MEADOWBANK GOLD PROJECT

UPDATED WATER MANAGEMENT PLAN

JULY 2009

EXECUTIVE SUMMARY

Agnico-Eagle Mines Ltd. Meadowbank Division (AEM) is developing the Meadowbank Gold Project (the Project), located on Inuit-owned surface lands in the Kivalliq region approximately 70 km north of the Hamlet of Baker Lake, Nunavut. The Project is subject to the terms and conditions of both the Project Certificate issued in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on December 30, 2006, and the Nunavut Water Board Water Licence No. 2AM_MEA0815 issued June 9, 2008. This report presents an Updated Water Management Plan for the Project and forms a component of the documentation series that has been produced in accordance with the above.

The water management objectives for the Project are to minimize potential impacts to the quantity and quality of surface water and groundwater resources at the site. Diversion ditches will be constructed to avoid the contact of clean runoff water with areas affected by the mine or mining activities. Contact water originating from affected areas will be intercepted, collected, conveyed to central storage facilities for re-use in process, or decant to treatment (if needed) prior to release to receiving lakes. The uncontrolled release of contact water to neighbouring lakes is not anticipated.

The Project consists of several gold-bearing deposits that will be mined from three open pits: Vault, Portage (North, Center and South) and Goose Island. A series of dewatering dikes (East, West Channel, Bay-Goose, South Camp and Vault) will be required to isolate the mining activities from neighbouring lakes. Once the dewatering dikes are constructed, dewatering of Second Portage Lake (2PL) inside the East and West Channel dikes, and Third Portage Lake (3PL) inside the Bay-Goose and South Camp dikes, will be accomplished by pumping water west into 3PL. Dewatering of Vault Lake will be accomplished by pumping water to the northeast into Wally Lake. Additional dikes (the Central Dike, Stormwater Dike and Saddle Dams 1 to 6) will also be constructed to manage tailings within the dewatered northwest arm of 2PL (2PL Arm)

The TSS levels within water dewatered or pumped from each basin will be closely monitored to verify that it is acceptable for release to the neighbouring lakes. Where necessary, additional TSS management practices will be used to ensure pool water meets discharge standards defined in the Type-A Water License. These practices include a reduction in pumping rates, the installation of silt curtains and/or baffles in the vicinity of exposed beaches to increase the flow path and residency time within each basin, and/or the use of a dedicated TSS treatment system.

The 2PL Arm will be dewatered in Years -1 and 1 (2009 and 2010) to permit mining in the north and south (part only) portions of Portage Pit, and construction of a Tailings Storage Facility (TSF) with Reclaim Pond, and the Portage Attenuation Pond. The Reclaim and Portage Attenuation ponds will be separated by the Stormwater Dike constructed between the north and main basins of 2PL Arm. Dewatering volumes not meeting the TSS discharge standards will either be treated using a dedicated TSS treatment system, or as a last resort, will be sent to the Reclaim Pond to supplement the water available for process reclaim during the mine life.

During Years 1 to 3 (2010 to 2012), site contact water from the Portage mine area will be collected in the Portage Attenuation Pond located in the main basin of 2PL Arm. Contact water collected within the Portage Attenuation Pond will be used to satisfy mill process water make-up requirements with any excess water treated, if required, and discharged to 3PL. Reclaim water from the TSF will also be available to meet the process water demand, with excess water being returned to the Reclaim Pond located in the northwest basin of 2PL Arm.

The Portage Attenuation Pond will be operated in a manner to minimize the amount of water stored within the facility during the open water period. This will facilitate the construction of the Central Dike, which will be required in future years to isolate the open pit mine operations from the TSF, and will limit water storage over the winter period thereby maximizing the storage capacity available for the spring freshet.

In Year 4 (2013), the north basin will become filled with tailings, and tailings deposition will commence in the main basin until the end of mining operations. At this time the former Portage Attenuation Pond will be used as the Reclaim Pond, and freshwater make-up to mill will be sourced from mill area and pit runoff supplemented by pumping from either 3PL or flooded pit lakes.

The portion of 3PL located within the Bay Goose and South Camp dikes will be dewatered in Year 2 (2011) to facilitate open pit mining in Portage South and Goose Island pits. Dewatering volumes meeting the TSS discharge standards will be discharged to 3PL with any remainder either directly treated and released, or sent to the Portage Attenuation or Reclaim ponds for storage and eventual treatment prior to release.

Vault Lake will be dewatered in Year 4 (2013) to provide attenuation storage for site contact water from the Vault mine area prior to release to Wally Lake. Dewatering will be to Wally Lake, with volumes of water not meeting discharge standards stored within the Vault Attenuation Pond for treatment prior to release. The Vault Attenuation Pond will be operated in such a manner to minimize the amount of water stored within the facility during the open water period. This limits the amount of water that will be stored over the winter period and maximizes the storage capacity available for the spring freshet.

Following completion of mining in the respective pits, the pits will be filled with water from 3PL or Wally Lake over a period of several years. The Reclaim Pond will remain in place until mining has been completed. At this time, excess reclaim water will be drained to the Portage Pit Lake, which will be isolated from the receiving lakes by the East and Bay Goose dewatering dikes. Reclaim water will be treated, if necessary, prior to discharge to the pit lakes. Treatment, if required, will be in-situ (within the Reclaim Pond) or via a dedicated water treatment plant.

Water management during closure and reclamation will involve maintaining surface water diversions to prevent clean runoff water from coming into contact with areas affected by the mine or mining activities. The water management facilities, including the dewatering dikes, attenuation ponds, water collection systems (sumps and ditches), and treatment plants (if necessary), will be required to remain in place until mine closure activities are completed and monitoring results demonstrate that water quality conditions are acceptable for discharge of all contact water to the environment without further treatment.

All infrastructure that are maintained for mine operations, closure and reclamation including ditches and sumps will be re-contoured and/or surface treated according to site specific conditions to minimize windblown dust and erosion from surface runoff, and enhance the development site area for revegetation and wildlife habitat.

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SECTION 1 • INTRODUCTION

Agnico-Eagle Mines Ltd. (AEM) is developing the Meadowbank Gold Project (the Project), located approximately 70 km north of Baker Lake, Nunavut. The Project is subject to the terms and conditions of the Project Certificate issued in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on December 30, 2006, and Nunavut Water Board Water Licence No. 2AM_MEA0815 issued June 9, 2008. This report presents an updated Water Management Plan (WMP) for the Project and forms a component of the documentation series produced in accordance with the above.

The previous WMP for the Project was presented in *Meadowbank Gold Project Mine Waste & Water Management* (MMC, 2007a), a support document (Doc. 500) to the Type-A Water License Application for the Project. Under the previous plan, site contact water from the Portage mine area (plant site, Portage Rock Storage Facility and Portage and Goose pits) during the first 5 years of mine life was to be collected in a Portage Attenuation Pond located in the north basin of the northwest arm of Second Portage Lake (2PL Arm). During the same period, tailings were to be deposited in the main basin of 2PL Arm. In Year 6, when the main basin tailings capacity would be achieved, tailings deposition would commence in the north basin and the former Portage Attenuation Pond would be used as the Reclaim Pond.

In order to facilitate the above approach, full dewatering of the 2PL Arm and construction of both the Stormwater and Central dikes would be required prior to mill start up in January 2010. However, due to scheduling constraints on dewatering and dike construction, the construction of the Central Dike will not be feasible prior to January 2010. This has necessitated a revision to the initial water management strategy.

The updated water management plan presented herein proposes that the north basin of the 2PL Arm be used for tailings deposition from the start of mine life, while a smaller Portage Attenuation Pond would be operated within the main basin until the north basin tailings storage capacity is achieved in Year 4 (2013). At this time, tailings deposition would commence in the main basin and the former Portage Attenuation Pond would be used as the Reclaim Pond. From this point forward, the updated WMP is essentially the same as that presented in MMC (2007a).

It should be noted that that the update presented herein does not represent a significant departure from the previous WMP (MMC, 2007a), and the water management objectives of minimizing potential impacts to the quantity and quality of surface water and groundwater resources at the site remain. Importantly however, the updated approach removes the requirement to fully dewater 2PL Arm and construct the Central Dike prior to mill start up, and provides greater operational flexibility and less risk to dewatering and dike construction schedules.

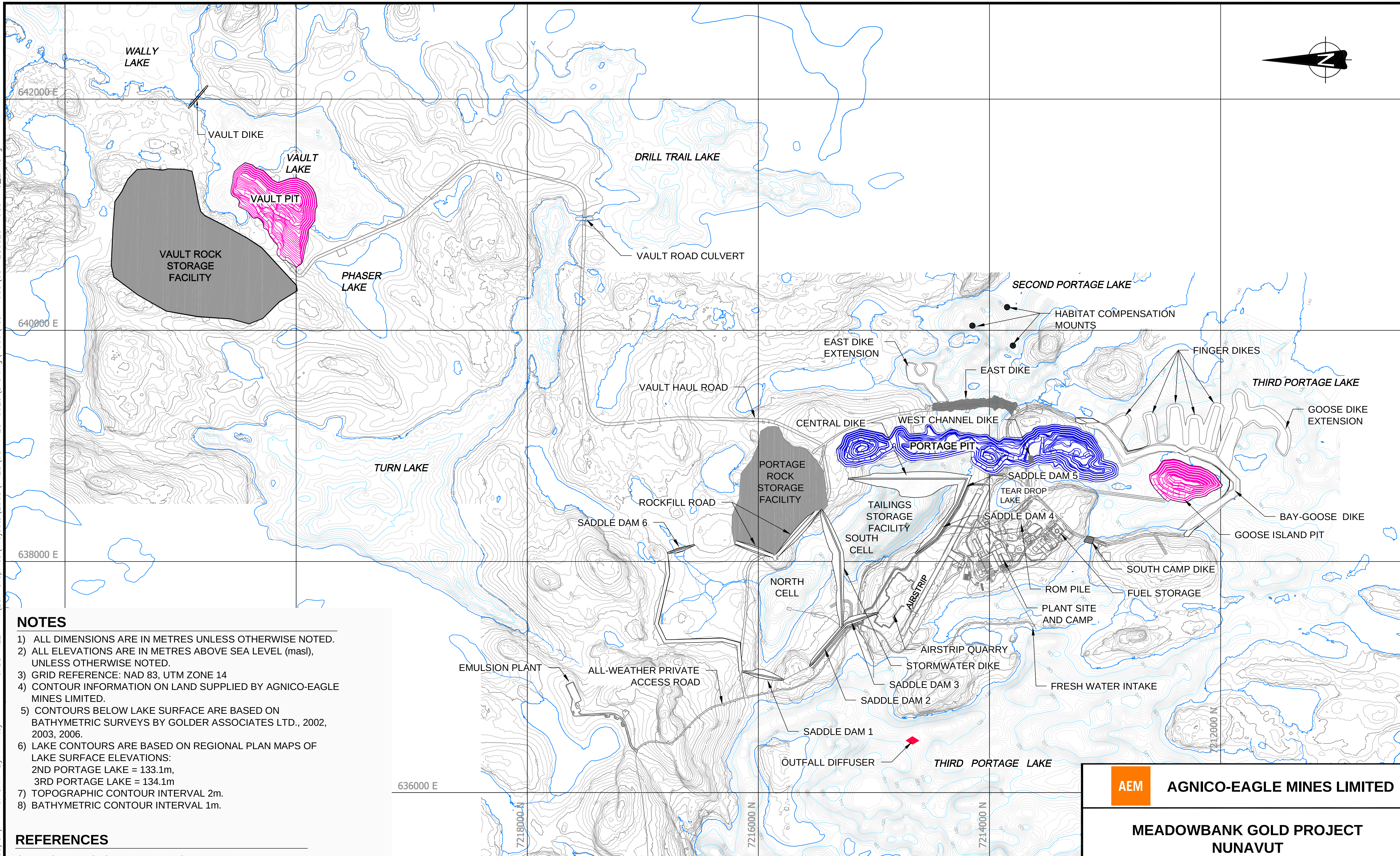
SECTION 2 • BACKGROUND INFORMATION

2.1 PROJECT DESCRIPTION

The Meadowbank Gold Project consists of several gold-bearing deposits within reasonably close proximity to one another. The four main deposits are: Vault, Portage (South, Center and North Portage deposits), and Goose Island (Figure 2.1).

The South Portage deposit is located on a peninsula, and extends northward under Second Portage Lake (2PL) and southward under Third Portage Lake (3PL). The North Portage deposit is located on the northern shore of 2PL. The South, Center and North Portage deposits will be mined from a single pit, termed the Portage pit, which will extend approximately 2 km in a north-south direction. The Goose Island deposit lies approximately 1 km to the south of the Third Portage deposit, and beneath 3PL. The Vault deposit is located adjacent to Vault Lake, approximately 6 km north from the Portage deposits. A series of dewatering dikes (East, West Channel, Bay-Goose, South Camp and Vault) will be required to isolate the mining activities from the lakes. Additional dikes (the Central Dike, Stormwater Dike and Saddle Dams 1 to 6) will also be constructed to manage tailings within the dewatered 2PL Arm.

Mining will be primarily a truck-and-shovel open pit operation. The current mining plan indicates that approximately 29.3 Mt of ore will be mined over a nominal mine life of approximately 9 years.



NOTES

1) ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2) ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (masl), UNLESS OTHERWISE NOTED.
3) GRID REFERENCE: NAD 83, UTM ZONE 14
4) CONTOUR INFORMATION ON LAND SUPPLIED BY AGNICO-EAGLE MINES LIMITED.
5) CONTOURS BELOW LAKE SURFACE ARE BASED ON BATHYMETRIC SURVEYS BY GOLDER ASSOCIATES LTD., 2002, 2003, 2006.
6) LAKE CONTOURS ARE BASED ON REGIONAL PLAN MAPS OF LAKE SURFACE ELEVATIONS:
   2ND PORTAGE LAKE = 133.1m,
   3RD PORTAGE LAKE = 134.1m
7) TOPOGRAPHIC CONTOUR INTERVAL 2m.
8) BATHYMETRIC CONTOUR INTERVAL 1m.

REFERENCES

1) AMEC AMERICAS LTD., DRAWING NUMBER A1-131395-100-C-0001 (100-C-0001.DWG), MEADOWBANK FEASIBILITY STUDY, APRIL 2005.

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MEADOWBANK GOLD PROJECT NUNAVUT

GENERAL SITE PLAN | **FIGURE 2.1**

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2.2 SITE CONDITIONS

2.2.1 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 (Table 2.1).

Table 2.1: Estimated Average Monthly Climate Data – Meadowbank Site

Month	Max. Air Temp. (°C)	Min. Air Temp. (°C)	Rainfall (mm)	Snowfall (mm)	Total Precip. (mm)	Lake Evap. (mm)	Min. Relative Humidity (%)	Max. Relative Humidity (%)	Wind Speed (km/h)	Soil Temp. (°C)
January	-29.1	-35.5	0	11.2	11.2	0	67.1	75.9	16.3	-25.5
February	-27.8	-35.2	0	10.5	10.5	0	66.6	76.5	16.0	-28.1
March	-22.3	-30.5	0.1	14.6	14.6	0	68.4	81.4	16.9	-24.9
April	-13.3	-22.5	2.3	16.7	19.0	0	71.3	90.1	17.3	-18.1
May	-3.1	-9.9	9.8	11.3	21.1	0	75.7	97.2	18.9	-8.0
June	7.6	0.0	14.5	3.9	18.4	8.8	62.6	97.2	16.4	2.0
July	16.8	7.2	36.7	0.0	36.7	99.2	47.5	94.3	15.1	10.5
August	13.3	6.4	45.5	0.9	46.4	100.4	59.2	97.7	18.4	9.3
September	5.7	0.9	30.1	8.8	38.9	39.5	70.8	98.6	19.3	3.6
October	-5.0	-10.6	3.5	30.3	33.8	0.1	83.1	97.4	21.4	-2.8
November	-14.8	-22.0	0	23.6	23.6	0	80.6	91.1	17.9	-11.7
December	-23.3	-29.9	0	15.0	15.0	0	73.3	82.7	17.7	-19.9

Note: Rounding of monthly averages has occurred. Temperatures and precipitation were estimated based on site data (1997 to 2004). Snowfall is based on adjusted Baker Lake data (1946 to 2004). Adjusted small lake evaporation was estimated from pan evaporation data (2002 to 2004). Mean soil temperature is reported by AMEC to be measured at a depth between 0.2 m and 0.3 m below ground surface, but should be confirmed. Installation details such as slope aspect, surficial cover, site drainage, and annual snow cover are not available.
Source: AMEC 2003, 2005a and 2005b.

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 Baker Lake air temperatures, 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.

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 May 21, 2002. Light to moderate snowfall is accompanied by variable winds up to 70 km/h, creating large, deep drifts and occasional whiteout conditions. Skies tend to be more overcast in winter than in summer.

Monthly rainfall, snowfall, and total precipitation values shown in Table 2.1 were adjusted for undercatch using the values reported by Environment Canada for Baker Lake. The resulting adjusted mean annual rainfall, snowfall, and precipitation totals for Meadowbank are 142.5, 146.8, and 289.2 mm, respectively. Meadowbank total annual rainfall averaged 85% of the Baker Lake total for the common period of record.

2.2.2 Permafrost

The Meadowbank Gold Project is located in the area of continuous permafrost, as shown on Figure 2.2.

Lake ice thicknesses of between 1.5 m and 2.5 m have been encountered during geotechnical investigations in mid to late spring. Taliks (zone of permanently unfrozen ground) are expected to exist beneath lakes where water depth is greater than about 2 to 2.5 m. It is possible that ice thickness will be greater than that reported above during the mid-winter period; however, no data relating to ice thickness currently exists for the mid-winter period.

Based on thermal studies and measurements of ground temperatures (Golder, 2003a), 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. The depth of the permafrost and active layer will vary based on proximity to lakes, overburden thickness, vegetation, climate conditions, and slope direction.

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.

