of West Pit		SW ¼ of SW ¼ of Section 10, T59N, R13W
GW506	Bedrock – Downgradient and south of Category 2/3 Waste Rock Stockpile	BR-6	SE ¼ of NW ¼ of Section 12, T59N, R13W
GW507	Bedrock – Downgradient of West Pit and Category 1 Waste Rock Stockpile	OB-1	NW ¼ of SE ¼ of Section 3, T59N, R13W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Groundwater Monitoring Stations – Bedrock**		
GW512	Bedrock – Downgradient and northeast of Category 1 Stockpile Groundwater Containment System		SE ¼ of NE ¼ of Section 3, T59N, R13W
GW514	Bedrock – Downgradient and west of Category 1 Stockpile Groundwater Containment System		NW ¼ of NW ¼ of Section 9, T59N, R13W
GW515	Bedrock – Downgradient and north of Category 1 Stockpile Groundwater Containment System		SE ¼ of NE ¼ of Section 4, T59N, R13W
GW516	Bedrock – Downgradient of West Pit and Category 1 Stockpile Groundwater Containment System		NE ¼ of NW ¼ of Section 15, T59N, R13W
GW524	Bedrock – Downgradient of Equalization Basin Area, OSLA, Category 4 Waste Rock Stockpile, and Central Pit		SW ¼ of SW ¼ of Section 11, T59N, R13W
GW525	Bedrock – Downgradient of Category 4 Waste Rock Stockpile and Central Pit		NW ¼ of NW ¼ of Section 11, T59N, R13W
Mine Site	**Groundwater Monitoring Stations – Possible North Flow Path Surficial Aquifer**		
GW470	Surficial Aquifer – North of East Pit and the Mine Site		SE ¼ of SE ¼ of Section 35, T59N, R13W
GW471	Surficial Aquifer – North of East Pit and the Mine Site		NW ¼ of NW ¼ of Section 2, T59N, R13W
GW472	Surficial Aquifer – North of East Pit and the Mine Site		NW ¼ of NW ¼ of Section 36, T59N, R13W
GW473	Surficial Aquifer – North of East Pit and the Mine Site		NW ¼ of SW ¼ of Section 25, T59N, R13W
GW477	Surficial Aquifer – Downgradient of Category 1 Stockpile Groundwater Containment System		NW ¼ of NW ¼ of Section 10, T59N, R13W
GW478	Surficial Aquifer – North of West Pit and the Mine Site		NW ¼ of NE ¼ of Section 4, T59N, R13W
GW479	Surficial Aquifer – North of West Pit and the Mine Site		SW ¼ of SE ¼ of Section 33, T59N, R13W
GW499	Surficial Aquifer – North of East Pit		SW ¼ of NE ¼ of Section 2, T59N, R13W
Mine Site	**Groundwater Monitoring Stations – Possible North Flow Path Bedrock**		
GW504	Bedrock – Adjacent to and north of East Pit	OB-4	NE ¼ of NE ¼ of Section 2, T59N, R13W
GW505	Bedrock – Adjacent to and northeast of East Pit	OB-5	NW ¼ of NW ¼ of Section 1, T59N, R13W
GW508	Bedrock – Between West Pit and Category 1 Stockpile Groundwater Containment System		SW ¼ of NE ¼ of Section 9, T59N, R13W
GW509	Bedrock – North of East Pit		SW ¼ of NE ¼ of Section 2, T59N, R13W
GW510	Bedrock – North of East Pit and north of Mine Site		SE ¼ of SE ¼ of Section 35, T59N, R13W
GW517	Bedrock – Downgradient of Category 1 Stockpile Groundwater Containment System		NW ¼ of NW ¼ of Section 10, T59N, R13W

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Station	Type of station/description	Local name	PLS location
Mine Site	**Groundwater Monitoring Stations – Possible North Flow Path Bedrock**		
GW518	Bedrock – North of West Pit and north of Mine Site		NW ¼ of NE ¼ of Section 4, T59N, R13W
GW519	Bedrock – North of West Pit and north of Mine Site		SW ¼ of SE ¼ of Section 33, T59N, R13W
GW521	Bedrock – North of East Pit and north of Mine Site		NW ¼ of NW ¼ of Section 2, T59N, R13W
GW522	Bedrock – North of East Pit and north of Mine Site		SW ¼ of NW ¼ of Section 36, T60N, R13W
GW523	Bedrock – North of East Pit and north of Mine Site		NW ¼ of SW ¼ of Section 25, T60N, R13W
Mine Site	**Surface Water Monitoring Stations**		
SW402	Background Monitoring – Partridge River	PM-2 / SW002	NW ¼ of SE ¼ of Section 36, T60N, R13W
SW407	Downstream Monitoring – Wetlegs Creek	WL-1	NW ¼ of SE ¼ of Section 17, T59N, R13W
SW408	Downstream Monitoring – Longnose Creek	LN-1	SW ¼ of SE ¼ of Section 18, T59N, R14W
SW409	Downstream Monitoring – Wyman Creek	PM-5	NE ¼ of NW ¼ of Section 24, T59N, R14W
SW410	Background Monitoring – Wyman Creek	PM-6B	NE ¼ of SE ¼ of Section 14, T59N, R14W
SW411	Background Monitoring – Longnose Creek	LN-2	NW ¼ of SE ¼ of Section 18, T59N, R13W
SW412	Background Monitoring – Wetlegs Creek	WL-2	NW ¼ of SE ¼ of Section 17, T59N, R13W
SW413	Downstream Monitoring – Partridge River	SW004c	NE ¼ of SW ¼ of Section 15, T59N, R13W
SW414	Downstream Monitoring – West Pit Outlet Creek	WP-1	SW ¼ of SW ¼ of Section 10, T59N, R13W
Station	**Type of station/description**	**Local name**	**PLS location**
Plant Site	**Internal Waste Stream Monitoring Stations – Flotation Tailings Basin (FTB)**		
WS001	FTB Pond		SE ¼ of NE ¼ of Section 4, T59N, R14W
WS002	FTB Seepage Containment System		NW ¼ of SW ¼ of Section 9, T59N, R15W
WS003	FTB South Seepage Management System		NW ¼ of SW ¼ of Section 9, T59N, R16W
Plant Site	**Internal Waste Stream Monitoring Stations – Hydrometallurgical Residue Facility (HRF)**		
WS004	HRF Pond		NW 14 of SE ¼ of Section 8, T59N, R17W
WS005	HRF Leachate		NE ¼ of SW ¼ of Section 8, T59N, R18W

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Station	Type of station/description	Local name	PLS location
Plant Site	**Internal Waste Stream Monitoring Stations – Sewage Treatment Stabilization Ponds**		
WS009	Sewage Treatment Stabilization Ponds		NW ¼ of SE ¼ of Section 17, T59N, R19W
Plant Site	**Groundwater Monitoring Stations – FTB Seepage Containment System Performance**		
GW200	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW200-GW201)		NW ¼ of NW ¼ of Section 8, T59N, R14W
GW201	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW200-GW201)		NW ¼ of NW ¼ of Section 8, T59N, R14W
GW202	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW202-GW203)		NW ¼ of SW ¼ of Section 5, T59N, R14W
GW203	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW202-GW203)		NW ¼ of SW ¼ of Section 5, T59N, R14W
GW204	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW204-GW205)		SW ¼ of NW ¼ of Section 5, T59N, R14W
GW205	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW204-GW205)		SW ¼ of NW ¼ of Section 5, T59N, R14W
GW206	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW206-GW207)		SW ¼ of SW ¼ of Section 31, T60N, R14W
GW207	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW206-GW207)		SW ¼ of SW ¼ of Section 31, T60N, R14W
GW208	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW208-GW209)		SW ¼ of SE ¼ of Section 31, T60N, R14W
GW209	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW208-GW209)		SW ¼ of SE ¼ of Section 31, T60N, R14W
GW210	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW210-GW211)		SE ¼ of SE ¼ of Section 31, T60N, R14W
GW211	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW210-GW211)		SE ¼ of SE ¼ of Section 31, T60N, R14W
GW212	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW212-GW213)		NW ¼ of SW ¼ of Section 33, T60N, R14W
GW213	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW212-GW213)		NW ¼ of SW ¼ of Section 33, T60N, R14W
GW214	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW214-GW215)		NW ¼ of SE ¼ of Section 33, T60N, R14W
GW215	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW214-GW215)		NW ¼ of SE ¼ of Section 33, T60N, R14W
GW216	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW216-GW217)		NE ¼ of SE ¼ of Section 33, T60N, R14W
GW217	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW216-GW217)		NE ¼ of SE ¼ of Section 33, T60N, R14W
GW218	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW218-GW219)		NE ¼ of SW ¼ of Section 34, T60N, R14W

Station	Type of station/description	Local name	PLS location
Plant Site	**Groundwater Monitoring Stations – FTB Seepage Containment System Performance**		
GW219	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW218-GW219)		NE ¼ of SW ¼ of Section 34, T60N, R14W
GW220	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW220-GW221),		NW ¼ of SE ¼ of Section 34, T60N, R14W
GW221	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired wells (GW220-GW221),		NW ¼ of SE ¼ of Section 34, T60N, R14W
GW222	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW222-GW223)		SE ¼ of SE ¼ of Section 3, T60N, R14W
GW223	Surficial Aquifer – FTB Seepage Containment System performance monitoring paired piezometers (GW222-GW223)		SE ¼ of SE ¼ of Section 3, T60N, R14W
GW236	Surficial Aquifer – East of east dam		SE ¼ of SE ¼ of Section 3, T60N, R14W
GW237	Surficial Aquifer – East of east dam		SW ¼ of SW ¼ of Section 2, T60N, R14W
Plant Site	**Groundwater Monitoring Stations – Surficial Aquifer**		
GW002	Surficial Aquifer – Background conditions upgradient & west of FTB & HRF	GW002	NW ¼ of NW ¼ of Section 18, T59N, R14W
GW009	Surficial Aquifer – Downgradient of FTB Cell 2E; beyond property boundary	GW009	SE ¼ of NE ¼ of Section 28, T60N, R14W
GW010	Surficial Aquifer – Downgradient of FTB at northern property boundary	GW010	NE ¼ of NE ¼ Section 31, T60N, R14W
GW015	Surficial Aquifer – Background conditions west and downgradient of Cell 2W at western property boundary	GW015	NE ¼ of NE ¼ of Section 10, T59N, R15W
GW016	Surficial Aquifer – Downgradient of Cell 2W at northwestern property boundary	GW016	SW ¼ of NW ¼ of Section 31, T60N, R14W
Plant Site	**Groundwater Monitoring Stations – Bedrock**		
GW109	Bedrock – Downgradient of FTB Cell 2E beyond the property boundary		NE ¼ of SE ¼ of Section 28, T60N, R14W
GW110	Bedrock – Downgradient of FTB at northern property boundary		NE ¼ of NE ¼ of Section 31, T60N, R14W
GW115	Bedrock – Background conditions west and downgradient of Cell 2W at the western property boundary		NE ¼ of NE ¼ of Section 10, T60N, R14W
GW116	Bedrock – Downgradient of Cell 2W at northwestern property boundary		SW ¼ of NW ¼ of Section 31, T60N, R14W
GW117	Bedrock – Downgradient of the northern side of Cell 2E, outside FTB seepage containment system and within property boundary		NE ¼ of SE ¼ of Section 33, T60N, R14W
GW118	Bedrock – Downgradient of the northern side of Cell 2E, outside FTB seepage containment system and within property boundary		NW ¼ of SW ¼ of Section 33, T60N, R14W

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Station	Type of station/description	Local name	PLS location
Plant Site	**Groundwater Monitoring Stations – Bedrock**		
GW119	Bedrock – Downgradient of northern toe of Cell 2W and outside the FTB seepage containment system		SW ¼ of SE ¼ of Section 32, T60N, R14W
GW120	Bedrock – Downgradient of western toe of Cell 2W and outside the FTB seepage containment system		SW ¼ of NW ¼ of Section 5, T59N, R14W
GW121	Bedrock – Downgradient of Tailings Basin		NW ¼ of NW ¼ of Section 8, T59N, R14W
Plant Site	**Surface Water Monitoring Stations**		
SW003	Downstream Monitoring – Unnamed Creek	PM-11 / SW003	NE ¼ of SE ¼ of Section 36, T60N, R15W
SW005	Downstream Monitoring – Embarrass River	PM-13 / SW005	SE ¼ of NE ¼ of Section 4, T59N, R15W
SW006	Downstream Monitoring – Trimble Creek	TC-1a	NE ¼ of NE ¼ of Section 29, T60N, R14W
SW007	Downstream Monitoring – Unnamed (Mud Lake) Creek	MLC-1	SE ¼ of NW ¼ of Section 27, T60N, R14W
SW008	Background Monitoring – Embarrass River	PM-12.2	NE ¼ of SE ¼ of Section 16, T60N, R14W
SW020	Downstream Monitoring – Second Creek	PM-7 / SD026	SW ¼ of NE ¼ of Section 16, T59N, R14W

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GW002, GW009, GW010, GW015, GW016, GW109, GW110, GW115-GW121; GW200-GW223; GW200-GW223; GW236, GW237; GW402, GW403, GW405, GW407-GW409, GW411, GW412, GW414-GW422; GW468, GW470-GW473; GW477-GW479; GW491-GW495; GW499, GW501, GW502, GW504-GW510; GW512, GW514-GW519; GW521-GW525; GW600-GW625	**Monitoring Wells**	
	6.1.0	**Groundwater Monitoring Station Facility Specific Limit and Monitoring Requirements**
	6.1.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.1.2	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]
SD001 – SD011	**Effluent to Surface Water**	
	6.2.0	**Surface Water Discharge Facility Specific Limit and Monitoring Requirements**
	NEW	The discharge of treated wastewater from the WWTS must not violate state water quality standards. [Minn. Stat. § 115.03 subd. 1]
	NEW	The MPCA may modify this permit, require corrective actions, or take other actions if it determines that a discharge authorized by this permit is causing or contributing to a violation of water quality standards. [Minn. Stat. §115.03; Minn. R. 7001.0170]
	6.2.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.2.2	**Sampling Location. [Minn. R. 7001.0150, Subp. 2(B)]**
	6.2.3	Samples for Station SD001 must be taken at a point representative of the blended effluent from the reverse osmosis and nanofiltration membranes and after discharge stabilization. [Minn. R. 7001.0150, Subp. 2(B)]
	6.2.4	Flow measurements for Station SD002-SD003 must be taken at a point representative of the discharge from the WWTS to the headwater wetlands of Unnamed Creek. [Minn. R. 7001.0150, Subp. 2(B)]
	6.2.5	Flow measurements for Station SD004-SD010 must be taken at a point representative of the discharge from the WWTS to the headwater wetlands of Trimble Creek. [Minn. R. 7001.0150, Subp. 2(B)]
	6.2.6	Flow measurements for Station SD011 must be taken at a point representative of the discharge from the WWTS to the headwaters of Second Creek. [Minn. R. 7001.0150, Subp. 2(B)]
	6.2.7	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]

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	6.3.0	**Chronic Toxicity Requirements**
	6.3.1	**General Requirements. [Minn. R. 7001.0150 subp. 2(B)]**
	6.3.2	This permit includes a chronic whole effluent toxicity limit of 1.0 TUc for Surface Discharge Station SD001. A violation of the 1.0 TUc limit constitutes a violation of the permit. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.6	The Permittee shall submit quarterly chronic toxicity test battery results: Due quarterly following commencement of the discharge. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.8	Any test that exceeds 1.0 TUc must be re-tested according to the Positive Toxicity Result requirements that follow to determine if toxicity is still present above 1.0 TUc. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.9	**Species and Procedural Requirements. [Minn. R. 7001]**
	6.3.10	Any test that is begun with an effluent sample that exceeds a total ammonia concentration of 5 mg/l must use the carbon dioxide-controlled atmosphere technique to control pH drift. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.11	Test organisms for each test battery must include the fathead minnow (Pimephales promelas)-Method 1000.0 and Ceriodaphnia dubia-Method 1002.0. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.12	Static renewal chronic serial dilution tests of the effluent shall consist of a control, 12.5%, 25%, 50%, 75%, and 100%. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.13	All effluent samples must be flow proportioned, 24-hour composites. Test solutions must be renewed daily. Testing of the effluent must begin within 36 hours of sample collection. Receiving water collected outside of the influence of discharge must be used for dilution and controls. Chronic toxicity tests must be conducted in accordance with procedures outlined in EPA-821-R-02-013 "Short-term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" - Fourth Edition (Chronic Manual) and any revisions to the Manual. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.14	Any other circumstances not addressed in the previous requirements or that require deviation from that specified in the previous requirements must first be approved by the MPCA. [Minn. R. 7001.0170, 7001.0190]
	6.3.15	**Quality Control and Report Submittals. [Minn. R. 7001]**
	6.3.16	Any test that does not meet quality control measures, or results which the Permittee believes reflect an artifact of testing must be repeated within two (2) weeks. These reports must contain information consistent with the report preparation section of the Chronic Manual. The MPCA must make the final determination regarding test validity. [Minn. R. 7001.0150 subp. 2(B)]

	6.3.17	**Positive Toxicity Result for Whole Effluent Toxicity (WET). [Minn. R. 7001]**
	6.3.18	Should a test exceed 1.0 TUc for whole effluent toxicity based on results from the most sensitive test species, the Permittee shall conduct two repeat test batteries on all species. The repeat tests are to be completed within forty-five (45) days after completion of the positive test. These tests will be used to determine if toxicity exceeding 1.0 TUc remains present for any test species. For both retests, if no toxicity is present above 1.0 TUc for any test species, the Permittee shall return to the test frequency specified by the permit. If either of the repeat test batteries indicate toxicity above 1.0 TUc for any test species, the Permittee shall submit for MPCA review a plan for conducting a Toxicity Reduction Evaluation (TRE), including the Facility Performance Review (to be submitted to the MPCA WQ Submittals Center within 60 days after toxicity discovery date) and, at a minimum, provide quarterly reports starting from the date of TRE submittal, regarding progress towards the identity, source, and any plans for the removal of the toxicity. The TRE must be consistent with EPA guidance or subsequent procedures approved by the MPCA in attempting to identify and remove the source of the toxicity. [Minn. R. 7001.0150 subp. 3(J)]
	6.3.19	During the TRE, the Permittee shall continue the quarterly chronic toxicity test batteries required in this permit section. Amendments to the initial TRE and the schedules contained therein must be approved by MPCA staff . [Minn. R. 7001.0150 subp. 2(A)]
	6.3.20	**WET Data and Test Acceptability Criteria (TAC) Submittal. [Minn. R. 7001]**
	6.3.21	All WET test data and TAC must be submitted to the MPCA by the dates required by this section of the permit using the Minnesota Pollution Control Agency Ceriodaphnia dubia Chronic Toxicity Test Report and/or Minnesota Pollution Control Agency Fathead Minnow Chronic Toxicity Test Report and associated instruction forms. Data not submitted on the correct form(s), or submitted incomplete, will be returned to the permittee and deemed incomplete until adequately submitted on the designated form (identified above). Data should be submitted to: MPCA Attn: WQ Submittals Center 520 Lafayette Road North St. Paul, Minnesota 55155-4194. [Minn. R. 7001.0150 subp. 2(B)]
	6.3.22	**Permit Re-opening for WET. [Minn. R. 7001]**
	6.3.23	Based on the results of the testing, the permit may be modified to include additional toxicity testing and a whole effluent toxicity limit. [Minn. R. 7001.0170, 7001.0190]
	6.3.24	**Whole Effluent Toxicity Requirement Definitions. [Minn. R. 7001]**
	6.3.25	"Chronic Whole Effluent Toxicity (WET) Test is a static renewal test conducted on an exponentially diluted series of effluent. The purpose is to calculate appropriate biological effect endpoints (NOEC or IC25), specified in the referenced chronic manual. A statistical effect level less than the Receiving Water Concentration (RWC) constitutes a positive test for chronic toxicity. The RWC equals the 100 percent effluent concentration or 1.0 TUc. [Minn. R. 7001]
	6.3.26	"Chronic toxic unit (TUc)" is the reciprocal of the effluent dilution that causes no unacceptable effect on the test organisms by the end of the chronic exposure period. For example, a TUc equals [7Q10 flow (mgd) + effluent average dry weather flow (mgd)]/[effluent average dry weather flow (mgd)]. [Minn. R. 7001]

	6.3.27	"Test" refers to an individual species. [Minn. R. 7001]
	6.3.28	"Test Battery" consists of WET testing of all test species for the specified test. For chronic WET testing, all test species includes Fathead minnows and ceriodaphnia dubia. [Minn. R. 7001]
SW003, SW005 – SW008; SW020, SW402, SW407 - SW414	**Surface Water Monitoring**	
	6.4.0	**Facility Specific Limit and Monitoring Requirements**
	6.4.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.2	**Sampling Location – Plant Site. [Minn. R. 7001.0150, Subp. 2(B)]**
	6.4.3	Samples for Station SW003 must be taken in Unnamed Creek downstream of the FTB Seepage Containment System at the PM-11 monitoring location. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.4	Samples for Station SW005 must be taken in the Embarrass River downstream of the FTB at the PM-13 monitoring location. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.5	Samples for Station SW006 must be taken in Trimble Creek downstream of the FTB Seepage Containment System at the TC-1a monitoring location. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.6	Samples for Station SW007 must be taken in Unnamed (Mud Lake) Creek downstream of the drainage swale and the FTB Seepage Containment System at the MLC-1 monitoring location. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.7	Samples for Station SW008 must be taken in the Embarrass River upstream of the FTB and downstream of Area 5 at the PM-12.2 monitoring location. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.8	Samples for Station SW020 must be taken in Second (Knox) Creek downstream of the FTB South Seepage Management System at monitoring location PM-7. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.9	**Sampling Location – Mine Site. [Minn. R. 7001.0150, Subp. 2(B)]**
	6.4.10	Samples for Station SW402 must be taken in the Partridge River upstream of the Mine Site at monitoring location PM-2. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.11	Samples for Station SW407 must be taken in Wetlegs Creek downstream of the Transportation and Utility Corridors at monitoring location WL-1. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.12	Samples for Station SW408 must be taken in Longnose Creek downstream of the Transportation and Utility Corridors at monitoring location LN-1. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.13	Samples for Station SW409 must be taken in Wyman Creek downstream of the Transportation and Utility Corridors at monitoring location PM-5. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.14	Samples for Station SW410 must be taken in the Wyman Creek upstream of the Transportation and Utility Corridors at monitoring location PM-6B. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.15	Samples for Station SW411 must be taken in the Longnose Creek upstream of the Transportation and Utility Corridors at monitoring location LN-2. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.16	Samples for Station SW412 must be taken in the Wetlegs Creek upstream of the Transportation and Utility Corridors at monitoring location WL-2. [Minn. R. 7001.0150, Subp. 2(B)]
	6.4.17	Samples for Station SW413 must be taken in the Partridge River upstream of the South Branch and downstream of Unnamed Creek at monitoring location SW004c. [Minn. R. 7001.0150, Subp. 2(B)]
	NEW	Samples for Station SW414 must be taken in the West Pit Outlet Creek downstream of the Transportation and Utility Corridor at monitoring location WP-1. [Minn. R. 7001.0150, Subp. 2(B)]

