AEM

WASTE AND WATER MANAGEMENT PLAN FOR MINE PRE-DEVELOPMENT WORK SPRING 2008

AGNICO-EAGLE MEADOWBANK PROJECT

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Executive Summary

Agnico-Eagle Mines Limited (AEM) has applied for a Type A water license to allow for construction, operation and reclamation of the Meadowbank Gold Project. This application is under review and if a positive decision is reached could lead to the start of construction in the summer of 2008. Due to the remote location and short summer ice free construction season AEM projects that it will take one full summer ice free season to construct the first dewatering dike (the East Dike) required allowing for development of the Portage Pit. This requires the pre-development of the two on-land starter pits on the Portage deposit to develop a stockpile of broken rockfill material ahead of the start of construction that will be required to construct the outer shells of the East Dike. Consequently AEM is applying for an amendment of the Tehek Lake Access Road Type B water license to allow for the stripping of overburden and the development of these two starter pits in the spring of 2008 (late April thru June) to develop a sufficient stockpile of broken rock to allow for summer construction of the East Dike. To minimize the effects on the environment, the broken rock will be left in place in the pit footprint until AEM receives the License A.

Mitigation measures will be put in place to minimize the effects on the environment during the pre-development work. These mitigations measures include: installation of silt fences on the shore around the working areas and stockpiles and minimizing the effects of waste rock by keeping the broken rock in place.

This report presents the Waste and Water Management Plan for the proposed pre-development work.

1. INTRODUCTION

This report presents the Waste and Water Management Plan for the proposed pre-development work at the Meadowbank site. The proposed mine pre-development will involve the construction of roads, installation of culverts and the establishment of temporary stock piles for overburden storage. The pre-development work will occur during the spring of 2008 (late April thru June) and is essential to allow the construction of the dikes during the summer of 2008 assuming that AEM receives an approved Type A Water License (application currently under review). This pre-development work is necessary given the short 'open water' construction season in Nunavut. The objective is to create a stockpile of suitable dike construction material in the second quarter of 2008 so that construction of the East Dike can commence as soon as possible after the Type A water License is approved by the Minister of Indian Affairs and Northern Development. The accelerated schedule is to prevent the Meadowbank Project slipping by one year which could occur if the East Dike cannot be fully constructed in the summer of 2008. This Waste and Water Management plan is included as a component to an application to amend the existing Tehek Lake Access Road Type B water license 8BC-TEH0708 to allow for this pre-development work.

2. BACKGROUND INFORMATION

The Meadowbank site, located 70 km north of Baker Lake is located on Inuit owned lands (IOL BL-14) and as such is subjected to land use and water use approvals by the Kivalliq Inuit Association and the Nunavut Water Board. The Meadowbank project, subject of a type A Water license application submitted in September 2007, will be a gold mine with a roughly eight- to ten-year operational lifespan. The project received a Nunavut Impact Review Board Project Certificate in December 2006.

All construction and operating supplies for the pre-development work project will be transported from Baker Lake through the all-weather private access road (AWPAR) under construction that should be completed at the beginning of March 2008. AEM has been actively exploring the Meadowbank area since 1995. Engineering, environmental baseline studies and community consultations have paralleled these exploration programs.

3. PRE-DEVELOPMENT WORK

AEM proposes to prepare the site during the spring of 2008 (late April thru June) to allow dike construction to start during the summer of 2008 as soon as the A license is granted (expected in early July). In order to prepare the ground for rock excavation, it is initially necessary to excavate the overburden. Stripping of 0.9 Mt of overburden on the South Portage Pit footprint and of 1.9 Mt on the North Portage Pit footprint and some rock preparation will be necessary for the dike construction. To minimize the effects on the environment, the broken rock will be left in the pit footprint until AEM receives the Type A Water License from the NWB and INAC Minister.

The first zone to be excavated will be the south pre-development zone (see Figure 1). Approximately 0.9 million tonnes of overburden will be removed from that zone. This overburden will be placed in two stock piles, one West of the south zone and one at the East.

In parallel, the same type of excavation work will take place in the north pre-development zone (see Figure 1). Approximately 1.9 million tonnes of overburden will be excavated from the north zone and will be placed in proximity.