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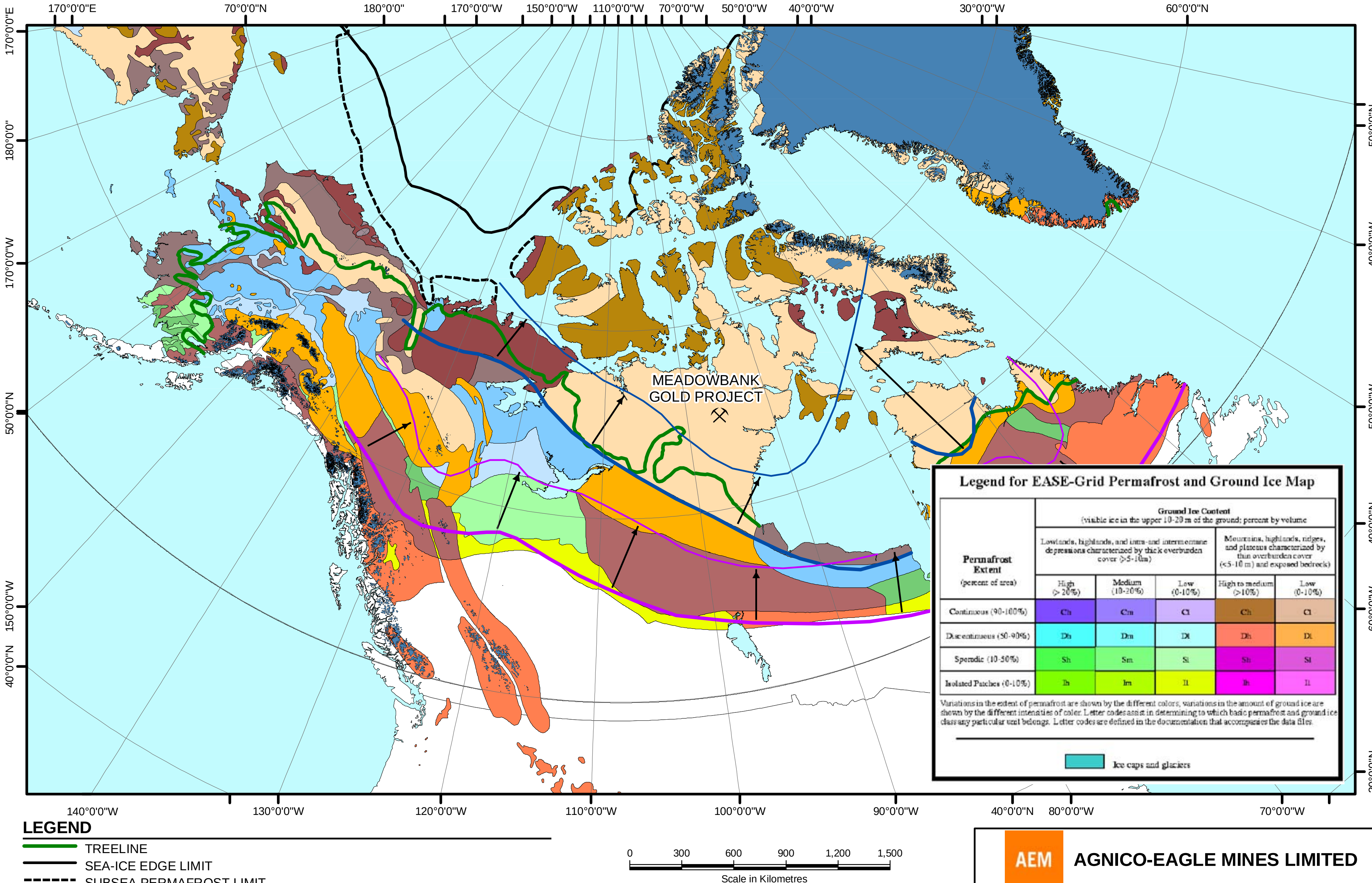

LEGEND

- TREELINE
- SEA-ICE EDGE LIMIT
- SUBSEA PERMAFROST LIMIT
- SOUTHERN BOUNDARY OF DISCONTINUOUS PERMAFROST - PRESENT
- SOUTHERN BOUNDARY OF DISCONTINUOUS PERMAFROST - PREDICTED
- SOUTHERN BOUNDARY OF CONTINUOUS PERMAFROST - PRESENT
- SOUTHERN BOUNDARY OF CONTINUOUS PERMAFROST - PREDICTED
- PREDICTED MOVEMENT OF PERMAFROST BOUNDARIES

NOTES

1) PROJECTION: LAMBERT AZIMUTHAL EQUAL AREA

REFERENCES

1) BROWN, J., O.J. FERRIANS JR., J.A. HEGINBOTTOM, AND E.S. MELNIKOV. 1998. CIRCUM-ARCTIC MAP OF PERMAFROST AND GROUND-ICE CONDITIONS. BOULDER, CO: NATIONAL SNOW AND ICE DATA CENTER/WORLD DATA CENTER FOR GLACIOLOGY. DIGITAL MEDIA.
2) PREDICTED PERMAFROST BOUNDARIES BASED ON WOO ET AL., 1992.

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MEADOWBANK GOLD PROJECT
NUNAVUT

PERMAFROST MAP OF CANADA

FIGURE 2.2

2.2.2.1 Impact of Global Warming on Site Conditions

A report titled "Implications of Global Warming and the Precautionary Principle in Northern mine Design and Closure" (BGC, 2003) was prepared for Indian and Northern Affairs Canada, and provides guidance relevant to mine design in Nunavut.

This report suggests that globally the average temperature may increase by about 2°C by 2100 due to global warming. However, the report also states that the increase may be double the global average for sites located at 50°N, and may be 3.5 times greater for sites located at 80°N. In a more recent study, the Intergovernmental Panel on Climate Change (IPCC, 2007) projected the maximum average air temperature to increase by 6.4°C by 2100 for a site located at 65°N latitude.

Table 2.2 presents a summary of reported climate change predictions used on a number of northern projects that have been reported in the engineering and scientific literature.

Table 2.2: Summary of Reported Climate Change Rates Used in Northern Projects Engineering Studies

Reference	Increase in MAAT by Year 2100 (°C)	Notes
INAC (2003)	5.5	Used in Meadowbank DEIS for site at 65° North Latitude
Hayley (2004)	4.7	Used in design studies for the Inuvik Regional Health Center. Reported as increase of 0.47°C per decade.
Hayley and Cathro (1996)	5.0	Used for Raglan Dam analyses.
Mackenzie Valley Land & Water Board (2002)	3.0	Used for the Ekati mine expansion
Diavik	3.2	Used for the Processed Kimberlite Containment Facility Design
Burn (2003)	6.0	For use in the Western Arctic for pipeline design projects. Reported as increase of 1.75°C over a 29 year period
IPCC (2003)	0.8-5.2	Predicted range for change in the global average surface air temperature

Based on Table 2.2, a climate warming trend of 6.4°C over 100 years is considered to be a conservative upper estimate of the climate change rate for the project area and is consistent with predicted and recommended climate change trends for projects in the north.

By the middle of the 21st century, the effect of temperature change is predicted to reduce near-surface permafrost by 12% to 15% once equilibrium conditions become established under the new temperatures. The predicted increase in active layer thickness of 15% to 30% will reach equilibrium relatively much faster (NRC, 2004).

Studies indicate that the boundaries of discontinuous and continuous permafrost are expected to move northward due to global warming (Woo et al., 1992) (Figure 2.2). Predictions based on a warming of 4°C to 5°C over the next 50 years (NRC, 2004) (approximately double the rate predicted above) suggests that the Meadowbank property would remain within the zone of continuous permafrost, but the active layer thickness would be expected to increase, and the total thickness of permafrost may slowly reduce in time.

2.2.3 Groundwater

2.2.3.1 Current and Projected Groundwater Use

Groundwater sources from either the active layer or from the deep groundwater regime below the permafrost are not presently utilized for drinking water at the project site. This is likely due to the presence of deep permafrost, the seasonal nature of the active layer, and the availability of good quality surface drinking water sources in the vicinity of the project site. Furthermore, it is unlikely that the groundwater in the shallow active layer would be utilized in the future because of its seasonal nature and low yields. Deep groundwater may be utilized in the future, but the likelihood of this is considered low because there are abundant sources of good quality surface water.

2.2.3.2 Shallow Groundwater Flow Regime

From late spring to late summer, when temperatures are above 0°C, the active layer at the site thaws. Groundwater in the active layer would flow to local depressions and ponds that drain to 2PL or 3PL, or would flow directly to 2PL or 3PL.

Permafrost reduces the hydraulic conductivity of the rock by at least one to two orders of magnitude (Anderson and Morgenstern, 1973; Burt and Williams, 1976). Consequently, the permafrost in the rock at the Meadowbank Gold Project site would be of a very low permeability compared to that of the unfrozen rock. The shallow groundwater flow regime is therefore anticipated to have little to no hydraulic connection with the groundwater regime located below the deep permafrost.

2.2.3.3 Deep Groundwater Flow Regime

In areas of continuous permafrost, the deep groundwater regime is connected by taliks (unfrozen ground) located beneath large lakes. Taliks exist beneath lakes that do not freeze to the bottom in winter. If a lake is large enough, the talik extends down to the deep groundwater regime. At the Meadowbank Gold Project, analyses have predicted that open taliks extending to the deep groundwater regime will occur beneath lakes that do not freeze to the bottom in winter, when the diameter is in the order of 570 m or greater for round lakes, or the width is at least 320 m for elongated lakes (Golder, 2003a).

Based on these analyses, open taliks exist beneath 3PL, 2PL, and 2PL Arm. These analyses also suggest that the talik beneath Vault Lake does not extend to the deep groundwater flow regime because this lake is relatively shallow and much of the lake freezes to the bottom in winter.

The elevation of the water levels in lakes that have open taliks provides the driving force (hydraulic head) for the deep groundwater flow. The presence of the thick and low permeability permafrost beneath land located between large lakes results in negligible recharge to the deep groundwater flow from these areas. Smaller lakes have isolated, or closed, taliks that do not extend down to the deep groundwater regime and thus do not influence the groundwater flow in the deep regime. Consequently, recharge to the deep groundwater flow regime is limited to the open taliks beneath large lakes. Generally groundwater will flow from higher elevation lakes to lakes located at lower elevations.

The driving force or hydraulic head for the deep groundwater regime is the water levels in large lakes that extend down to the deep groundwater regime. The Project is located close to the surface water divide between the Back River basin, which flows north and northwest towards the Arctic Ocean; and the Thelon River basin, which flows east to southeast into Hudson Bay. Consequently, on a regional scale, groundwater from the north-western side of 3PL would flow in a northwest direction, and groundwater from the southeast end of 3PL and 2PL would flow in a southeast direction. However; on a local scale, groundwater flows from a higher elevation lake located to the east to the 2PL Arm.

Simulations performed with the regional groundwater model representing baseline conditions suggest that 2PL acts primarily as a groundwater discharge zone except for a small portion in the southern end of the lake where groundwater is predicted to flow from 2PL to Tehek Lake.

2.2.3.4 Predictions of Pit Inflow Quantities and Brackish Water Upwelling

The Project is underlain by deep ancient groundwater (connate water) that is brackish to saline with high TDS and chloride (Cl) concentrations. Excavation of the open pits will induce the upward flow of this deep-seated groundwater and alter the chemistry of the water pumped from the pits. This will only occur where the pits will be hydraulically connected to the deep groundwater by the presence of an open talik. An open talik is not predicted to exist beneath Vault Lake based on the current level of knowledge of the site; consequently, brackish water upwelling within the proposed Vault Pit has not been considered.

A TDS-depth profile for the Project was developed based on deep groundwater samples collected throughout the Canadian Shield including the Meadowbank site itself, Yellowknife, Diavik, and the Lupin mine. This profile was incorporated into a numerical model that was used to predict groundwater inflow to the Portage and the Goose pits. It should be noted that the pit geometries used in the existing groundwater model are undergoing internal review as part of the mine planning process. Finalized pit geometries were not available at the time of preparing this update; nevertheless, the existing model estimates are considered to reasonable for planning purposes. The water management plan, groundwater model and site water balance will be reviewed an updated, as required, once finalized pit geometries are prepared.

In the model, the hydraulic conductivity of the bedrock to a depth of 160 m was based on tests conducted at the site which indicated a general decrease in hydraulic conductivity with depth (Table 2.3). At depths greater than 160 m, and to the full 1,000 m depth of the model, the model assumed that the hydraulic conductivity was the same as that measured at 160 m depth (3×10^{-8} m/s). In reality, the hydraulic conductivity would be expected to reduce further with depth as has been observed in similar geologic environments in the Canadian Shield (Stevenson et al., 1996 a & b, Ophori et al. 1996, Ophori and Chan, 1994).

Table 2.3: Variation in Hydraulic Conductivity (K) with Depth

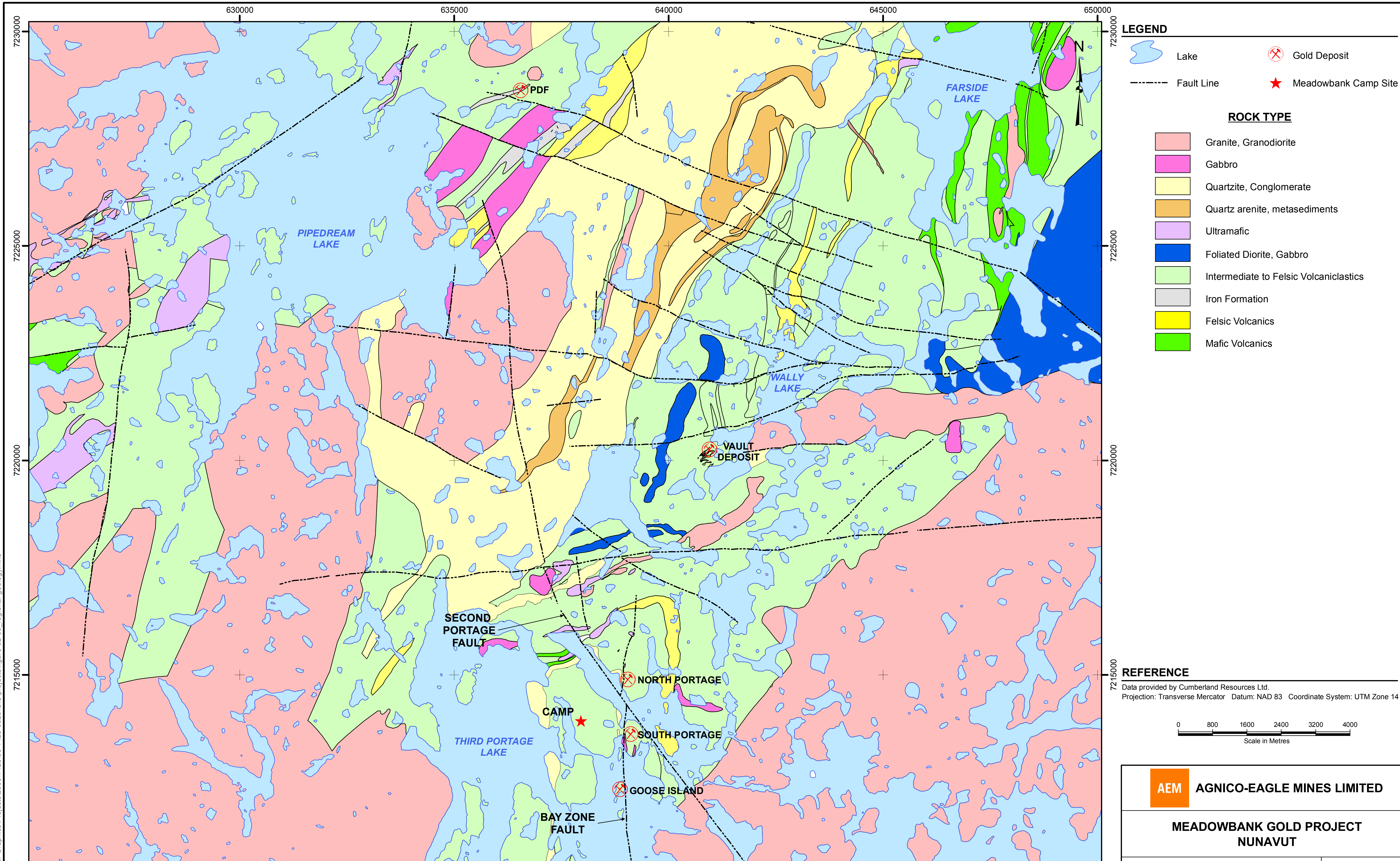
Depth below Ground (m)	**K (m/s)**	
	Measured	**Assumed in the Model**
0-30	$7x10^{-7}$	$7x10^{-7}$
30-60	$2x10^{-7}$	$2x10^{-7}$
60-90	$3x10^{-8}$	$8x10^{-8}$
90-120	$4x10^{-8}$	$4x10^{-8}$
120-160	$3x10^{-8}$	$3x10^{-8}$

Two main faults are inferred in the Portage deposit area and were included in the groundwater model used to estimate groundwater inflows and brackish water upwelling to the pits during mine life. These are the Bay Zone Fault and an associated splay, and the Second Portage Fault (Figure 2.3). The Bay Zone Fault and associated splay trend in a roughly north-south direction along the western margin of the Third Portage deposit. The Second Portage fault trends to the northwest, roughly parallel to the orientation of 2PL).

The upper 500 m of the fractured rock zone associated with the Second Portage Fault was assumed to have a hydraulic conductivity of 1 x 10^{-5} m/s in the model, which was the average hydraulic conductivity measured in six tests conducted in this zone at less than 80 m depth. Over the interval of 500 m to the bottom of the model, the hydraulic conductivity was assumed to be reduced by an order of magnitude to 1 x 10^{-6} m/s.

In hydraulic testing in fractured rock zones associated with the Bay Zone Fault and fault splay the hydraulic conductivity was found to be similar to the hydraulic conductivity of less fractured bedrock. However, the Bay Zone Fault is assumed to have a hydraulic conductivity equal to the Second Portage Fault in the model. Assuming a higher hydraulic conductivity in the Bay Zone Fault is conservative for predictions of inflows and brackish water upwelling as more upwelling would occur if the fault is assumed to be more permeable.

Total inflow to the mine from both the Portage and Goose pits is predicted to range from approximately 2,400 m^3/day to 3,200 m^3/day when the Portage and Goose pits are being mined concurrently. These values are higher than previous predictions because the fractured rock zones are explicitly simulated in the current model, whereas previously they were not. Results of sensitivity simulations carried out on the model results indicate that groundwater inflow to the open pits would range from 2,700 m^3/day to 4,600 m^3/day (up to 40% greater than the base case) if the fault hydraulic conductivities were three times higher.



REGIONAL GEOLOGY FIGURE 2.3

2.2.3.5 Post-Operations Groundwater Flow

Upon closure of the mine, 2PL Arm will be occupied by tailings. The tailings are expected to freeze over time, and will therefore not be hydraulically connected to the regional flow system. During closure, the dewatered areas within the Dewatering Dikes will be re-flooded. The water quality will be monitored (MMC, 2007c), and once deemed acceptable for mixing with neighbouring lakes, portions of the Bay Goose Dike will be breached. Modelling results of these conditions suggest that the flooded area between the Central and East dikes will act as a discharge zone in the north and as a recharge zone in the south where water is predicted to flow to the area of 2PL to the east of the East Dike.

The area east of the East Dike will act as a discharge zone in its northern portion, with groundwater flow originating from two lakes to the north and northeast of the project, from 3PL and from the flooded area between the East and Central dikes. The southern portion of the area east of the East dike will act as a recharge zone with groundwater flow to Tehek Lake, as in the baseline conditions. This pattern of groundwater flow is similar to baseline conditions, but differs in that there is a gradient between the flooded area between the East and Central dikes and the area of 2PL east of the East Dike.

Overall, the groundwater flow to 2PL is reduced due to the reduction of the total lake area to accommodate the frozen tailings and due to flooding of the area between the Dewatering Dikes to the 3PL level (approximately 134.1 masl). The groundwater flow to Tehek Lake from 2PL post-operations is predicted to be similar to the baseline values.