	6.4.18	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]
WS001 – WS005; WS009, WS015, WS072 – WS074; WS401 – WS404; WS411 – WS416; WS421 – WS425	**Internal Waste Stream Monitoring**	
	6.5.0	**Facility Specific Limit and Monitoring Requirements**
	6.5.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.2	**Sampling Location – Plant Site. [Minn. R. 7001.0150, Subp. 2(B)]**
	6.5.3	Samples for Station WS001 must be taken at a point representative of the waste stream in the FTB Pond and must be taken at the FTB Pond intake. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.4	Samples for Station WS002 must be taken at a point representative of the waste stream from the FTB Seepage Containment System and must be taken at the WWTS intake. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.5	Samples for Station WS003 must be taken at a point representative of the waste stream from the FTB South Seepage Management system and must be taken at the WWTS intake. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.6	Samples for Station WS004 must monitor the waste stream in the HRF Pond and must be taken at the HRF Pond intake. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.7	Samples for Station WS005 must monitor the waste stream from the HRF Leakage Collection System and must be representative of underliner leakage. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.8	Samples for Station WS009 must be taken at a point representative of the waste stream from the Sewage Treatment Stabilization Ponds to the FTB Pond. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.9	Samples for Station WS015 must be taken at a point representative of the combined influent to the WWTS from the FTB Seepage Containment System and the FTB South Seepage Management System. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.10	Samples for Station WS072 must be taken at a point representative of the effluent from the mine water chemical precipitation treatment train. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.11	Samples for Station WS073 must be taken at a point representative of the effluent from the mine water membrane filtration treatment train. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.12	Samples for Station WS074 must monitor the blended effluents from the reverse osmosis and nanofiltration membranes of the tailings basin seepage treatment train, upstream of the effluent stabilization process. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.13	**Sampling Location – Mine Site. [Minn. R. 7001.0150, Subp. 2(B)]**
	6.5.14	Samples for Stations WS401, WS402, WS403, and WS404 must be taken at points representative of mine pit dewatering. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.15	Samples for Stations WS411 and WS412 must be taken at points representative of the waste stream from the Category 1 Stockpile Groundwater Containment Sump. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.16	Samples for Station WS413 must be representative of the waste stream at the OSLA runoff and must be taken at the OSLA Pond. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.17	Samples for Station WS414 must be taken at the Construction Mine Water Basin and must be representative of the combined flow of construction mine water and OSLA runoff that is

		routed to the FTB via the Construction Mine Water Pipeline. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.18	Samples for Station WS415 must be taken at the Low Concentration Equalization Basins that goes to the WWTS via the Low Concentration Pipeline. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.19	Samples for Station WS416 must be taken at the High Concentration Equalization Basin that goes to the WWTS via the High Concentration Pipeline. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.20	Samples for Stations WS421, WS422, and WS423 must be taken at points representative of the waste stream collected from the Category 2/3 Waste Rock Stockpile Liners. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.21	Samples for Station WS424 must be taken at a point representative of the waste stream collected from the Category 4 Waste Rock Stockpile Liner. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.22	Samples for Station WS425 must be taken a point representative of the waste stream from the OSP Liner. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.23	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]
	6.6.0	**Groundwater Station General Requirements**
	6.6.1	**Analysis Requirements. [Minn. R. 7001]**
	6.6.2	Dissolved Oxygen, pH, and Specific Conductance analyses must be conducted within 15 minutes of Sample collection. [Minn. R. 7053.0155]
	6.6.3	**Monitoring Wells. [Minn. R. 7001]**
	6.6.4	The Permittee shall install, maintain and abandon groundwater monitoring wells according to the Minnesota Water Well Construction Code, Minnesota Rules, ch. 4725. Damaged or improperly constructed monitoring wells must be repaired or properly abandoned and replaced. Information on licensed water well contractors is available from the Minnesota Department of Health. [Minn. R. 4725]
	6.6.5	The Permittee shall submit a detailed monitoring well log for each new monitoring well at the facility and a detailed US Geological Survey topographical map identifying the location of each well. [Minn. R. 7001]
	6.6.6	Each monitoring well must be clearly numbered on the outside of the well with either indelible paint or an inscribed number. [Minn. R. 7001]
	6.6.7	The monitoring wells must be sampled in accordance with "Minnesota Pollution Control Agency, Water Quality Division: Sampling Procedures for Ground Water Monitoring Wells, July 1997, Reviewed and re-approved September 2006" or any updates to this document. A copy of this publication is available on the MPCA website at: http://www.pca.state.mn.us. [Minn. R. 7001]
	6.6.8	Grab samples must be collected at all groundwater monitoring points (lysimeters or wells) after stabilization tests are conducted. [Minn. R. 7001]
	6.6.9	Prior to well purging and sampling, depths to groundwater must be measured to the nearest 0.01 foot below the top of the well casing, and groundwater elevations must be reported to the nearest 0.01 foot above mean sea level. [Minn. R. 7001]
	6.6.10	Temperature, specific conductance and pH must be reported as the final field measurements from well stabilization. [Minn. R. 7001]
	6.7.0	**Surface Discharge Station General Requirements**
	6.7.1	**Analysis Requirements. [Minn. R. 7001]**
	6.7.2	Dissolved Oxygen, pH, and Specific Conductance analyses must be conducted within 15 minutes of Sample collection. [Minn. R. 7053.0155]

	6.7.3	**Representative Samples. [Minn. R. 7001]**
	6.7.4	Samples and measurements required by this permit must be representative of the monitored activity. [Minn. R. 7001.0150 subp. 2(B)]
	6.7.5	**Surface Discharge Prohibitions. [Minn. R. 7001]**
	6.7.6	Floating solids or visible foam must not be discharged in other than trace amounts. [Minn. R. 7050.0210]
	6.7.7	Oil or other substances must not be discharged in amounts that create a visible color film. [Minn. R. 7001]
	6.7.8	The Permittee must install and maintain outlet protection measures at the discharge stations to prevent erosion. [Minn. R. 7001]
	6.7.9	**Winter Sampling Conditions. [Minn. R. 7001]**
	6.7.10	The Permittee shall sample flows at the designated monitoring stations including when this requires removing ice to sample the water. If the station is completely frozen throughout a designated sampling month, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR) and note the ice conditions in Comments on the DMR. [Minn. R. 7001]
	6.7.11	**Mercury Limits and Monitoring Requirements. [Minn. R. 7001]**
	6.7.12	The Permittee is required to sample for TSS (grab sample) at the same time that Total/Dissolved Mercury samples are taken. Total Mercury, Dissolved Mercury, and TSS (grab sample) samples must be collected via grab samples. All results must be recorded on DMRs. [Minn. R. 7001]
	6.7.13	Total and Dissolved Mercury samples must be analyzed using the most current versions of EPA Method 1631 with clean techniques method 1669. Should another mercury analytical method that has a reportable quantitation level of <0.5 ng/L that allows for low-level sample characterization be approved by the EPA and certified by an MPCA recognized accreditation body, the method may be used in place of 1631/1669. [Minn. R. 7001]
	NEW	**Mercury Minimization Plan**
	NEW	The Permittee is required to complete and submit a Mercury Pollutant Minimization Plan (MMP) to the MPCA as detailed in this section. If the Permittee has previously submitted a MMP, it shall update its MMP and submit the updated MMP to the MPCA. The purpose of the MMP is to evaluate collection and treatment systems to determine possible sources of mercury as well as potential mercury reduction options. Guidelines for developing a MMP are detailed in this section. [Minn. R. 7001] -
	NEW	The specific mercury monitoring requirements are detailed in the limits and monitoring section of this permit. Information gained through the MMP process can be used to reduce mercury concentrations. As part of its mercury control strategy, the Permittee should consider selecting activities based on the potential of those activities to reduce mercury loadings to the wastewater treatment facility. [Minn. R. 7001] -
	NEW	The Permittee shall submit a mercury pollutant minimization plan: Due by 180 days after permit issuance. [Minn. R. 7001] -
	NEW	At a minimum, the MMP shall include the following: a. A summary of mercury influent and effluent concentrations using the most recent five years of monitoring data, if available. b. Identification of existing and potential sources of mercury concentrations and/or loading to the WWTS. As appropriate for your facility, you should consider influent mercury sources, such as stormwater inputs, ground water inputs, lift station components, and waste streams contributing to the WWTS. c. An evaluation of potential WWTS operations to determine those operating procedures that maximize mercury removal. d. A plan to implement mercury management and reduction measures during the next five years. [Minn. R. 7001] -
	NEW	The Permittee shall submit an annual mercury pollutant minimization plan (MMP) update: Due annually, by the 1st of March following MPCA approval of the MMP. Submit the MMP to the MPCA Water Quality Submittals Center. [Minn. R. 7052] -
	NEW	The annual report shall include, at a minimum: a. All minimization program monitoring results for the year. b. A list of potential sources of mercury to the WWTS. c. A summary of all actions taken to meet the effluent limit for mercury. d. Any updates of the mercury minimization strategy. [Minn. R. 7052] -
	6.7.14	**Nitrogen Limits and Monitoring Requirements. [Minn. R. 7001]**

	6.7.15	"Total Nitrogen" is to be reported as the summation of the Total Kjeldahl Nitrogen and Total Nitrite plus Nitrate Nitrogen values. [Minn. R. 7001]
	6.8.0	**Surface Water Station General Requirements**
	6.8.1	**Analysis Requirements. [Minn. R. 7001]**
	6.8.2	Dissolved Oxygen, pH, and Specific Conductance analyses must be conducted within 15 minutes of Sample collection. [Minn. R. 7053]
	6.8.3	**Sampling Protocol. [Minn. R. 7001]**
	6.8.4	Samples must be taken at mid-stream, mid-depth. Record location, date, time and results for each sample on the supplemental Discharge Monitoring Report form. [Minn. R. 7001]
	6.8.5	All instruments used for field measurements must be maintained and calibrated to insure accuracy of measurements. [Minn. R. 7001]
	6.8.6	Sample water must be preserved according to lab instructions and delivered to a certified lab within the maximum holding times. [Minn. R. 7001]
	6.8.7	**Winter Sampling Conditions. [Minn. R. 7001]**
	6.8.8	The Permittee shall sample flows at the designated monitoring stations including when this requires removing ice to sample the water. If the station is completely frozen throughout a designated sampling month, the Permittee shall check the "No Flow" box on the Discharge Monitoring Report (DMR) and note the ice conditions in Comments on the DMR. [Minn. R. 7001]
	6.9.0	**Waste Stream Station General Requirements**
	6.9.1	**Analysis Requirements. [Minn. R. 7001]**
	6.9.2	Dissolved Oxygen, pH, and Specific Conductance analyses must be conducted within 15 minutes of Sample collection. [Minn. R. 7053]
	6.9.3	**Representative Samples. [Minn. R. 7001]**
	6.9.4	Grab and composite samples must be collected at a point representative of total influent flow to the system. [Minn. R. 7001]
	6.10.0	**Special Requirements**
	6.10.1	**40 CFR 440 Allowable Discharge [40 CFR § 440.104(b)(2)(i)]**
	6.10.2	The Permittee is authorized to discharge through Surface Discharge Stations SD002 – SD011 an amount no more than the annual net precipitation from the facility plus the annual mine drainage during each calendar year.
	6.10.3	Mine drainage is an allowable discharge as defined in 40 CFR § 440.132(h) and is included in the allowable discharge volume. Mine drainage must not be directly discharged at the Mine Site, but an amount of treated mine water may be discharged through Stations SD002 – SD011 equal to the amount of the annual mine drainage.
	6.10.4	Allowable discharge must be determined as follows: Da = Y + Dm Where: Da = Allowable discharge Y = Annual net precipitation Dm = Mine drainage

	6.10.5	The annual net precipitation must be determined as follows: Y = (Af x P) - (At x E) where: Y = annual net precipitation Af = area of the Tailings Basin (FTB + Cell 2W), plus the drainage area contributing surface runoff to the Tailings Basin and to the FTB seepage capture systems. P = total annual precipitation At = open water area of the Tailings Basin E= annual reservoir evaporation
	6.10.6	The total annual precipitation and the annual reservoir evaporation must be determined from either meteorological data collected by the Permittee at the Project site, or from the local precipitation values estimated from data collected at Hoyt Lakes area measurement stations and "Mean Annual Lake Evaporation" values shown in the "Climatic Atlas of the United States" published by the U.S. Department of Commerce.
	6.10.7	The annual mine drainage (Dm) must be determined as the sum of the following flows: • OSLA runoff and construction mine water (WS414) • Mine pit dewatering and other flows routed to the Low Concentration Equalization Basin (WS415) • Waste Rock Stockpile and Ore Surge Pile Drainage and other flows routed to the High Concentration Equalization Basin (WS416)
	6.10.8	If the Permittee does not discharge through outfalls SD002 – SD011 the volume equivalent to the allowable annual discharge volume in a given calendar year, then the Permittee may carry over the difference between the allowable annual discharge volume and the actual volume discharged as a credit to the allowable annual discharge volume for the following calendar year. Such credit may be carried over only to that calendar year immediately following the year in which not all of the allowable annual discharge volume was utilized. In no case shall the volume of water discharged in a calendar year exceed 4060 million gallons.
	6.10.9	The total precipitation and total evaporation records must be reported in the Comprehensive Annual Performance Evaluation Report described in Parts 6.10.72 to 6.10.74 of this permit. The Comprehensive Annual Performance Evaluation Report must also include the net annual precipitation volume and the annual mine drainage volume compared to the volume of water discharged through Outfalls SD002 – SD011. [Minn. R. 7001.0150 subp. 3(H)]
		No Unauthorized Discharge to Surface Waters – Plant Site
	6.10.26	Direct discharge to surface waters from the FTB pond and the FTB Seepage Containment System is prohibited. All water collected from the FTB Seepage Containment System must either be pumped back to the FTB or routed to the WWTS.
	NEW	Direct discharge to surface waters from the South Seepage Management System to former Cliffs Erie outfall SD026 is prohibited. All water collected from the South Seepage Management System must either be pumped back to the FTB or routed to the WWTS.
	NEW	**FTB Seepage Containment Systems - Construction**
	NEW	The Permittee shall construct the FTB Seepage Containment System to include a low permeability cutoff wall keyed into bedrock, a subgrade collection and sump system on the inward side of the cutoff wall, and pumping capable of removing collected water to the WWTS and/or the FTB. The cutoff wall shall be no less than one foot in thickness and have a maximum permeability of $1x10^{-6}$ cm/sec, or equivalent as approved by MPCA. The FTB Seepage Containment System shall be constructed and operated so as to maintain an inward hydraulic gradient across the cutoff wall.
	NEW	Proposed design changes to the FTB Seepage Containment System prior to construction, or at any time thereafter, must be submitted to MPCA for review and approval if the changes will alter the basic design described above. In accordance with

		Minn. R. 7001.0170, design changes may require a modification of the permit, including a public notice of the proposed modifications.
	NEW	The Permittee shall construct the FTB South Seepage Management System as an upgrade or replacement of the existing temporary surface seepage pumpback system located upstream of former Cliffs Erie outfall SD026. The South Seepage Management System shall be designed, constructed, and operated to collect seepage from the FTB in this area such that there will be no direct discharge of seepage to surface waters.
	NEW	The Permittee shall submit the following documents for the FTB Seepage Containment System and the FTB South Seepage Management System to the MPCA within one year after the date of initiation of operation: a. A signed certification by a professional engineer registered in the State of Minnesota stating that the seepage capture system, as constructed, meets the design performance standards. b. A certificate of completion of an operation and maintenance manual. At a minimum this must include a detailed discussion of operational controls, maintenance, sampling and analysis, and problem mitigation. This manual must be maintained and updated regularly as needed and reviewed at least annually and made available to the MPCA staff upon request. c. As-built drawings and QA/QC test results must be submitted to the MPCA in the format outlined in the MPCA fact sheet titled: "Wastewater Treatment Facility Construction Record Documents: As-Built Submittal Requirements." The document is located on the MPCA web page at: http://www.pca.state.mn.us/sites/default/files/wq-wwtp5-87.pdf.
	6.10.10	**FTB Seepage Containment System - Water Management during Construction**
	6.10.11	The Permittee is prohibited from depositing nonferrous tailings in the FTB until the FTB Seepage Containment System along the northern, northwestern, and western sides of the FTB is fully constructed and operating. [Minn. R. 7001]
	6.10.12	The Permittee shall not merge Cells 2E and 1E until the portion of the FTB Seepage Containment System on the eastern side of the FTB is fully constructed and operating. [Minn. R. 7001]
	NEW	A segment of the FTB Seepage Containment System (i.e., the northern, northwestern and western segment or the eastern segment) is considered to be fully constructed and operating when construction of that segment is complete and the Permittee has demonstrated that the segment is capable of collecting and routing FTB seepage for treatment at the WWTS or for temporary storage in the FTB.
	6.10.13	The Permittee is required to obtain coverage under, and follow the requirements of the Minnesota General Construction Stormwater permit for construction of the FTB Seepage Containment System. Water encountered during construction of the FTB Seepage Containment System must be managed as *construction stormwater.* [Minn. R. 7001]
	6.10.14	The Permittee shall notify the MPCA within 14 days of completion of construction of the FTB Seepage Containment System. [Minn. R. 7001]
	6.10.15	The Permittee shall notify the MPCA within 14 days of initiation of operation of the FTB Seepage Containment System and the introduction of nonferrous tailings to the FTB.
	6.10.25	**FTB Seepage Containment System - Operation**
	6.10.27	The Permittee shall maintain a system of paired monitoring wells and paired piezometers, with one well or piezometer located along the exterior side of the containment system and one located along the interior side at the FTB Seepage Containment System.
	6.10.28	The Permittee shall maintain an inward hydraulic gradient across the FTB Seepage Containment System as determined from water level measurements from the paired monitoring wells and piezometers.
	6.10.29	If a decrease in pumping rate occurs, or if monitoring detects an outward hydraulic gradient

		in the well/piezometer system, the Permittee shall document the decrease in pumping rate on the monthly DMR and shall immediately commence mitigation measures which include: a. Sampling of the affected paired monitoring wells/piezometers once per week for three weeks for water level, total sulfate (as SO4), TDS, specific conductance and total chloride b. Inspection of the containment system c. Assessment of quantity of seepage released, if any d. Pumping from interior wells (FTB side) of the containment system as needed to reestablish an inward gradient e. Removal of ponded water on the inward side (FTB side) of the containment system as needed f. Timely replacement, repair or supplementation of pipes and/or pumps as needed g. Expansion, upgrade or repair of the cutoff wall as needed h. Implementation of other Agency approved adaptive management or mitigation measures, as appropriate. Adaptive management or mitigation measures may include those identified above. All proposed adaptive management or mitigation measures are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, adaptive management or mitigation measures may require a modification of the permit, including a public notice of the proposed modifications.
	NEW	If an inward hydraulic gradient is re-established within 14-days following the detection of an outward gradient, the detection of an outward gradient shall not be considered a violation of the permit. In no case, however, is an overflow from the FTB Seepage Containment System that results in a direct discharge to surface waters authorized.
	6.10.30	If mitigation is required under Part 6.10.29, within 30 days following the resumption of an inward hydraulic gradient across paired wells/piezometers, the Permittee shall submit a Seepage Containment System Corrective Action Evaluation Report. The Corrective Action Evaluation Report must include, at a minimum: a. Trend and intrawell two-sample testing results b. Evaluation of potential causes of the change in groundwater flow and pumping rates c. Identification of steps to prevent the outward hydraulic gradient from reoccurring .
		FTB Seepage Containment System & South Seepage Management System – System Redundancy
	NEW	The Permittee shall maintain on site an inventory of essential spare or replacement components for the FTB Seepage Containment System and the South Seepage Management System that can be utilized to avoid or minimize downtime in the event of system malfunction. Essential components include, at a minimum, redundant pumping capacity, spare piping and other replacement parts needed to restore operation in the shortest time possible and to prevent an unauthorized discharge. In lieu of maintaining spare components on site, the Permittee may provide evidence in the Annual Comprehensive Performance Evaluation Report of confirmed local/regional availability of essential spare or replacement parts that can be mobilized to the site within a 48-hour period of such need being identified.
	6.10.16	**No Unauthorized Discharge to Surface Waters – Mine Site**
	6.10.17	The Permittee shall not directly discharge any mine water or other process wastewater from the Mine Site to surface waters. All mine water or other process wastewater from the Mine Site must be routed to the Equalization Basins and pumped to the Plant Site for treatment or

		storage in the FTB.
	6.10.18	The Permittee shall perform routine inspection and maintenance on all parts of the infrastructure at the Mine Site to ensure that a direct discharge of any mine water or other process wastewater to surface waters does not occur.
	NEW	***Category 1 Waste Rock Stockpile Groundwater Containment System – Construction***
	NEW	The Permittee shall construct the Category 1 Waste Rock Stockpile Groundwater Containment System to include a low permeability cutoff wall keyed into bedrock, a subgrade collection and sump system on the inward side of the cutoff wall, and pumping capable of removing collected water to the Equalization Basins for subsequent treatment at the WWTS. The cutoff wall shall be no less than two feet in thickness and have a maximum permeability of $1x10^{-5}$ cm/sec, or equivalent as approved by MPCA. The FTB Seepage Containment System shall be constructed and operated so as to maintain an inward hydraulic gradient across the cutoff wall.
	NEW	Proposed design changes to the Category 1 Waste Rock Stockpile Groundwater Containment System prior to construction, or at any time thereafter, must be submitted to MPCA for review and approval if the changes will alter the basic design described above. In accordance with Minn. R. 7001.0170, design changes may require a modification of the permit, including a public notice of the proposed modifications.
	NEW	The Permittee shall submit the following documents for the Category 1 Waste Rock Stockpile Groundwater Containment System to the MPCA within one year after the date of completion of construction: a. A signed certification by a professional engineer registered in the State of Minnesota stating that the containment system, as constructed, meets the design performance standards. b. A certificate of completion of an operation and maintenance manual. At a minimum, this must include a detailed discussion of operational controls, maintenance, sampling and analysis, and problem mitigation, This manual must be maintained and updated regularly as needed and reviewed at least annually and made available to the MPCA staff upon request. c. As-built drawings and QA/QC test results must be submitted to the MPCA in the format outlined in the MPCA fact sheet titled: "Wastewater Treatment Facility Construction Record Documents: As-Built Submittal Requirements." The document is located on the MPCA web page at: http://www.pca.state.mn.us/sites/default/files/wq-wwtp5-87.pdf.
	6.10.19	***Category 1 Waste Rock Stockpile Groundwater Containment System - Operation***
	6.10.20	All water collected from the Category 1 Waste Rock Stockpile must be collected by the Category 1 Stockpile Groundwater Containment System and routed to the WWTS, with the exception of stormwater from the reclaimed portions of the stockpile. The Permittee shall maintain the following at the Category 1 Waste Rock Stockpile: a. A groundwater containment system consisting of a low-permeability hydraulic barrier (cutoff wall) combined with an interior drainage collection system. The containment system shall be constructed incrementally as planned until the completed stockpile footprint is fully surrounded by the containment system. b. A system of alternating paired monitoring wells and paired piezometers along the containment system with one well or piezometer located along the exterior side of the containment system and one located along the interior side.