Once overburden excavation is completed, the next stage will be to prepare the rock within the exposed open pit zones which will be used for dike construction (the East Dike). The exposed surface waste rock will be drilled and blasted. To minimize the effects on the environment, the broken rock will be left in place in the two pre-development zones. Estimated quantities of drilled and blasted material in the south and north zones, are summarised in the following tables:

Table 1 Estimated quantities of blasted rock left in place

Zone	Rock Type*	Vol. in-place (m^3)	Vol. blasted (m^3)	Tonnes
South	Ore	17 594	26 391	54 894
	UM	4 019	6 028	11 293
	IV	58 868	88 301	161 886
	IF	51 213	76 819	159 784
	QZ	-	-	-
	Total	131 694	197 540	387 857
North	Ore	19 773	29 660	61 693
	UM	14 863	22 294	41 765
	IV	404 283	606 425	1 111 779
	IF	107 976	161 964	336 886
	QZ	2 469	3 703	6 542
	Total	549 365	824 047	1 558 665

* Ore = Mineralized material UM = Ultramafic IV = Intermediate volcanic
IF = Iron formation QZ = Quartzite

Table 2 South zone blasted rock quantities left in place, by bench

	Tonnes					
	Ore	UM	IV	IF	QZ	Total
Bench 136	39 887	11 293	111 860	143 164	-	306 204
Bench 142	15 007	-	50 026	16 620	-	81 653
Total	54 894	11 293	161 886	159 784	-	387 857

Table 3 North zone blasted rock quantities left in place, by bench

	Tonnes					
	Ore	UM	IV	IF	QZ	Total
Bench 142	44 873	40 643	731 833	247 681	6 542	1 071 572
Bench 148	16 654	1 122	375 771	87 879	-	481 426
Bench 154	166	-	4 175	1 326	-	5 667
Total	61 693	41 765	1 111 779	336 886	6 542	1 558 665

3.1. Road

To have access to the working areas and allow access by the mining equipment on the site, the construction of access and haul roads is necessary. These roads will be used throughout the life of the mine. Two main working areas will be developed, the South and the North pre-development zones.

Access to the South zone

The roads required to access the South zone will connect the plant site area to the zone of pre-development. These roads will also be necessary to have access to the overburden stockpile and to the East dike (see Figure 1 – attached at end of this document). At first the roads will be constructed to have access to the pre-production zones using material already present on site (left from previous earthworks). When sufficient overburden has been removed to have access to the bedrock, non-acid generating waste rock material will be used to finalise the construction of the roads. The roads will then comprise a mixture of blasted waste rock (non acid generating) coming from the pre-production zone and crushed material already present on the site. The roads will be 2.1 km long and 25 m wide, with a height of 1 m and a maximum grade of 8%.

Access to the south zone starter pit will require crossing the western most channel outlet between Second and Third Portage Lakes (see Figure 1). Initially this crossing will be achieved using an ice-bridge across the frozen channel. This will continue until ice conditions no longer allow for this safe crossing by mining vehicles. At that time the ice bridge will be replaced with a culverted crossing designed to allow unobstructed fish and water passage through the spring freshet. This crossing will consist of four metal culvert pipes of 36’’ in diameter each placed beside each other and set into the ground to allow for unobstructed fish passage.

A short on land connecting road will have to be constructed to provide access between the Meadowbank camp site and the ice bridge crossing over the western most channel between Second and Third Portage Lakes as shown on Figure 1. The length of this connection road is 280 meters with a width of 25 meters.

Access to the North zone

There were several options considered to access the North Zone starter pit area during this pre-development phase. To minimize the overall footprint during this phase, AEM decided to start the pre-development stripping in the north zone starter pit so that all access to this area can be accomplished using an ice road built across Second Portage Lake. This option defers the need for the construction of a 2.5 km gravel road passing north of Second Portage Lake until after the Type A Water License is issued (assuming that a Type A Water License will be approved by the Nunavut Water Board and INAC Minister). All of the required mining equipment to strip the overburden and to develop the first bench in the north zone starter pit will be positioned using this ice road. This necessitates completion of the equipment movement prior to the loss of this ice road due to deteriorating ice conditions in the spring. The length of this ice-road is approximately 370 meters (see Figure 1). The south end of the ice road will be connected to the road to the south zone starter pit with a short on land road connection as shown on Figure 1. The length of this connection road is 200 meters with a width of 25 meters.

This connecting road will have to cross the natural outlet channel between Tear Drop Lake and Second Portage Lake. This will be crossed via a culverted crossing designed to allow unobstructed fish and water passage.

During this pre-development phase the only road that will be used in the north pre-development zone is a road needed to connect the north starter pit zone to the proposed overburden waste dump (see Figure 1). This road will be built with a mixture of blasted non-acid generating waste rock coming from the pre-development zones and crushed material available on the site. The length of this road connection to the dump option #1 is 170 meters and 985 meters for the segment connecting to the option #2 dump location. AEM intends to use Option 1. The road width will be 25 meters with a road base thickness of approximately 1 meter.