SECTION 3 • MINE DEVELOPMENT PLAN

The planned mine development sequence as it pertains to water management on site is summarized in Table 3.1 and Figures 3.1 to 3.7

Table 3.1: Mine Development Sequence

Figure	Year	Key Issues
	-2 (2008)	- Construct plant site, plant roads and road to ANFO storage - Initiate construction of East and West Channel dikes.
3.1	-1 (2009)	- Complete construction of East and West Channel dikes - Stripping in North Portage and South Center Portage (part) - Dewater 2PL Arm to elevation 127 masl by mid June, and 116 masl by end December to facilitate construction of the Stormwater Dike and initiate mining in the Portage Pit North Center and South Center, respectively. - Dewater volume discharged directly to 3PL if meet TSS criteria. Otherwise, treated prior to release, or sent to Reclaim Pond for storage and reuse as reclaim water - Construct Stormwater (first raise), South Camp, and Bay Goose (Phase 1) dikes, as well as Saddle Dam 1.
3.2	1 (2010)	- Commence mining of Portage Pit North, North Center and South Center . - Continue dewatering of 2PL Arm if required - Operate separate Reclaim and Portage Attenuation ponds - Construct Vault Haul Road - Initiate tailings deposition in TSF north cell. Initiate waste rock placement in the Portage Rock Storage Facility (RSF) - Runoff from Portage RSF and Landfill directed to Reclaim Pond - Portage Pit water, and plant site and airstrip runoff directed to Portage Attenuation pond, or pumped to Tear Drop Lake (Sump 4) for use as process make-up water as required before discharge of excess to Portage Attenuation Pond - Monitor water quality within Portage Attenuation Pond, treating if required prior to decant of excess to 3PL, the Reclaim Pond and/or pumping to Process Plant for use as make-up water - Construction of Bay Goose Dike (Phase 2), Saddle Dams 2 and 6, and second raise of the Stormwater Dike and Saddle Dam 1 - Maintain low water volume within Portage Attenuation Pond during open water season to facilitate construction of the Central Dike in 2011, if necessary

Table 3.1 continued

Figure	Year	Key Issues
3.3	2-3 (2011-2012)	- Complete construction of Bay Goose Dike if required. - Dewater inside Bay Goose Dike to 3PL. Dewater volume discharged directly to 3PL if meet TSS criteria. Otherwise, treated prior to release, or sent to Portage Attenuation Pond or Reclaim Pond for storage, treatment or reuse as process/reclaim water - Advance mining in Portage Pit South (to completion) , North center and South center - Commence construction of Finger Dikes and Goose Island Dike Extension - Stage 1 construction of the Central Dike to elevation 135 masl - Continue to operate separate Reclaim and Portage Attenuation ponds - Runoff from Portage RSF and Landfill directed to Reclaim Pond - Portage Pit waters, and plant site and airstrip runoff directed to Portage Attenuation pond, or pumped to Tear Drop Lake (Sump 4) for use as process make-up water as required before discharge of excess to Portage Attenuation Pond - Monitor water quality within Portage Attenuation Pond, treating if required prior to decant of excess to 3PL, the Reclaim Pond and/or pumping to Process Plant for use as make-up water - Maintain low water volume within Portage Attenuation Pond during open water season to facilitate construction of the Central Dike - Construct Vault dike
	4 (2013)	- Continue construction of Finger Dikes and Goose Island Dike Extension - Advance mining in Portage North Center and South Center (to completion) and North Portage. Initiate mining in Goose Pit - Selective placement of waste rock into Portage Pit South. - Stop tailings deposition in north cell of TSF and commence in the south cell. Portage Attenuation and Reclaim ponds combine - Being reclamation in North Cell, including cover trials. - Runoff from Portage RSF and Landfill directed to Reclaim Pond - Portage and Goose pit waters, and plant site and airstrip runoff directed to Reclaim Pond, or pumped to Tear Drop Lake (Sump 4) for use as process make–up water as required before discharge of excess to the Reclaim Pond - Dewater Vault Lake to Wally Lake. Dewater volume discharged directly to Wally Lake if meet TSS criteria. Otherwise, stored in Vault Attenuation Pond, and treated before release.
3.4	5 (2014)	- Stage 2 construction of Central Dike to elevation 145 masl - Saddle Dams 3, 4 and 5 construction to elevation 145 masl. - Continue and complete construction of Finger Dikes and Goose and East Dike extensions. Construct Fish Habitat Compensation Mounts in 2PL - Runoff from Portage RSF and Landfill directed to Reclaim Pond - Portage and Goose pit waters (until completion of mining) and plant site and airstrip runoff directed to Reclaim Pond, or pumped to Tear Drop Lake (Sump 4) for use as process make-up water as required before discharge of excess to the Reclaim Pond - Selective placement of waste rock into Portage Pit south. - Advance and complete mining of Portage and Goose Pits. - Stripping and initiate mining in Vault Pit

Table 3.1 continued

Figure	Year	Key Issues
3.5	6-8 (2015-2017)	- Commence flooding of Portage Pit (Portage and Goose pits) Lake - Monitor water quality within flooded pits, treating in–situ if required and/or pumping to Process Plant for use as process water - Advance mining of Vault Pit - Runoff from Vault RSF directed to Vault Attenuation Pond - Monitor water quality within Vault Attenuation Pond, treating in–situ if required prior to decant of excess to Wally Lake - Stage 3 Central Dike and Stage 2 Saddle Dams 3, 4 and 5 construction to elevation 150 masl. - Runoff from Portage Rock Storage Facility and Landfill directed to Reclaim Pond - Plant site and airstrip runoff to be directed to Tear Drop Lake (Sump 4) for use as process make-up water as required before discharge of excess to Goose and Portage pits to assist with flooding - Continue Portage Pit Lake flooding. Monitor water quality within flooded pits, treating in–situ if required and/or pumping to process plan for use as process water
3.6	9 (2018)	- Mining complete, start final closure and reclamation - Runoff from Portage Rock Storage Facility and Landfill directed to Reclaim Pond - Plant site and airstrip runoff to be directed to Tear Drop Lake (Sump 4) (until mining complete) for use as process make-up water as required before discharge of excess to Goose and Portage pits to assist with flooding - Reclaim Pond water treated if necessary and discharged to Portage Pit Lake to assist with flooding - Continue Portage Pit Lake flooding. - Commence Vault Pit Lake flooding - Monitor water quality within flooded pits, treating in–situ if required
3.7	Post Closure	- Breach dewatering dikes once pit lake water quality is suitable for mixing with neighbouring lakes.

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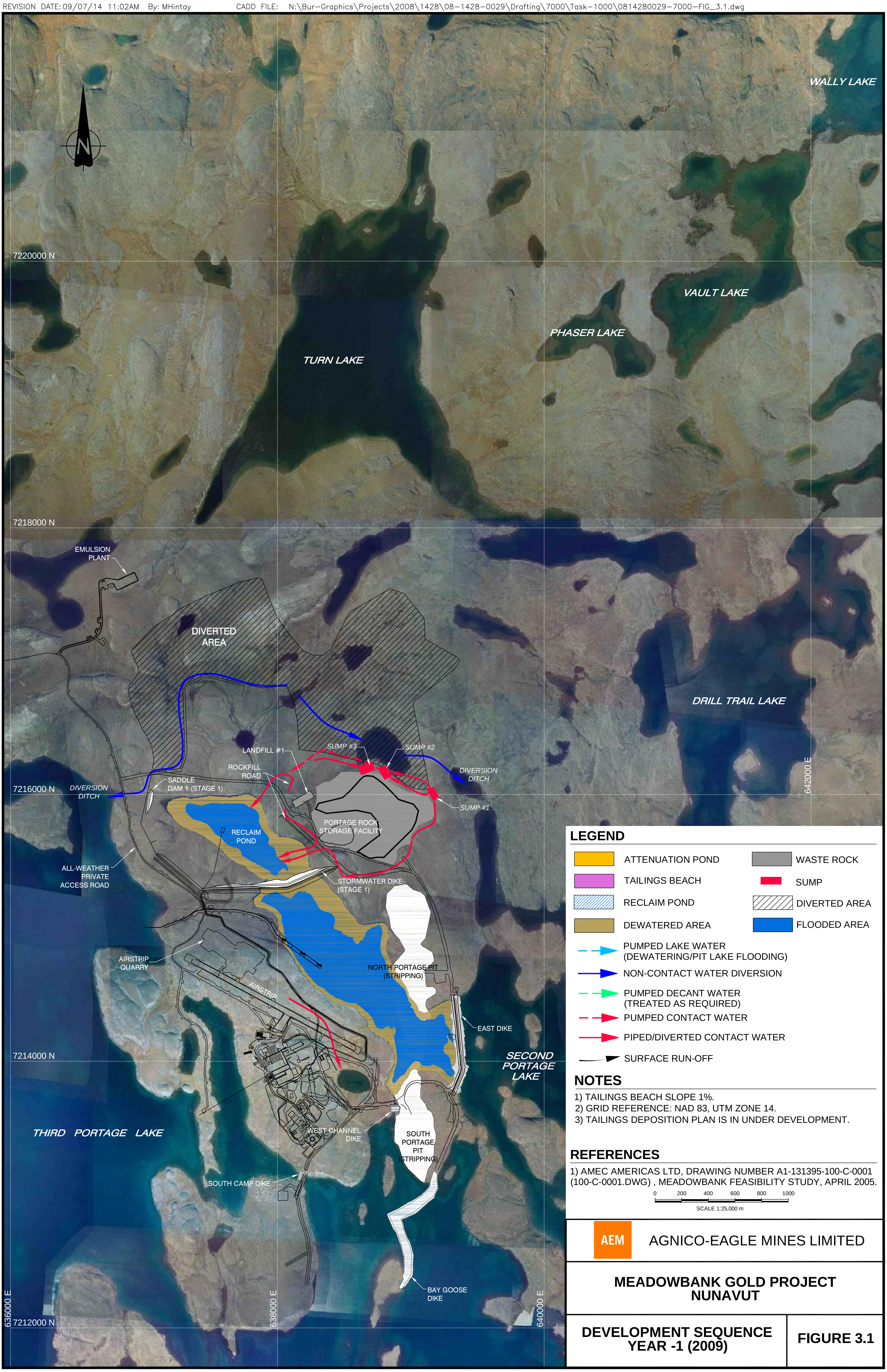

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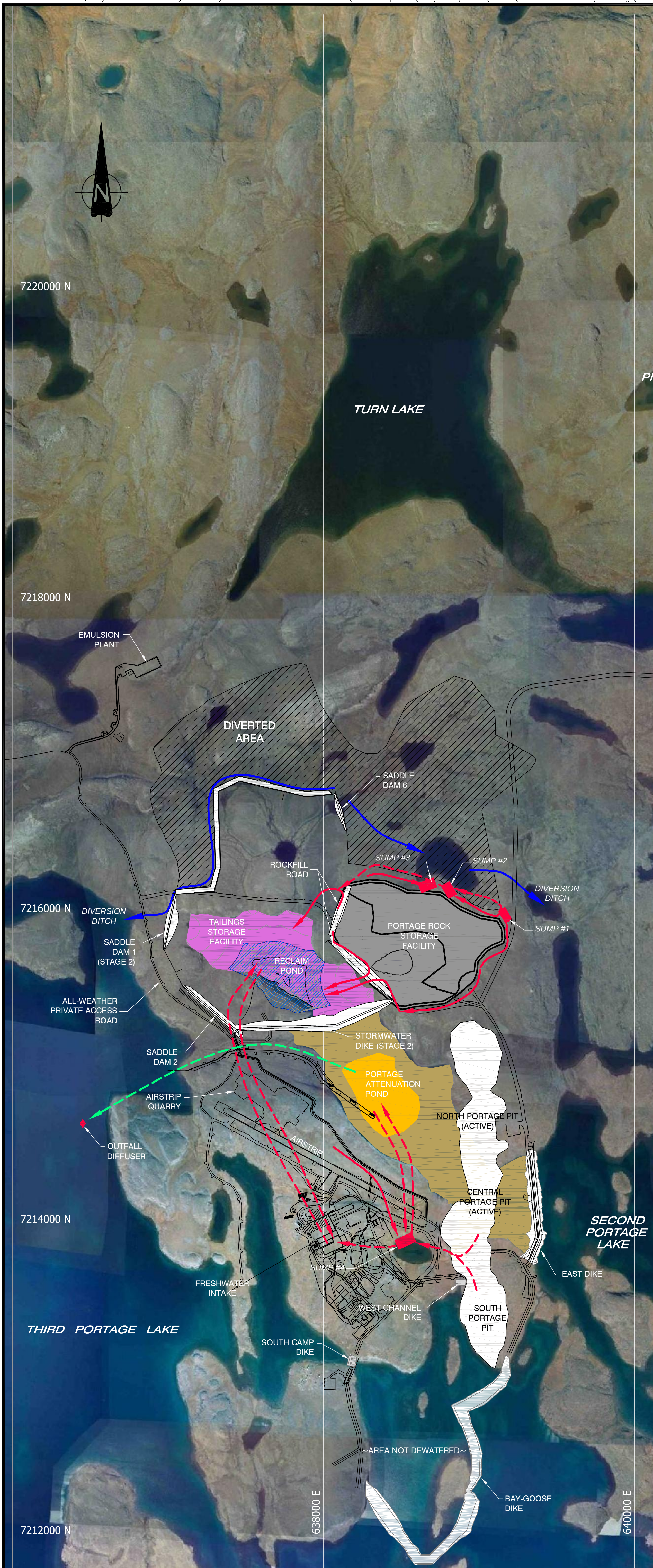

LEGEND

- ATTENUATION POND
- TAILINGS BEACH
- RECLAIM POND
- DEWATERED AREA
- WASTE ROCK
- SUMP
- DIVERTED AREA
- FLOODED AREA
- PUMPED LAKE WATER (DEWATERING/PIT LAKE FLOODING)
- NON-CONTACT WATER DIVERSION
- PUMPED DECANT WATER (TREATED AS REQUIRED)
- PUMPED CONTACT WATER
- PIPED/DIVERTED CONTACT WATER
- SURFACE RUN-OFF

NOTES

1) TAILINGS BEACH SLOPE 1%.
2) GRID REFERENCE: NAD 83, UTM ZONE 14.
3) TAILINGS DEPOSITION PLAN IS IN UNDER DEVELOPMENT.

REFERENCES

1) AMEC AMERICAS LTD, DRAWING NUMBER A1-131395-100-C-0001 (100-C-0001.DWG) , MEADOWBANK FEASIBILITY STUDY, APRIL 2005.

0 200 400 600 800 1000
SCALE 1:25,000 m

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DEVELOPMENT SEQUENCE YEAR 1 (2010)

FIGURE 3.2

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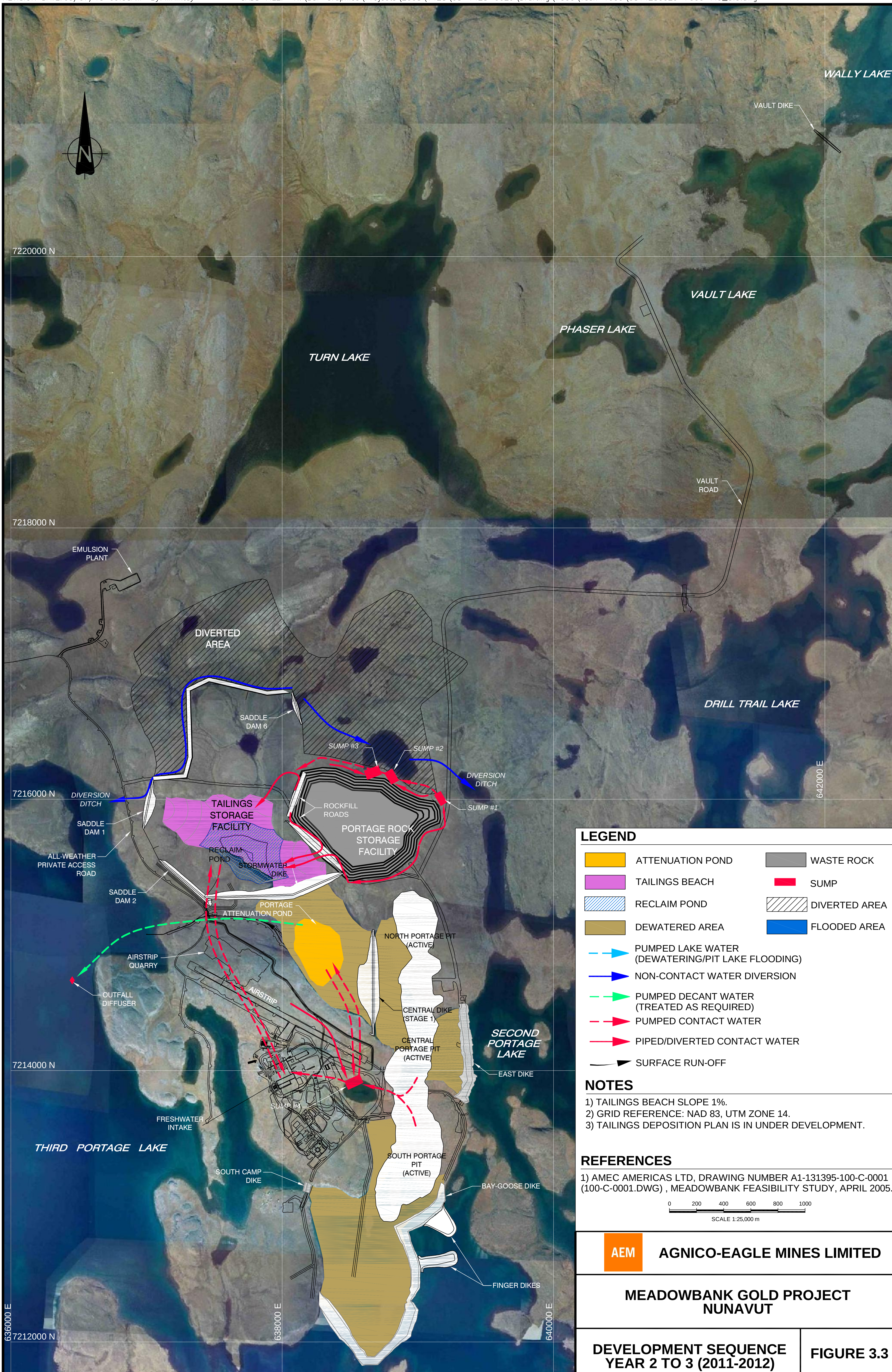