	6.10.21	The Permittee shall maintain an inward hydraulic gradient across the Category 1 Waste Rock Stockpile Groundwater Containment System as determined by comparing water level measurements from the paired monitoring wells and piezometers. If monitoring detects an outward hydraulic gradient in the well/piezometer system, the Permittee shall immediately commence mitigation measures which include: a. Sampling of the affected paired monitoring wells/piezometers once per week for three weeks for water level, total sulfate (as SO4), TDS, specific conductance and total chloride b. Inspection of the containment system c. Assessment of quantity of seepage released, if any d. Pumping from interior wells (stockpile side) of the containment system as needed e. Removal of ponded water on the inward side (stockpile side) of the containment system as needed f. Timely repair of pipes and/or pumps as needed g. Expansion or repair of the cutoff wall as needed h. Implementation of other Agency approved adaptive management or mitigation measures, as appropriate. Adaptive management or mitigation measures may include those identified above. All proposed adaptive management or mitigation measures are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, adaptive management or mitigation measures may require a modification of the permit, including a public notice of the proposed modifications.
	NEW	If an inward hydraulic gradient is re-established within 14-days following the detection of an outward gradient, the detection of an outward gradient shall not be considered a violation of the permit. In no case, however, is an overflow from the Groundwater Containment System that results in a direct discharge to surface waters authorized. To ensure that an unauthorized discharge does not occur under an extreme rainfall event, water levels from the paired piezometers and monitoring wells shall be monitored weekly for three weeks following a rainfall event equal to or greater than the 100-year, 24-hour storm event.
	6.10.22	***Category 2/3 Waste Rock Stockpile, Category 4 Waste Rock Stockpile, OSLA, and Ore Surge Pile***
	NEW	The Permittee shall construct an engineered liner system for the Category 2/3 Waste Rock Stockpile that includes a foundation, an underdrain/sump system (if needed to address existing groundwater conditions), a composite liner barrier with a maximum permeability of $1x10^{-5}$ cm/sec for the soil component of the liner, and an overliner drainage layer with mine water sumps, or equivalent system as approved by MPCA.
	NEW	The Permittee shall construct engineered liner systems for the Category 4 Waste Rock Stockpile and Ore Surge Pile that includes of a foundation, an underdrain/sump system (if needed to address existing groundwater conditions), a composite liner barrier with a maximum permeability of $1x10^{-6}$ cm/sec for the soil component of the liner, and an overliner drainage layer with mine water sumps, or equivalent system as approved by MPCA.
	NEW	The Permittee shall submit the following documents for the Category 2/3 and Category 4 Waste Rock Stockpiles and the Ore Surge Pile to the MPCA within one year after the date of completion of installation: a. A signed certification by a professional engineer registered in the State of Minnesota stating that the stockpile liner systems, as constructed, meet the design performance standards. b. A certificate of completion of an operation and maintenance manual. At a minimum this must include a detailed discussion of operational controls, maintenance, sampling and analysis, and problem mitigation. This manual must be maintained and updated regularly and made available to the MPCA staff upon request.

		c. As-built drawings and QA/QC test results must be submitted to the MPCA in the format outlined in the MPCA fact sheet titled: "Wastewater Treatment Facility Construction Record Documents: As-Built Submittal Requirements." The document is located on the MPCA web page at: http://www.pca.state.mn.us/sites/default/files/wq-wwtp5-87.pdf.
	6.10.23	The Permittee shall operate and maintain its engineering controls associated with these infrastructure facilities to ensure there is no direct discharge of mine water or other process wastewater to surface waters from the Mine Site. These engineering controls may include, among other things, liner systems, sumps, underdrains (if used), ponds, pumps, and pipelines.
	6.10.24	If the Permittee discovers the sump systems at the Category 2/3 Waste Rock Stockpile, Category 4 Waste Rock Stockpile, or Ore Surge Pile has any leakage, the Permittee shall capture the leakage and route it to the WWTS.

	NEW	**WWTS - Construction**
	NEW	The Permittee shall construct the Wastewater Treatment System to include a mine water treatment train utilizing lime precipitation and nanofiltration membrane technologies and a FTB seepage treatment train utilizing greensand filtration and a combination of nanofiltration and reverse osmosis membrane technologies.
	NEW	Proposed design changes to the WWTS prior to construction, or at any time thereafter, must be submitted to MPCA for review and approval if the changes will alter the basic design described above. In accordance with Minn. R. 7001.0170, design changes may require a modification of the permit, including a public notice of the proposed modifications.
	NEW	The Permittee shall submit the following documents for the Wastewater Treatment System to the MPCA within one year after the date of initiation of operation: a. A signed certification by a professional engineer registered in the state of Minnesota stating that the WWTS, as constructed, meets the design performance standards. b. A certificate of completion of an operation and maintenance manual. At a minimum this must include a detailed discussion of operational controls, maintenance, sampling and analysis, and problem mitigation. This manual must be maintained and updated regularly and made available to the MPCA staff upon request. c. As-built drawings and QA/QC test results must be submitted to the MPCA in the format outlined in the MPCA fact sheet titled: "Wastewater Treatment Facility Construction Record Documents: As-Built Submittal Requirements." The document is located on the MPCA web page at: http://www.pca.state.mn.us/sites/default/files/wq-wwtp5-87.pdf.
	NEW	The Permittee shall notify the MPCA within 14 days of commencement of discharge from the WWTS through outfall SD001 [Minn. R. 7001]
	6.10.31	**WWTS Performance Monitoring - Sulfate**
	6.10.32	The Permittee is required to sample for sulfate at an internal performance monitoring station established within the WWTS at a point located after the permeate streams from the reverse osmosis and the nanofiltration membranes are blended and prior to effluent stabilization (monitoring station WS074).
	6.10.33	So that the sulfate concentration as measured at WS074 is representative of the discharge of treated effluent through Outfall SD001, no sulfate may be added to the treated wastewater during the effluent stabilization process (i.e., between monitoring station WS074 and Outfall SD001). The Permittee shall certify in the comments section on its DMR for SD001 that no sulfate has been added during the effluent stabilization process.

	6.10.34	The Permittee shall meet an Operating Limit of 10 mg/L sulfate. The Operating Limit applies to the rolling average annual sulfate concentration at WS074 (calculated as the rolling average of the most recent 12 calendar monthly average sulfate values). Exceedance of the Operating Limit is a violation of this permit.
	6.10.35	The Permittee shall meet an Operating Target of 9 mg/L sulfate. The Operating Target applies to the calendar monthly average sulfate concentration at WS074 (calculated as the average of all sulfate samples taken at WS074 during the calendar month). The Operating Target of 9 mg/L sulfate is defined as an intervention limit that triggers preventative actions (described in Part 6.10.37 below) to help ensure the Operating Limit for sulfate is not exceeded. Exceedance of the Operating Target for sulfate is not a violation of this permit.
	6.10.36	If sampling by the Permittee at monitoring station WS074 indicates an exceedance of the Operating Target for sulfate concentration, the Permittee shall conduct the following: a. Provide notification to the MPCA as a comment on the monthly Discharge Monitoring Report. b. Immediately implement investigation and contingency mitigation measures as required by the Sulfate Reduction Evaluation Plan (described in Parts 6.10.37 and 6.10.38 below) to reduce sulfate concentrations below the Operating Target. c. Within 60 days of the exceedance of the Operating Target provide a written report to the MPCA describing the cause of the exceedance, the steps taken to resolve the exceedance and the date at which conformance with the Operating Target was re-achieved.
	6.10.37	The Permittee is required to submit a proposed Sulfate Reduction Evaluation Plan (Plan) to the MPCA within 365 days after permit issuance. The Plan shall include, but is not limited to:
		a. How the Permittee proposes to evaluate the treatment process to ensure sulfate reduction at the WWTS, b. Testing to be performed to diagnose any observed performance issues, and c. A list of contingency mitigation options to restore performance and achieve results at or below the Operating Target in the event the Operating Target sulfate concentration of 9 mg/L is exceeded. The list must, at a minimum, include: the transfer of water from reverse osmosis membranes to nanofiltration units or vice versa, the completion of a Clean in Place process, pressure checks of the membrane modules, and replacement of the membrane modules. The Plan must describe the operating conditions or circumstances under which each option would be taken and a schedule to implement the various options.
	6.10.38	The Plan and schedule are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the Plan. The Permittee must update the Plan to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the Plan. The Permittee must update the Plan to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.39	If sampling by the Permittee at monitoring station WS074 indicates an exceedance of the Operating Target for sulfate, the Permittee shall initiate the plan of action identified in the Sulfate Reduction Evaluation Plan in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 14 days of receiving laboratory results that indicate an exceedance of the Operating Target.
	6.10.40	**WWTS Performance Monitoring - Metals**
	6.10.41	The Permittee is required to sample for total copper, arsenic, cobalt, lead, nickel, and mercury at an internal performance monitoring station established within the WWTS at a point located after the permeate streams from the reverse osmosis and the nanofiltration membranes are blended and prior to effluent stabilization (monitoring station WS074).

	6.10.42	The Permittee shall meet a monthly average Operating Limit for total copper, arsenic, cobalt, lead, nickel and mercury at monitoring station WS074 (calculated as the average of each metal sample taken at WS074 during the calendar month). Exceedance of the Operating Limit as listed in the Limits and Monitoring Section at Station WS074 is a violation of this permit.
	6.10.43	So that the copper and mercury concentrations as measured at monitoring station WS074 are representative of the discharge of treated effluent through Outfall SD001, no copper or mercury may be added to the treated wastewater during the effluent stabilization process (i.e., between monitoring station WS074 and Outfall SD001).
	NEW	**WWTS Effluent Stabilization Process**
	NEW	Permeate stabilization must occur after permeates from the reverse osmosis and nanofiltration processes mix and prior to the discharge. The addition of any aluminum to the effluent stabilization process (i.e., between monitoring station WS074 and Outfall SD001) is prohibited. The Permittee shall certify in the comments section on its DMR for SD001 that no aluminum has been added during the effluent stabilization process.
	6.10.45	**Attenuation of Legacy Pollutants**
	6.10.46	The Permittee shall operate and maintain the existing pumpback systems for the former LTVSMC tailings basin located at NPDES/SDS Permit MN0054089 outfalls SD004, SD006 and SD026 at the Plant Site until operation of the WWTS is initiated.
	6.10.47	The Permittee is required to notify the MPCA that the WWTS has initiated operation within 7 days after initiation of operation of the WWTS.
	6.10.48	The Permittee shall notify the MPCA that operation of the pump-back system(s) have ceased within 7 days of cessation of operation of the pump-back system(s) located at NPDES/SDS Permit MN0054089 outfalls SD004, SD006 and/or SD026.
	6.10.49	The Permittee shall begin sampling of the waters downstream of the Plant Site (SW003, SW005, SW006, SW007, and SW020) 18 months after initiation of operation of the WWTS as described in the Limits & Monitoring Section of this permit. The Permittee is required to notify the MPCA when 17-months has passed after the initiation of operation of the WWTS
	6.10.50	**Model Verification**
	6.10.51	***Annual Report***
	6.10.52	The Permittee shall submit an Annual Model Verification Report assessing the performance of the probabilistic GoldSim models for the Mine and Plant Sites by comparing predicted water quality and quantity values against actual observed values. The Report must provide a detailed evaluation of the GoldSim models to reflect actual physical conditions and a comparison of the modeled and observed water quality and water quantity at major Project features including, but not limited to, stockpiles, Tailings Basin, groundwater, and downstream monitoring stations.
	6.10.53	The Annual Model Verification Report must compare monitoring data collected through the previous year to the values predicted by the GoldSim model as updated with actual inputs (e.g., climate, mine feature dimensions, material movement, waste rock sulfur content, inflow water quantity and quality, etc.). The Report must focus on key parameters including Project flows and concentrations of sulfate, chloride, copper and nickel, but must also include other constituents if available from monitoring results and if necessary to compare predicted and actual water quality and quantity.

	6.10.54	The Annual Model Verification Report must include, at a minimum: a. Discussion of observed flows and concentrations as compared to predicted GoldSim value ranges (P10 to P90 statistics, as updated) at critical evaluation locations, including mine pits, stockpile and seepage containment system sumps, collection ponds, and WWTS influents. The discussion must address whether observed flows and concentrations are within the range of previously predicted GoldSim values, as updated, at each comparison location. b. Discussion of predicted range of updated GoldSim values at downgradient groundwater locations as compared to the predicted range of future concentrations. The discussion must address whether the updated predicted future concentrations are within the range of those predicted by GoldSim in previous long-term impact assessments.
	6.10.55	For any observed values outside the range of values predicted by GoldSim (as updated), the Annual Model Verification Report must contain, at a minimum, an evaluation of the following: a. Comparison and discussion of the observed values to previously predicted project impacts. Do the observed values indicate the potential for increased Project impacts? b. Model assumptions as updated versus those reflected by the observed data. Are there indications that the model assumptions are incorrect? c. Evaluation of the effect of any changes to the mine plan that occurred after the GoldSim modeling was conducted. Are the observed values the result of mine plan changes that were not captured in the relevant GoldSim predictions? d. Potential future outcomes based on the actual conditions versus model predictions. Are the observed values indicative of potential undesirable or unacceptable future outcomes?
	6.10.56	Based on the evaluation of the items in Part 6.10.55 above, the Annual Model Verification Report must include a Work Plan for MPCA approval that proposes actions or responses that will be taken to address any deviations from GoldSim predictions identified by the evaluation required above. If the Permittee determines that the results of the evaluations above do not require any actions or responses and no Work Plan is needed, the Report must contain the specific rationale used to reach that determination. Work plans submitted as required by this permit are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, actions proposed by a submitted work plan may require a modification of the permit, including a public notice of the proposed modifications.
	6.10.57	Upon submittal of the Model Verification Work Plan for approval, the Permittee shall initiate the plan of action identified in the Work Plan in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 14 days of receipt of approval from the MPCA. The Work Plan and schedule are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the Work Plan. The Permittee must update the Work Plan to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the plan. The Permittee must update the Work Plan to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.58	The first Annual Model Verification Report must be submitted within 18 months of initiation of operation of the WWTS, then annually by May 31 of each year after permit issuance.
	6.10.59	***Five-Year Model Evaluation Report***
	6.10.60	The Permittee shall prepare a Five Year Model Evaluation Report (Report) which includes a comprehensive evaluation of the underlying conceptual models (e.g., XP-SWMM, MODFLOW, Geochemistry, etc.) and other supporting mathematical models that are used as inputs to the GoldSim models. The Report must compare monitoring data collected from the date of permit issuance to the values predicted by the conceptual models as updated with actual inputs (e.g., data from major mine feature and groundwater monitoring wells, stream flow data, waste characterization, WWTS data, etc.).

	6.10.61	The Five-Year Model Verification Report must be based on the MPCA-approved Work Plan described in Part 6.10.62.
	6.10.62	The Permittee shall submit a Five Year Model Evaluation Report Work Plan (Work Plan) for MPCA review and approval due at three years after permit issuance. The Work Plan must include, but is not limited to: a. Description of the underlying conceptual models to be evaluated and how they will be evaluated. b. The measures or performance standards against which each of the models will be evaluated. c. A discussion of how the model evaluations will collectively be considered to reach a conclusion on the performance of the GoldSim modelling. d. The process for assessing whether the modeling evaluations warrant the need for adaptive management measures, contingency actions and/or other mitigations. All proposed adaptive management, work plans or mitigation measures are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, adaptive management, mitigation measures, or actions described in work plans may require a modification of the permit, including a public notice of the proposed modifications.
	6.10.63	Upon submittal of the Work Plan and schedule for approval, the Permittee shall initiate the Work Plan in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 30 days of receipt of approval from the MPCA. The Work Plan and schedule are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the Work Plan. The Permittee must update the Work Plan to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the Work Plan. The Permittee must update the Work Plan to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.64	If the Permittee determines the results of the evaluation do require further actions or responses, the Report must include a plan of action and schedule for implementation for MPCA review and approval. If the Permittee determines that the results of the evaluations do not require any actions or responses, the Report must contain the specific rationale used to reach that determination.
	6.10.65	If the Report includes a plan of action and schedule, the Permittee shall initiate the plan of action in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 14 days of receipt of approval from the MPCA.
	6.10.66	The Report and any plan of action and schedule necessary are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the Report's plan of action, if any. The Permittee must update the Reports plan of action to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the plan of action. The Permittee must update the plan of action to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.67	The Permittee shall submit the Five Year Model Evaluation Report at least 180 days prior to permit expiration with the application for permit reissuance, which is required by Parts 6.11.13-6.11.16 of this permit.
	6.10.68	**Annual Groundwater Evaluation Report**

	6.10.69	The Permittee shall submit an Annual Groundwater Evaluation Report (Groundwater Report) which will provide an annual evaluation and assessment of the groundwater monitoring well data from the Mine Site and Plant Site. The Groundwater Report must include an analysis of data collected through the previous year using appropriate statistical methodologies. The Annual Groundwater Evaluation Report must include, at a minimum: a. A discussion on the statistical methodologies used in the Report and the rationale for their selection. b. An evaluation of the overall suitability of the existing groundwater monitoring network at the Mine Site and Plant Site to adequately monitor groundwater flows from the Mine and Plant Sites, including its ability to detect a potential future groundwater impact to any surface water. The evaluation shall identify whether any changes to the monitoring network are needed. If the evaluation indicates that changes to the monitoring network are needed, the Permittee shall: i. Submit with the Groundwater Report a plan, for MPCA review and approval, that describes in detail the changes proposed, including monitoring locations, parameters to be monitored and/or monitoring frequencies. ii. Install any approved monitoring wells within 1-year of approval of the wells by MPCA and any other agency that must provide approval. Upon installation of approved monitoring wells, sample the wells for the parameters and at the frequencies identified in the MPCA approval. iii. Include the data collected from any additional wells installed into the upcoming year's annual report. c. An evaluation of compliance with groundwater standards at the property boundaries of the Mine Site and Plant Site. d. An assessment of spatial distribution of groundwater quality and the current and future potential and timeframe for migration toward surface waters from the Mine Site and Plant Site such that, if needed, adaptive management, mitigation or corrective actions can be undertaken prior to the impact occurring. e. The Permittee shall provide an assessment on the potential for a north flow path in the bedrock or surficial aquifer north of PolyMet's property boundary at the Mine Site. The assessment must provide discussion on whether or not a potential for a north flow path exists and the logic for that determination. If the potential for a north flow path exists, the Permittee must include a plan and schedule for MPCA review and approval for adaptive management or mitigation to prevent northward groundwater flow. The plan and schedule must include:
		i. A detailed description of the specific actions to be taken and how they will prevent a north flow path, ii. A discussion on the timing of implementation of the actions such that a north flow path is prevented before it can occur, and iii. Whether any additional permitting or approvals are necessary prior to implementation. If a plan and schedule for adaptive management or mitigation must be implemented, it must comply with the MPCA approved schedule. Work plans or proposed adaptive management or mitigation measures submitted as required by this permit are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, actions proposed by a work plan, adaptive management or mitigation plan may require a modification of the permit, including a public notice of the proposed modifications.

	6.10.70	Upon submittal of the Annual Groundwater Evaluation Report for approval, the Permittee shall initiate any plan of action identified in the Report in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 14 days of receipt of approval from the MPCA. The plan of action and schedule are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the plan. The Permittee must update the plan to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the plan. The Permittee must update the plan to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.71	The Permittee shall submit the Annual Groundwater Evaluation Report by March 31 of each year following permit issuance.
	6.10.72	**Comprehensive Performance Evaluation Report**
	6.10.73	The Permittee shall submit an Annual Comprehensive Performance Report (Performance Report). The Performance Report must provide an annual comprehensive assessment of the performance of the facility engineering controls at the Mine Site and Plant Site in minimizing impacts to water resources downstream of the facility, including the avoidance of an unauthorized discharge to surface waters. The intent of the Performance Report is to identify in a proactive manner the potential for unauthorized impacts such that adaptive management, mitigation or corrective actions can be undertaken prior to the potential impact occurring. The Performance Report must utilize all relevant monitoring and performance data, including waste stream monitoring results, groundwater monitoring results, surface water monitoring results and internal operational data. The Performance Report, at a minimum, must address: a. The Category 1 Waste Rock Stockpile Seepage Containment System i. Is an inward gradient being maintained so as to prevent any measurable impact to groundwater from the stockpile? b. The stockpile liner systems for the Category 2/3 Waste Rock Stockpile, Category 4 Waste Rock Stockpile and the Ore Surge Pile i. Are the liner systems being effective in capturing drainage from the stockpiles in such a way so as to prevent any impact to groundwater from the stockpiles? ii. Are the liner systems functioning in such a way so as to prevent any impact to groundwater from the stockpiles? c. The Mine Site equalization basins and wastewater conveyance systems from the mine site to the plant site i. Does the monitoring indicate any leakage from the equalization basins or conveyance systems? ii. Are the equalization basins functioning in such a way so as to prevent any impact to groundwater from the basins? d. The Tailings Basin Seepage Containment System i. Is an inward gradient being maintained so as to prevent any impact to ground or surface waters from the Tailings Basin? ii. Is all of the seepage collected being routed to the WWTS/FTB? e. The HRF Facility
		i. Is operation of the HRF Leakage Collection System being effective at preventing seepage through the liner system to groundwater? f. The Transportation and Utility Corridors, including the MPP and railroad i. Is there any leakage or discharge from the MPP? ii. Does the monitoring indicate any impact to ground or surface water along the Corridors? If the answer to any of the above questions indicates that the engineering controls are not operating as intended or are not providing a sufficient level of control, the Performance Report must describe in detail the adaptive management or corrective actions that are being done, or will be done, to correct the problem, including a schedule for their