3.2. Overburden stockpiles

Overburden material to be removed (stripped) from the two pre-development starter pits will need to be stored in permanent stockpiles (pending final reclamation). An assessment was conducted to select strategic places to store this material. The main priorities were to minimize the environmental risks and hauling distance. The piles will be constructed by free dumping and levelling in layers of 1 m in height. The levelling will be done with a dozer which will also produce some material compaction. The side slopes of the pile will dozed to a maximum angle of 45^{o} and the maximum height of the pile will be 15 m. As shown on Figure 1, AEM will install silt fences around the entire toe of the overburden stockpiles to control the release of sediment from these stockpiles to prevent sediment entering nearby water bodies.

In the south zone, two stockpiles locations were selected. In the north, two locations are proposed. Pending on condemnation drilling, option #1 (stock pile location North of the North Zone) is the preferred solution; if condemnation drilling results confirm a potential ore resource in this location then the preferred overburden stockpile location for the north zone will be option #2. AEM preference is stockpile option #1. These locations are shown on Figure 1. The specifications for these four stockpiles are presented in Table 4:

Table 4: Proposed Pre-Development Overburden Stockpile Specifications

Zone	Dump #	Area (m^2)	Height (m)	Max. elevation (m)	Volume (m^3)	Tonnage (t)
South	1	54 000	5-15	+155	167 000	222 666
	2	36 000	5-15	+155	355 000	473 333
North*	Option #1	87 000	5-15	+155	889 017	1 185 356
	Option #2	88 800	5-15	+155	889 017	1 185 356

* Only one of the two options will be choosen;
AEM's preference is Option 1

A quantity of the overburden material extracted from the South Starter Pit will be screened for use as in the construction of the East Dike in the summer of 2008. A rock crusher and screening plant will be used with the screens rejecting particles larger than 150 mm to achieve a minimum of 15 % passing through a # 200 mesh sieve.

3.3. Rock drilling and blasting

The rock drilling and blasting in the north and south zone starter pits will be carried out using the same procedures that were used to provide quarry rock from the Airstrip Quarry at the Meadowbank Site in 2007 for construction of first 200m of the on-site air strip. However for this phase all of the blasted rock will be left in place in the two pits pending the start of East Dike construction when and after the Type A Water License is approved and issued. Until this license is in place no blasted rock will be transported outside the perimeter of the two starter pit zones.

4. SITE CONDITIONS

4.1. Climate

The Meadowbank region is located within a low Arctic ecoclimate described as one of the coldest and driest regions of Canada. Arctic winter conditions occur from October through May, with temperatures ranging from +5°C to -40°C. Summer temperatures range from -5°C to +25°C with isolated rainfall increasing through September. The long-term mean annual air temperature for Meadowbank is estimated to be approximately -11.1°C. Air temperatures at the Meadowbank area are, on average, about 0.6°C cooler than at Baker Lake, and extreme temperatures tend to be larger in magnitude. This climatic difference is thought to be the effect of a moderating maritime influence at Baker Lake. Skies tend to be more overcast in winter than in summer. The prevailing winds at Meadowbank for both the winter and summer months are from the northwest. A maximum daily wind gust of 83 km/h was recorded on 21 May 2002. Light to moderate snowfall is accompanied by variable winds up to 70 km/h, creating large, deep drifts and occasional whiteout conditions. Monthly rainfall, snowfall, and total precipitation values were adjusted for under catch using the values reported by Environment Canada for Baker Lake to develop estimates of adjusted monthly and annual values for Meadowbank (1949 to 2003). The resulting adjusted mean annual rainfall, snowfall, and precipitation totals are 142.5, 146.8, and 289.2 mm, respectively.

4.2. *Permafrost*

The Meadowbank Gold Project area is located within the zone of continuous permafrost and, as such, is underlain by continuous permafrost except for lake induced taliks and thaw bulbs. Thermal studies at the site were initiated during the 1996 summer exploration drilling program, with the installation of two thermistor cables in exploration boreholes drilled on Third Portage peninsula. These studies continued with the installation of additional thermistor cables during field investigations in 1997, 1998, 2002, 2003, and 2006. To date, 23 thermistor cables have been installed to characterize and monitor the thermal conditions and permafrost at the project site. The thermistors have been located to characterize the thermal regime at the project site both inland (away from the influence of deep lakes), as well as adjacent to lakes.