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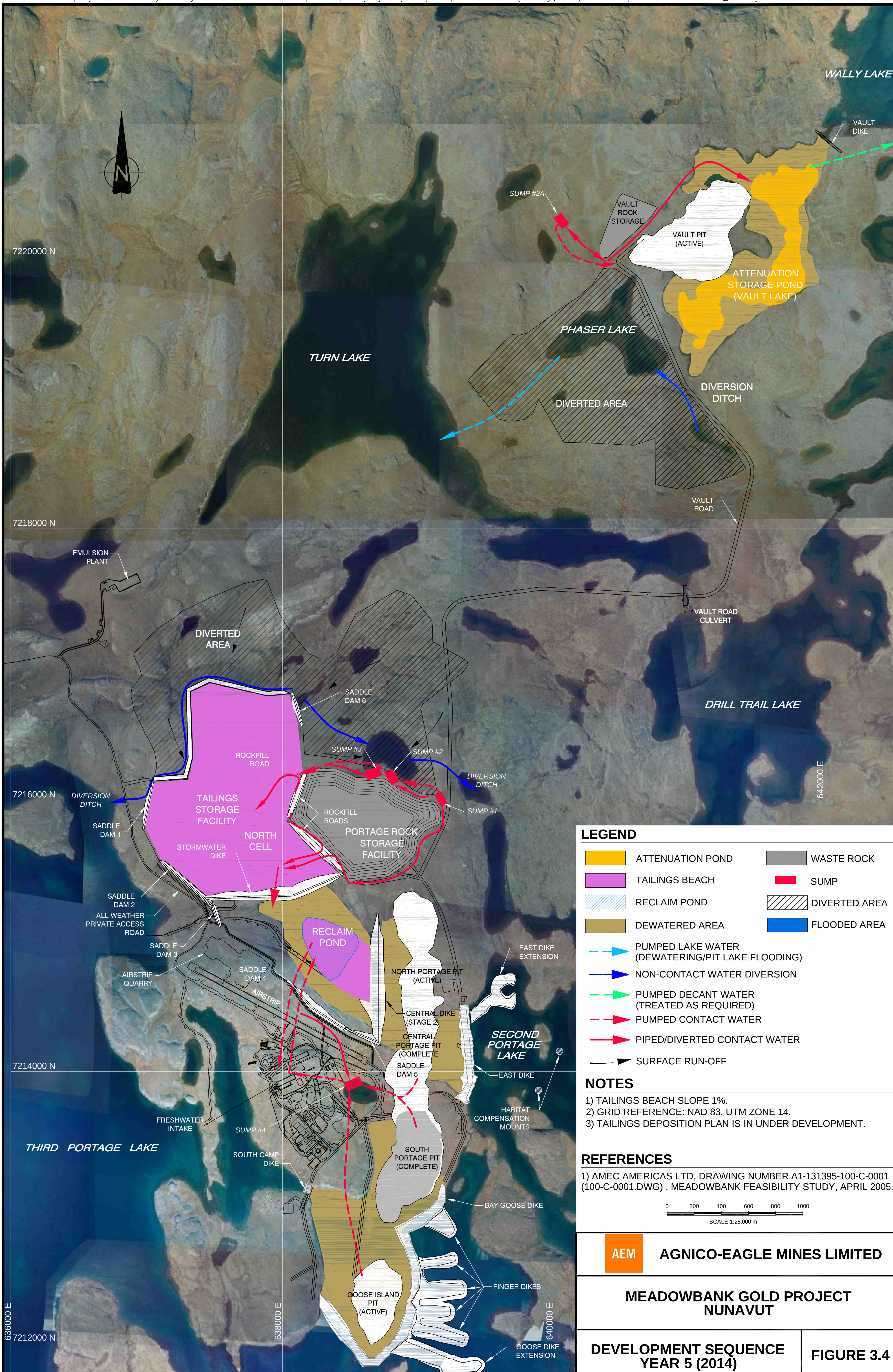
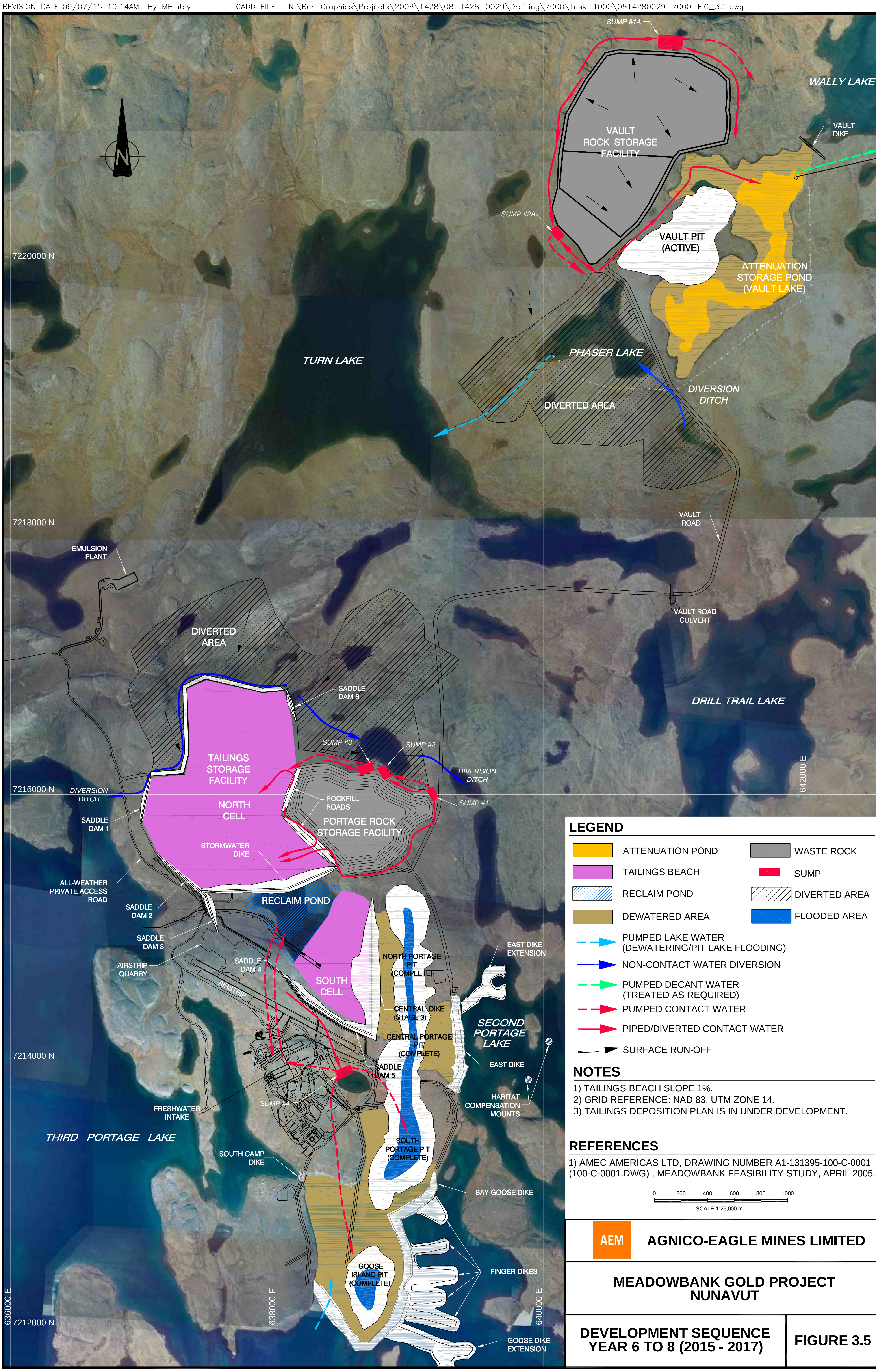


REVISION DATE: 09/07/15 10:14AM By: MHintay CADD FILE: N:\Bur-Graphics\Projects\2008\1428\08-1428-0029\Drafting\7000\Task-1000\0814280029-7000-FIG_3.5.dwg



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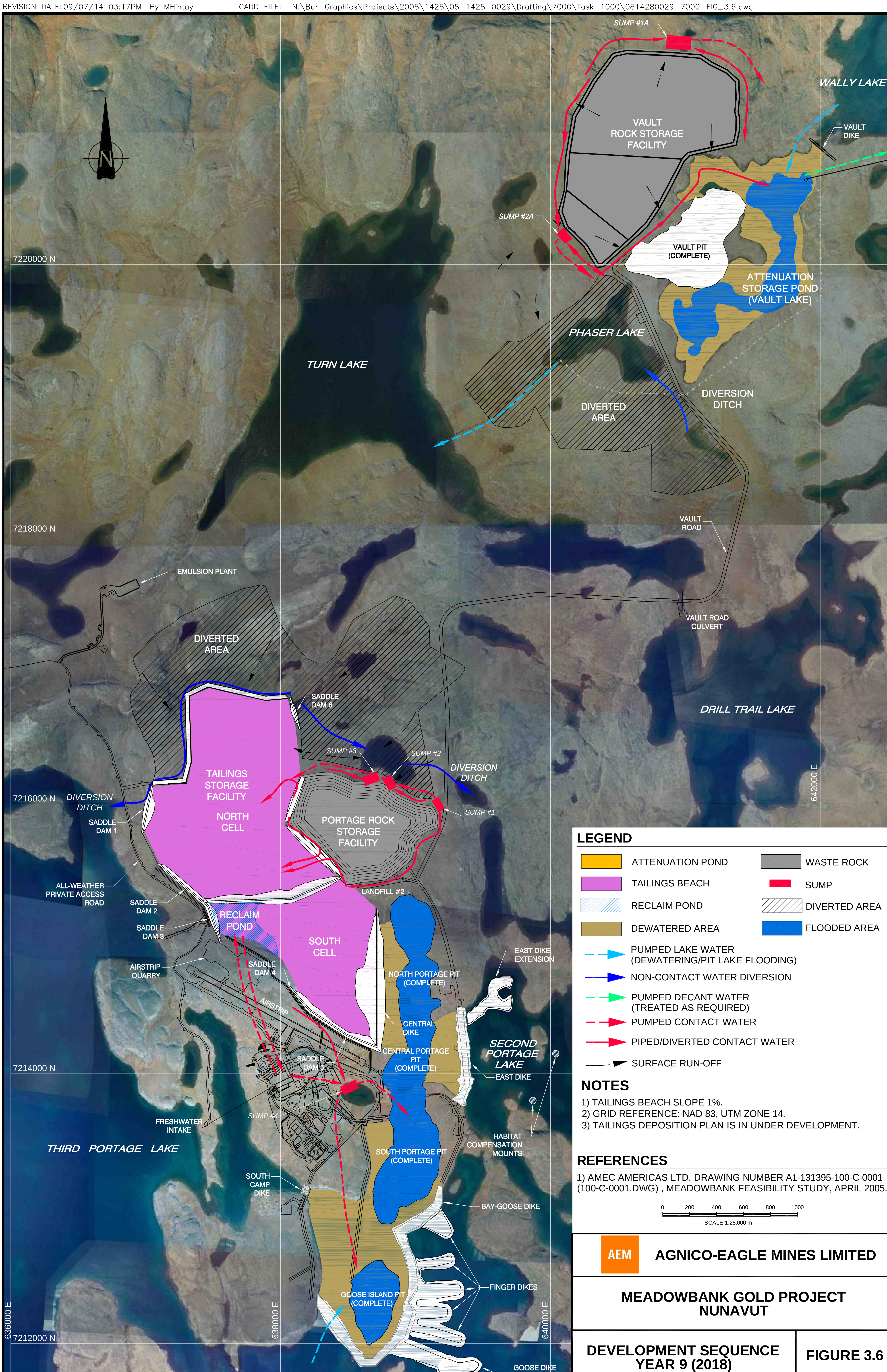

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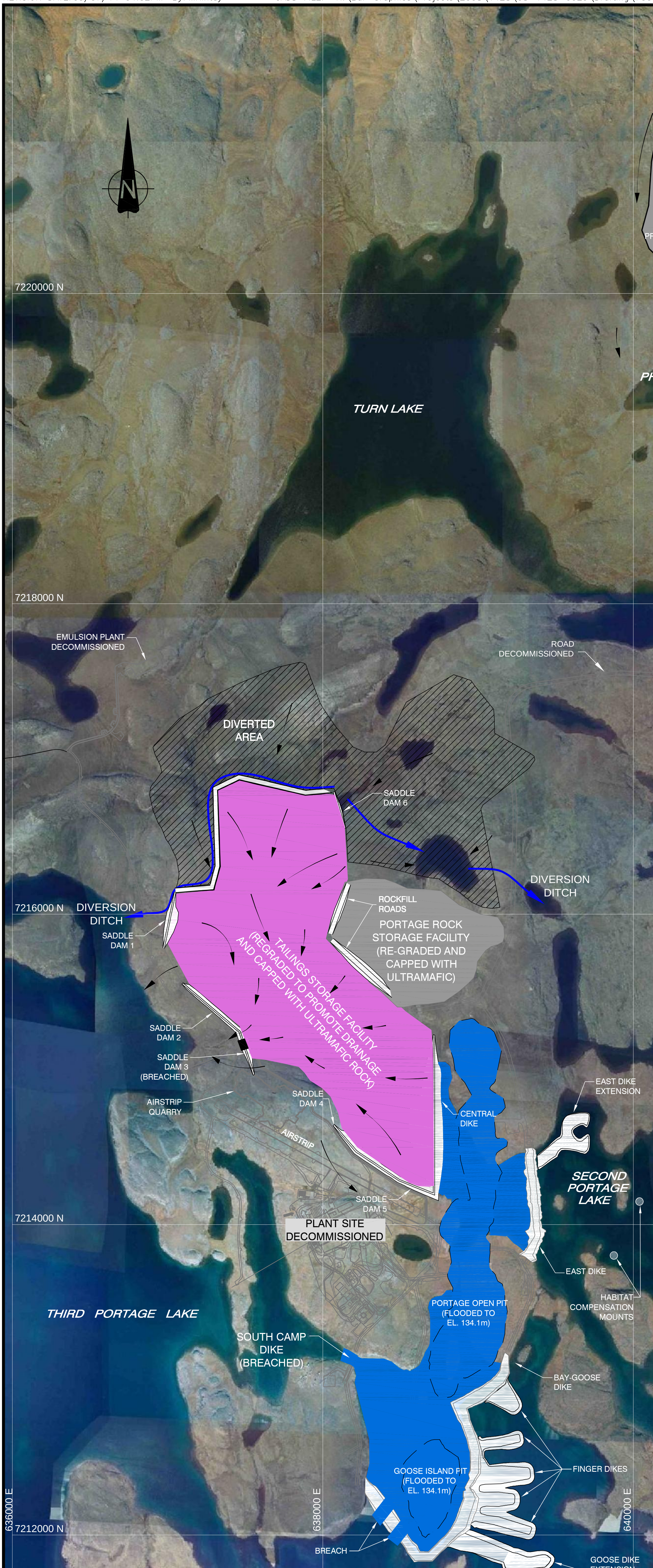

LEGEND

- ATTENUATION POND
- TAILINGS BEACH
- RECLAIM POND
- DEWATERED AREA
- WASTE ROCK
- SUMP
- DIVERTED AREA
- FLOODED AREA
- PUMPED LAKE WATER (DEWATERING/PIT LAKE FLOODING)
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- PUMPED CONTACT WATER
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NOTES

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REFERENCES

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0 200 400 600 800 1000

SCALE 1:25,000 m

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SITE POST CLOSURE CONCEPT

FIGURE 3.7

3.1 LAKE DEWATERING

As indicated above, the Meadowbank Gold Project consists of several gold-bearing deposits within reasonably close proximity to one another (Figure 2.1). To mine the ore at these deposit areas, five perimeter Dewatering Dikes will be constructed:

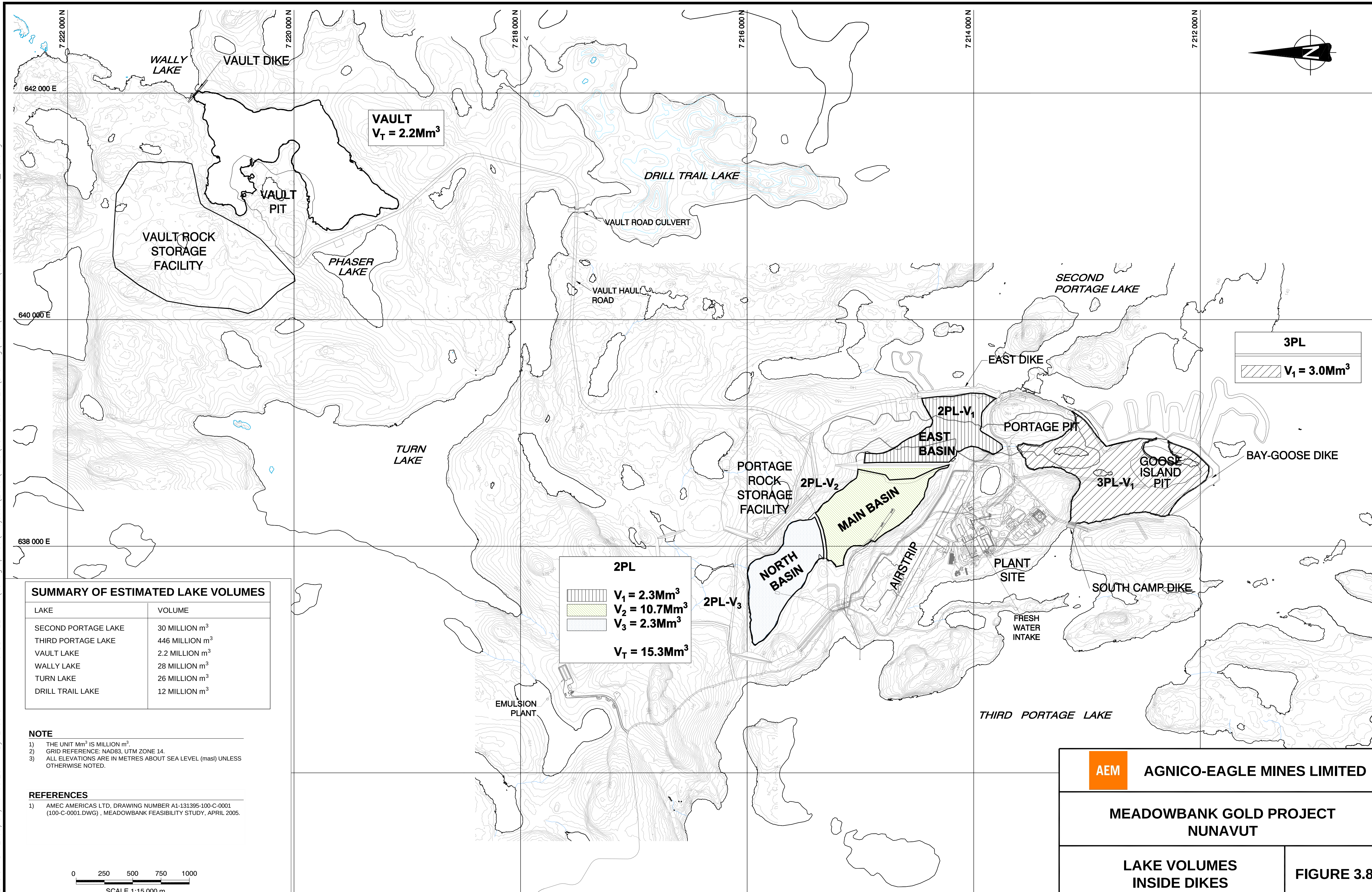
- East Dike;
- West Channel Dike;
- Bay Goose Dike;
- South Camp Dike; and
- Vault Dike.