		Implementation. All proposed adaptive management or proposed corrective actions are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, adaptive management or corrective actions may require a modification of the permit, including a public notice of the proposed modifications.
	6.10.74	The Permittee shall submit the Annual Comprehensive Performance Evaluation Report for MPCA review and approval by April 30 of each year following permit issuance. Upon submittal of the Annual Comprehensive Performance Evaluation Report for approval, the Permittee shall initiate the adaptive mitigation or corrective actions, if any, identified in the Report in accordance with the schedule contained therein, and provide written notice to the MPCA that it has done so within 14 days of receipt of approval from the MPCA. The adaptive mitigation or corrective actions and schedule are enforceable under this permit upon submittal. The MPCA reserves the right to grant partial approval of the plan. The Permittee must update the plan to address MPCA's comments to the satisfaction of the MPCA on any disapproved portion of the plan. The Permittee must update the plan to address MPCA's comments within 30 days of receiving the comments, or a longer period if allowed by MPCA. Failure to address MPCA disapproval within the specified deadline is a violation of the permit.
	6.10.75	**Hydrometallurgical Residue Facility**
	6.10.76	***Authorization***
	6.10.77	The HRF is permitted to receive hydrometallurgical residue and process water used to transport residue from the Hydrometallurgical Plant, residual solids from the WWTS, stormwater run-on and direct precipitation, and water collected by the HRF Leakage Collection System. The Permittee shall maintain a closed-loop system at the HRF. Decant water from the HRF Pond is permitted to be pumped back to the Hydrometallurgical Plant for reuse in the process. Direct discharge from the HRF Pond and/or the HRF Leakage Collection system to surface waters or to the FTB is prohibited. All water collected from the HRF Leakage Collection System must be pumped back to the HRF Pond.
	6.10.78	The Permittee is prohibited from disposing of coal-ash, including materials from the former LTVSMC Coal Ash Landfill, or any other non-mining waste into the HRF Pond.
	6.10.79	***HRF Annual Assessment***
	6.10.80	The Permittee shall conduct an annual assessment of the engineering controls, operational data and water quality data at the HRF to evaluate the effectiveness of the liner and Leakage Collection System. A professional engineer licensed in the State of Minnesota with the appropriate expertise shall conduct the assessment. The results of the annual assessment must be included as part of the "Comprehensive Performance Evaluation Report" described in Parts 6.10.72 to 6.10.74.
	6.10.81	The Permittee shall conduct monthly inspections of the HRF Pond and HRF Leakage Collection System to ensure that the HRF and all engineering controls are operating effectively. A professional engineer licensed in the State of Minnesota with the appropriate expertise shall conduct the assessment. Inspection reports must be retained at the facility and be made available to the MPCA upon request for a period of five years following completion of the inspection.
	6.10.82	***HRF Preload***
	6.10.83	The Permittee shall submit a Preload Design Investigation Work Plan (PDIW) to MPCA for review and approval at least twelve (12) months prior to placing fill material for preload construction in preparation for the Hydrometallurgical Residue Facility (HRF). The PDIW shall include a schedule with regard to sequencing and timing of the various plans and activities described below to enable MPCA and Permittee to minimize delays that would disrupt implementation of the preload work.
	6.10.84	The Preload Design Investigation Work Plan shall include the following items:

	6.10.85	A. Supplemental Subsurface Investigation Plan (SSIP): The purpose of the SSIP is to obtain additional information on subsurface soil conditions to better understand the in-situ soil conditions and refine the HRF preload design to minimize the uncertainty associated with differential settlement. The goal of the SSIP is to ensure that the types of information gathered and methods used to acquire that information will meet the needs of the HRF Preload Design Plan described in Parts 6.10.88 to 6.10.92. The SSIP must propose investigation and testing methods and locations for additional investigation in the (previously/currently) inaccessible portion of the Emergency Basin where the HRF will be constructed. The SSIP must include provisions for: i. Construction of a working platform to ensure vehicle access and safety to conduct investigation activities. If the working platform is to remain in-place as a permanent part of the preload, a Working Platform Development Plan described in Part 6.10.86 must also be submitted for review and approval; ii. A subsurface exploration and laboratory testing program to develop a soil profile for the previously inaccessible area of the Emergency Basin. To accurately develop a soil profile for at least four cross-sections - two oriented north-south and two oriented east-west - the exploration program shall consist of either: a. a geophysical survey, using methods such as seismic refraction and electrical resistivity, combined with supplemental soil borings at locations of interest, or b. a sufficient number of soil borings that if used in the absence of geophysical methods provide the information necessary to adequately characterize the soil profile sufficient to complete the required cross-sections. Soil sample collection and soil sample testing, including laboratory consolidation testing per ASTM D2435 on peat and fine tailings/slimes shall be performed. Proposed locations for soil borings must be reviewed and approved by MPCA. iii. If the use of wick drains is anticipated, additional consolidation testing of the fine tailings and peat underlying the proposed HRF must be completed. If wick drains are anticipated, the SSIP must describe the additional testing that will be conducted to inform the Wick Drain Plan required by Part 6.10.91.
	6.10.86	B. Working Platform Development Plan (WPDP): The WPDP must identify and provide details on the proposed methods (e.g. the use of low-ground pressure equipment) used to: 1) ensure a safe and stable working platform over the soft soils that are present in the Emergency Basin; and 2) minimize differential settlement and minimize long-term HRF liner stress due to localized displacement

	6.10.87	The Permittee shall submit a HRF Preload Design Plan (HPDP) to MPCA for review and approval at least 60 days prior to the start of placing fill material for preload construction in preparation for the HRF.
	6.10.88	The HRF Preload Design Plan must include the following:

	6.10.89	A. Design and Specification documentation that provide details on the design of the preload based on the results of the SSIP. At a minimum, the Design and Specification documentation must: i. Identify locations where soft soil (peat and fine tailings/slimes) remediation measures, other than a preload, will be used. If methods such as 1) excavation/replacement with granular fill or 2) soft soil displacement (rolling surcharge) are used, then details of the proposed procedures must be provided and visual confirmation (for open excavations) and cone penetration testing and/or soil borings (for rolling surcharge) shall be performed to verify all unsuitable soils have been removed; ii. Specify the corresponding preload height/crest elevation and the total proposed consolidation stress that will be applied to the foundation soils; iii. Where different preload heights and different stress levels will be applied to different areas of the foundation soils, identify the extent of each area and stress level; iv. Detail the preload extent and limits along the sideslope of existing tailings basin cell 2W; v. Identify the preload materials and placement methods, including constraints on equipment; vi. Describe the geotechnical instrumentation that will be used to determine when pore water pressure dissipation and consolidation settlement is functionally complete; vii. Provide an estimate of preload time required for each area subjected to a different preload stress within the HRF footprint.
	6.10.90	B. A Geotechnical Instrumentation and Monitoring Plan (GIMP) as a separate document or as an attachment to the HPDP. The GIMP must identify and provide details on the type, number, and locations of instrumentation that may include, but is not necessarily limited to pore water pressure cells and settlement plates that will be used to determine when excess pore pressure has dissipated within soft soil deposits and settlement is functionally complete after preload construction
	6.10.91	C. The Permittee may propose to use wick drains to accelerate consolidation settlement. If a wick drain system is proposed, the Permittee shall include a Wick Drain Plan (WDP). The WDP must incorporate results of consolidation tests performed on samples of fine tailing/slimes and peat collected as a part of the SSIP.

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	6.10.92	D. A HRF Liner Plan (HLP) as a separate document or as an attachment to the HPDP. The HLP must include final plans and specifications for the HRF liner system and Leakage Collection System for MPCA review and approval. At a minimum, provisions for the following items are required elements for the design: i. If the primary liner is proposed to be exposed, at least 100-mil high density polyethylene (HDPE) is required; an alternate primary liner or a covered primary liner that provides equivalent performance may be proposed subject to approval by the MPCA; ii. The secondary liner must be at least 60-mil HDPE; an alternate secondary liner that provides equivalent performance may be proposed subject to approval by the MPCA; iii. The design must incorporate a lysimeter under the HRF sump or other suitable monitoring device located northwest of and proximal to the HRF and within the FTB Seepage Containment System that is capable of assessing the facility's impact on groundwater quality. iv. The design must include an analysis of the suitability of the proposed monitoring to detect leakage from the HRF. v. Strain gauge(s) or other strain monitoring systems, such as fiber optics, must be included with the liner to monitor and provide assurance that the liner system is not subject to excessive strain.
	6.10.93	The Permittee shall provide the funding for MPCA to contract with a qualified third-party geotechnical consultant to provide expertise for the review of the geotechnical aspects of the Preload Design Investigation Work Plan, HRF Preload Design Plan, and associated sub-plans.
	6.10.94	Beginning one quarter after installation of the instrumentation identified in the GIMP and approved by the MPCA, the Permittee shall provide quarterly updates on the data collected through the GIMP and any proposed revisions to the HPDP.
	6.10.95	When the Permittee determines that consolidation is functionally complete, it may propose to remove the preload at any time by submitting the cumulative geotechnical monitoring results from the preload to MPCA for review and approval. The Permittee must submit the proposal and monitoring results at least 30 days prior to the proposed date that the preload removal would commence.
	6.10.96	If the MPCA determines, upon review of the submittals required in Parts 6.10.82 – 6.10.95 that site conditions at the proposed HRF location preclude the construction and operation of the HRF in compliance with applicable water quality standards, construction of the HRF at that location is prohibited.
	NEW	***Work Plans***
	NEW	Work plans required by this permit are subject to MPCA review and approval. In accordance with Minn. R. 7001.0170, actions proposed by a work plan may require a major modification of the permit, including a public notice of the proposed modifications.
	6.11.0	**Industrial Process Wastewater**
	6.11.1	**Prohibited Discharges. [Minn. R. 7001]**
	6.11.2	This permit does not authorize the discharge of wash water, scrubber water, spills, oil, hazardous substances, or equipment/vehicle cleaning and maintenance wastewaters to ditches, wetlands or other surface waters of the state. [Minn. R. 7001.1090, Subp. 1(A)]
	6.11.3	The Permittee shall prevent the routing of pollutants from the facility to a municipal wastewater treatment system in any manner unless authorized by the pretreatment standards of the MPCA and the municipal authority. [Minn. R. 7001.1090, Subp. 1(A)]
	6.11.4	The Permittee shall not transport pollutants to a municipal wastewater treatment system that will interfere with the operation of the treatment system or cause pass-through violations of effluent limits or water quality standards. [Minn. R. 7049.140, Subp. 2]
	6.11.5	**Toxic Substance Reporting. [Minn. R. 7001]**

	6.11.6	The Permittee shall notify the MPCA immediately of any knowledge or reason to believe that an activity has occurred that would result in the discharge of a toxic pollutant listed in Minnesota Rules, pt. 7001.1060, subp. 4 to 10 or listed below that is not limited in the permit, if the discharge of this toxic pollutant has exceeded or is expected to exceed the following levels: a. for acrolein and acrylonitrile, 200 ug/L; b. for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol, 500 ug/L; c. for antimony, 1mg/L; d. for any other toxic pollutant listed in Minnesota Rules, pt. 7001.1060, subp. 4to 10, 100 ug/L; or e. five times the maximum concentration value identified and reported for that pollutantin the permit application. [Minn. R. 7001.1090, Subp. 2]
	6.11.7	The Permittee shall notify the MPCA immediately if the Permittee has begun or expects to begin to use or manufacture as an intermediate or final by-product a toxic pollutant that was not reported in the permit application under Minnesota Rules, pt. 7001.1050, subp. 2.J. [Minn. R. 7001.1050, Subp. 2(J)]
	6.11.8	**High-Concentration, Low-Concentration and Construction Mine Water Pipelines (Mine to Plant Pipelines, MPP) [Minn. R. 7001]**
	6.11.9	This permit does not authorize discharges to surface waters from the High-Concentration, Low-Concentration and Construction Mine Water Pipelines.
	6.11.10	The High-Concentration, Low-Concentration, and Construction Mine Water pipelines are designed, constructed, and operated to collect and transport mine drainage from the Mine Site to the Plant Site mine water treatment system and the FTB. The Permittee shall make every effort to prevent and contain any breaks in or spills from the pipelines that run along the Transportation and Utility Corridors from the Mine Site to the Plant Site. The Permittee shall comply with the requirements of the Noncompliance, Upset Defense and Duty to Notify and Avoid Pollution sections contained in this permit should a pipeline break or spill occur.
	6.11.11	**Polychlorinated Biphenyls (PCBs). [Minn. R. 7001]**
	6.11.12	PCBs, including but not limited to those used in electrical transformers and capacitors, must not be discharged or released to the environment. [Minn. R. 7001.0150, Subp. 2]
	6.11.13	**Application for Permit Reissuance. [Minn. R. 7001]**
	6.11.14	The permit application must include analytical data as part of the application for reissuance of this permit. These analyses shall be done on individual samples taken during the twelve-month period before the reissuance application is submitted. [Minn. R. 7001.1050]
	6.11.15	The permit application must include analytical data for at least the following parameters at monitoring station SD001. Analysis of all parameters must comply with their specific 40 CFR Part 136 analytical methodologies or any updates to those methodologies. The reporting limits must meet the minimum levels as defined by this permit and all state and federal regulations. a. Biochemical oxygen demand, chemical oxygen demand, total organic carbon, gasoline range organics, diesel range organics, fecal coliform, ammonia, temperature; b. Color, fluoride, nitrate-nitrite (as nitrogen), total organic nitrogen, oil and grease, total phosphorus, chloride, sulfate, sulfide (as sulfur), surfactants, bicarbonates, alkalinity, total salinity, total dissolved solids, specific conductance; c. Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, thallium, tin, titanium, vanadium, zinc (all in total form) according to 40 CFR Part 136.3; d. Total mercury using EPA Method 1631;

		e. Gross alpha particles, radium-226, radium-228, radon-222, uranium; f. PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260; and g. a scan of constituents using EPA Methods 624 and 625, in 40 CFR Part 136. The Permittee shall identify, in addition to those pollutants noted in Methods 624 and 625 (Appendix D, Table II), the concentrations of at least ten of the most abundant constituents of the acid and base/neutral organic fractions shown to be present by peaks on the total ion plots (reconstructed gas chromatograms) within ten percent of the nearest internal standard. Identification must be through the use of U.S. EPA/NIH computerized library of mass spectra, with visual confirmation and potential quantification. [Minn. R. 7001, Minn. R. 7001.1060]
	6.11.16	The Permittee shall include, as part of the application for reissuance of this permit: a. a current map of the Tailings Basin, showing the dikes, dams, cells, and current topographic and water level elevations in the basin; b. an updated water balance for the facility; c. an updated Operating Plan for the Tailings Basin for the next five (5) years
	6.12.0	**Low Concentration and High Concentration Equalization Basins**
	6.12.1	**Authorization. [Minn. R. 7001]**
	6.12.2	This permit does not authorize a direct discharge from the Mine Site Equalization Basins or any other industrial mine water pond system to surface waters. The Mine Site Low Concentration Equalization (LCEQ) Basins and High Concentration Equalization (HCEQ) Basin are authorized to discharge to the WWTS.
	NEW	The LCEQ Basins and HCEQ Basin shall each be constructed to include a primary barrier system that includes a geosynthetic clay layer overlain by a 60 mil HDPE liner, or equivalent as approved by the MPCA.
	6.12.3	This permit authorizes the Permittee to manage industrial wastewater in the LCEQ and HCEQ Basins, as described in the Facility Description section of this Permit. This activity is limited by the Limits and Monitoring section of this Permit, as well as the other terms and conditions of this Permit. [Minn. R. 7001]
	6.12.4	The requirements of Parts 6.12.0 through 6.12.28 apply to all components of the permitted LCEQ and HCEQ Basins and associated systems, including but not limited to all related components in the Equalization Basin Area used for collection, containment, storage, and/or treatment; and all related structures, conveyances, and/or appurtenances. [Minn. R. 7001]
	6.12.5	**Low Concentration and High Concentration Equalization Basins Performance Evaluation. [Minn. R. 7001]**
	6.12.6	The Permittee shall submit an Equalization Basin Performance Evaluation Report: Due by 180 days before permit expiration. [Minn. R. 7001]
	6.12.7	The Equalization Basin Performance Evaluation Report must include at least the following elements for each of the LCEQ and HCEQ Basins: a. Pond performance data, calculations and graphs for each equalization basin. Pond performance data includes, but is not limited to, desktop water balance data, influent and effluent flow data for the ponds, pond water depth measurements, and capacity/volume use comparisons. b. A certification from a licensed professional engineer with expertise in wastewater structures that the respective basin continues to meet the technical criteria of its original design as required by Part 6.12.9; or,

		c. If the professional engineer cannot certify that all basins meet the required technical criteria, a Pond Restoration Plan must be submitted for MPCA review and approval, to be completed by a licensed professional engineer with expertise in wastewater structures. The Pond Restoration Plan must include, at minimum, a proposal of corrective actions for the restoration of any basin to meet the technical criteria of its original design, and an implementation schedule for the proposed actions. [Minn. R. 7001]
	6.12.8	**Maintenance of Low Concentration and High Concentration Equalization Basins [Minn. R. 7001]**
	6.12.9	Liner Performance. Wastewater ponds at the facility shall maintain liner systems that restrict infiltration losses consistent with the technical criteria of the original design as necessary to protect groundwater.[Minn. R. 7001]
	6.12.10	Locational Standards. All of the following locational standards apply to the LCEQ and HCEQ Basins: a. The impoundment must be located entirely above the high water table. A minimum separation of 3 feet (0.9m) between the bottom of the basin liner and the maximum groundwater elevation should be maintained. Where this separation distance is not achievable under natural conditions, an underdrain system may be installed, or an alternative liner design must be approved by the agency. If an underdrain system is used to artificially maintain the separation distance between the liner and groundwater, the Permittee shall conduct quarterly monitoring of discharges from the drain system for total chloride, specific conductance, total sulfate (as SO4), and total dissolved solids. b. The impoundment may not be located within a shoreland or wild and scenic river land use district governed by Minn. R. chapters 6105 and 6120. c. The impoundment may not be located within a wetland. d. The impoundment may not be located within a location where emissions of air pollutants would violate the ambient air quality standards in Minn. R. chapters 7005, 7007, 7009, 7011, 7017, 7019, and 7028 and Minn. R. parts 7023.0100 to 7023.0120. e. The impoundment should not be located in an area which is unsuitable because of topography, geology, hydrology, or soils.
	6.12.11	Operating Depth. All of the following apply to the LCEQ and HCEQ Basins: a. At least 3 feet freeboard on all impoundments must be maintained at all times. b. Based on specific facility conditions and upon demonstration of an acceptable alternative, an alternate performance standard may be approved by the MPCA. Specific written authorization by the MPCA must be obtained prior to implementing an alternately approved performance standard in lieu of item a. and/or b. of this part. [Minn. R. 7001]
	6.12.12	An approved riprap cover that meets MPCA's "Riprap Criteria for Stabilization Ponds" (May 1991, or as amended or revised) must be maintained on any earthen LCEQ and HCEQ Basin dikes from one foot above the high water line to the toe of the dike. Where riprap is not used, the Permittee shall maintain a vegetative cover of shallow-rooted, perennial, low-growing grasses that withstand erosion and inundation and that can be mowed. [Minn. R. 7001]
	6.12.13	Plants with long root structures, such as alfalfa, reed canary, willows, poplars, cottonwoods, shrubs, and cattails must not be allowed to grow in the pond or on the dikes, regardless of water depth in the pond. Such harmful vegetative growth must be controlled and such plants removed from the pond and pond structure. [Minn. R. 7001]
	6.12.14	The Permittee shall use approved methods to prevent muskrats and other burrowing animals from tunneling and causing damage to the pond liner or dikes. [Minn. R. 7001]
	6.12.15	In addition to the requirements of this Permit, the Permittee shall operate and maintain the pond system in general accordance with relevant sections of MPCA's "Stabilization Pond Systems Manual" (2013, or as amended or revised). [Minn. R. 7001]

	6.12.16	**Solids Removal from Low Concentration and High Concentration Equalization Basins. [Minn. R. 7001]**
	6.12.17	Prior to the excavation or removal of solids from the LCEQ and HCEQ Basins, the Permittee shall implement measures to maintain the integrity of the pond liner during the removal process. [Minn. R. 7001]
	6.12.18	A water balance evaluation must be completed on the LCEQ and HCEQ Basins within seven months of each removal action, the results of which must be made available for MPCA review at the facility or upon request. The water balance evaluation procedure is described in the MPCA document "Prefill and Water Balance Criteria (Dec. 2010, or as amended or revised). [Minn. R. 7001]
	6.12.19	Groundwater quality monitoring results must be evaluated before and after the excavation or removal to assess the potential impacts of the pond on groundwater. Any significant changes must be reported to the MPCA on the next scheduled Discharge Monitoring Report. [Minn. R. 7001]
	6.12.20	No impact demonstration. The requirements of Parts 6.12.17 and/or 6.12.18 of this permit can be foregone if the Permittee can successfully demonstrate that the removal action will not impact the liner of the LCEQ and HCEQ Basins, or the integrity thereof. To make this demonstration, submit a Removal Plan for MPCA review and approval at least 90 days prior to the anticipated removal date. The Removal Plan should include, at a minimum, a description of the proposed methodology(ies) to be used for the excavation or removal or solids, any proposed deviations from the water balance procedure cited in subpart a, above, and justification that the removal action does not impact the liner of the LCEQ and HCEQ Basins. The requirement to comply with Parts 6.12.17 and/or 6.12.18 may only be waived after written confirmation of approval of the Removal Plan by the Agency. [Minn. R. 7001]
	6.12.21	**Inspection of Low Concentration and High Concentration Equalization Basins. [Minn. R. 7001]**
	6.12.22	The Permittee shall inspect the LCEQ and HCEQ Basin system weekly, and must take measurements of pond water depth, estimate the coverage of aquatic plants, floating mats and ice cover on the surface of the ponds, and note odors, the condition of the dikes and the presence of muskrats. The Permittee shall maintain records of these weekly inspections for the last three (3) years, and submit the results on the Discharge Monitoring Report (DMR) supplemental form. [Minn. R. 7001]
	6.12.23	The Permittee shall maintain daily precipitation records. [Minn. R. 7001]
	6.12.24	The Permittee shall inspect the LCEQ and HCEQ Basins, related conveyances, and appurtenances to the pond system and based on the inspection, shall certify to the MPCA that the LCEQ and HCEQ Basins, related conveyances, and appurtenances maintain structural integrity, complete containment, and compliance with performance standards. [Minn. R. 7001]
	6.12.25	The inspection and certification must be completed by a licensed professional engineer with expertise in wastewater structures. [Minn. R. 7001]
	6.12.26	An inspection report must be prepared by the professional engineer and submitted with the application for permit reissuance and/or every five years, whichever comes first. [Minn. R. 7001]
	6.12.27	If repairs are necessary as a result of the professional engineer's inspection, a detailed proposal for restoration must be submitted to the Agency for review within 180 days of discovery, and at least 60 days prior to initiation of restoration work. [Minn. R. 7001]
	NEW	**Low Concentration and High Concentration Equalization Basins - System Redundancy**
	NEW	The Permittee shall maintain on site an inventory of essential spare or replacement components for the Equalization Basins that can be utilized to avoid or minimize downtime in the event of system malfunction. Essential components include, but are not limited to, redundant pumping capacity, spare piping and other replacement parts needed to restore operation in the shortest time possible and to prevent an unauthorized discharge. In lieu of maintaining spare components on site, the Permittee may provide evidence in the