The depth of the permafrost and active layer are expected to vary based on proximity to lakes, overburden thickness, vegetation, climate conditions, and slope direction. Based on thermal studies and measurements of ground temperatures carried out to date, the depth of permafrost at site is estimated to be in the order of 450 to 550 m, depending on proximity to lakes. The depth of the active layer ranges from about 1.3 m in areas with shallow overburden, up to about 4 m adjacent to lakes. Based on ground conductivity surveys and compilation of regional data, the ground ice content is expected to be low. Locally on land, ice lenses and ice wedges are present, as indicated by ground conductivity, and by permafrost features such as frost mounds. These areas of local ground ice are generally associated with low-lying areas of poor drainage. Taliks exist below Second Portage Lake and Arm and Third Portage Lake and are expected to extend to the base of the permafrost. Taliks extending to the base of the permafrost are referred to as open taliks.

Surface Water Regime

The Meadowbank Gold Project is located close to the surface water divide between the Back River basin, which flows north to northeast towards the Arctic Ocean, and the Quoich River basin, which flows east to southeast into Chesterfield Inlet. All lakes in the project area are connected by streams with boulder channels. Turn Lake drains southeast into Drill Trail Lake, which drains into Second Portage Lake. Third Portage Lake drains north into Second Portage Lake across a narrow strip of land dividing the two lakes via three distinct outflow channels: a western channel, a center channel, and an eastern channel.

4.3. Mine Waste Geochemistry

The relative potentials of the rock types and overburden to generate ARD or metal leaching (ML) were previously evaluated through both static and kinetic testing conducted by Golder Associates on AEM’s behalf. The characterization results were previously reported on in the NIRB Environmental Assessment process and are summarized as follows:

Table 5: Summary of Geochemical Characterization for the Meadowbank Project

Open Pit	Material Type	Potential for ARD	Potential for ML	Restrictions for Storage or use in Construction
All Pits	Overburden	None	Low	None
	Tailings	High	High	Requires measures to control ARD
Portage & Goose	Ultramafic & Mafic Volcanic	Very low	Low	May require collection and treatment of drainage
	Intermediate Volcanics	Variable (65% low; 35% uncertain to high)	Moderate	Requires measures to control ARD
	Iron Formation	High	High under ARD conditions Low under neutral conditions	Requires measures to control ARD
	Quartzite	High	Low	Co-disposal with ultramafic/mafic volcanic or cap/water cover
Vault	Intermediate Volcanics	75% low; 25% uncertain to high	Variable (low to moderate)	May require collection and treatment of drainage

4.3.1. Waste Rock

South and north Portage pre-development zones
There are three major lithologies (IF, IV, and UM) present in the Portage and Goose Island pits, as well as a fourth but less common rock type present in these southern deposits (QZ). The characteristics of each lithological unit are described below. Statistical evaluation of results from samples contained within the starter pit (shallow portion of Third Portage pit) indicates that the chemical characteristics of each lithology within the two starter pits are generally not statistically different from those of rocks outside the starter pit within the Portage Pit area.

Ultramafic (UM)
The predominant minerals in UM rock include talc, chlorite, and iron-rich carbonate minerals (mostly iron-rich dolomite, some siderite, and calcite). These minerals provide UM rock with a relatively high neutralization potential. Some pyrite and pyrrhotite are present in UM rocks, although sulphide phases are generally sparse in this lithology. UM volcanic waste is considered non-acid-generating (NPAG), with 96% of samples having a neutralization potential ratio (NPR) >2. The UM field cell and the two UM rock samples kinetically tested contained available, reactive carbonate minerals, generating neutral drainage throughout the testing period and sustained alkalinity in leachates. This indicates that the bulk of UM rock will not generate ARD.

Iron Formation (IF)
The characteristic mineral assemblage of IF rock includes quartz, magnetite, chlorite, and amphibole, and generally excludes any carbonate minerals. The principal sulphides present in mineralized IF rocks are pyrrhotite and pyrite, both of which are approximately equal in proportion in the Goose Island deposit, with pyrite content increasing toward the North Portage

deposit. Trace arsenopyrite and chalcopyrite are also present. Sixty-seven percent of IF rock is classified as being potentially acid generating (PAG) (NPR<2). Samples have a median total sulphur content of 0.9 wt% and low neutralization potential. The Non-PAG IF rock also has low neutralization potential, but lower total sulphur (0.2%).

Quartzite (QZ)
Six out of seven QZ samples tested were classified as PAG. Considering the median paste pH of 8.2 and low median total sulphur content (0.35%), it is uncertain whether the apparent potential of the QZ to generate ARD would ever be realized. The small quantity of QZ pit rock excavated during mining will, nonetheless, be considered and managed as PAG material since this lithology contains virtually no neutralization potential.