Once construction of the Dewatering Dikes has been completed, dewatering of 2PL inside the East and West Channel dikes, and 3PL inside the Bay Goose and South Camp dikes, will be accomplished by pumping water west into 3PL. Dewatering of Vault Lake will be accomplished by pumping water to the northeast into Wally Lake. Table 3.2, Figure 3.8 and Appendix A summarize the estimates of dewatering volumes for the various mining areas based on the results of bathymetry surveys carried out at the site and the current dike configurations.

Table 3.2: Estimate of Dewatering Volumes

Location	**Description**	**Dewatering Volume ($x10^6$ m^3)**
Second Portage Lake	Dewatering to pit side of East and West Channel dikes	15.3
Third Portage Lake	Dewatering to pit side of Bay-Goose and South Camp dikes	3.0
Vault Lake	Total Vault Lake within the Vault Dewatering Dike	2.2

Bathymetric data of 2PL Arm indicates three separate basins; a Northwest Basin (~$2.2x10^6$ m^3), the Main Basin (~$10.7x10^6$ m^3), and an East Basin (~$2.3x10^6$ m^3) (Figure 3.8). A topographical divide exists at approximately 130 masl between the Northwest and Main basins, and at approximately 117 masl between the Main and East basins. A dewatering volume of $15.3x10^6$ m^3 from 2PL assumes that all of the water from the Northwest Basin drains to the main basin during dewatering (see Figures 3.8 and 3.9). However, as the Northwest Basin will be used as a tailings storage facility and source for reclaim make-up to process during early mine operations (until approximately Year 3.5 or 2013), all pool water may not be pumped from this basin during the dewatering process. Any water stored in, or transferred to, this basin during dewatering will be used to supplement reclaim make-up requirements to the mill process at mine start-up.



SUMMARY OF ESTIMATED LAKE VOLUMES

LAKE	VOLUME
SECOND PORTAGE LAKE	30 MILLION m³
THIRD PORTAGE LAKE	446 MILLION m³
VAULT LAKE	2.2 MILLION m³
WALLY LAKE	28 MILLION m³
TURN LAKE	26 MILLION m³
DRILL TRAIL LAKE	12 MILLION m³

NOTE

1) THE UNIT Mm³ IS MILLION m³.
2) GRID REFERENCE: NAD83, UTM ZONE 14.
3) ALL ELEVATIONS ARE IN METRES ABOUT SEA LEVEL (masl) UNLESS OTHERWISE NOTED.

REFERENCES

1) AMEC AMERICAS LTD, DRAWING NUMBER A1-131395-100-C-0001 (100-C-0001.DWG) , MEADOWBANK FEASIBILITY STUDY, APRIL 2005.

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LAKE VOLUMES INSIDE DIKES

FIGURE 3.8

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NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (MASL), UNLESS OTHERWISE NOTED.
3. CONTOUR INFORMATION ON LAND SUPPLIED BY AGNICO-EAGLE MINES LIMITED (AEM).
4. LAKEBED SURFACE BASED ON BATHYMETRIC AND SEISMIC SURVEYS BY GOLDER ASSOCIATES LTD., 2006.
5. LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS: 2nd PORTAGE LAKE = 133.1m, 3rd PORTAGE LAKE = 134.1m
6. DIKE LOCATIONS SHOWN FOR REFERENCE PURPOSES ONLY.

REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

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2 PL ARM DEWATERING VOLUME AT 133.43 masl LAKE ELEVATION

FIGURE 3.9

Critical milestones for dike construction and lake dewatering activities are identified as follows:

- Complete construction of the East and West Channel dikes and initiate dewatering of 2PL Arm on March 1, 2009;
- Dewater 2PL Arm down to approximately elevation 127 masl by mid July 2009 to facilitate construction of Stage 1 of the Stormwater Dike (Figure 3.10). This requires dewatering of approximately $6.9x10^6$ m^3 of water (or approximately 45% of the total dewatering volume);
- Dewater 2PL Arm down to elevation 116 masl by December 31, 2009 to permit lakebed stripping within the footprint of the Portage Pit that lies below 2PL (Figure 3.11). This requires dewatering of an additional roughly $5.2x10^6$ m^3, for a total dewatering volume of approximately $12.1x10^6$ m^3 (or approximately 79% of the total volume);
- Dewater remainder of 2PL Arm (to elevation 96 masl) in 2010 to facilitate Central Dike Stage 1 construction in 2011 (NOTE: Central Dike is not required for tailings management until 2013, so complete dewatering and construction could be delayed until 2011 or 2012);
- Complete construction of the Bay-Goose and South Camp dikes and dewater 3PL inside the dikes to facilitate mining in Portage Pit south in the third quarter of 2011 (Year 2); and
- Complete construction of the Vault Dike and dewater Vault Lake to facilitate mining of Vault Pit starting in 2014 (Year 5).

Potential constraints on the above dewatering schedule include:

- Available pumping capacity;
- Limited dewatering volume during the winter period in order to maintain natural water levels within 3PL; and
- Effluent from dewatering shall not exceed maximum monthly mean and short term maximum total suspended solids (TSS) concentrations of 15.0 mg/L and 22.5 mg/L, respectively (Type-A Water Licence 2AM_MEA0815, Part D, Item 16).

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NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (MASL), UNLESS OTHERWISE NOTED.
3. CONTOUR INFORMATION ON LAND SUPPLIED BY AGNICO-EAGLE MINES LIMITED (AEM).
4. LAKEBED SURFACE BASED ON BATHYMETRIC AND SEISMIC SURVEYS BY GOLDER ASSOCIATES LTD., 2006.
5. LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS: 2nd PORTAGE LAKE = 133.1m, 3rd PORTAGE LAKE = 134.1m
6. DIKE LOCATIONS SHOWN FOR REFERENCE PURPOSES ONLY.

REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

0 100 200 300 400 500

SCALE 1:12,500 m

AGNICO-EAGLE MINES LIMITED

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REMAINING 2PL ARM DEWATERING VOLUME AT 127 masl LAKE ELEVATION

FIGURE 3.10

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NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (MASL), UNLESS OTHERWISE NOTED.
3. CONTOUR INFORMATION ON LAND SUPPLIED BY AGNICO-EAGLE MINES LIMITED (AEM).
4. LAKEBED SURFACE BASED ON BATHYMETRIC AND SEISMIC SURVEYS BY GOLDER ASSOCIATES LTD., 2006.
5. LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS: 2nd PORTAGE LAKE = 133.1m, 3rd PORTAGE LAKE = 134.1m
6. DIKE LOCATIONS SHOWN FOR REFERENCE PURPOSES ONLY.

REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

0 100 200 300 400 500
SCALE 1:12,500 m

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REMAINING 2PL ARM DEWATERING VOLUME AT 116 masl LAKE ELEVATION

FIGURE 3.11

3.1.1 Pumping Capacity

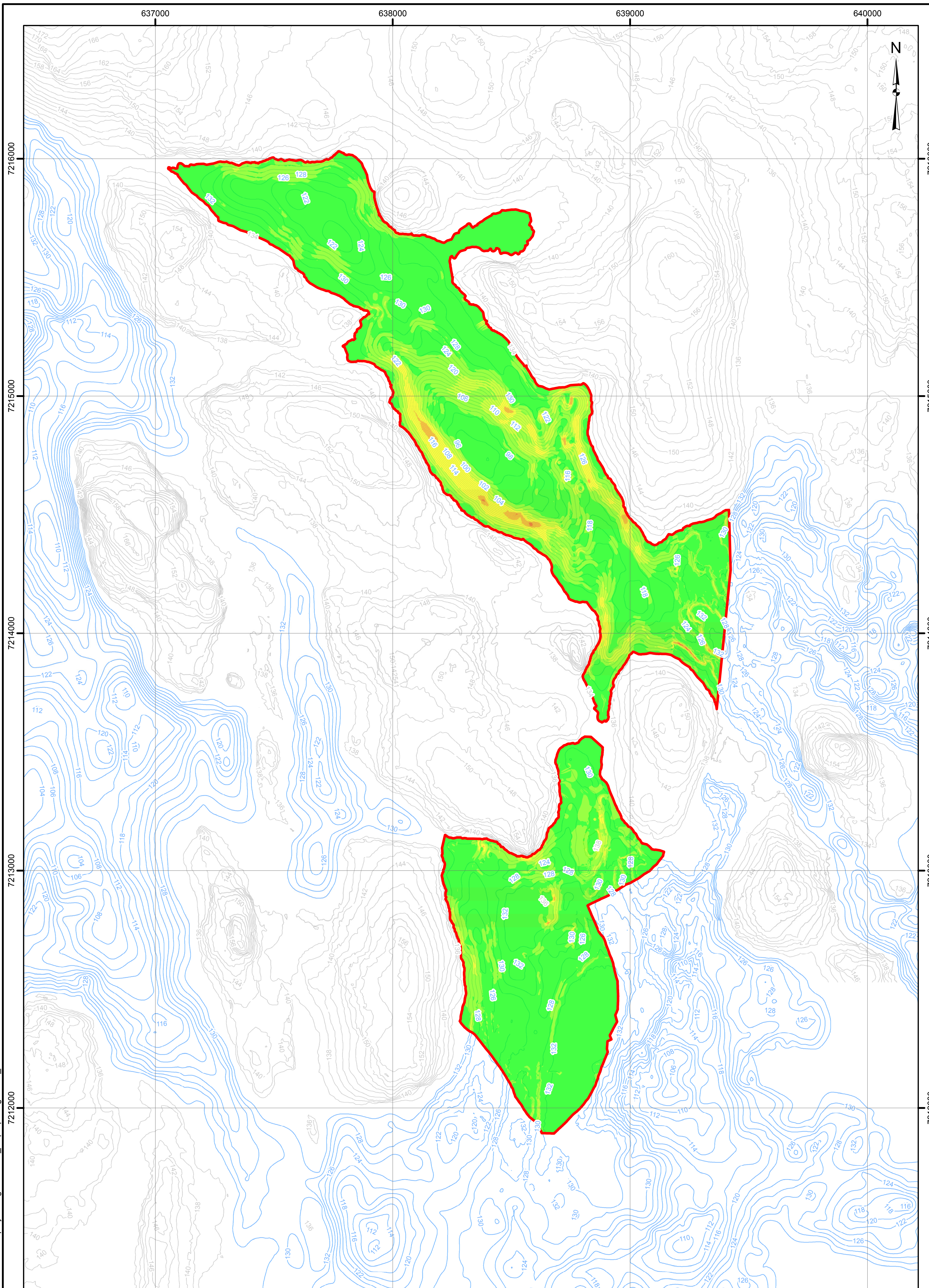
Pool water will be withdrawn from 2PL Arm using six 27,000 m^3/day maximum capacity pumps. The discharge piping will be heat traced and insulated, and will be installed on a graded pipe bed with an installed vacuum break. This will allow the lines to be fully drained in the event of a prolonged pump outage.

The pumping system will be optimized as required based on the experiences gained during 2PL Arm dewatering. For the purposes on this WMP, it has been provisionally assumed that a similar pumping setup will be used to dewater behind the Bay-Goose and Vault dikes.

3.1.2 TSS Management

Dewatering of 2PL Arm, the Goose Pit area, and Vault Lake may expose lake shoals composed of unconsolidated sediments, which may lead to local sedimentation within the impounded water. The introduction of sediments into the water column will depend on the type of material being exposed and the material properties, slope gradient, and timing (e.g., ice cover versus open water conditions), prevailing weather conditions (e.g., wind speed and direction, wave action) and rate at which the basin is drawn down. Where submarine slopes are steep, these may be underlain by a thin layer of soft lake bottom sediments overlying till or bedrock. In these areas, slumping may occur as the lake is drawn down. Where submarine slopes are less steep, these may be underlain by thicker sequences of soft lake bottom sediments, which overlie till or bedrock and may be prone to flow. It is not possible to accurately quantify areas that may be prone to slumping or flow other than in general terms. An estimate of areas that may be susceptible to soft sediment displacement and slumping during dewatering activities is shown on Figure 3.12 for the Portage and Goose areas and Figure 3.13 for the Vault area.

The quality of water pumped from each basin will be closely monitored to verify that it is acceptable for release to receiving environment. Where necessary, additional TSS control practices will be used to limit the amount of TSS reporting to the dewatering pumps and increase the amount of water released directly to the environment without further TSS management. These practices may include a reduction in pumping rates, and the installation of silt curtains and/or baffles in the vicinity of exposed beaches to increase the flow path and residency time within each basin, and limit the uptake of TSS laden water.



LEGEND

DEWATERING AREA
TOPOGRAPHIC CONTOUR (2 m INTERVAL)
BATHYMETRIC CONTOUR (0.5 OR 2 m INTERVAL)

SLOPE (DEGREE)

0 - 5	POTENTIAL SOFT SEDIMENT DISPLACEMENT
5 - 10	
10 - 15	
15 - 20	POTENTIAL SLUMPING
20 - 25	
25 - 30	
> 30	

REFERENCES

1) TOPOGRAPHIC DATA: AGNICO-EAGLE MINES LIMITED
2) HORIZONTAL DATUM: NAD83 PROJECTION: UTM ZONE 14

NOTES

DURING DEWATERING ACTUAL DISPLACEMENTS WILL DEPEND ON MATERIAL PROPERTIES AND DEWATERING RATES.

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AREAS OF POTENTIAL SEDIMENT DISPLACEMENT DURING DEWATERING PORTAGE AREA

FIGURE 3.12

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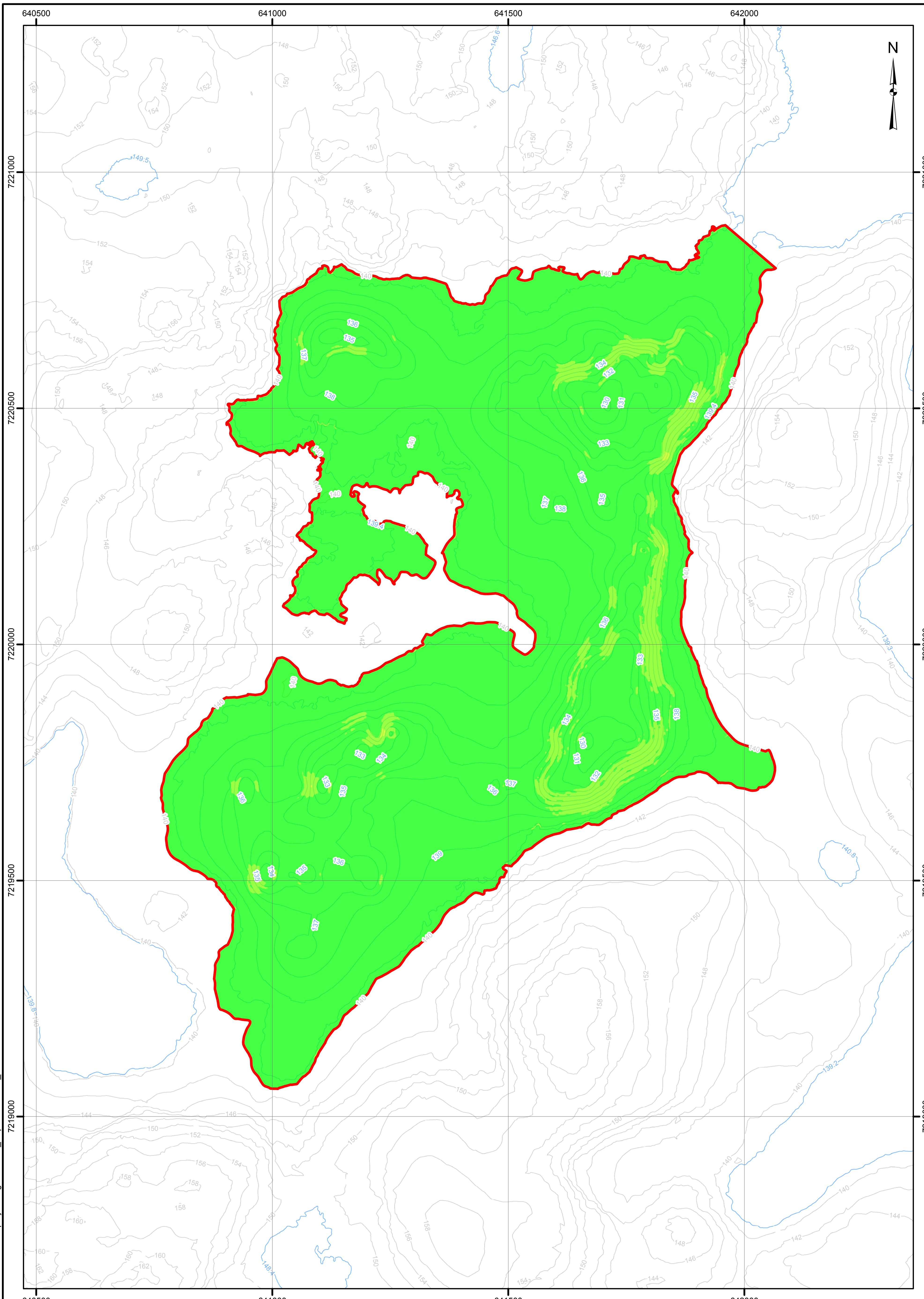

LEGEND

DEWATERING AREA

TOPOGRAPHIC CONTOUR (2 m INTERVAL)

BATHYMETRIC CONTOUR (1 m INTERVAL)

SLOPE (DEGREE)

Slope (degree)	
0 - 5	POTENTIAL SOFT SEDIMENT DISPLACEMENT
5 - 10	
10 - 15	
15 - 20	POTENTIAL SLUMPING
20 - 25	
25 - 30	
30 - 35	

0 75 150 225 300 375

Scale in Metres

REFERENCES

1) TOPOGRAPHIC DATA: AGNICO-EAGLE MINES LIMITED

2) HORIZONTAL DATUM: NAD83 PROJECTION: UTM ZONE 14

NOTES

DURING DEWATERING ACTUAL DISPLACEMENTS WILL DEPEND ON MATERIAL PROPERTIES AND DEWATERING RATES.

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AREAS OF POTENTIAL SEDIMENT DISPLACEMENT DURING DEWATERING VAULT AREA

FIGURE 3.13

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As a base case, approximately 60% of total pool water volume from each basin is assumed to be of suitable quality to permit direct discharge to neighbouring lakes without further TSS management. This estimate is consistent with other similar mining operations in the north requiring dewatering of mining areas (R. Eskelson, Diavik, pers. comm.). However, given the inherent uncertainties in TSS generation during dewatering noted above, contingency scenarios of 50% and 40% direct discharge to the environment were also considered in the development of this water management plan. The approximate remaining water volumes and water levels within 2PL Arm at 60%, 50% and 40% dewatering are presented on Figures 3.14 to 3.16, respectively. 40% dewatering to the environment is estimated to be the minimum required to facilitate Stormwater Dike Stage 1 construction starting in July 2009.

Based on the above, it is expected that some level of TSS treatment will be required to meet the dewatering schedule. For this reason, two modular John Meunier Actiflo TSS treatment units, similar to that used in other Northern Projects such as Troilus and Diavik, will be installed on site. Each unit will remove TSS using chemical flocculants and fine sand to seed flocculant growth followed by high capacity clarification. The sludge from the clarifier will be disposed of within the footprint of the Portage Rock Storage Facility (RSF), where drainage, if any, would report to the north basin of 2PL Arm (i.e., the tailings storage area). Each unit would have a treatment capacity of between 14,000 m^3/day and 35,000 m^3/day, with an expected treatment performance of 24,900 m^3/day (49,800 m^3/day for two units). The units are expected to be on site and operational by mid August 2009.