		Annual Comprehensive Performance Evaluation Report of confirmed local/regional availability of essential spare or replacement parts that can be mobilized to the site within a 48-hour period of such need being identified.
	6.13.0	**Metallic Mining**
	6.13.1	**Mine Tailings Basin. [Minn. R. 7001]**
	6.13.2	The Permittee shall conduct a detailed field survey of seepage zones from the perimeter dikes of the FTB and HRF Pond during October of each year. [Minn. R. 7001]
	6.13.3	The Permittee shall submit a Dike Seepage Survey Report on January 31 of each calendar year following permit issuance. [Minn. R. 7001]
	6.13.4	The Dike Seepage Survey Report must include the following information: a. a clearly labeled map indicating the locations of the visible seepage zones; b. the estimated flow rates for the seepage zones; c. the specific conductance, pH and temperature values for the seepage zones; d. a brief description of the changes in the nature ofthe seepage from previous observations; and e. photographs as needed to document items a. - d. [Minn. R. 7001]
	6.13.5	**Mobile and Rail Equipment Service Areas. [Minn. R. 7001]**
	6.13.6	Mobile equipment and rail equipment service areas in the facility must be operated in compliance with the following: a. The Permittee shall collect and dispose of locomotive traction sand, degreasing wastes, motor oil, oil filters, oil sorbent pads and booms, transmission fluids, power steering fluids, brake fluids, coolant/antifreeze, radiator flush wastewater and spent solvents in accordance with applicable solid and hazardous waste management rules. These materials must not be discharged to surface or ground waters of the state. b. The steam-cleaning of mobile equipment and rail equipment, except for limited outdoor cleaning of large drills and shovels, must be conducted in wash bays that drain to wastewater treatment systems that include the removal of suspended solids and flammable liquids. The only washing of mobile equipment done in outside areas must be to remove mud and dirt that has accumulated during outside work. c. The Permittee shall not use solvent-based cleaners, such as those available for brake cleaning and degreasing, to wash mobile and rail equipment unless the cleaning fluids are completely contained and not allowed to flow to surface or ground waters of the state. Soaps and detergents used in washing must be biodegradable. d. Mobile and rail equipment maintenance and repairs must not be conducted in wash bays. e. Hazardous materials must not be stored or handled in wash bays. f. The Permittee shall inspect wastewater containment systems regularly, and repair any leaks that are detected immediately. g. If the Permittee discovers that recoverable amounts of petroleum products have entered wastewater containment systems, they must be recovered immediately and reported to the MPCA. h. Spill cleanup procedures must be posted in mobile and rail equipment maintenance and repair areas. [Minn. R. 7001]
	6.14.0	**Domestic Wastewater (non-POTW)**
	6.14.1	**Operator Certification. [Minn. R. 7001]**
	6.14.2	The Permittee shall provide a Class D state certified operator who is in direct responsible charge of the operation, maintenance and testing functions required to ensure compliance with the terms and conditions of this permit. [Minn. R. 9400]
	6.14.3	The Permittee shall provide the appropriate number of operators with a Type IV certification to be responsible for the land application of biosolids or semisolids from commercial or industrial operations. [Minn. R. 7001]

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	6.14.4	If the Permittee chooses to meet operator certification requirements through a contractual agreement, the Permittee shall provide a copy of the contract to the MPCA, WQ Submittals Center. The contract must include the certified operator's name, certificate number, company name if appropriate, the period covered by the contract and provisions for renewal; the duties and responsibilities of the certified operator; the duties and responsibilities of the permittee; and provisions for notifying the MPCA 30 days in advance of termination if the contract is terminated prior to the expiration date. [Minn. R. 9400]
	6.14.5	The Permittee shall notify the MPCA within 30 days of a change in operator certification or contract status. [Minn. R. 9400]
	6.14.6	**Bypass Structures. [Minn. R. 7001]**
	6.14.7	All structures capable of bypassing the treatment system must be manually controlled and kept locked at all times. [Minn. R. 7001]
	NEW	**Stabilization Pond Discharge to FTB**
	NEW	Direct discharge to surface waters from the Plant Site Sewage Treatment System is prohibited. All wastewater collected and treated by the Plant Site Sewage Treatment system must be routed to the FTB.
	6.14.8	**Sewage Stabilization Pond Requirements. [Minn. R. 7001]**
	6.14.9	The facility has at least 180 days of storage if located south of the 46 degrees 25 north latitude (approximately the latitude of Brainerd) and 210 days of storage for facilities north of this line unless previously approved by the MPCA for something less. If design capacity is less than 180 days and 210 days respectively, the Permittee may show that actual flows allow for 180 days and 210 days respectively. [Minn. R. 7001]
	6.14.10	The collection system and sewage stabilization pond facility may not receive excessive flows that result in regular bypassing from the collection system or facility, or result in regular discharges outside the designated discharge window for that facility. [Minn. R. 7001]
	6.14.11	Pond Discharge Rate. The discharge rate must be limited so as not to disturb the pond bottom sediment in the area of the intake. [Minn. R. 7001]
	6.14.12	Pond Observations. The Permittee shall inspect the pond system weekly, and must take measurements of pond water depth, estimate the coverage of aquatic plants, floating mats and ice cover on the surface of the ponds, and note odors, the condition of the dikes and the presence of rodents. Pond observation reports must be submitted monthly with the eDMRs. The Permittee shall maintain records of these weekly inspections for the last three (3) years, and submit the results on the Supplemental Report Form (SRF). [Minn. R. 7001]
	6.14.13	Unauthorized Releases. For all unauthorized releases that may cause pollution of the waters of the state, the Permittee shall take at least one grab sample of the release for permitted effluent parameters two times per week. If the Permittee believes that measuring these parameters is inappropriate due to known information about the discharge, the monitoring may be modified in consultation with the MPCA. Where there is reason to believe a pollutant other than those limited in the permit is present, the Permittee shall sample for that pollutant in addition to the permitted effluent parameters. [Minn. R. 7001]
	6.15.0	**Stormwater Management**
	6.15.1	**Authorization**
	6.15.2	This permit does not authorize the discharge of stormwater. The discharge and management of construction stormwater and industrial stormwater for the Project will be regulated under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater General Permit (MNR100001) and the NPDES/SDS Industrial Stormwater General Permit (MNR050000) respectively.
	6.15.3	**Construction Stormwater**

	6.15.4	This permit does not authorize the discharge of construction stormwater. The Permittee shall obtain and maintain coverage under the NPDES/SDS Construction Stormwater General Permit (MNR100001) for any stormwater generated from the Project construction prior to initiation of mining operations and prior to the operation of the WWTS for the following areas: a. Mine Site b. Plant Site (Processing Areas) c. Tailings Basin d. Transportation & Utility Corridors
	6.15.5	As construction is completed or as construction areas are revegetated/stabilized, stormwater runoff from these former construction areas must either be permitted as industrial stormwater covered under the Minnesota Industrial Stormwater General Permit or must be non-contact stormwater (which does not require permit coverage). Upon completion of construction and site stabilization, the Permittee shall request termination of coverage under the Construction Stormwater General Permit. The Permittee shall submit a Notice of Termination (NOT) to the MPCA on a form provided by the Commissioner within 30 days after all activities required for Final Stabilization (as defined by the Construction Stormwater General Permit) are complete.
	6.15.6	**Termination of Construction Stormwater General Permit(s)**
	6.15.7	The Permittee may request termination of coverage under the General Construction Stormwater permits for the Mine Site, Plant Site (Processing Areas) and Tailings Basin upon the initiation of operation of the WWTS. The Permittee must obtain coverage under the Industrial Stormwater General Permit for these areas prior to requesting termination of the Construction Stormwater General Permit(s).
	6.15.8	The Permittee may request termination of coverage under the General Construction Stormwater permit for the Transportation and Utility Corridors upon completion of infrastructure upgrades (e.g., railroad, Dunka Road) and completion of new infrastructure (e.g., Mine to Plant Pipeline). The Permittee must obtain coverage under the Industrial Stormwater General Permit prior to requesting termination of the Construction Stormwater General Permit for the Transportation and Utility Corridors.
	6.15.9	This permit does not authorize discharges of construction stormwater after termination of coverage under the Construction Stormwater General Permit. If construction is required after termination of the Construction Stormwater General Permit coverage, and the stormwater from the proposed construction area will not be routed to a point which ultimately discharges through NPDES discharge point SD001, the Permittee shall apply for and obtain any necessary Construction Stormwater General Permit coverage prior to commencing construction in these areas.
	6.15.10	**Industrial Stormwater**
	6.15.11	This permit does not authorize the discharge of industrial stormwater from the NorthMet project. The Permittee shall obtain and maintain coverage under the NPDES/SDS Industrial Stormwater General Permit (MNR050000) for any stormwater generated from industrial activities at the NorthMet Mine Site, Plant Site, and Transportation and Utility Corridors that is not ultimately discharged through NPDES discharge point SD001.
	6.16.0	**Total Facility Requirements (NPDES/SDS)**
	6.16.1	Definitions. Refer to the 'Permit User's Manual' found on the MPCA website (www.pca.state.mn.us) for standard definitions. [Minn. R. 7001.]
	6.16.2	Incorporation by Reference. The following applicable federal and state laws are incorporated by reference in this permit, are applicable to the Permittee, and are enforceable parts of this permit: 40 CFR pts. 122.41, 122.42, 136, 403 and 503; Minn. R. pts. 7001, 7041, 7045, 7050, 7052, 7053, 7060, and 7080; and Minn. Stat. ch. 115 and 116. [Minn. R. 7001]
	6.16.3	Permittee Responsibility. The Permittee shall perform the actions or conduct the activity authorized by the permit in compliance with the conditions of the permit and, if required, in accordance with the plans and specifications approved by the Agency. [Minn. R. 7001.0150, subp. 3(E)]

	6.16.4	Toxic Discharges Prohibited. Whether or not this permit includes effluent limitations for toxic pollutants, the Permittee shall not discharge a toxic pollutant except according to Code of Federal Regulations, Title 40, sections 400 to 460 and Minnesota Rules 7050, 7052, 7053 and any other applicable MPCA rules. [Minn. R. 7001.1090, subp. 1(A)]
	6.16.5	Nuisance Conditions Prohibited. The Permittee's discharge must not cause any nuisance conditions including, but not limited to: floating solids, scum and visible oil film, acutely toxic conditions to aquatic life, or other adverse impact on the receiving water. [Minn. R. 7050.0210, subp. 2]
	6.16.6	Property Rights. This permit does not convey a property right or an exclusive privilege. [Minn. R. 7001.0150, subp. 3(C)]
	6.16.7	Liability Exemption. In issuing this permit, the state and the MPCA assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under this permit. To the extent the state and the MPCA may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act. [Minn. R. 7001.0150, subp. 3(O)]
	6.16.8	The MPCA's issuance of this permit does not obligate the MPCA to enforce local laws, rules, or plans beyond what is authorized by Minnesota Statutes. [Minn. R. 7001.0150, subp. 3(D)]
	6.16.9	Liabilities. The MPCA's issuance of this permit does not release the Permittee from any liability, penalty or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. [Minn. R. 7001.0150, subp. 3(A)]
	6.16.10	The issuance of this permit does not prevent the future adoption by the MPCA of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee. [Minn. R. 7001.0150, subp. 3(B)]
	6.16.11	Severability. The provisions of this permit are severable and, if any provisions of this permit or the application of any provision of this permit to any circumstance are held invalid, the application of such provision to other circumstances and the remainder of this permit must not be affected thereby. [Minn. R. 7001]
	6.16.12	Compliance with Other Rules and Statutes. The Permittee shall comply with all applicable air quality, solid waste, and hazardous waste statutes and rules in the operation and maintenance of the facility. [Minn. R. 7001]
	6.16.13	Inspection and Entry. When authorized by Minn. Stat. ch. 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the agency, or an authorized employee or agent of the agency, must be allowed by the Permittee to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveysand investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit. [Minn. R. 7001.0150, subp. 3(I)]
	6.16.14	Control Users. The Permittee shall regulate the users of its wastewater treatment facility so as to prevent the introduction of pollutants or materials that may result in the inhibition or disruption of the conveyance system, treatment facility or processes, or disposal system that would contribute to the violation of the conditions of this permit or any federal, state or local law or regulation. [Minn. R. 7001.0150, subp. 3(F)]
	6.16.15	**Sampling. [Minn. R. 7001]**
	6.16.16	Representative Sampling. Samples and measurements required by this permit must be conducted as specified in this permit and must be representative of the discharge or monitored activity. [40 CFR § 122.41(j)(1)]
	6.16.17	Additional Sampling. If the Permittee monitors more frequently than required, the results and the frequency of monitoring must be reported on the Discharge Monitoring Report (DMR) or another MPCA-approved form for that reporting period. [Minn. R. 7001.1090, subp. 1(E)]

	6.16.18	Certified Laboratory. A laboratory certified by the Minnesota Department of Health and/or registered by the MPCA must conduct analyses required by this permit. Analyses of dissolved oxygen, pH, temperature, specific conductance, and total residual oxidants (chlorine, bromine) do not need to be completed by a certified laboratory but must comply with manufacturers specifications for equipment calibration and use. [Minn. R. 4740.2010, Minn. R. 4740.2050 through 2120]
	6.16.18	Sample Preservation and Procedure. Sample preservation and test procedures for the analysis of pollutants must conform to 40 CFR Part 136 and Minn. R. 7041.3200. [40 CFR 136, Minn. R. 7041.3200]
	6.16.20	Equipment Calibration: Flow meters, pumps, flumes, lift stations or other flow monitoring equipment used for purposes of determining compliance with permit must be checked and/or calibrated for accuracy at least twice annually. [Minn. R. 7001.0150, subp. 2(B and C)]
	6.16.21	Maintain Records. The Permittee shall keep the records required by this permit for at least three years, including any calculations, original recordings from automatic monitoring instruments, and laboratory sheets. The Permittee shall extend these record retention periods upon request of the MPCA. The Permittee shall maintain records for each sample and measurement. The records must include the following information: a. the exact place, date, and time of the sample or measurement; b. the date of analysis; c. the name of the person who performed the sample collection, measurement, analysis, or calculation; d. the analytical techniques, procedures and methods used; and e. the results of the analysis. [Minn. R. 7001.0150, subp. 2(C)]
	6.16.22	Completing Reports. The Permittee shall submit the results of the required sampling and monitoring activities on the forms provided, specified, or approved by the MPCA. The information must be recorded in the specified areas on those forms and in the units specified. Required forms may include DMR Supplemental/Sample Value Form Individual values for each sample and measurement must be recorded on the DMR Supplemental/Sample Value Form which, if required, will be provided by the MPCA. DMR Supplemental/Sample Value Forms must be submitted with the appropriate DMRs. You may design and use your own supplemental form; however it must be approved by the MPCA. Note: Required summary information must also be recorded on the DMR. Summary information that is submitted ONLY on the DMR Supplemental/Sample Value Form does not comply with the reporting requirements. [Minn. R. 7001.1090, subp. 1(D), Minn. R. 7001.0150, subp. 2(B)]
	6.16.23	Submitting Reports. DMRs, DMR supplemental forms and related attachments must be electronically submitted via the MPCA Online Services Portal after authorization is approved. DMRs and DMR Supplemental Forms must be electronically submitted by the 21st day of the month following the sampling period or as otherwise specified in this permit. Electronic DMR submittal must be complete on or before 11:59 PM of the 21st day of the month following the sampling period or as otherwise specified in this permit. A DMR must be submitted for each required station even if no discharge occurred during the reporting period. Other reports required by this permit must be postmarked by the date specified in the permit to: MPCA, Attn: WQ Submittals Center, 520 Lafayette Road North, St Paul Minnesota 55155-4194. [Minn. R. 7001.0150, Subp. 2(B), Minn. R. 7001.0150, Subp. 3(H)]
	6.16.24	Incomplete or Incorrect Reports. The Permittee shall immediately submit an electronically amended report or DMR to the MPCA upon discovery by the Permittee or notification by the MPCA that it has submitted an incomplete or incorrect report or DMR. The amended

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		report or DMR must contain the missing or corrected data along with a cover letter explaining the circumstances of the incomplete or incorrect report. If it is impossible to electronically amend the report or DMR, the Permittee shall immediately notify the MPCA and the MPCA will provide direction for the amendment submittals. [Minn. R. 7001.0150, 3(G)]
	6.16.25	Required Signatures. All DMRs, forms, reports, and other documents submitted to the MPCA must be signed by the Permittee or the duly authorized representative of the Permittee. Minn. R. 7001.0150, subp. 2, item D. The person or persons that sign the DMRs, forms, reports or other documents must certify that he or she understands and complies with the certification requirements of Minn. R. 7001.0070 and 7001.0540, including the penalties for submitting false information.
	6.16.26	Detection Level. The Permittee shall report monitoring results below the reporting limit (RL) of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the concentration must be reported as "<0.1 mg/L." "Non-detected," "undetected," "below detection limit," and "zero" are unacceptable reporting results, and are permit reporting violations. Where sample values are less than the level of detection and the permit requires reporting of an average, the Permittee shall calculate the average as follows: a. If one or more values are greater than the level of detection, substitute zero forall nondetectable values to use in the average calculation. b. If all values are below the level of detection, report the averages as "<" the corresponding level of detection. c. Where one or more sample values are less than the level of detection, and thepermit requires reporting of a mass, usually expressed as kg/day, the Permittee shall substitute zero for all nondetectable values. [Minn. R. 7001.0150, 2(B)]
	6.16.27	Records. The Permittee shall, when requested by the Agency, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. [Minn. R. 7001.0150, 3(H)]
	6.16.28	Confidential Information. Except for data determined to be confidential according to Minn. Stat. § 116.075, subd. 2, all reports required by this permit must be available for public inspection. Effluent data must not be considered confidential. To request the Agency maintain data as confidential, the Permittee shall follow Minn. R. 7000.1300. [Minn. R. 7000.1300]
	6.16.29	**Noncompliance and Enforcement. [Minn. R. 7001]**
	6.16.30	Subject to Enforcement Action and Penalties. Noncompliance with a term or condition of this permit subjects the Permittee to penalties provided by federal and state law set forth in section 309 of the Clean Water Act; United States Code, title 33, section 1319, as amended; and in Minn. Stat. §§ 115.071 and 116.072, including monetary penalties, imprisonment, or both. [Minn. R. 7001.1090, subp. 1(B)]
	6.16.31	Criminal Activity. The Permittee may not knowingly make a false statement, representation, or certification in a record or other document submitted to the Agency. A person who falsifies a report or document submitted to the Agency, or tampers with, or knowingly renders inaccurate a monitoring device or method required to be maintained under this permit is subject to criminal and civil penalties provided by federal and state law. [Minn. R. 7001.0150, subp. 3(G), Minn. R. 7001.1090, subp. 1(G and H), Minn. Stat. § 609.671]

	6.16.32	Noncompliance Defense. It must not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [40 CFR § 122.41(c)]
	6.16.33	Effluent Violations. If sampling by the Permittee indicates a violation of any discharge limitation specified in this permit, the Permittee shall immediately make every effort to verify the violation by collecting additional samples, if appropriate, investigate the cause of the violation, and take action to prevent future violations. If the permittee discovers that noncompliance with a condition of the permit has occurred which could endanger human health, public drinking water supplies, or the environment, the Permittee shall within 24 hours of the discovery of the noncompliance, orally notify the commissioner and submit a written description of the noncompliance within 5 days of the discovery. The written description must include items a. through e., as listed below. If the Permittee discovers other non-compliance that does not explicitly endanger human health, public drinking water supplies, or the environment, the non-compliance must be reported during the next reporting period to the MPCA with its Discharge Monitoring Report (DMR). If no DMR is required within 30 days, the Permittee shall submit a written report within 30 days of the discovery of the noncompliance. This description must include the following information: a. a description of the event including volume, duration, monitoring results and receiving waters; b. the cause of the event; c. the steps taken to reduce, eliminate and prevent reoccurrence of the event; d. the exact dates and times of the event; and e. steps taken to reduce any adverse impact resulting from the event. [Minn. R. 7001.0150, subp. 3(K)]
	6.16.34	Upset Defense. In the event of temporary noncompliance by the Permittee with an applicable effluent limitation resulting from an upset at the Permittee's facility due to factors beyond the control of the Permittee, the Permittee has an affirmative defense to an enforcement action brought by the Agency as a result of the noncompliance if the Permittee demonstrates by a preponderance of competent evidence: a. the specific cause of the upset; b. that the upset was unintentional; c. that the upset resulted from factors beyond the reasonable control of the Permittee and did not result from operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or increases in production which are beyond the design capability of the treatment facilities; d. that at the time of the upset the facility was being properly operated; e. that the Permittee properly notified the Commissioner of the upset in accordance with Minn. R. 7001.1090, subp. 1, item I; and f. that the Permittee implemented the remedial measures required by Minn. R. 7001.0150, subp. 3, item J. [Minn. R. 7001.1090]
	6.16.35	**Release. [Minn. R. 7001]**
	6.16.36	Unauthorized Releases of Wastewater Prohibited. Except for discharges from outfalls specifically authorized by this permit, overflows, discharges, spills, or other releases of wastewater or materials to the environment, whether intentional or not, are prohibited. However, the MPCA will consider the Permittee's compliance with permit requirements, frequency of release, quantity, type, location, and other relevant factors when determining appropriate action. [33 U.S.C. § 1342 and Minn. R. 7001.0030.]
	6.16.37	Discovery of a release. Upon discovery of an unauthorized release to the environment, the Permittee shall:

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		a. Take all reasonable steps to immediately end the release. b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon discovery of the release. You may contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area). c. Recover as rapidly and as thoroughly as possible all substances and materials released or immediately take other action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If the released materials or substances cannot be immediately or completely recovered, the Permittee shall contact the MPCA. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies (such as the Minnesota Department of Natural Resources and/or the Wetland Conservation Act authority) for implementation of additional clean-up or remediation activities in wetland or other sensitive areas. [Minn. Stat. § 115.061]
	6.16.38	Sampling of a release. Upon discovery of a release, the Permittee shall: a. Collect representative samples of the release. The Permittee shall sample the release for parameters of concern immediately following discovery of the release. The Permittee may contact the MPCA during business hours to discuss the sampling parameters and protocol. In addition, Fecal Coliform Bacteria samples must be collected where it is determined by the Permittee that the release contains or may contain sewage. If the release cannot be immediately stopped, the Permittee shall consult with MPCA regarding additional sampling requirements. Samples must be collected at least, but not limited to, two times per week for as long as the release continues. b. Submit the sampling results on the Release Sampling Form (http://www.pca.state.mn.us/index.php/view-document.html?gid=18867). The Release Sampling Form must be submitted to the MPCA with the next DMR or within 30 days whichever is sooner. [Minn. Stat. § 115.061]
	6.16.39	**Bypass. [Minn. R. 7001]**
	6.16.40	Anticipated bypass. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if the bypass is for essential maintenance to assure efficient operation of the facility. The permittee shall submit prior notice, if possible at least ten days before the date of the bypass to the MPCA. The notice of the need for an anticipated bypass must include the following information: a. the proposed date and estimated duration of the bypass; b. the alternatives to bypassing; and c. a proposal for effluent sampling during the bypass. Any bypass wastewater must enter waters of the state from outfalls specifically authorized by this permit. Therefore, samples must be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. [40 CFR § 122.41(m)(2 and 3), Minn. R. 7001.1090, subp. 1(J)]
	6.16.41	All other bypasses are prohibited. The MPCA may take enforcement action against the Permittee for a bypass, unless the specific conditions described in Minn. R. 7001.1090 subp. 1, K and 40 CFR § 122.41(m)(4)(i) are met. In the event of an unanticipated bypass, the permittee shall: a. Take all reasonable steps to immediately end the bypass. b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon commencement of the bypass. You may

		contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area). c. Immediately take action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies for implementation of abatement, clean-up, or remediation activities. d. Only allow bypass wastewater as specified in this section to enter waters of the state from outfalls specifically authorized by this permit. Samples must be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. The permittee shall also follow the reporting requirements for effluent violations as specified in this permit. [40 CFR § 122.41(m)(4)(i), Minn. Stat. ch. 115.061]
	6.16.42	**Operation and Maintenance. [Minn. R. 7001]**
	6.16.43	The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control, and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. In addition to other operation and maintenance activities specified in this permit, proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible [Minn. R. 7001.0150, subp. 3(F)]
	6.16.44	In the event of a reduction or loss of effective treatment of wastewater at the facility, the Permittee shall control production or curtail its discharges to the extent necessary to maintain compliance with the terms and conditions of this permit. The Permittee shall continue this control or curtailment until the wastewater treatment facility has been restored or until an alternative method of treatment is provided. [Minn. R. 7001.1090, subp. 1(C)]
	6.16.45	Solids Management. The Permittee shall properly store, transport, and dispose of biosolids, septage, sediments, residual solids, filter backwash, screenings, oil, grease, and other substances so that pollutants do not enter surface waters or groundwaters of the state. Solids should be disposed of in accordance with local, state and federal requirements. [40 CFR 503, Minn. R. 7041]
	6.16.46	Scheduled Maintenance. The Permittee shall schedule maintenance of the treatment works during non-critical water quality periods to prevent degradation of water quality, except where emergency maintenance is required to prevent a condition that would be detrimental to water quality or human health. [Minn. R. 7001.0150, subp. 3(F), Minn. R. 7001.150, subp. 2(B)]
	6.16.47	Control Tests. In-plant control tests must be conducted at a frequency adequate to ensure compliance with the conditions of this permit. [Minn. R. 7001.0150, subp. 3(F), Minn. R. 7001.0150, subp. 2(B)]
	6.16.48	**Changes to the Facility or Permit. [Minn. R. 7001]**
	6.16.49	Permit Modifications. Except as provided under Minnesota Statutes, section 115.07, subdivisions 1 and 3, no person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted, nor must a person commence an activity for which a permit is required by statute or rule until the agency has issued a written permit for the facility or activity. Permittees that propose to make a change to the facility or discharge that requires a permit modification must follow Minn. R. 7001.0190. If the Permittee cannot determine whether a permit modification is needed, the Permittee shall contact the MPCA prior to any action. It

		is recommended that the application for permit modification be submitted to the MPCA at least 180 days prior to the planned change. [Minn. R. 7001.0030]
	6.16.50	Plans, specifications and MPCA approval are not necessary when maintenance dictates the need for installation of new equipment, provided the equipment is the same design size and has the same design intent. For instance, a broken pipe, lift station pump, aerator, or blower can be replaced with the same design-sized equipment without MPCA approval. If the proposed construction is not expressly authorized by this permit, it may require a permit modification. If the construction project requires an Environmental Assessment Worksheet under Minn. R. 4410, no construction is permitted to begin until a negative declaration is issued and all approvals are received or implemented. [Minn. R. 7001.0030]
	6.16.51	Report Changes. The Permittee shall give advance notice as soon as possible to the MPCA of any substantial changes in operational procedures, activities that may alter the nature or frequency of the discharge, and/or material factors that may affect compliance with the conditions of this permit. [Minn. R. 7001.0150, subp. 3(M)]
	6.16.52	Chemical Additives. The Permittee shall receive prior written approval from the MPCA before increasing the use of a chemical additive authorized by this permit, or using a chemical additive not authorized by this permit, in quantities or concentrations that have the potential to change the characteristics, nature and/or quality of the discharge. The Permittee shall request approval for an increased or new use of a chemical additive at least 60 days, or as soon as possible, before the proposed increased or new use. This written request must include at least the following information for the proposed additive: a. The process for which the additive will be used; b. Safety Data Sheet (SDS) which must include aquatic toxicity, human health, and environmental fate information for the proposed additive. The aquatic toxicity information must include at minimum the results of: a) a 48-hour LC50 or EC50 acute study for a North American freshwater planktonic crustacean (either Ceriodaphnia or Daphnia sp.) and b) a 96-hour LC50 acute study for rainbow trout, bluegill or fathead minnow or another North American freshwater aquatic species other than a planktonic crustacean; c. a complete product use and instruction label; d. the commercial and chemical names and Chemical Abstract Survey (CAS) number for all ingredients in the additive (If the MSDS does not include information on chemical composition, including percentages for each ingredient totaling to 100%, the Permittee shall contact the supplier to have this information provided); and e. The proposed method of application, application frequency, concentration, and daily average and maximum rates of use. Upon review of the information submitted regarding the proposed chemical additive, the MPCA may require additional information be submitted for consideration. This permit may be modified to restrict the use or discharge of a chemical additive and include additional influent and effluent monitoring requirements. Approval for the use of an additive must not justify the exceedance of any effluent limitation nor must it be used as a defense against pollutant levels in the discharge causing or contributing to the violation of a water quality standard. [Minn. R. 7001.0170]
	6.16.53	MPCA Initiated Permit Modification, Suspension, or Revocation. The MPCA may modify or revoke and reissue this permit pursuant to Minn. R. 7001.0170. The MPCA may revoke without reissuance this permit pursuant to Minn. R. 7001.0180. [Minn. R. 7001.0170, Minn. R. 7001.0180]

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	6.16.54	TMDL Impacts. Facilities that discharge to an impaired surface water, watershed or drainage basin may be required to comply with additional permits or permit requirements, including additional restriction or relaxation of limits and monitoring as authorized by the CWA § 303(d)(4)(A) and 40 CFR § 122.44(l)(2)(i)., necessary to ensure consistency with the assumptions and requirements of any applicable US EPA approved wasteload allocations resulting from Total Maximum Daily Load (TMDL) studies. [40 CFR § 122.44(l)(2)(i)]
	6.16.55	Permit Transfer. The permit is not transferable to any person without the express written approval of the Agency after compliance with the requirements of Minn. R. 7001.0190. A person to whom the permit has been transferred must comply with the conditions of the permit. [Minn. R. 7001.0150, subp. 3(N)]
	6.16.56	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance: Due by 180 days prior to permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration. If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160): a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit; b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit; c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies. [Minn. R. 7001.0160]

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6. Submittal Action Summary

GW002, GW009, GW010, GW015, GW016, GW109, GW110, GW115 – GW121; GW200 – GW223; GW236, GW237, GW402, GW403, GW405, GW407 – GW409; GW411, GW412, GW414 – GW422; GW468, GW470 – GW473; GW477 – GW479; GW491 – GW495; GW499, GW501, GW502, GW504 – GW510, GW512, GW514 – GW519; GW521 – GW525; GW600 – GW625		
		Facility Specific Limit and Monitoring Requirements
	7.1.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD001 – SD011		
		Facility Specific Limit and Monitoring Requirements
	7.2.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
		Chronic Toxicity Requirements – SD001
	7.3.1	The Permittee shall submit quarterly chronic toxicity test battery results: Due quarterly following commencement of the discharge. [Minn. R.7001.0150 subp. 2(B)]
SW003, SW005 – SW008; SW020, SW402, SW407 - SW414		
		Facility Specific Limit and Monitoring Requirements
	7.4.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]

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WS001 – WS005; WS009, WS015, WS071 – WS074; WS401 – WS404; WS411 – WS416; WS421 – WS425		
		Facility Specific Limit and Monitoring Requirements
	7.5.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
		Flotation Tailings Basin Water Management during Construction of the FTB Seepage Containment System
	7.6.1	The Permittee shall notify the MPCA within 30 days of completion of construction of the FTB Seepage Containment System. [Minn. R. 7001.0150 subp. 3(H)]
	7.6.1	The Permittee shall notify the MPCA within 30 days of initiation of operation of the FTB Seepage Containment System and the introduction of nonferrous tailings to the FTB. [Minn. R. 7001.0150 subp. 3(H)]
		WWTS Performance Monitoring - Sulfate
	7.7.1	The Permittee is required to submit a proposed Sulfate Reduction Evaluation Plan to the MPCA within 365 days after permit issuance.
		Attenuation of Legacy Pollutants
	7.8.1	The Permittee is required to notify the MPCA the WWTS has initiated operation within 14-days of cessation of operation of the pump-back system(s) located at SD004, SD006 and/or SD026.
	7.8.2	The Permittee is required to notify the MPCA when 17-months has passed after the initiation of operation of the WWTS.
		Model Verification
	7.9.1	The Permittee is required to submit an Annual Model Verification Report. The first annual report must be submitted within 18 months of initiation of operation of the wastewater treatment system, then annually by May 31 of each year after permit issuance.
	7.9.2	The Permittee shall submit a Five Year Model Evaluation Report Work Plan for MPCA review and approval due at three years after permit issuance.
	7.9.3	The Permittee shall submit a Five Year Model Evaluation Report at least 180 days prior to permit expiration. The Permittee must submit the Five Year Model Evaluation Report with the application for permit reissuance.
		Annual Groundwater Evaluation Report
	7.10.1	The Permittee shall submit the Annual Groundwater Evaluation Report by March 31 of each year following permit issuance.
		Annual Comprehensive Performance Evaluation Report
	7.11.1	The Permittee shall submit the Annual Comprehensive Performance Evaluation Report by April 30 of each year following permit issuance.
		Hydrometallurgical Residue Facility
	7.12.1	The Permittee shall submit a Preload Design Investigation Workplan (PDIW) to the MPCA for review and approval at least 12 months prior to placing fill material for preload construction in preparation for the Hydrometallurgical Residue Facility (HRF).

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	7.12.2	The Permittee shall submit a HRF Preload Design Plan (HPDP) to MPCA for review and approval at least 60 days prior to the start of placing fill material for preload construction in preparation for the HRF.
		Low Concentration and High Concentration Equalization Basin Performance Evaluation
	7.13.1	The Permittee shall submit the Equalization Basin Performance Evaluation Report at least 180 days prior to permit expiration. [Minn. R. 7001.0150 subp. 3(H)]
	7.13.2	The Permittee shall inspect the LCEQ and HCEQ Basins, related conveyances, and appurtenances to the pond system and submit the evaluation by the end of each calendar five years following permit issuance. [Minn. R. 7001.0150 subp. 3(H)]
	7.13.3	Based on the inspection, the Permittee shall certify to the MPCA that the LCEQ and HCEQ Basin system maintains structural integrity, complete containment, and compliance with performance standards. Due by the end of each calendar five years following permit issuance. [Minn. R. 7001.0150 subp. 3(H)]
		Metallic Mining
	7.14.1	The Permittee shall submit a Dike Seepage Survey Report on January 31 of each calendar year following permit issuance. [Minn. R. 7001.0150 subp. 3(H)]
		Total Facility Requirements (NPDES/SDS)
	7.15.1	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance: Due by 180 days prior to permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration. If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160): a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit; b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit; c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies. [Minn. R. 7001.0160]

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8. Monitoring Requirements

8.1 Wastewater Treatment System (WWTS)

8.1.1 Surface Water Discharge Monitoring
SD001

Weekly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Total (as As)	500	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Arsenic, Total (as As)	1000	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Cadmium, Total (as Cd)	50	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Cadmium, Total (as Cd)	100	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Calcium Total (as Ca)	Monitor only	mg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	
Calcium Total (as Ca)	Monitor only	mg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	
Copper Total (as Cu)	150	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Copper Total (as Cu)	300	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Hardness, Calcium & Magnesium Calculated (as CaC03))	Monitor only	mg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	
Hardness, Calcium & Magnesium Calculated (as CaC03)	Monitor only	mg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	
Iron, Dissolved (as Fe)	1.0	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	TBEL
Iron, Dissolved (as Fe)	2.0	mg/L	Daily Max	Jan – Dec	24-hr composite	1 x week	TBEL
Lead, Total (as Pb)	300	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Lead, Total (as Pb)	600	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Magnesium, Total (as Mg)	Monitor only	mg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	
Magnesium, Total (as Mg)	Monitor only	mg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	
Mercury, Total (as Hg)	1000	ng/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Mercury, Total (as Hg)	2000	ng/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Nickel, Total (as Ni)	Monitor only	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	
Nickel, Total (as Ni)	Monitor only	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	
pH	6.0	SU	Calendar Month Min	Jan - Dec	Continuous	1 x week	TBEL
pH	9.0	SU	Calendar Month Max	Jan - Dec	Continuous	1 x week	TBEL

Specific Conductance	Monitor only	umh/cm	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	
Specific Conductance	Monitor only	umh/cm	Daily Max	Jan - Dec	24-hr composite	1 x week	
Total Suspended Solids (TSS)	20.0	mg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Total Suspended Solids (TSS)	30.0	mg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Zinc, Total (as Zn)	500	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x week	TBEL
Zinc, Total (as Zn)	1000	µg/L	Daily Max	Jan - Dec	24-hr composite	1 x week	TBEL
Flow	Monitor only	Mgd	Calendar Month Avg	Jan - Dec	Measurement	1 x day	
Flow	Monitor only	Mgd	Daily Max	Jan - Dec	Measurement	1 x day	
Flow	Monitor only	MG	Calendar Month Total	Jan - Dec	Measurement	1 x day	

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Aluminum, Dissolved (as Al)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Antimony, Total (as Sb)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Beryllium, Total (as Be)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Bicarbonates (HCO_3)	Monitor only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Boron, Total (as B)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Chloride, Total	Monitor only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Chromium, Total (as Cr)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Cobalt, Total (as Co)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Fluoride, Total (as F)	Monitor only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Manganese, Total (as Mn)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Selenium, Total (as Se)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Silver, Total (as Ag)	Monitor only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Sodium, Total (as Na)	Monitor only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jan - Dec	24-hr composite	1 x month	
Solids, Total Dissolved(TDS)	Monitor only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	

Quarterly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Dissolved Mercury	Monitor only	ng/L		Jan – Dec	24-hr composite	1 x quarter	Sample to be taken at same time as TSS

2 x Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Nitrite + Nitrate Total (as N)	Monitor Only	mg/L	Calendar Month Avg	March, September	24-hr composite	2 x year	
Nitrogen, Kjeldahl, Total	Monitor Only	mg/L	Calendar Month Avg	March, September	24-hr composite	2 x year	
Nitrogen, Total (as N)	Monitor Only	mg/L	Calendar Month Avg	March, September	24-hr composite	2 x year	
Phosphorus, Total (as P)	Monitor Only	mg/L	Calendar Month Avg	March, September	24-hr composite	2 x year	

WET Testing							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
WET Testing - Chronic	Monitor Only	TuC	Calendar Quarter Average	Jan – Dec	24-hr composite	1 x quarter	

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8.1.2 Surface Water Discharge Monitoring
SD002, SD003, SD004, SD005, SD006, SD007, SD008, SD009, SD010, SD011

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Flow	Monitor Only	Mgd	Calendar Month Avg	Jan - Dec	Measurement, Instantaneous	1 x day	Report 1 x month
Flow	Monitor Only	MG	Daily Maximum	Jan - Dec	Measurement, Instantaneous	1 x day	Report 1 x month
Flow	Monitor Only	MG	Calendar Month Total	Jan - Dec	Measurement, Instantaneous	1 x month	

8.1.3 Internal Waste Stream - Internal Performance Monitoring WS074

Weekly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Sulfate, Total (as SO_4)	9.0	mg/L	Calendar Month Avg Intervention	Jan – Dec	24-hr composite	1 x week	Operating Target
Sulfate, Total (as SO_4)	10.0	mg/L	Average of previous 12 monthly averages	Jan – Dec	24-hr composite	1 x week	Operating Limit
Copper, Total (as Cu)	9.3	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit
Arsenic, Total (as As)	53	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit
Cobalt, Total (as Co)	5.0	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit
Lead, Total (as Pb)	3.2	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit
Nickel, Total (as Ni)	52	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit
Mercury, Total (as Hg)	1.3	ng/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	Operating Limit

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8.1.4 Internal Waste Stream Monitoring – Influent to WWTS (from FTB seepage capture systems) WS015

Weekly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x week	

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Beryllium , Total (as Be)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Boron, Total (as B)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Iron, Total (as Fe)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	

Manganese, Total (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Silver, Total (as Ag)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Sodium, Total (as Na)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	24-hr composite	1 x month	

Quarterly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Mercury, Dissolved (as Hg)	Monitor Only	ng/L	Calendar quarter Max	Jan – Dec	24-hr composite	1 x quarter	
Solids, Total Suspended (TSS)	Monitor Only	ng/L	Calendar quarter Max	Jan – Dec	24-hr composite	1 x quarter	

8.1.5 Internal Waste Stream Monitoring – Influent to WWTS (Combined Mine Water Sources) WS415, WS416

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Iron, Total (as Fe)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

2 x Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Beryllium, Total (as Be)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Boron, Total (as B)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Manganese, Total (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Silver, Total (as Ag)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Sodium, Total (as Na)	Monitor Only	mg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	

8.1.6 Internal Waste Stream Monitoring – WWTS Mine Water Treatment Effluent WS072, WS073

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Calcium, Total (as Ca)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Iron, Total (as Fe)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

2 x Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Beryllium, Total (as Be)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Boron, Total (as B)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Manganese, Total (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Silver, Total (as Ag)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Sodium, Total (as Na)	Monitor Only	mg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	

8.2 Mine Site

8.2.1 Internal Waste Stream Monitoring – Mine Pit Dewatering WS401, WS402, WS403, WS404

2 x Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Hardness , Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
pH	Monitor Only	SU	Calendar Month Min	Jan – Dec	Grab	2 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Flow	Monitor Only	mgd/MG	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	2 x month	

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8.2.2 Internal Waste Stream Monitoring – Waste Rock Stockpiles; Ore Surge Pile WS411, WS412, WS421, WS422, WS423, WS424, WS425

2 x Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
pH	Monitor Only	SU	Calendar Month Min	Jan – Dec	Grab	2 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x month	
Flow	Monitor Only	mgd/MG	Calendar Month Avg	Jan – Dec	Measurement	2 x month	

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

8.2.3 Internal Waste Stream Monitoring – Overburden Storage & Laydown Area (OSLA), Construction Mine Water Basin
WS413, WS414

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved(TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

8.2.4 Groundwater Monitoring - Category 1 Stockpile Groundwater Containment System Performance
GW600, GW601, GW604, GW605, GW608, GW609, GW612, GW613, GW616, GW617, GW620, GW621, GW624, GW625

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

8.2.5 Groundwater Monitoring - Category 1 Stockpile Groundwater Containment System Performance
GW602, GW603, GW606, GW607, GW610, GW611, GW614, GW615, GW618, GW619, GW622, GW623

Quarterly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

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8.2.6 Groundwater Monitoring – Surficial Aquifer
GW402, GW403, GW405, GW407, GW408, GW409, GW411, GW412, GW414, GW415, GW416, GW417, GW418, GW419, GW420, GW421, GW422, GW468, GW491, GW492, GW493, GW494, GW495

3 x Yearly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Dissolved (as As)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Calcium, Dissolved, (as Ca)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Copper, Dissolved (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Hardness, Calcium & Magnesium Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Magnesium, Dissolved (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Manganese, Dissolved (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Nickel, Dissolved (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Antimony, Dissolved (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Beryllium, Dissolved (as Be)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Barium, Dissolved (as Ba)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cadmium, Dissolved (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Chromium, Dissolved (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cobalt, Dissolved (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	

Lead, Dissolved (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Selenium, Dissolved (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Thallium, Dissolved (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Zinc, Dissolved (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

8.2.7 Groundwater Monitoring – Bedrock
GW501, GW502, GW506, GW507, GW512, GW514, GW515, GW516, GW524, GW525

3 x Yearly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Dissolved (as As)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Calcium, Dissolved (as Ca)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Copper, Dissolved (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Hardness, Calcium & Magnesium Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Magnesium, Dissolved (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Manganese, Dissolved (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Nickel, Dissolved (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Antimony, Dissolved (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Beryllium, Dissolved (as Be)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Barium, Dissolved (as Ba)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

Cadmium, Dissolved (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Chromium, Dissolved (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cobalt, Dissolved (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	
Lead, Dissolved (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Selenium, Dissolved (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Thallium, Dissolved (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Zinc, Dissolved (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

8.2.8 Groundwater Monitoring – North Flow Path Surficial Aquifer GW470, GW471, GW472, GW473, GW477, GW478, GW479, GW499

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

8.2.9 Groundwater Monitoring – North Flow Path Bedrock GW504, GW505, GW508, GW509, GW510, GW517, GW518, GW519, GW521, GW522, GW523

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

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8.2.10 Surface Water Monitoring
SW402, SW407, SW408, SW409, SW410, SW411, SW412, SW413, SW414

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Flow	Monitor Only	mgd	Calendar Month Avg	Jan – Dec	Grab	1 x month	

2 x Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	

8.3 Plant Site

8.3.1 Internal Waste Stream Monitoring – Flotation Tailings Basin (FTB) WS001, WS002, WS003

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Magnesium, Total (as Mg)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Boron, Total (as B)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Oct	Grab	1 x month	

8.3.2 Internal Waste Stream Monitoring – Hydrometallurgical Residue Facility (HRF) WS004, WS005

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Barium, Total (as Ba)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Beryllium, Total (as Be)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	
Iron, Total (as Fe)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	
Manganese, Total (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

8.3.3 Internal Waste Stream Monitoring – Sewage Treatment Stabilization Ponds WS009

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
BOD, Carbonaceous 05 Day (20 Deg C)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x week during discharge	
Solids, Total Suspended (TSS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	2 x week during discharge	
pH	Monitor Only	SU	Calendar Month Min	Jan – Dec	Grab	2 x week during discharge	
Fecal Coliform, MPN or Membrane Filter 44.5C	Monitor Only	200/#100mL	Calendar Month Geo Mean	Jan – Dec	Grab	2 x week during discharge	
Flow	Monitor Only	mgd/MG	Calendar Month Avg	Jan – Dec	Measurement	2 x week during discharge	

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8.3.4 Groundwater Monitoring – FTB Seepage Containment System Performance GW202, GW203, GW206, GW207, GW210, GW211, GW214, GW215, GW218, GW219, GW222, GW223, GW236, GW237

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

8.3.5 Groundwater Monitoring – FTB Seepage Containment System Performance GW200, GW201, GW204, GW205, GW208, GW209, GW212, GW213, GW216, GW217, GW220, GW221

Quarterly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan, Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Jan – Dec	Measurement	1 x month	