Intermediate Volcanic (IV)
IV rock in this area consists mainly of quartz and aluminosilicate minerals, mostly muscovite and chlorite, and a variable carbonate mineral content, mainly as dolomite, some of which is iron-rich calcite and some siderite. Carbonate content increases from Goose Island to North Portage. Pyrite and pyrrhotite are the principal sulphide minerals, the average content ranging between 5% and 7% with the proportion of pyrite increasing toward the north. Minor sulphide phases also include arsenopyrite and trace amounts of chalcopyrite. The ARD potential of Portage / Goose Island IV pit rock is variable, with 20% of waste rock designated as PAG and 14% having an uncertain ARD potential.

Overburden
The overburden is not expected to be net acid generating or a source of metal leaching based on previous static and kinetic characterization work (reported under the NIRB Environmental Assessment Process).

5. WATER MANAGEMENT

A water management plan for the proposed pre-development work (south and north Portage starter pits) has been prepared to control and minimize potential impacts on the aquatic ecosystem of the adjacent water bodies.

The primary objective of the water management plan is to:

- Minimize impacts of the proposed pre-development work on surface water quality.

The water management strategies to implement this objective are as follows:

- Surface drainage from the working areas will go through the silt fences to remove the fine particles.

- All contact water with the overburden piles will be controlled to avoid watercourse sedimentation.

- All water accumulated within the pit perimeter in contact with the waste rock will be analysed.

- All water within the pit perimeter will be controlled and if necessary, treated before discharge to comply with the MMER water quality requirements

- Sediment mobilization will be minimised by implementing best management practices (BMPs) during construction.

- Water management practices will be adjusted through adaptive management based on the monitoring results of the discharge quality and the discharge criteria.

5.1. WATER USAGE

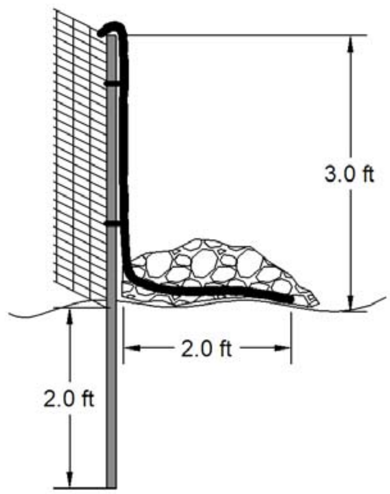
The north and south Portage starter pit pre-development work will not use or require any new water usages.

5.2. BEST MANAGEMENT PRACTICES

The following best management practices (BMPs) will be used during pre-development work to control and prevent sediment from reaching natural adjoining water bodies or water courses:

- Silt Fencing: Silt fencing will be placed along the edges of all areas where soils are disturbed until completion of all construction activities. Silt fences will follow the natural ground contours as much as possible.

In order to prevent sediment reaching the nearby water bodies during the spring thaw, all working areas will be surrounded by silt fences. These barriers will reduce the risk of sediments (coming from work areas or stockpiles) reaching the water. These silt fences are comprised of a permeable membrane held in place with steel spikes which will let water go through while retaining the sediments. The required silt fence is 4.04 km long (plus 0.84 km if north overburden stockpile option #2 is selected). The proposed silt fence locations are shown in red on Figure 1 and in green on Figure 2. To deal with the site extreme weather conditions, the silt fences will be reinforced with a wire backing and steel spikes. The total membrane width will be 5 feet. Three feet of the membrane will be above ground level (reinforced with wire backing) while the remaining 2 feet will be placed horizontally and secured by rocks. This extra two feet will prevent water passing under the membrane. To ensure that the fence will not be torn off by the wind, 6 feet tall spikes will be used (with 3 feet in the soil). The installation of these spikes will be done by drilling a 3 feet hole in the soil, each one spaced at 10 feet apart. The following sketch provides a typical cross-sectional representation of the proposed silt fence installation at Meadowbank for this pre-development phase.



Typical Proposed Silt Fence Cross Section

5.3. CONTACT WATER COLLECTION SYSTEM

AEM intends that under normal conditions any water that accumulates within the pre-development starter pits will remain in place. If the volume of water accumulating in the south pre-production zone pit is great enough to prevent blasting operations, then this water will be pumped to attenuation pond #1 (see Figure 2), which will then drain into Tear Drop Lake which is slated to become the Stormwater management pond for the project. In the North pre-production zone, if water accumulation becomes problematic, similar actions will be taken: water will be pumped to attenuation pond #2 (see Figure 3) which will then drain through a ditch into Lake #2. Overflowing water will pass from the Lake #2 into Second Portage Lake.