The use of a modular John Meunier Actiflo treatment system is considered to provide the following advantages:

- Minimal set up time once on site;
- Well proven technology in similar northern environments, and thus low risk;
- Ability to operate year round ensuring that dewatering can continue year round, if necessary; and
- Opportunity for use on other dewatering phases of the Project such as dewatering behind the Bay-Goose and Vault dikes, and in the potential treatment of other TSS laden waters that may be encountered during the mine life.

Estimated 2PL Arm dewatering elevations with time assuming 60%, 50% and 40% direct discharge to 3PL followed by TSS treatment commencing September 1, 2009 are presented on Figure 3.17 (Note: modelled 2PL Arm dewatering elevations are provided in Figure 6.12 below).

Drawing File: N:\Bur-Graphics\Projects\2008\1428\08-1428-0029\Drafting\7000\Task-1000\0814280029-7000-FIG_3.9-3.16.dwg July 15, 2009 9:26:09 AM By: MHintay

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (MASL), UNLESS OTHERWISE NOTED.
3. CONTOUR INFORMATION ON LAND SUPPLIED BY AGNICO-EAGLE MINES LIMITED (AEM).
4. LAKEBED SURFACE BASED ON BATHYMETRIC AND SEISMIC SURVEYS BY GOLDER ASSOCIATES LTD., 2006.
5. LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS: 2nd PORTAGE LAKE = 133.1m, 3rd PORTAGE LAKE = 134.1m
6. DIKE LOCATIONS SHOWN FOR REFERENCE PURPOSES ONLY.

REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

0 100 200 300 400 500

SCALE 1:12,500 m

AGNICO-EAGLE MINES LIMITED

MEADOWBANK GOLD PROJECT
NUNAVUT

2 PL ARM WATER VOLUME AT 40% DEWATERED

FIGURE 3.14

Drawing File: N:\Bur-Graphics\Projects\2008\1428\08-1428-0029\Drafting\7000\Task-1000\0814280029-7000-FIG_3.9-3.16.dwg July 15, 2009 9:26:09 AM By: MHintay

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
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REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

0 100 200 300 400 500

SCALE 1:12,500 m

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2PL ARM WATER VOLUME AT 50% DEWATERED

FIGURE 3.15

Drawing File: N:\Bur-Graphics\Projects\2008\1428\08-1428-0029\Drafting\7000\Task-1000\0814280029-7000-FIG_3.9-3.16.dwg July 15, 2009 9:26:09 AM By: MHintay

NOTES

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5. LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS: 2nd PORTAGE LAKE = 133.1m, 3rd PORTAGE LAKE = 134.1m
6. DIKE LOCATIONS SHOWN FOR REFERENCE PURPOSES ONLY.

REFERENCES

GRID REFERENCE: NAD 83, UTM ZONE 14

0 100 200 300 400 500

SCALE 1:12,500 m

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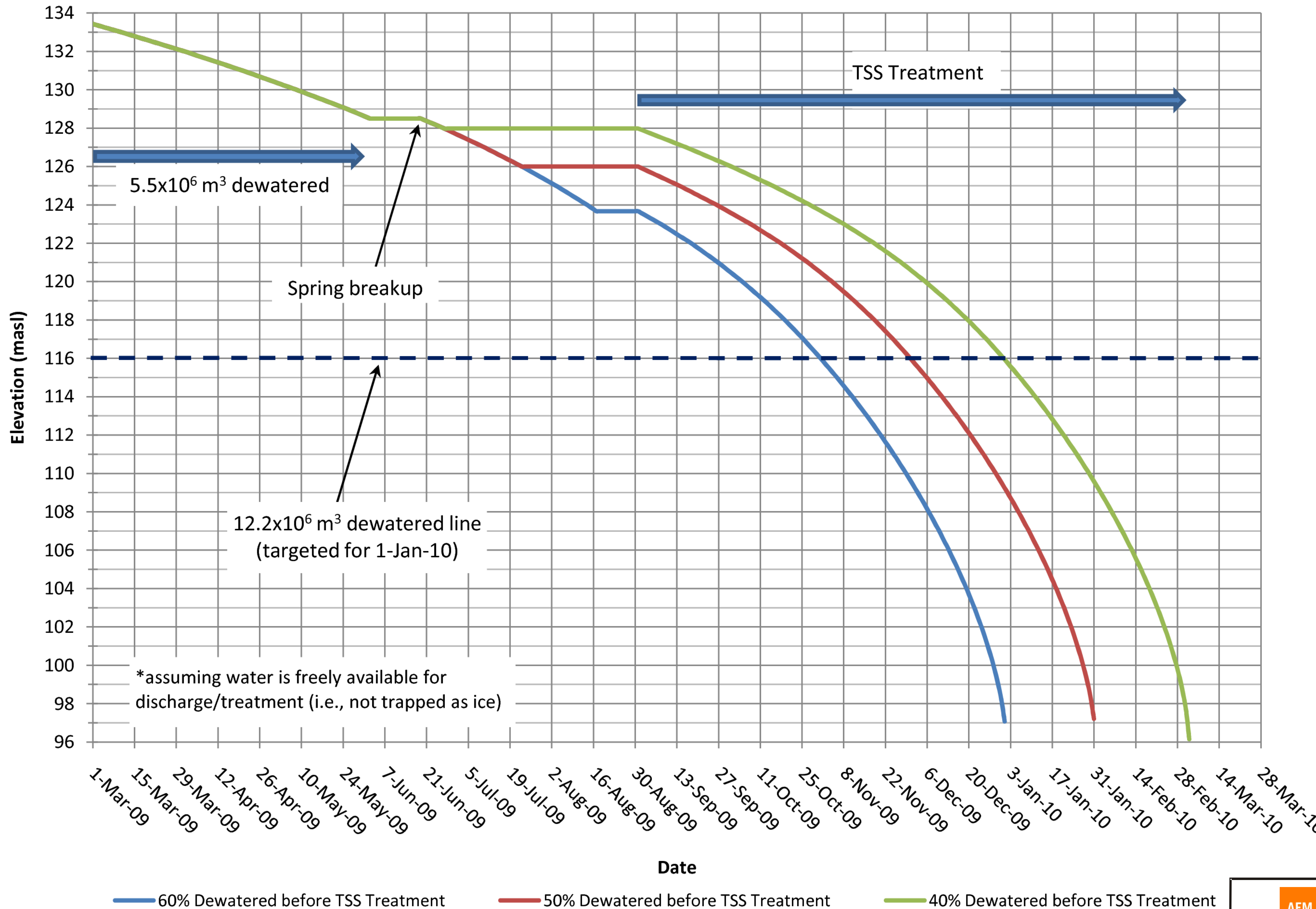
2PL ARM WATER VOLUME AT 60% DEWATERED

FIGURE 3.16

Second Portage Arm Dewatering Elevation with Time*



AEM **AGNICO-EAGLE MINES LIMITED**	
MEADOWBANK GOLD PROJECT NUNAVUT	
ESTIMATED 2PL ARM DEWATERING ELEVATION WITH TIME	**FIGURE 3.17**

REVISION DATE: 8JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure 3.17.ppt

Additional contingency options are also available for the management of TSS laden water should the proposed TSS treatment system not function as anticipated. These include:

- In situ treatment of TSS within the dewatering basin. Under this option, internal raft mounted circulating pump units would be used to chemically treat the remaining water in situ using flocculant mixing. Once mixed, the water would be left to allow TSS to naturally settle. It is likely that dewatering would have to stop during treatment. This approach is not preferred as treatment would be limited to the open water season, the length time required for treatment is unknown, and wind mixing may limit treatment effectiveness.

- Construction of temporary coffer dams to isolate mining operations – Under this option, temporary coffer dams would be constructed in the wet (i.e., through water) to isolate mining operations from remaining dewatering volumes. The size, location and number of coffer dams required would be dependent upon the success of dewatering, and therefore is difficult to predict beforehand. It is unlikely that this option would not be feasible for the Goose Island Pit given its location and the lake bathymetry in the area.

- Transfer of TSS laden water to the Reclaim Pond – Under this option, TSS laden water would be transferred to the Reclaim Pond for storage, re-use as process reclaim, and treatment prior to discharge to the Portage Pit Lake. The disadvantages of this option are that the available storage capacity of the tailings facility would be reduced, and the transferred water would likely require more expensive water treatment later in the mine life. For these reasons, this option would be considered only as a last resort.

3.2 TAILINGS DEPOSITION PLANNING

A preliminary tailings deposition plan for the Project has been developed assuming that tailings will be initially discharged into the north basin of 2PL Arm (TSF north cell) prior to being discharged into the main basin (TSF south cell) starting in Year 4 (2013) (Figures 3.2 to 3.6; see also Appendix VI of Golder, 2008). This allows for initiation of mining within the Portage area in Year 1 (2010) while maximizing the time available to complete dewatering of 2PL Arm and to construct the Central Dike. Once the north basin area is filled, the reclaim barge will be moved into the main basin, and tailings deposition will continue to the maximum tailings elevation.

As mill processing rates and tailings characteristics are liable to fluctuate over the life of the mine, the design of the TSF allows for modification to construction staging providing additional contingency for potential variations in design parameters including mill process rates, tailings beach slopes, ice entrapment, and tailings in-situ densities (Golder, 2008). The preliminary tailings deposition plan, which includes a 20% tailings bulking factor due to ice entrapment, indicates that the proposed TSF has sufficient capacity to store the expected tailings volume over the life of mine. The tailings production and storage curves for the TSF north and south cells, and total tailings basin, are shown on Figure 3.18.

It is likely that some ice will be trapped in the tailings as a result of tailings transport water freezing before it reaches the Reclaim Pond. The quantity of ice trapped will depend on the tailings beach management, but increases in tailings volume of up to 30% due to ice entrapment have been reported in similar environments. The impact of varying proportions of entrapped ice on the storage capacity of the TSF is presented on Figure 3.19. The figure indicates that bulking of the tailings by 30% due to ice entrapment would result in the final height of the TSF increasing by roughly 3.7 m compared to if no ice were entrapped. This increase would require minor extensions of containment dikes and would have a negligible impact on the visibility of the TSF.

The impact of possible ice entrapment on the final elevation of the TSF is summarized in Table 3.4. As indicated above, the current tailings deposition plan assumes a 20% bulking factor for ice. While the actual amounts of ice entrapment will not be known until the commencement of operation of the TSF, ice entrapment can be managed to a large degree by effective beach management and through the implementation of appropriate operational strategies. It should be noted however that the preliminary tailing deposition plan was developed assuming a relatively low tailings in-situ density, and therefore, additional storage contingency may be available within the TSF. Nevertheless, an advantage of the current facility layout relative to other possible storage areas is that increases in storage volume requirements can be accommodated by relatively small increases in the final tailings surface elevation, while maintaining a low overall profile relative to the surrounding terrain.

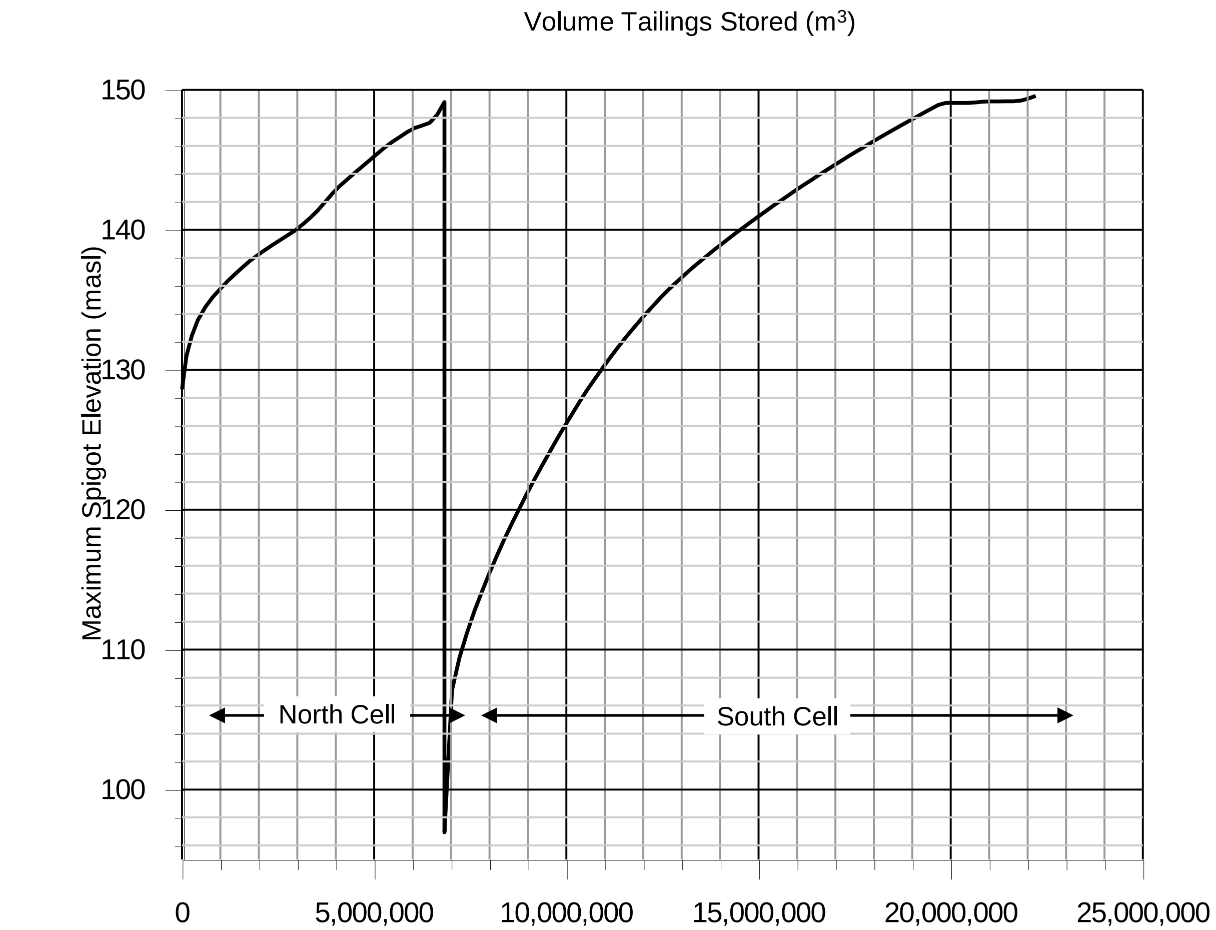
Table 3.3: Average Tailings Surface Elevation for Various Amounts of Ice Entrapment

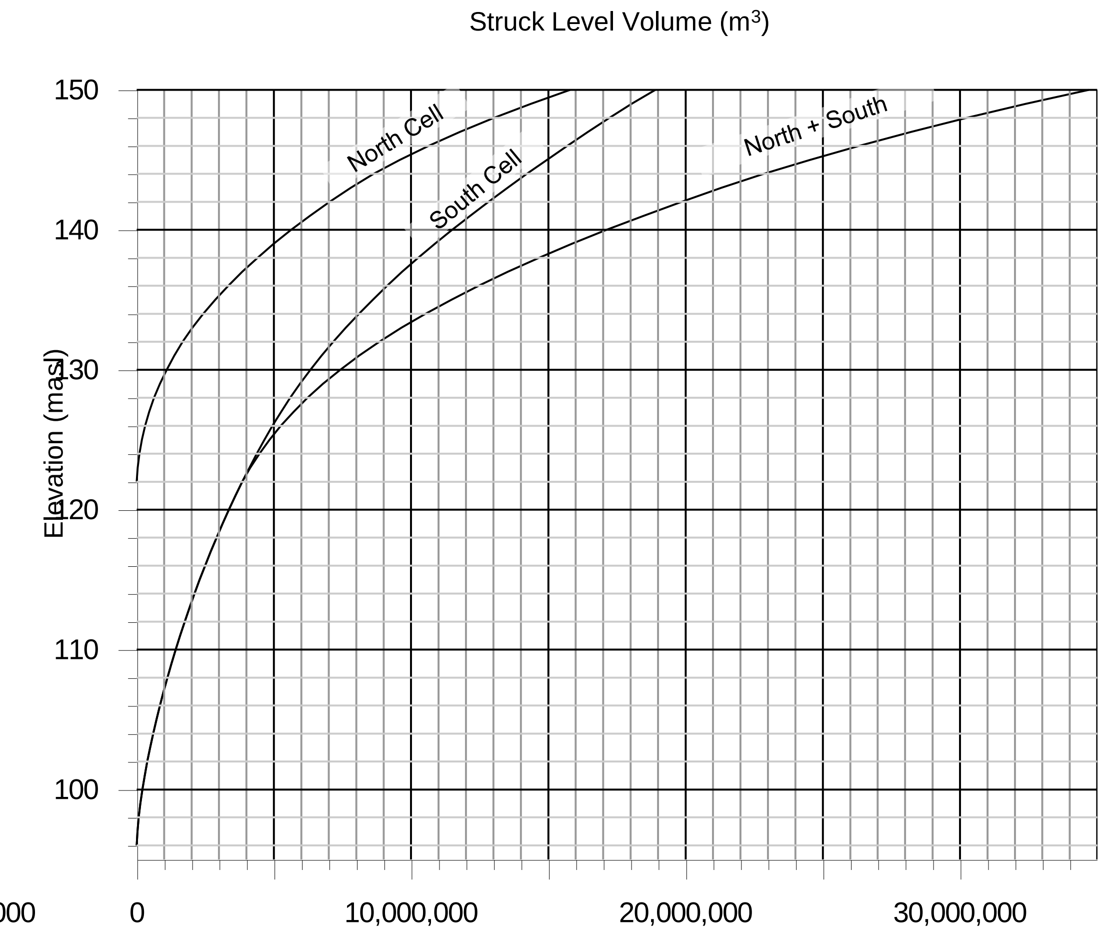
Proportion of Entrapped Ice (%)	Final Elevation of Tailings (m)
0	141.2
10	142.6
20	143.7
30	144.9