8.3.6 Groundwater Monitoring – Surficial Aquifer GW002, GW009, GW010, GW015, GW016

3 x Yearly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Dissolved (as As)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Calcium, Dissolved (as Ca)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Copper, Dissolved (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Hardness, Calcium & Magnesium Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Magnesium, Dissolved (as	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	

Mg)							
Manganese, Dissolved (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Nickel, Dissolved (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved(TDS)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Antimony, Dissolved (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Beryllium, Dissolved (as (Be)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Barium, Dissolved (as Ba)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Boron, Dissolved (as B)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cadmium, Dissolved (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Chromium, Dissolved (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cobalt, Dissolved (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	
Lead, Dissolved (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Selenium, Dissolved (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Thallium, Dissolved (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Zinc, Dissolved (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

8.3.7 Groundwater Monitoring – Bedrock
GW109, GW110, GW115, GW116, GW117, GW118, GW119, GW120, GW121

3 x Yearly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Arsenic, Dissolved (as As)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Bicarbonate (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Calcium, Dissolved (as Ca)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Copper, Dissolved (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Hardness, Calcium & Magnesium Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Magnesium, Dissolved (as Mg)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Manganese, Dissolved (as Mn)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Nickel, Dissolved (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Solids, Total Dissolved(TDS)	Monitor Only	mg/L	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	
Elevation of GW Relative to Mean Sea Level	Monitor Only	Feet	Calendar Month Avg	Apr, Jul, Oct	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Antimony, Dissolved (as Sb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Beryllium, Dissolved (as Be)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Barium, Dissolved (as Ba)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Boron, Dissolved (as B)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

Cadmium, Dissolved (as Cd)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Chromium, Dissolved (as Cr)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Cobalt, Dissolved (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Fluoride, Total (as F)	Monitor Only	mg/L	Calendar Month Avg	Jul	Grab	1 x month	
Lead, Dissolved (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Selenium, Dissolved (as Se)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Thallium, Dissolved (as Tl)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	
Zinc, Dissolved (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jul	Grab	1 x month	

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8.3.8 Surface Water Monitoring
SW003, SW005, SW006, SW007, SW008, SW020

Monthly Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Aluminum, Total (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Aluminum, Dissolved (as Al)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Arsenic, Total (as As)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Chloride, Total	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Cobalt, Total (as Co)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Copper, Total (as Cu)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Lead, Total (as Pb)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Nickel, Total (as Ni)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
pH	Monitor Only	SU	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Specific Conductance	Monitor Only	umh/cm	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Solids, Total Dissolved(TDS)	Monitor Only	mg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Zinc, Total (as Zn)	Monitor Only	µg/L	Calendar Month Avg	Jan – Dec	Grab	1 x month	
Flow	Monitor Only	mgd	Calendar Month Avg	Jan – Dec	Grab	1 x month	

Annual Monitoring							
Parameter	**Limit**	**Units**	**Limit Type**	**Effective Period**	**Sample Type**	**Frequency**	**Notes**
Antimony, Total (as Sb)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Cadmium, Total (as Cd)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Chromium, Total (as Cr)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Selenium, Total (as Se)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	
Thallium, Total (as Tl)	Monitor Only	µg/L	Calendar Month Avg	May, Sep	Grab	1 x month	

Figure 1: Location of WWTS Surface Water Discharge Monitoring Stations SD001 – SD011 and WWTS Internal Waste Stream Monitoring Stations WS074, WS015 and WS072 – WS073

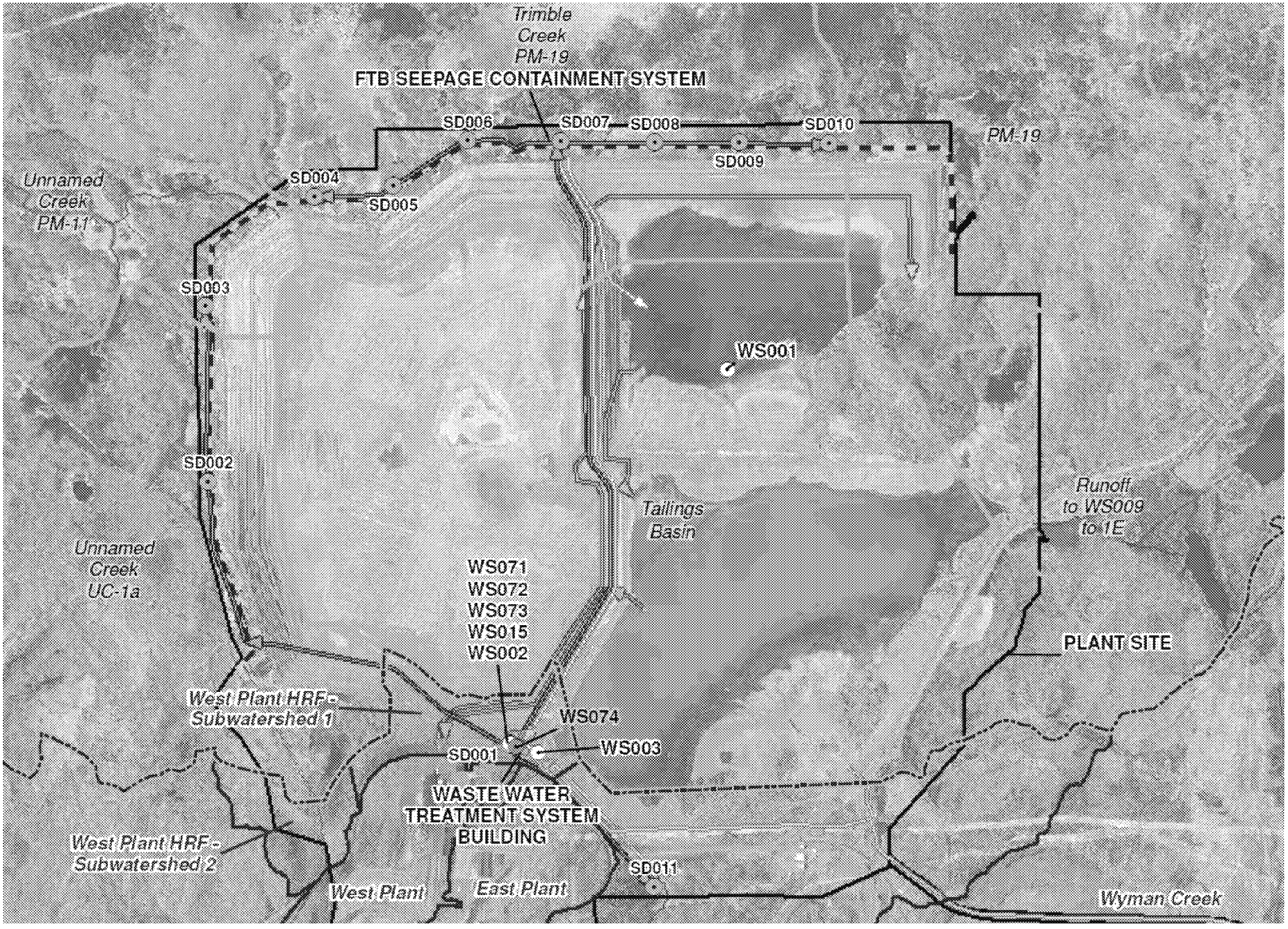


Figure 2: Location of WWTS Internal Waste Stream Monitoring Stations WS415 and WS416

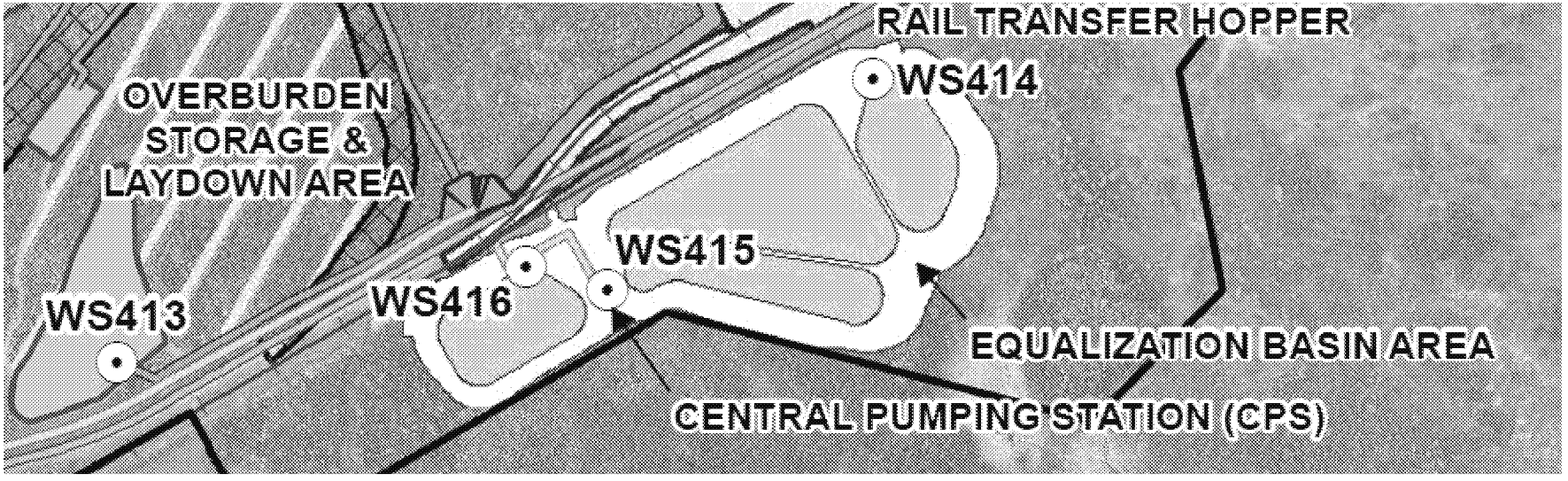


Figure 3: Location of Mine Site Internal Waste Stream Monitoring Stations (WS401-WS404; WS411-WS414; WS421-WS425)

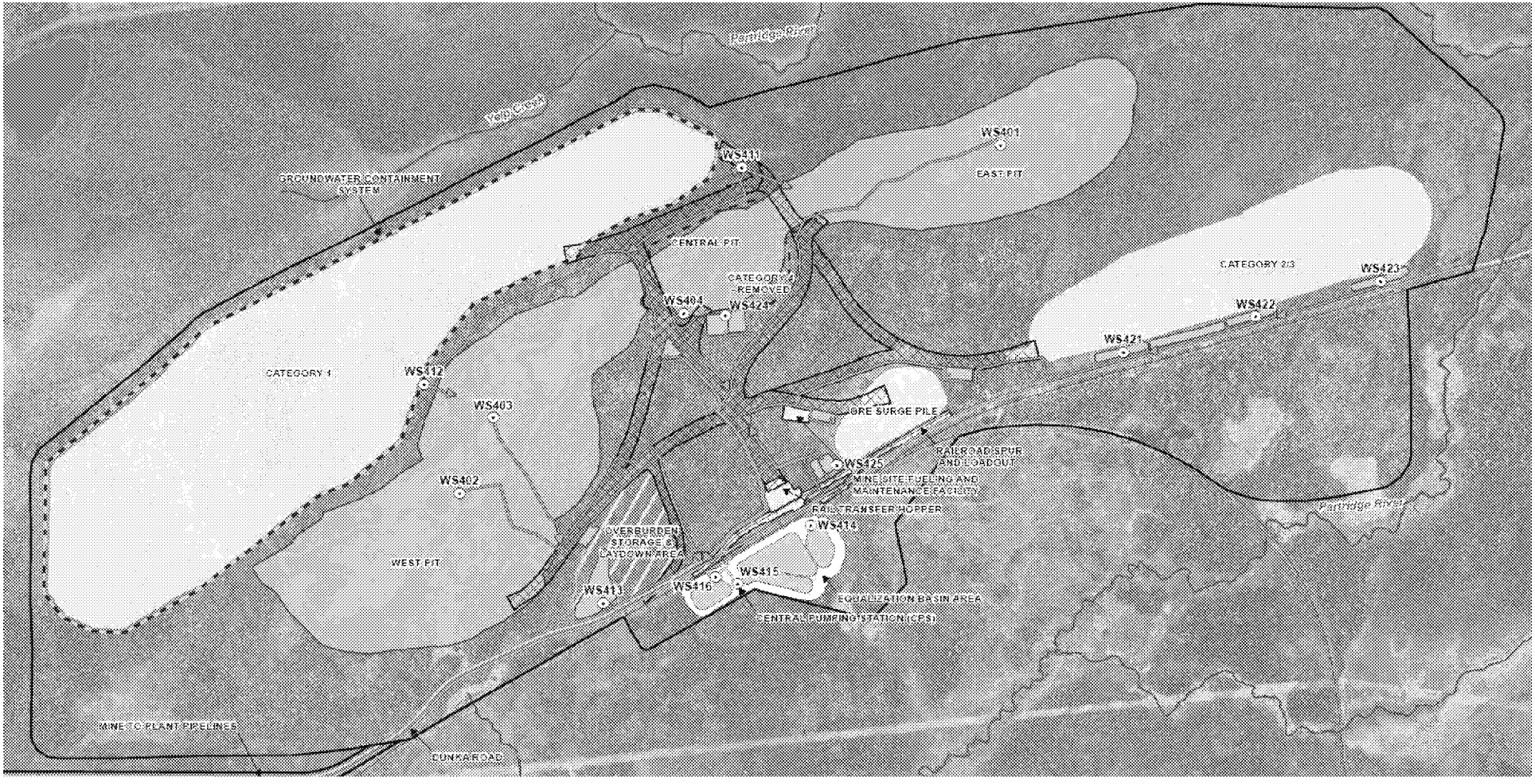


Figure 4: Location of Category 1 Groundwater Containment System Monitoring Well & Piezometer Stations (GW600-GW625)

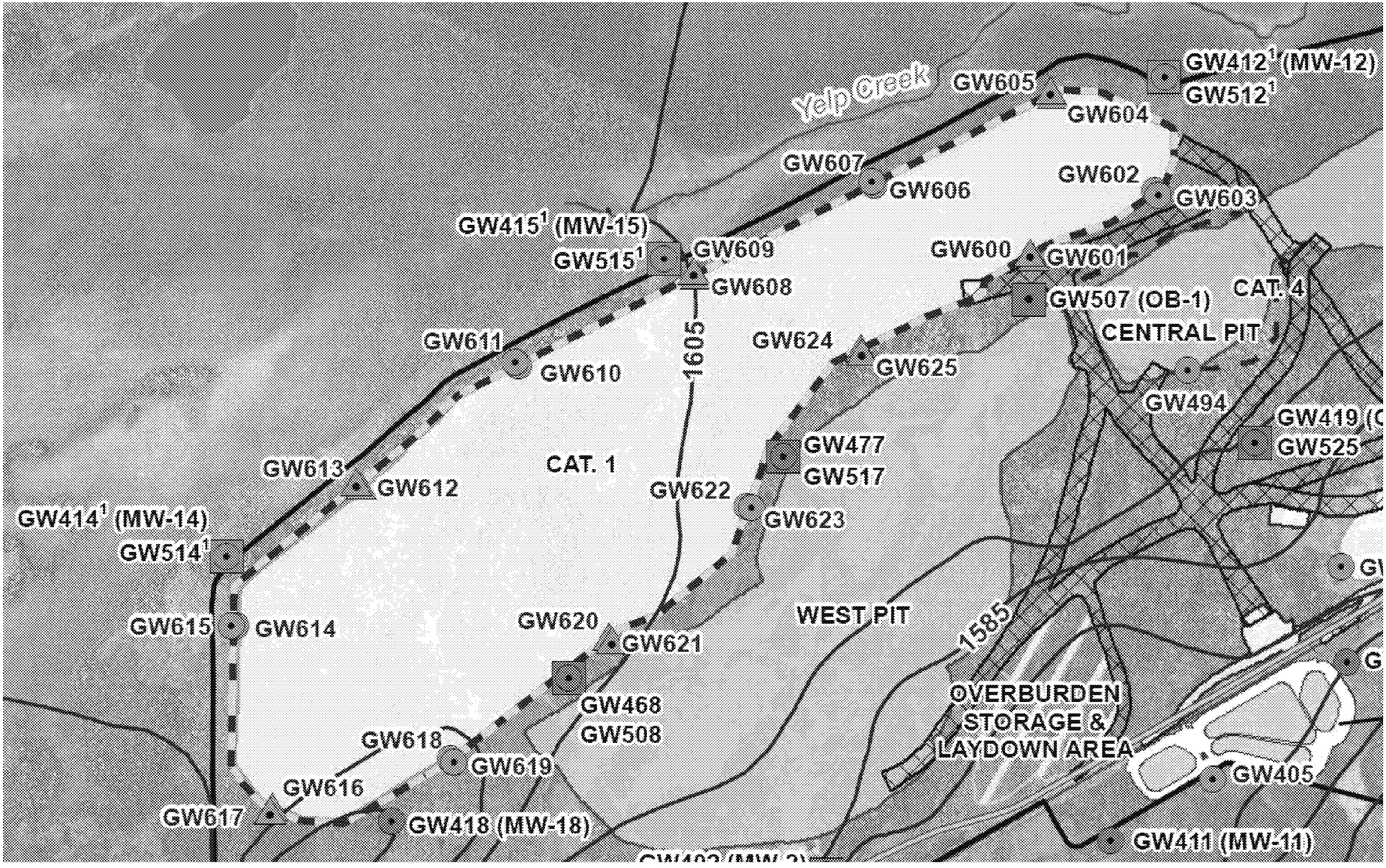


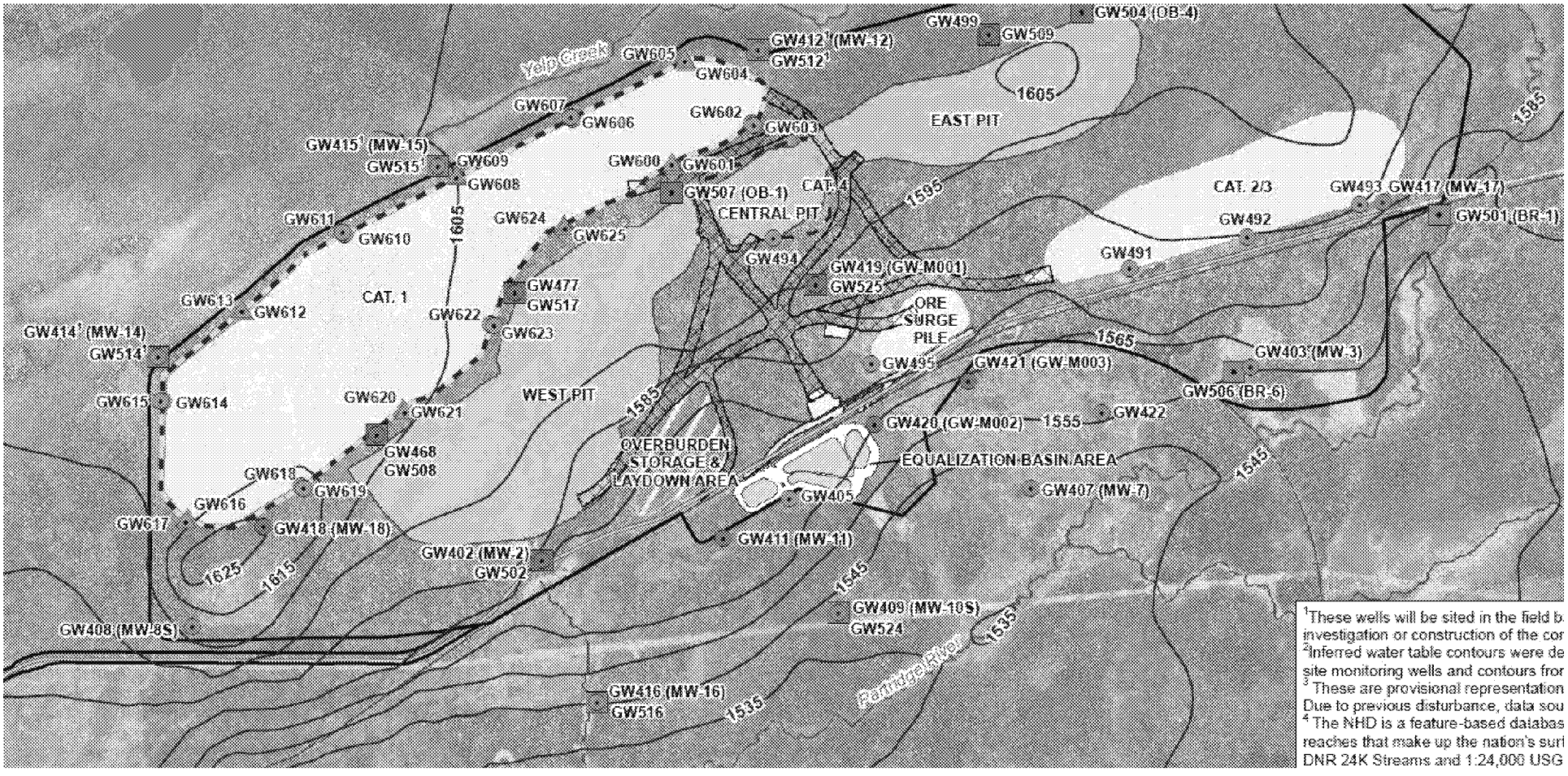
Figure 5: Location of Mine Surficial and Bedrock Groundwater Monitoring Well Stations

Groundwater Monitoring – Surficial Aquifer

GW402, GW403, GW405, GW407, GW408, GW409, GW411, GW412, GW414, GW415, GW416, GW417, GW418, GW419, GW420, GW421, GW422, GW468, GW491, GW492, GW493, GW494, GW495

Groundwater Monitoring – Bedrock Aquifer

GW501, GW502, GW506, GW507, GW512, GW514, GW515, GW516, GW524, GW525



[1]These wells will be sited in the field b
investigation or construction of the cor
[2]Inferred water table contours were de
site monitoring wells and contours fror
[3] These are provisional representation
Due to previous disturbance, data sou
[4] The NHD is a feature-based databas
reaches that make up the nation's surf
DNR 24K Streams and 1:24,000 USG

Figure 6: Mine Site Groundwater Monitoring

North Flow Path Surficial Aquifer: GW470, GW471, GW472, GW473, GW477, GW478, GW479, GW499

North Flow Path Bedrock Aquifer: GW504, GW505, GW508, GW509, GW510, GW517, GW518, GW519, GW521, GW522, GW523