The role of these ponds is to retain the contact water for water quality monitoring and treatment, if necessary, prior to discharge into Second Portage Lake. The ponds will also act as sedimentation ponds for the contact water.

Figure 1 South Pre-development zone water management

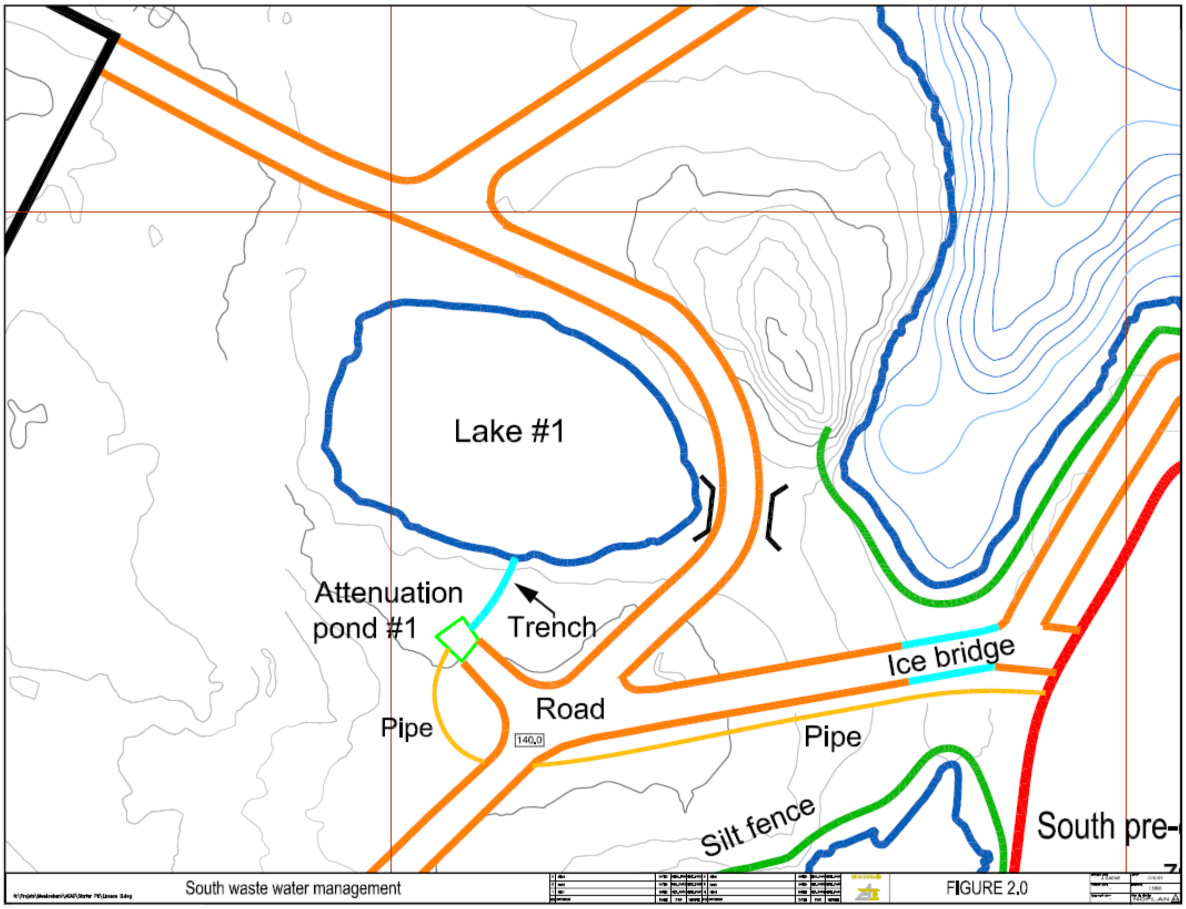
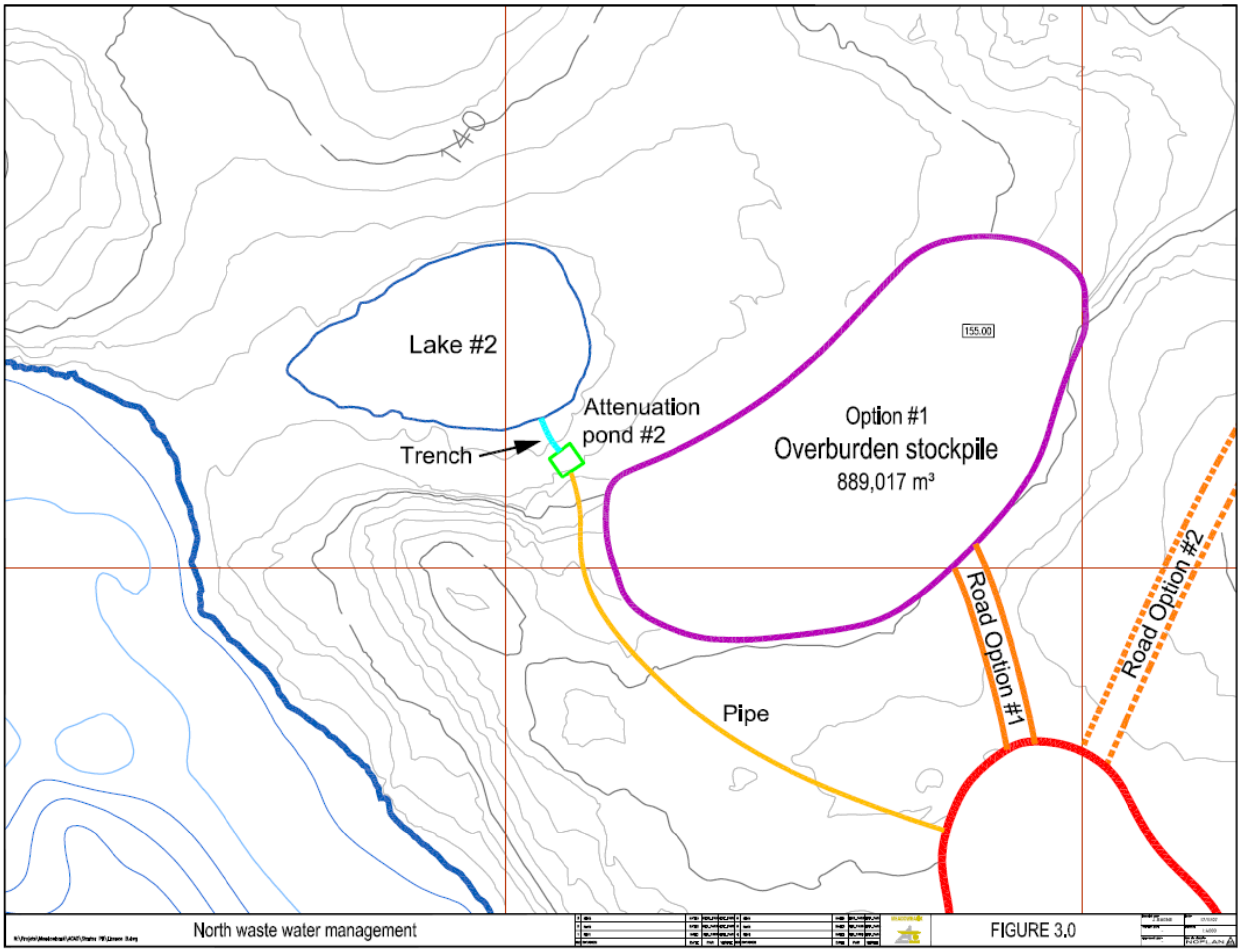