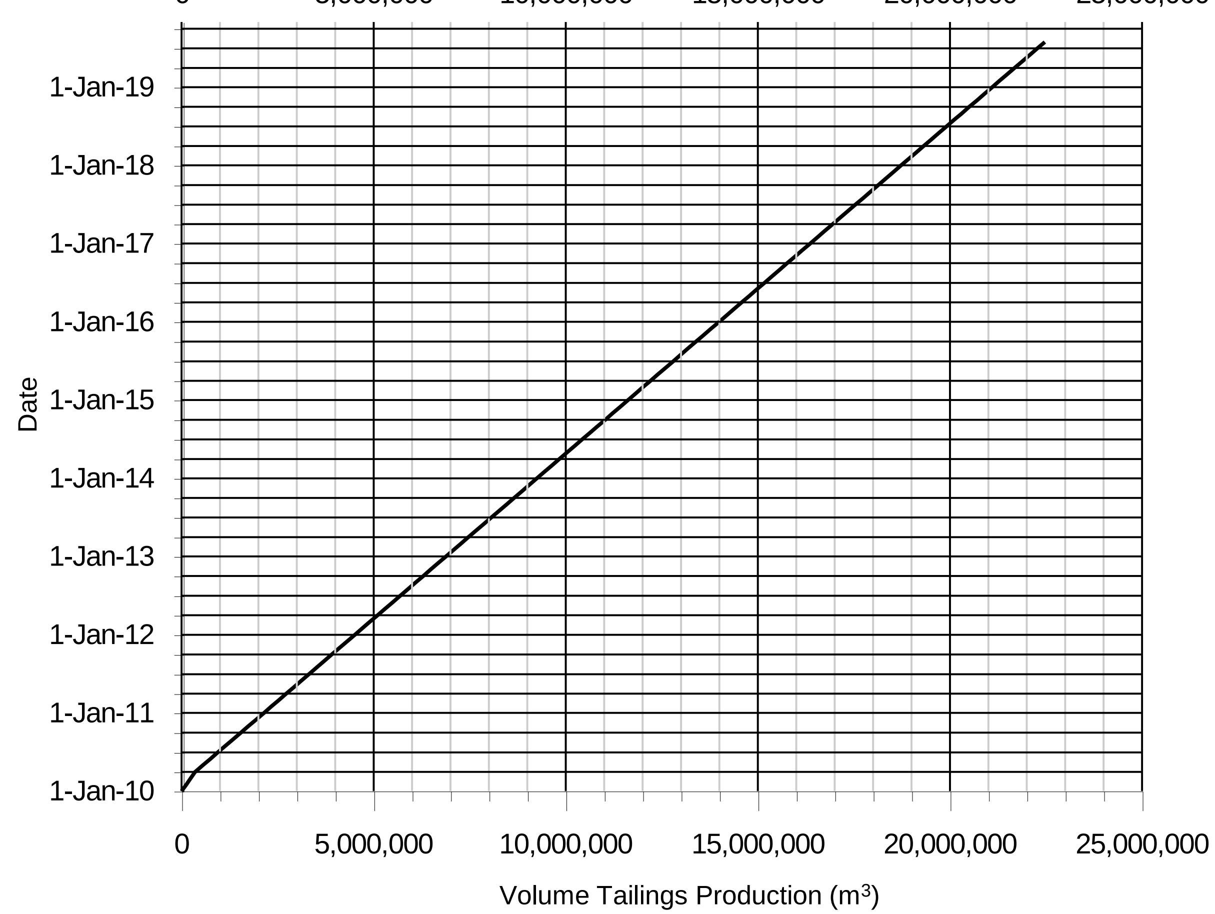
From a water management perspective, an increase in ice entrapment would result in a decrease in the reclaim water rate and an equivalent increase in the freshwater makeup water rate since less water would be released from the tailings and, hence, less supernatant would be available for reclaim. If less than 20% ice entrapment occurs, the reclaim rate may increase and the freshwater makeup would decrease accordingly.

As indicated above, the Reclaim Pond may also be considered for contingency storage of dewatering volume that does not meet discharge standards for TSS should the proposed TSS treatment system not function as intended. The approximate available water storage capacities within the TSF with and without the tailings storage are presented on Figure 3.20. It should be noted however, that the current tailings deposition plan assumes a constant pond volume of approximately 750,000 m^3, and a significant increase in the amount water stored within the facility will likely alter the final tailings deposition slopes and volumes that can be reasonably achieved. This in turn would influence the available water storage capacity within the facility. As discussed above, the transfer of TSS laden water to the TSF will be considered only as a last resort to facilitate mining of the open pits.

Additional fill to the TSF may include lake-bottom sediment generated during stripping of mining areas and the Central and Stormwater dike footprints. The thickness of sediments may range from centimetres to several metres. Other projects in the north have reported soft sediments of up to about 4 metres. Assuming a 1 m to 2 m average sediment thicknesses, the estimated potential volumes range from about 160,000 m^3 to 380,000 m^3, or approximately 0.5% to 1.5% of the total capacity of the TSF to elevation 148 m.







Tailings density of 1.31 t/m³ including 20% for ice entrapment.

1% beach slope

60% capacity Month 1

70% capacity Month 2

80% capacity Month 3

then 8500 tpd

Volume tailings stored is based on data from preliminary tailings deposition plan for North and South Cell. Elevations based on maximum spigot elevation..

Combined deposition curve the North Cell is filled first, followed by the South Cell.

Freeboard requirements:

- Central Dike 2 m
- Saddle Dams 2 m
- Stormwater Dike 1 m

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TAILINGS PRODUCTION AND STORAGE CURVES	FIGURE 3.18

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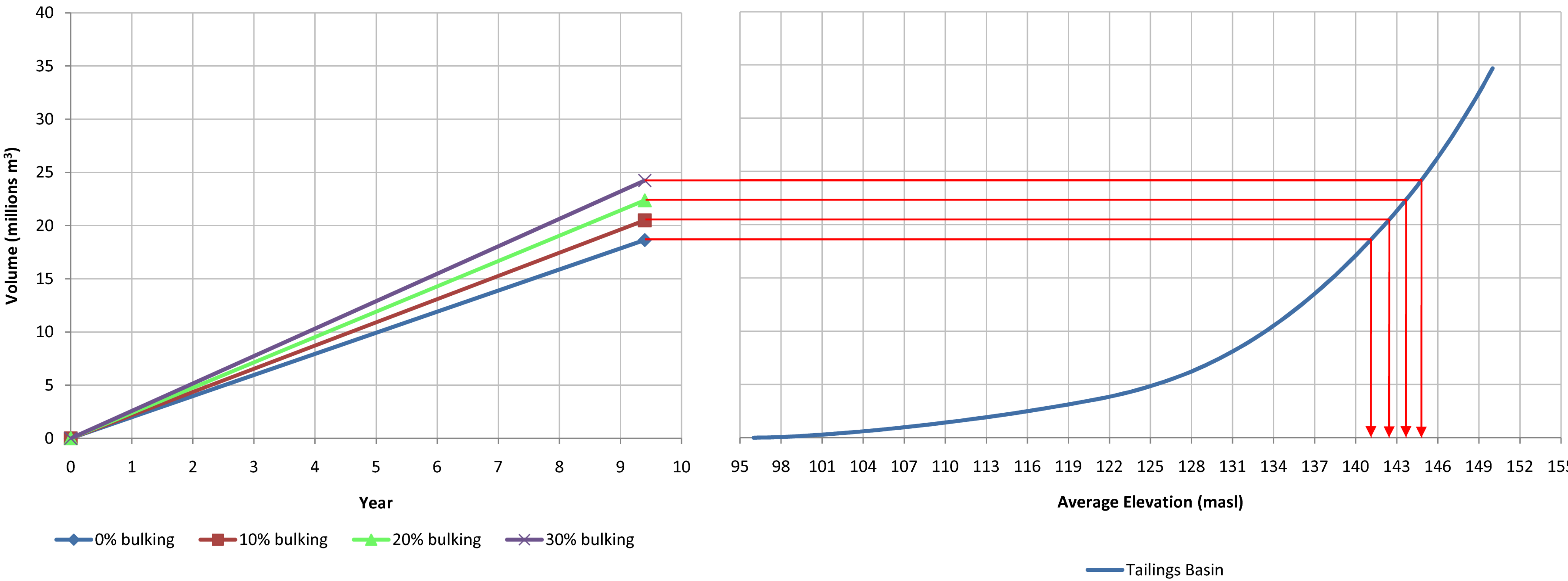

NOTE

FOR COMPARATIVE PURPOSES ONLY.
FINAL TAILINGS ELEVATIONS ARE AVERAGES
ONLY AND DO NOT REFLECT POTENTIAL
ELEVATION VARIATIONS ACROSS THE BASIN

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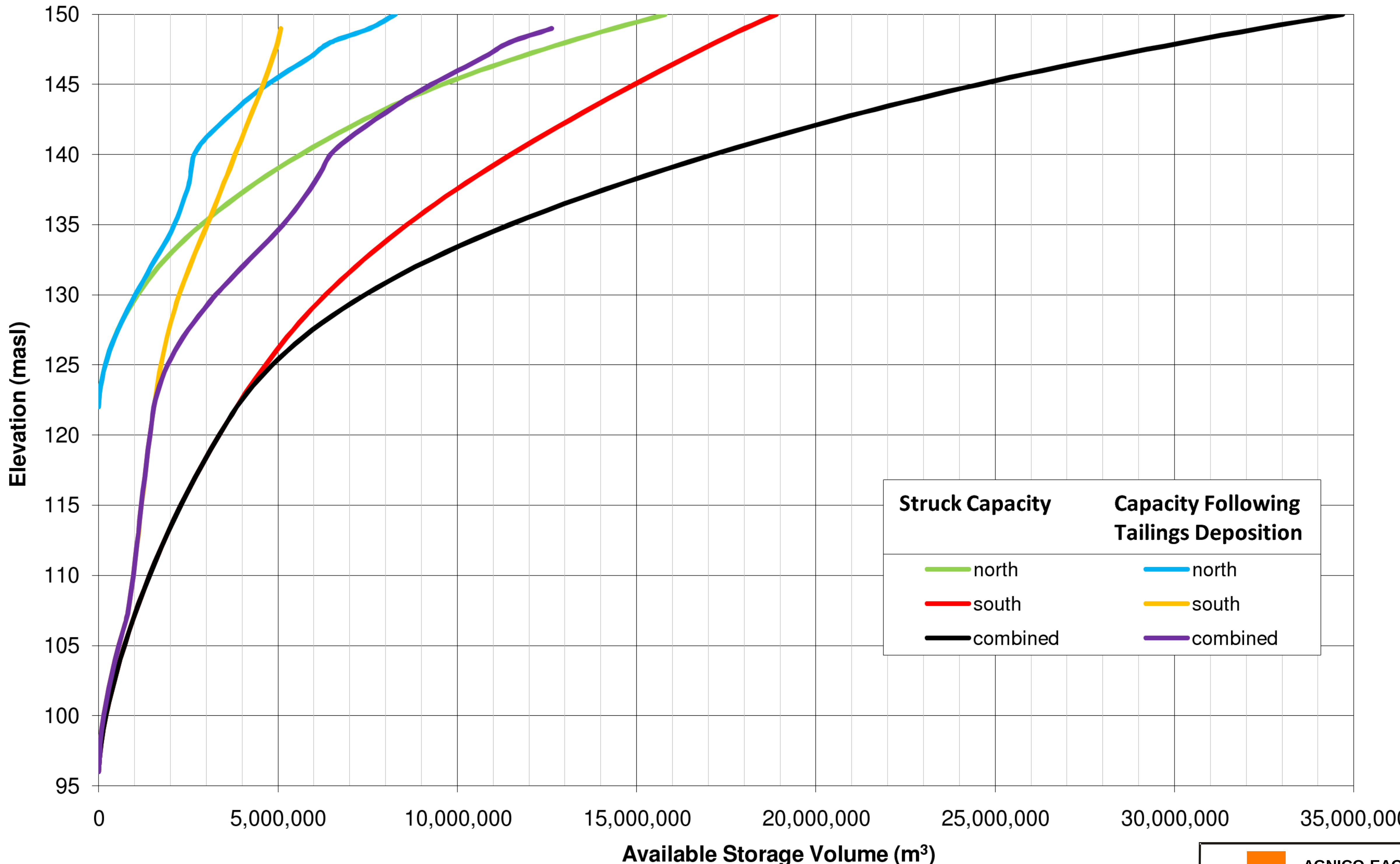
TSF STORAGE AS A FUNCTION OF ICE CONTENT

FIGURE 3.19

Approximate TSF Water Storage Capacity (m^3)



AGNICO-EAGLE MINES LIMITED	
MEADOWBANK GOLD PROJECT NUNAVUT	
APPROXIMATE TSF WATER STORAGE CAPACITY	FIGURE 3.20

REVISION DATE: 8JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure 3.20.ppt

3.3 DIKE BREACHING

Following completion of mining, the pits will be filled with water from 3PL (Goose and Portage pits) or Wally Lake (Vault Pit) over a period of several years. The Portage and Goose pits will be flooded (in the order of $54.9x10^6$ m^3) over a roughly eight year period and eventually become part of 3PL. The Vault Pit will be flooded (in the order of $26.9x10^6$ m^3) over a roughly six year period and will eventually become part of Vault Lake.

Since instantaneous breaching of the dikes would cause a significant drawdown of 3PL and Wally lakes, flooding will be achieved by a combination of seepage, precipitation, and partial re-direction of annual freshet flows from 3PL and Wally lakes in a controlled fashion over several years. Following completion of flooding, the Bay-Goose and Vault dikes will be breached and pit waters will be allowed to mix with adjacent water bodies provided that pit water quality is sufficiently high and water levels between the pit and the adjacent lake are equal to maintain a water balance. The East Dike will remain as a permanent structure with a 1 metre head difference – with the west side connected to 3PL at 134.1 masl, and the east side connected to 2PL at 133.1 masl.

Dike breaching will involve the removal of portion of the dikes to a minimum depth of 3 m below average lake water level within 3PL and Wally lakes. Consideration will be given to breach staging, with above water portions of the dike in the breach area removed during winter period when there will be little surface water flow, thereby minimizing the potential release of sediments to the neighbouring lake. The remainder of the breach would be completed during the open water season following freshet so as to allow for the deployment of turbidity curtains to control potential releases of sediment. Exposed till surfaces within the breach opening above normal lake water levels will be covered with UM rock, while either UM, IF or IV materials would be used below surface depending upon availability.

During the Environmental Impact Review Process for the Project, Environment Canada expressed concern that the re-flooding of the pit areas may mobilize fine clays and silts which are indicated to be high in metals. It should be noted that it will be several years before the dikes are breached after re-flooding of the pits begins. Consequently, any fine sediments that have potentially been re-mobilized into the water column are expected to have settled out by the time the pit lake areas are reconnected to the surrounding lakes.

SECTION 4 • WATER MANAGEMENT

4.1 WATER MANAGEMENT OBJECTIVES AND STRATEGIES

The goal of water management is to minimize the impact of the Meadowbank Gold Project on the aquatic ecosystem of the neighbouring lakes, namely Third Portage, Second Portage, Turn, and Wally lakes. The primary objectives of the water management plan are to:

- minimize impacts of the Project on the quantity of surface water; and
- minimize impacts of the Project on the quality of surface and groundwater.

The strategies to implement the above objectives include:

- reduce the intake of fresh water from the neighbouring lakes by recycling and reusing water wherever practicable;
- implement measures to avoid the contact of clean runoff water with areas affected by the mine or mining activities;
- collect, transport, and treat, if necessary, mine water, camp sewage, and runoff water in contact with project activities;
- manage potentially acid-generating or metal-leaching materials;
- monitor quality of discharges; and
- adjust management practices if monitoring results indicate discharge quality does not meet discharge criteria.

4.2 WATER MANAGEMENT DESIGN CRITERIA

For the purpose of this WMP, surface water has been grouped into two categories, contact and non-contact water.

Contact water is defined as any water that may have been physically or chemically affected by mining activities. Contact water includes:

- surface runoff from the mining and milling areas;
- groundwater seepage into open pits;
- surface runoff and shallow drainage from rock storage areas;
- surface runoff and shallow drainage from tailings disposal areas;
- transport water from tailings;
- water generated from consolidation of tailings (bleed water); and
- flushing water from tailings distribution lines.

All contact water will be intercepted, contained, analyzed, treated if required, and discharged to the receiving environment when water quality meets discharge criteria.

Non-contact water is limited to runoff originating from areas unaffected by mining activity that does not come into contact with developed areas. Non-contact water will be intercepted and directed away from developed areas by means of natural or man-made diversion channels and allowed to flow to the neighbouring lakes untreated.

The various components of the water management system will be designed to meet the following criteria:

- water management infrastructure along the perimeter of the developed areas must be able to intercept and convey to proper handling facilities contact water from a 1:100-year, 24-hour precipitation event (41 mm of runoff originating from 58.7 mm of precipitation);
- water management infrastructure located within mining affected areas where water has no chance of overflow outside of developed areas should be able to handle the runoff from a 1:10-year, 24-hour precipitation event (approximately 27 mm of runoff from 38.6 mm of precipitation);
- water management infrastructure along the perimeter of the developed areas must be able to divert non-contact water from a 1:100-year, 24-hour precipitation event;
- minimum pumping capacities for contact water sumps and ponds should be selected to handle the greater of:
    - the average year spring melt (126 mm) volume in a 30-day period; and
    - the 1:100-year, wet-year spring melt (370 mm) volume in a 90-day period;

  while observing required storage volumes;
- in the case of the pit sumps, the pumps must be able to handle the expected maximum monthly flow volume including seepage in addition to spring melt criterion;
- attenuation ponds should be sized to accommodate the runoff from a 1:100-year, 24-hour precipitation event in excess of their maximum operating storage volume (average year climate conditions), while maintaining a 1 m freeboard before the possibility of a spill to the receiving environment; and
- the Reclaim Pond should be sized to accommodate the runoff from a 1:100-year, 24-hour precipitation event in excess of the maximum operating storage volume (average year climate conditions), while maintaining a minimum 2 m freeboard before the possibility of a spill to the receiving environment.

4.3 WATER MANAGEMENT SYSTEMS

The development of the proposed water management systems will require the consideration of storm drainage design in cold regions. The importance of control and prevention of icing within and adjacent to drainage structures will be acknowledged in the detailed engineering design of these structures and will include the assessment of the degree of drainage required, hydrologic data, and the effects of, and impacts on, the permafrost thermal regime. Standard techniques for addressing icing of structures and facilities in cold regions will be employed during the design phase of the Project. These will include such standard techniques as avoidance and control and prevention.

The design of the surface water control structures will consider the existing geotechnical surface, subsurface, hydrological, hydrogeological and seasonal temperature conditions such that adequate measures are taken to maximize the interception and collection of contact water from the Project for environmental monitoring, water quality sampling and assessment for treatment prior to discharge to the environment.

The collection of surface water runoff as well as ground water flow from the Project will apply appropriate and cost-effective engineered solutions to minimize soil erosion, sedimentation and seepage loss of collected water from the facilities. Surface contact water will be collected by conventional gravitational means using perimeter drainage ditches and sumps and the collected water will be pumped to an attenuation pond by a mechanical system of pump and surface pipelines.