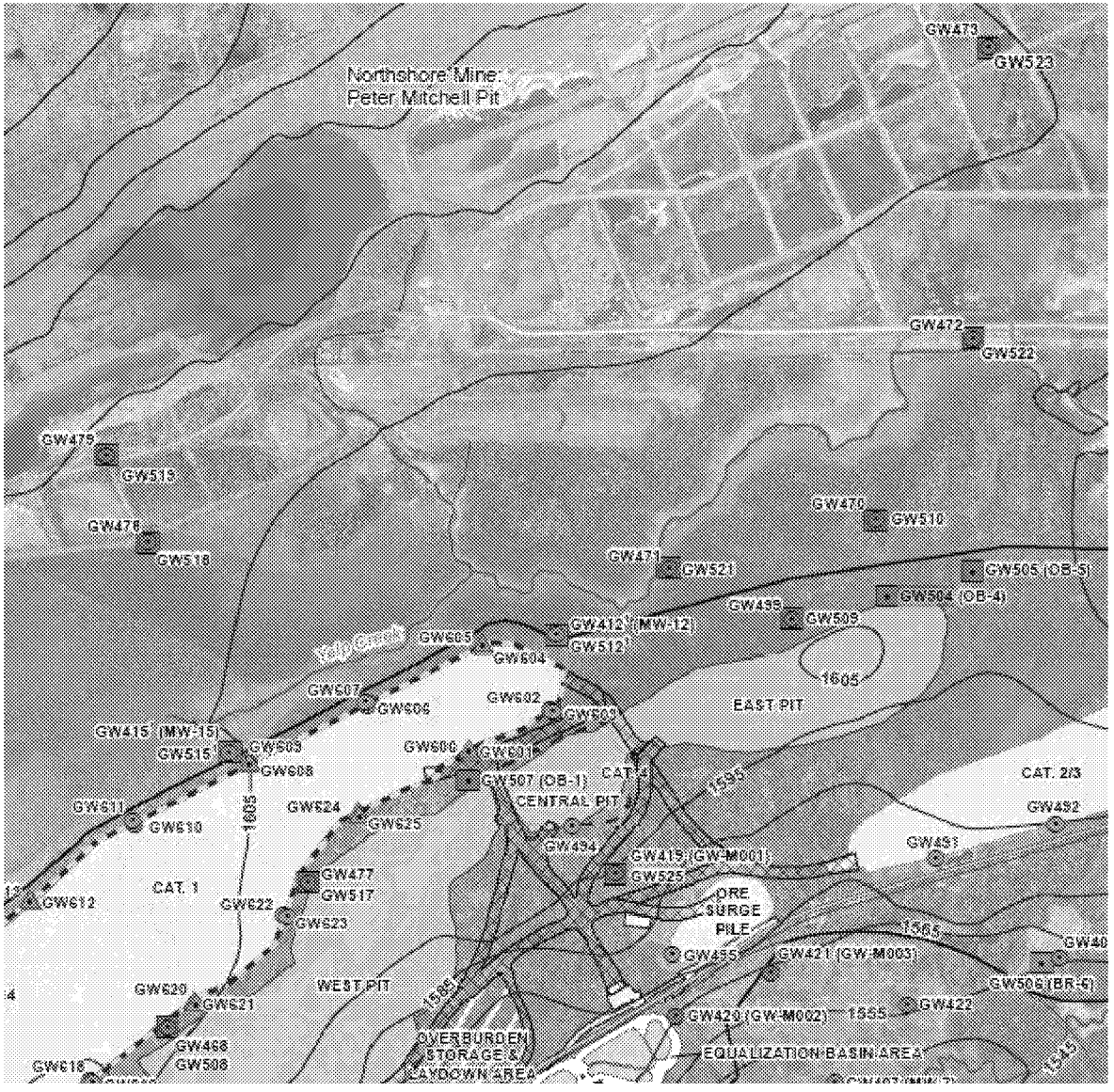


Figure 7: Location of Mine Site Surface Water Monitoring Stations (SW402, SW407, SW408, SW409, SW410, SW411, SW412, SW413, SW414)

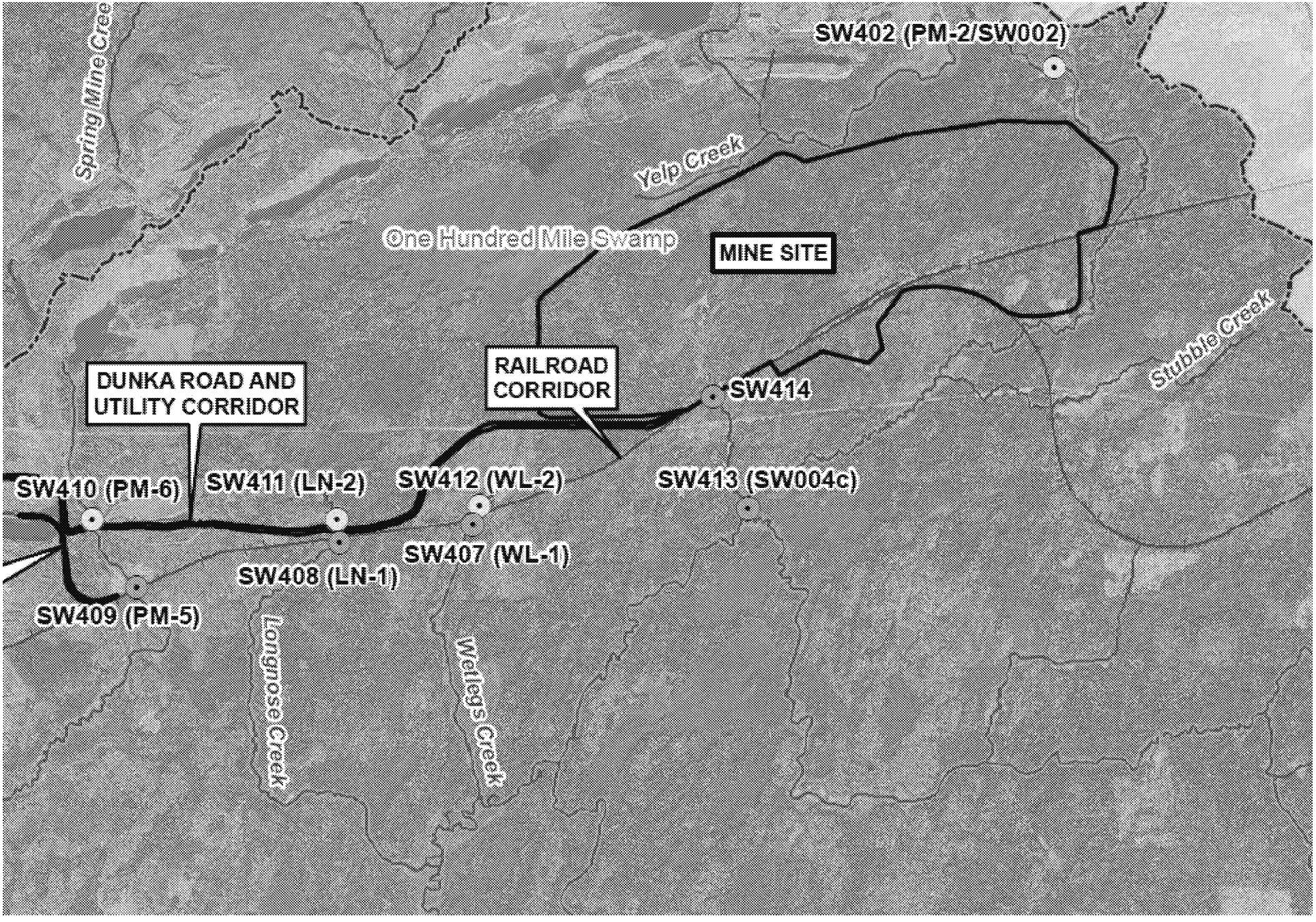


Figure 8: Location of Plant Site Internal Waste Stream Monitoring Stations: FTB, HRF and Sewage Treatment (WS001-WS005, WS009)

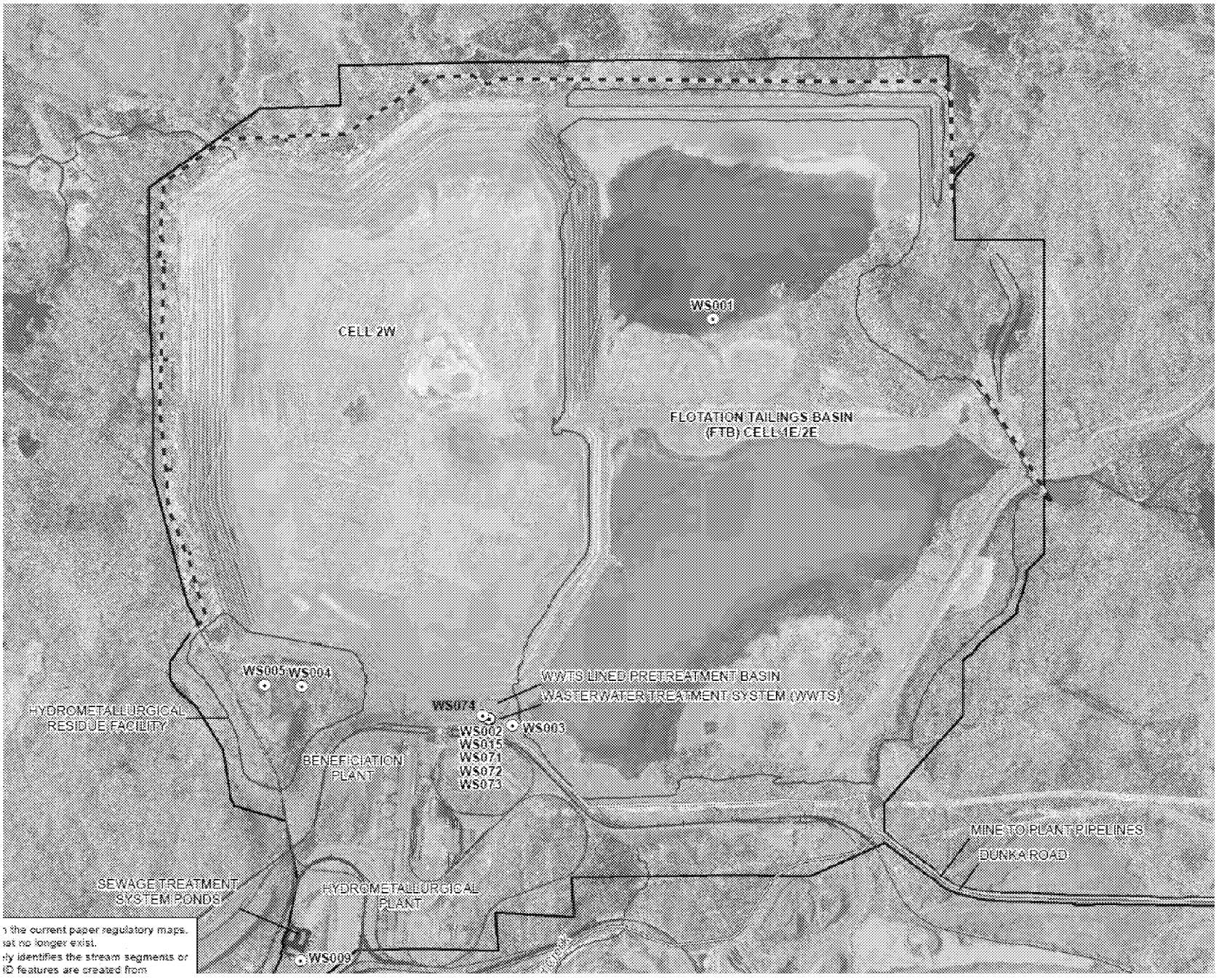


Figure 9: Location of FTB Seepage Containment System Groundwater Monitoring Stations (GW200-GW223; GW236-GW237)

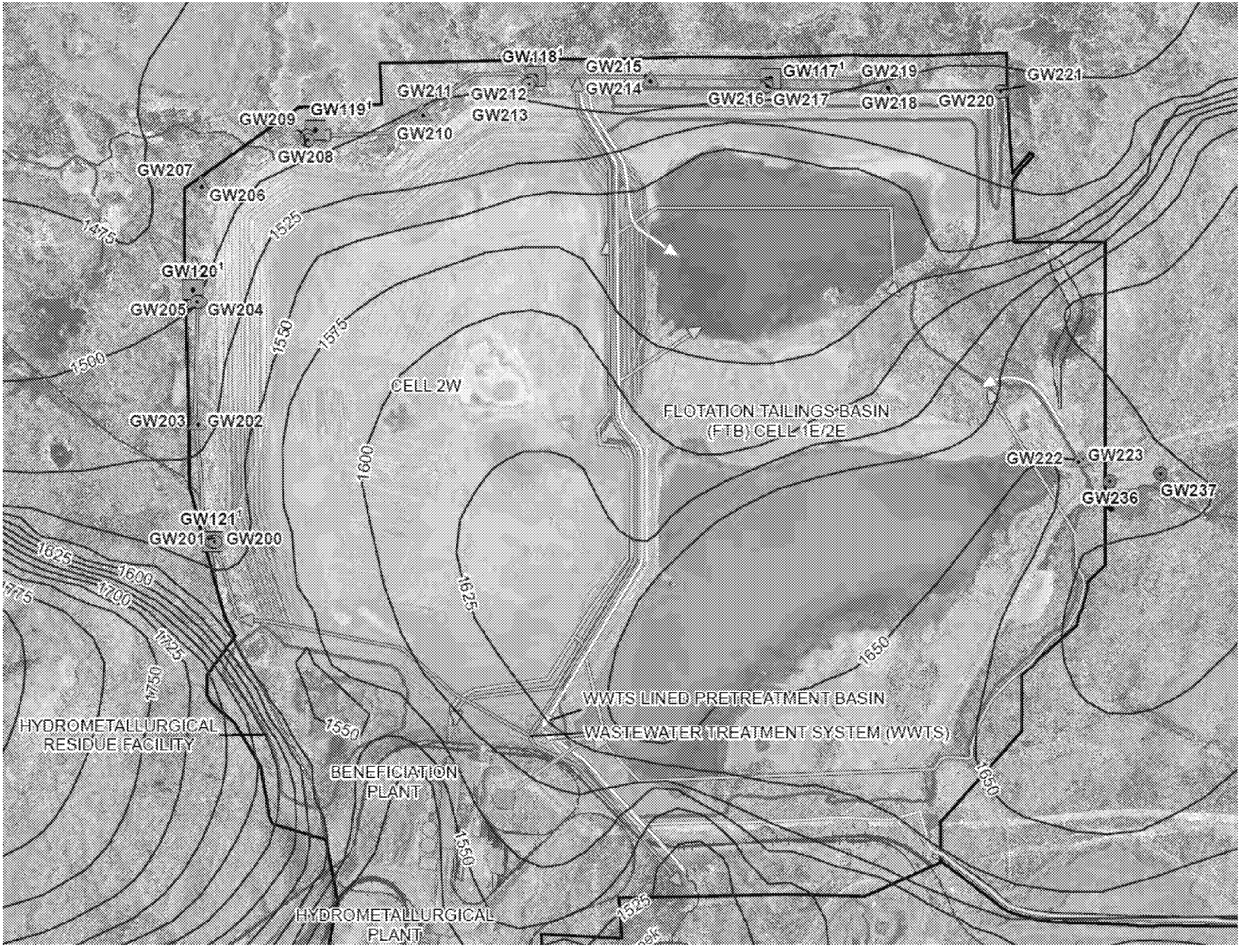
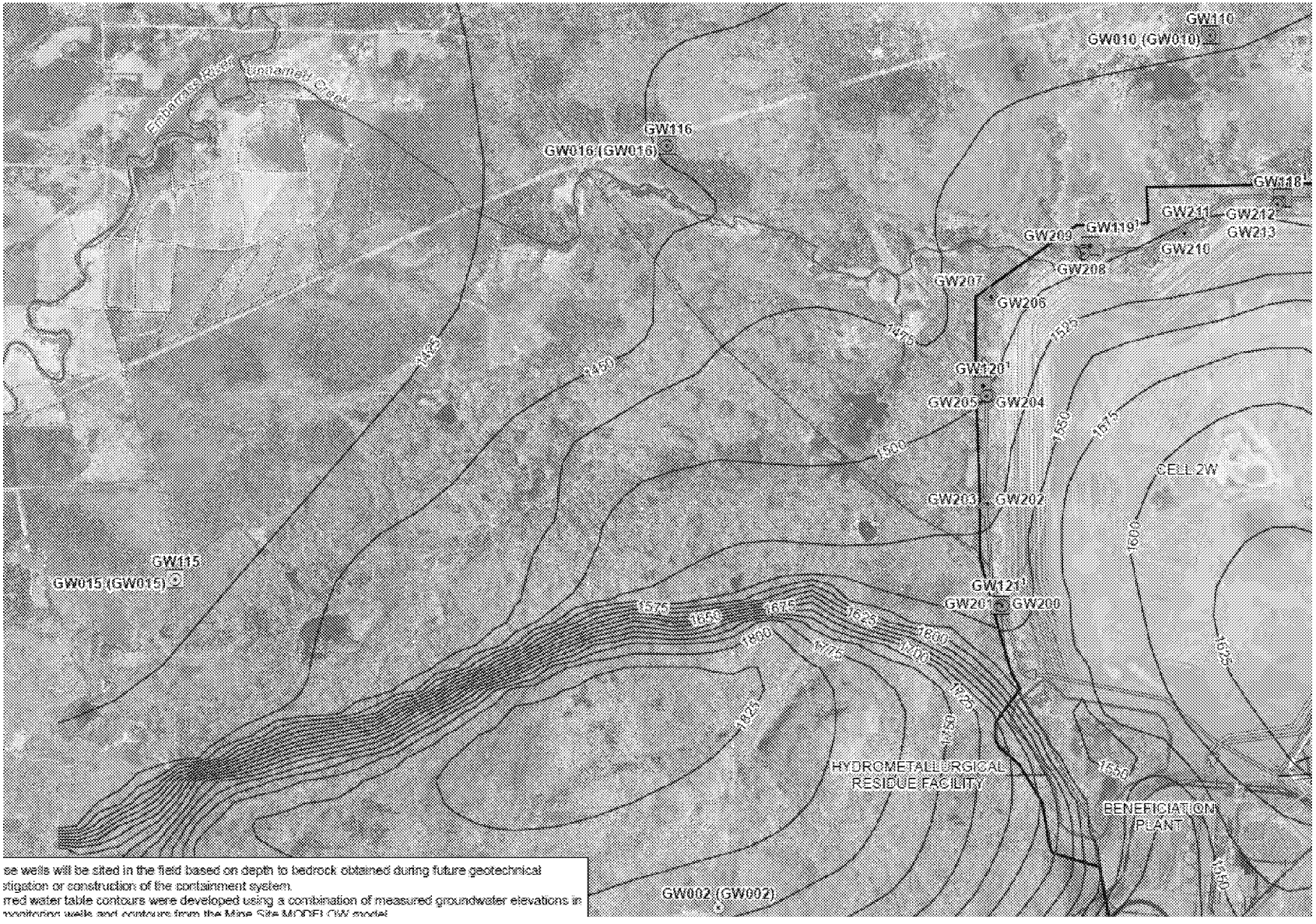


Figure 10: Location of Plant Site Surficial and Bedrock Groundwater Monitoring Well Stations

Surficial Aquifer: GW002, GW009, GW010, GW015, GW016

Bedrock Wells: GW109, GW110, GW115, GW116, GW117, GW118, GW119, GW120, GW121



se wells will be sited in the field based on depth to bedrock obtained during future geotechnical
stigation or construction of the containment system.
rred water table contours were developed using a combination of measured groundwater elevations in
monitoring wells and contours from the Mine Site MODFLOW model.

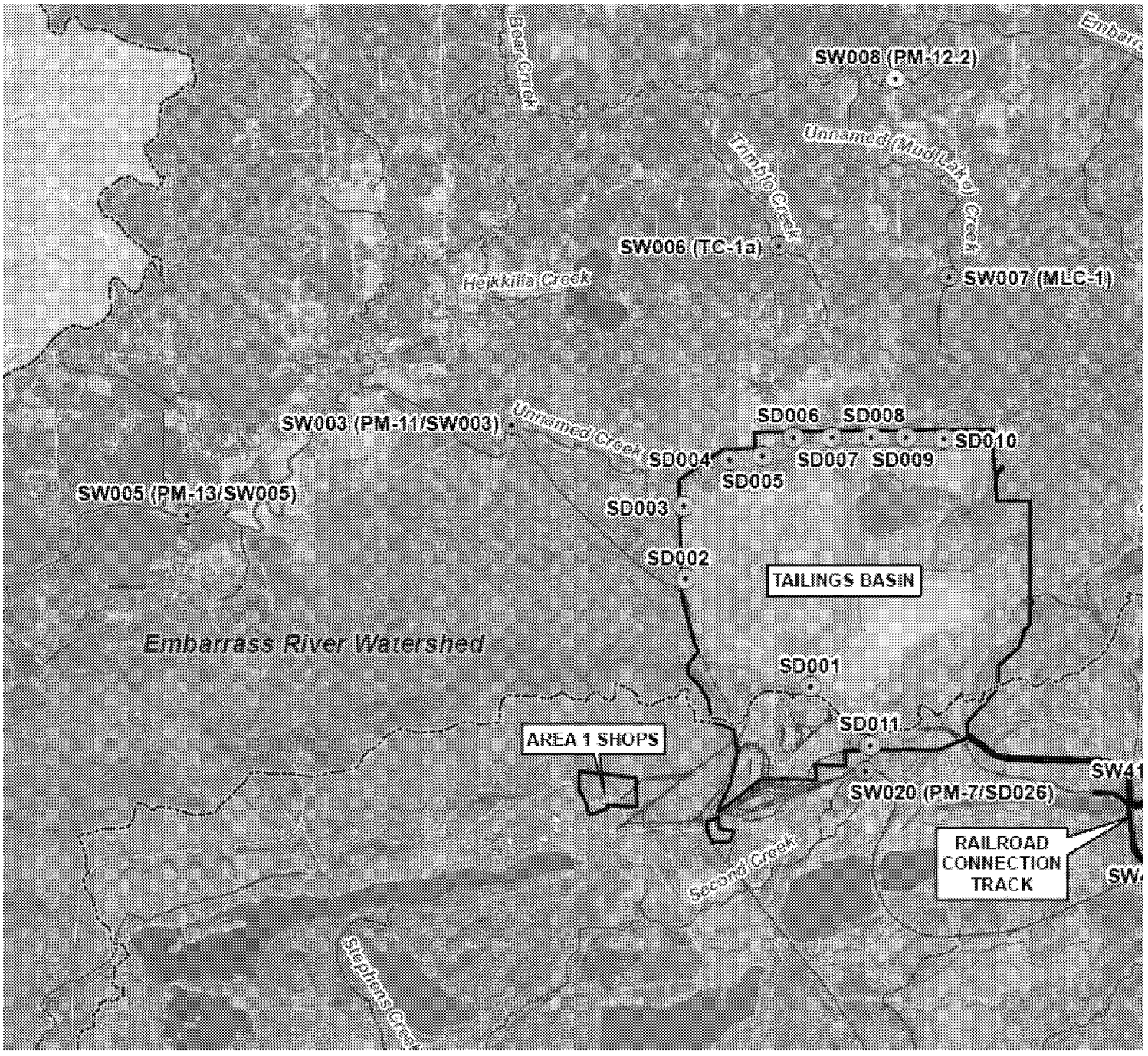



Figure 11: Location of Plant Site Surface Water Monitoring Stations (SW003, SW005, SW006, SW007, SW008, SW020)