Figure 2 North pre-development zone water management



5.4. CONTACT WATER MONITORING

Once a week, water accumulated (if any) in the pre-development zones will be monitored using a pH meter and a turbidity meter. The water will be analyzed on a monthly basis for metals using an ICP-MS 36 element scan, Total Ammonia, Nitrate and Sulphate.

In the event that this accumulated water needs to be pumped to the sumps and Lakes as proposed, water quality monitoring of the pumped water will be done every day for the same two parameters. In addition, the water quality of the receiving Lakes (Tear Drop Lake (Lake 1) and Lake 2) will be monitored for metals using an ICP-MS 36 element scan, Total Ammonia, Nitrate and Sulphate on a weekly basis. All monitoring results will be reported to the NWB and KIA on a monthly basis.

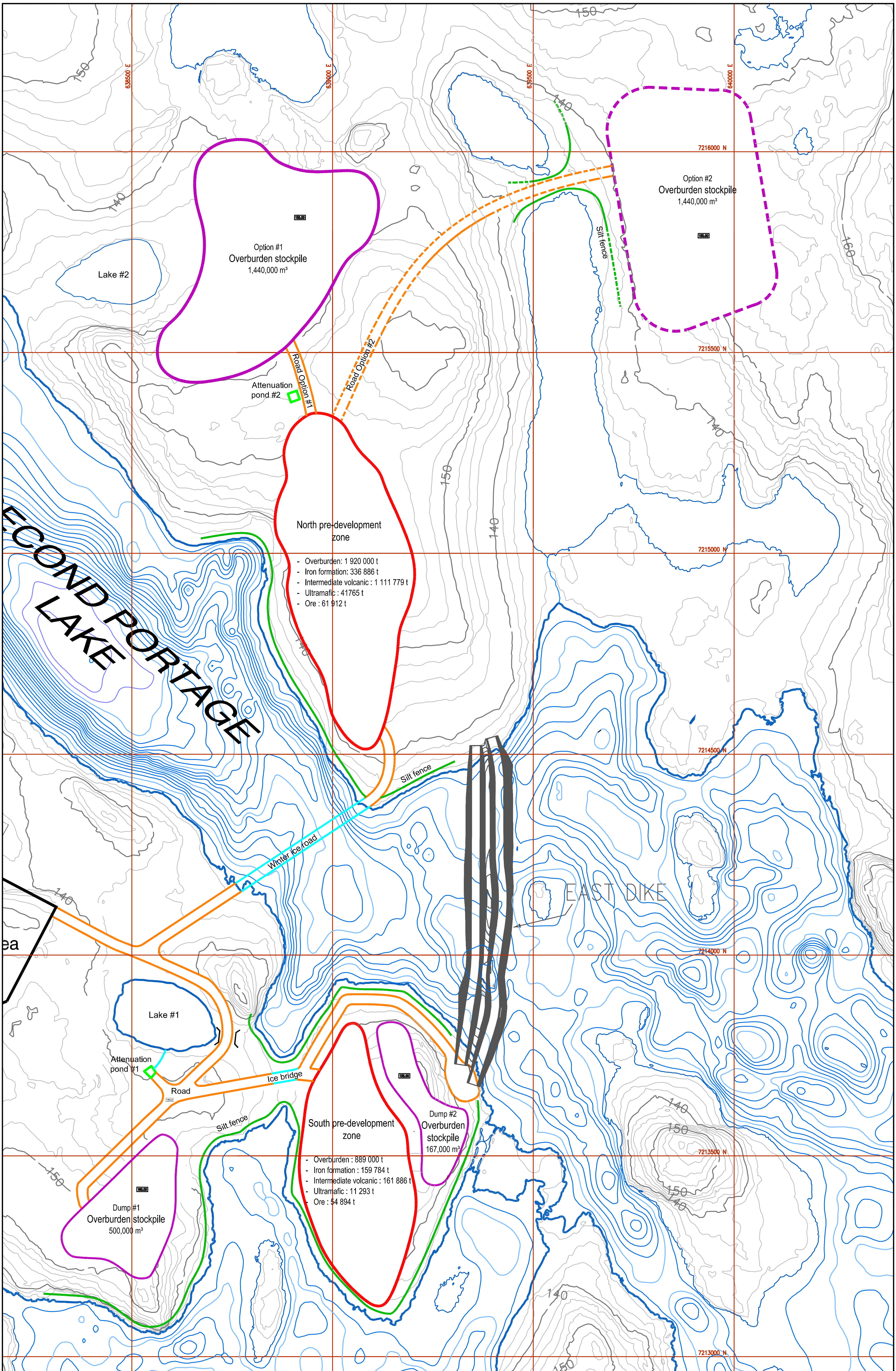
AEM proposes that only water meeting the following discharge criteria will be transferred to Lake 1 and 2 from the starter pits without further treatment being required:

Parameter	Units	Proposed Discharge Criteria
pH		6.0 to 9.0
TSS	mg/L	50
Total Ammonia-N	mg/L	15
Total Metals		
Aluminium Al	mg/L	2.0
Arsenic As	mg/L	0.5
Copper Cu	mg/L	0.3
Lead Pb	mg/L	0.2
Nickel Ni	mg/L	0.5
Zinc Zn	mg/L	0.5

If water quality does not meet these discharge criteria then it will be treated in the two attenuation ponds prior to being transferred into Lakes 1 and 2. The contingent treatment methods are presented in the next sub-section.

5.5. CONTACT WATER STORAGE AND TREATMENT SYSTEM

In the event that water is pumped from the pre-development zones into Lake #1 or Lake #2, water quality monitoring will be able to detect if water treatment is necessary prior to discharge. If the water quality problem is an excess of suspended solids, a coagulant will be added using a temporary addition system with a metering pump. If the water quality problem is a low pH value or metal concentrations in excess of the limits, lime will be added. Both types of treatment would be done in the attenuation pond to allow sufficient time for sedimentation to occur in Lakes #1 and 2.



PRE-PRODUCTION LAYOUT ARRANGEMENT

MEADOWBANK

FIGURE 1.0

NOPLAN