In areas where fine to coarse grained soils are encountered overlying weathered to intact bedrock, design measures will be taken to limit soil erosion and seepage losses from the drainage ditches and collection sumps using natural means and supplemented using engineered solutions. In areas where the soil and/or bedrock are of sufficiently low permeability to limit seepage losses, drainage measures will consider erosion protection and sediment control measures only. In areas where the soil and/or bedrock permeability is comparatively high, additional measures will be considered to limit seepage losses from the water control structures. Depending on the actual ground conditions encountered around the perimeter of the infrastructure development, some engineered solutions that may be considered during detailed design and construction include:

- increase the ditch gradients to minimize ponding of water in the perimeter collection ditches;
- excavation of the drainage ditch inverts and sumps into the underlying intact bedrock;
- provision of perimeter seepage containment by maintaining permafrost conditions down gradient of the water control structures by construction of a thaw stable fill embankment to insulate the ground from seasonal active thaw and to encourage re-freezing of the ground above the drainage ditch inverts;
- provision of positive seepage gradient containment around the water control structures by maintaining groundwater seepage flow from the lake environment towards the perimeter collection system using drainage ditch gradients lower than the lake level; and
- apply surface treatments to the ditch and sump excavation surfaces as necessary to seal the exposed subgrade surface to a condition where the hydraulic conductivity is suitably reduced using engineered materials such as geosynthetic, geomembrane, bentonite, surface grouting, injection grouting and/or concrete applications.

The appropriate and active management of water within the open pits will be a critical component of mining activities as it relates to operational considerations, but also to slope stability. This will be particularly true for the development of stable soil slopes within overburden materials. While allowance will be made for diversion of surface runoff from the perimeter of the pits, there is no plan to include additional drainage benches within the pits; nor is there a requirement. Unlike soil slopes, experience in open pit mining in hard rock has shown that seepage from the pit walls can be allowed to drain over the benches and catch-berms without causing erosion or stability problems. Moreover, the majority of seepage from the pit walls is conveyed to the pit bottom through the blast damaged rock below the bench faces and catch-berms, and only a small portion of the flow actually emanates on the pit wall surface. Consequently, the majority of wall flow would pass beneath any ditches that were established on the individual rock catch-berms. Water inflow to the pits will be collected in sumps, and pumped to the attenuation ponds. Significant ice accumulations on the pit walls, if any, will be physically removed as required, and will be transported to the attenuation or reclaim ponds for storage and eventual melt. Care will be taken to minimize the burial of ice by tailings.

The sumps will generally be operated with a low water level to provide temporary storage capacity for runoff generated by an extreme runoff event, possible breakdowns, or power failures at the pump stations. The pumping equipment and infrastructure will be selected and designed to accommodate the sub-zero temperatures that will prevail during the early and late portion of the open-water season. This may entail heat tracing of the pump intakes and providing self-priming pumps and increased monitoring during these periods. Pumping of the sumps will likely be possible to temperatures of up to -10°C during late winter or early spring. Other options would be to pump the sumps dry prior to freeze-up, or to break and remove ice manually or mechanically. Further standard techniques of control and prevention will be investigated during detailed engineering design of the sumps.

Environmental monitoring of the water control system field performance will be carried out during the regular collection of groundwater and temperature data, and annual geotechnical site inspections completed as part of the environmental monitoring program. Results of the data collection and site inspections will be used to assess and improve where necessary the field performance of the water control structures.

4.4 PORTAGE MINING AND MILLING AREAS

Under full operation, mining in the Portage area will consist of two open pits (Portage and Goose Island), a Rock Storage Facility (RSF), a Tailings Storage Facility (TSF), a process water Reclaim Pond, an Attenuation Pond, an ore processing mill, and a service complex. The mill and service complex will be located to the west of the Portage Pit, on the area of land separating 3PL and 2PL (Figure 2.1).

4.4.1 Water Supply and Distribution

Fresh water for site use will be pumped from an intake barge located on 3PL. The intake to the barge will be situated at least 1 m off of the bottom to avoid fish habitat and will be fitted with an appropriately sized screen to avoid entrainment of fish.

Heat-traced, insulated piping will extend from the barge to an insulated main storage tank located at the plant site, providing both fire and fresh water storage. Potable water will be drawn from the main storage tank in a skid-mounted chlorination system located in a pre-fabricated structure adjacent to the accommodation camp. The treated potable water will be stored in an insulated water tank. A water distribution pump, also skid mounted, will distribute potable water to the site.

Dust-control water for the Portage mining area will be drawn from the Portage Attenuation Pond in an effort to keep contact water within the mining areas. Dust control water for the haul roads outside the Vault and Portage catchment areas will be drawn from Phaser Lake.

4.4.2 Supernatant Reclaim

Tailings will be stored within the Tailings Storage Facility located with the 2PL Arm. The tailings will be isolated from the remainder of 2PL in Years 1 to 4 (2010 to 2013) through the construction of the Stormwater Dike, and in Year 4 (2013) onward through the construction of the Central Dike. Tailings will be deposited to the west of each of these dikes. Any process supernatant seepage and surface water runoff from the tailings will collect within the Reclaim Pond. A series of saddle dams will be constructed to allow the pond and tailings surface level to be raised above the current lake level so that sufficient process water volume requirements are maintained as necessary (see Figure 3.2).

The reclaim of supernatant and runoff water from the Reclaim Pond will be achieved using a floating barge, which will be moved progressively during the operation of the TSF. It will probably be necessary to use heated reclaim pumps to ensure operation during the winter. A bubbler system may also be required to keep ice away from the barge.

A retention time of approximately 90 days is required within the Reclaim Pond to allow stabilization of the supernatant chemistry, thereby avoiding large variations in the chemistry of reclaimed water used for ore processing. This corresponds to a Reclaim Pond storage requirement of approximately 550,000 m^3. Additional volume must be allowed for ice in the winter months. Consequently, a target supernatant storage volume of around 750,000 m^3 has been adopted for this plan.

4.4.3 Surface Water Management Systems and Activities

The WMP for the Portage mining area involves (see Figures 3.1 to 3.7) the following activities:

- divert non-contact water from the northern portion of the catchment area around the northwest end of 2PL towards 3PL;
- construct the East and West Channel dikes to allow the dewatering of 2PL (approximately $15.3x10^6$ m^3 of water) to facilitate Stormwater and Central dike construction and mining of the Portage Pit;
- construct the Bay-Goose and South Camp perimeter dikes to allow the dewatering of the Goose Island area (approximately $3.0x10^6$ m^3 of water) to allow mining of the Goose Island Pit and southern portion of the Portage Pit;
- once dewatered, use the north and main basins of 2PL Arm as a Reclaim Pond and temporary Attenuation Pond, respectively;
- collect contact water from the pits, mill site, airstrip, and tailings and RSFs for discharge in the Reclaim or Attenuation ponds, or deactivated pits; and
- monitor the water quality in the Attenuation Pond and treat in-situ, if necessary, prior to decanting excess water to 3PL or deactivated pits, and/or pumping to Process Plant for use as process make-up water.

The WMP for the Portage mining and milling area involves the diversion of an area of approximately 210 ha north of the 2PL Arm catchment to 3PL (see Figure 3.1). This will require the construction of approximately 2,850 m of interceptor ditching prior to the initiation of tailings deposition in Year 1 (2010).

During Years 1 to 3 (2010 to 2012), site contact water from the Portage mine area will be attenuated in the Portage Attenuation Pond located in the main basin of the 2PL Arm, while a Reclaim Pond will be maintained in the north basin (see Figures 3.2 and 3.3). The Reclaim Pond will receive little site contact water, and will therefore not have minimal attenuation function. Contact water collected within the Attenuation Pond will be used to satisfy mill process water make-up requirements with any excess water treated, as required, and discharged to the environment via an effluent pipe and diffuser located within 3PL. Reclaim water from the TSF will also be available to meet the process water demand, with excess water being returned to the Reclaim Pond.

Operating separate Attenuation and Reclaim ponds in Years 1 to 3 (2010 to 2012) will minimize potential water treatment requirements, and limit the amount of freshwater process make-up sourced from 3PL. In Year 4 (2013), the north basin will become filled with tailings, and tailings deposition will commence in the main basin (see Figure 3.4). At this time the former Portage Attenuation Pond will be used as the Reclaim Pond, and freshwater make-up to mill will be sourced from mill and airstrip runoff supplemented by pumping from either 3PL or the Portage Pit Lake (Year 6, or 2015, onwards).

The Portage Attenuation Pond will be operated in such a manner to minimize the amount of water stored within the facility during the open water period. This will facilitate the construction of the Central Dike, which will be required in future years to isolate the open pit mine operations from the TSF, and will limit water storage over the winter period thereby maximizing the storage capacity available for the spring freshet.

The Portage Attenuation Pond will receive runoff and seepage from the Portage and Goose Island pits, and pumped discharge from Tear Drop Lake (Sump 4). The pit water will be pumped directly to the Attenuation Pond, or via Tear Drop Lake (Sump 4) depending upon the availability of pipe on site.

Water collected within pit sumps will be pumped from the pits during the period of time that the pits are being mined. After that time, pit water will be permitted to collect naturally within the pits to assist with pit lake flooding (see Figure 3.5). The location and size of the pit sumps will vary as the pits are developed.

An interceptor ditch, located to the south of Saddle Dam 4, will collect water originating from part of the airstrip and mill area and direct it to Tear Drop Lake (Sump 4). Runoff from the plant area and sewage treatment plant effluent (during construction phase of the Project only) will also be directed to this sump. The water in Tear Drop Lake will be used to satisfy mill make-up requirements, with any excess pumped to the Portage Attenuation Pond, or to the Portage Pit Lake to assist with pit flooding.

Collection ditches along the eastern and northern edges of the Portage RSF will direct any contact water toward sumps. These sumps will either be pumped to the Reclaim Pond, or will be allowed to drain to the pond by gravity. Contact ditches along the southern and western edges of the RSF will drain to the pond by gravity. It is noted that it may prove difficult to maintain gravity flow in these ditches near the end of the mine life when pond water levels rise above the natural 2PL level (El. 133.1 m). An additional sump to the south of the rock storage area may be necessary at that time.

4.5 VAULT MINING AREA

The Vault mining area is located approximately 6 km northeast of the Portage mining and milling area. Activities at this location will be limited to open pit mining, local hauling, and disposal of waste rock, and hauling of ore to the mill at the Portage mining and milling area.

4.5.1 Water Supply and Distribution

Potable water for the local mine shop and office at the Vault mining area will be trucked from the 3PL water supply.

Dust control water for the Vault mining area will be drawn from the Vault Attenuation Pond in an effort to keep contact water within the mining areas. Dust control water for the haul roads outside the respective Vault and Portage catchment areas will be drawn from Phaser Lake.

4.5.2 Water Management Systems and Activities

The WMP for the Vault mining area during operation (Figures 3.3 to 3.7) involves the following:

- diverting Phaser Lake non-contact water toward Turn Lake;
- constructing a dike across the outlet of Vault Lake to allow the dewatering of approximately $2.2x10^6$ m^3 of water;
- using Vault Lake, once dewatered, as an attenuation storage facility;
- collecting contact water from the Vault Pit and Vault RSF and directing it toward the Vault Attenuation Pond; and
- monitoring the water quality in the Attenuation Pond and treating it, if necessary, prior to pumping the water to Wally Lake.

The proposed water management plan for the Vault mining area involves the diversion of approximately 152 ha of the Vault Lake tributary area to Turn Lake. This diversion necessitates the construction, during initial site development, of an interceptor ditch to divert non-contact water from the small unnamed lake to the south of Vault Lake toward Phaser Lake (Figure 3.4). Interceptor ditches and a sump will be required along the southeast edge of the Vault RSF to direct any contact water away from Phaser Lake and toward Vault Lake. Water collected in the Phaser Lake basin during the spring melt will be drawn down to a maximum elevation of 140 masl over the summer period to minimize impacts to overwintering fish habitat and provide sufficient storage for the following spring freshet and/or extreme runoff events.

In order to restrict the flow of water from Phaser Lake to Vault Lake during significant precipitation events and/or spring melt periods, the Vault access road will be constructed to a minimum elevation of 143 masl. The minimum road embankment elevation is set to provide sufficient capacity within the Phaser Lake basin to contain the 1:100-yr, wet year spring melt (370 mm; 565,000 m^3) with 1 m of freeboard above a Phaser Lake water surface elevation of 140 masl in the absence of pumping. The embankment would be designed to have low permeability, either through the use of native materials, man-made materials such as a geomembrane, or a combination of these. It is anticipated that the embankment will freeze, which will enhance its low permeability design.

After construction of the Vault Dike, the water level in Vault Lake will be lowered to form the Vault Attenuation Pond. To maximize the use of the available storage volume within the existing lake, the Vault Attenuation Pond will be formed by excavating a channel to join two deep depressions within Vault Lake. Consequently, Vault Lake will need to be drawn down to allow excavation of this channel. The total lake volume (lake level elevation of 139 masl) is estimated to be $2.2x10^6$ m^3.

As a basis for the WMP for Vault Lake, it has been assumed that the Vault Attenuation Pond water level will be operated at or below approximately El. 136 masl to reduce the potential for seepage into the Vault Pit through the active layer. Based on the Vault Lake bathymetry, a storage capacity of approximately 508,000 m^3 is available below elevation 136 m. Consequently, the pond will be managed to allow the collection of runoff water during spring freshet without exceeding this pond level. Water collected within the Vault Attenuation Pond will be treated if required prior to being pumped to Wally Lake during the open water season via an outfall diffuser system.

The potential expansion of the Vault Pit beyond its currently planned footprint may affect the use of Vault Lake as an attenuation storage facility. An alternative would be to use Phaser Lake as an attenuation storage pond by pumping pit water, along with rock storage runoff, to this lake. Another alternative would be to allow Phaser Lake to drain naturally to Vault Lake and have one centralized location within Vault Lake for attenuation and pumping; however, this would result in a greater area contributing to the Vault Attenuation Pond and would necessitate more aggressive dewatering to control the potential risks (seepage and/or overflow and related instabilities) to the adjacent Vault Pit.

The Vault RSF will be surrounded along its western and northern edges by interceptor ditches, which will direct any contact water toward sumps where the water will be pumped to interceptor ditches that drain via gravity to the Vault Attenuation Pond. An interceptor ditch along the eastern edge of the Vault RSF will drain by gravity to the Vault Attenuation Pond. Depending on the mining schedule and timing of the Vault Lake drawdown, it may be necessary to direct runoff from the Vault RSF to local sedimentation ponds, which will subsequently overflow to the Vault Attenuation Pond

Water collected within the Vault Pit sump will be pumped to the Vault Attenuation Pond. The location and size of the pit sumps will vary as the pit is developed.

4.5.3 Haul Roads

A network of haul roads will connect the ore bodies to the RSFs and the Process Plant. The majority of the roadways servicing the Portage mining area are located so that their drainage will be directed towards the proposed contact water management infrastructure.

Due to the geographic remoteness of the Vault ore body from the Portage mining area, significant sections of haul road will fall outside of the catchment areas serviced by contact water management infrastructure. Based on the proposed diversions, approximately 5 km of the Vault Haul Road will not be serviced by the proposed water management infrastructure at the Vault or Portage mining areas. These sections will drain naturally to a number of different small- and medium-sized lakes. A review of the topography in the vicinity of the Vault Haul Road indicates that, apart from Turn Lake, no significantly large tributary area or waterbody is intercepted. There will be one stream crossing located at the outlet of Turn Lake to Drill Trail Lake, which will be designed so as not to impair water movement out of Turn Lake, or upstream fish movement. The coarse road subgrade material will likely have an adequate conveyance capacity to pass the small amount of expected runoff across the roadway during summer months.

The approach to water management for these sections of Vault Haul Road will involve the implementation of local best management practices during construction, operation, and closure. Where possible, the road will be constructed of non-reactive waste rock from mining operations. Other best management practices will strive to minimize the amount of runoff originating from the roadways and to prevent the migration of surfacing material from the roadway and crossing. Any areas identified as point sources of runoff originating from the roadway or crossing can be managed locally with silt fences, turbidity curtains, interceptor ditches, rock check dams, and/or small sedimentation ponds.

4.6 PIT FLOODING

Table 4.1 summarizes the estimated time period required for flooding of the Vault, Portage and Goose Island deposit areas during closure. The maximum allowable drawdown of the source lakes (Wally and Third) has been assumed to correspond to the water level necessary to maintain a minimum flow equal to the average annual (1:2-year return period) 60-day low flow at the outlet of the lakes over the four summer months (June through September). The low flow rates were computed based on regression curves developed by AMEC (2003).

Table 4.1: Estimate of Pit Flooding

Deposit Area	60-Day Low Flow Criteria			
	Required Flood Volume[a] ($x10^6$ m^3)	**Available Annual Flood Volume ($x10^6$ m^3)**	**Time to Flood – Full Efficiency (Years)**	**Time to Flood – 50% Efficiency (Years)**
Portage/Goose	54.9	5.3	***10.4***	20.8
Vault	26.9	4.2	***6.5***	12.9

[a]assuming no waste rock will be placed within the dike perimeter. Ignores inflows from precipitation, runoff and pond transfers

4.6.1 Portage and Goose Island Open Pits

During the closure period, the Portage and Goose Island pits will be filled over a period of about eight to ten years. The pit lake water levels will eventually equilibrate with the adjacent lake elevations.

The walls of the open pits will have been exposed for a number of years during mine operation and some oxidation will have occurred. As the pits flood, the water will contact the oxidized rocks, affecting the water quality by increased concentrations of dissolved metals and lower pH. The water quality within the flooded pits will need to be managed, monitored, and treated (if necessary) until the water is of acceptable quality to be allowed to freely mix with the water in 3PL.

The volume of the completed Portage and Goose Island open pits between the dikes will be on the order of $54.9x10^6$ m^3. Instantaneous breaching of the dike would cause a significant drawdown of 3PL, which would have a significant impact on fish habitat. Therefore, flooding will carried out through a combination of direct seepage, precipitation, and runoff to the Portage Pit Lake area, transfers of treated water from the Reclaim Pond, and re-direction of spring freshet flows from 3PL. The rate of discharge from 3PL will be controlled through engineered structures such as siphons, spillway structures, side decant structures, or other designs. Where possible, the water for flooding will be removed from deep areas of 3PL to avoid the removal of oxygenated surface waters. Water intakes will be properly screened.

The final lake level within the Portage Pit Lake would be equal to that of 3PL (approximately El. 134.1 masl).

4.6.2 Vault Open Pit

The Vault Pit will be filled at closure and will become part of Vault Lake. In the same manner as for the Portage Pit Lake, the Vault Dike will only be completely removed when it is acceptable for water in the Vault Pit Lake to mix with Wally Lake. The rate of flooding will be determined by the rate of surface runoff and direct precipitation that can be directed into the pit, and by the amount of water that can be redirected from Wally Lake during the spring freshet. The rate of discharge from Wally Lake will be controlled through engineered structures such as siphons, spillway structures, side decant structures, or other designs. Where possible, the water for flooding will be removed from deep areas of Wally Lake to avoid the removal of oxygenated surface waters. Water intakes will be properly screened.

It is expected that flooding of the Vault Pit will take five to six years. The final lake level within the Vault Pit Lake would be equal to that of Wally Lake (approximately El. 139 masl).

SECTION 5 • INFRASTRUCTURE SIZING

During the mine construction and operation life, a network of collection and interceptor ditches and sumps will be constructed and maintained to facilitate mine site water management. The following sections provide preliminary infrastructure sizing requirements for the Portage and Vault mining areas based on the water management plan details and design criteria described in Sections 3 and 4 of this document.

Note that the storage volumes and pumping capacities are provided as a preliminary guide. These will be established during detailed design in conjunction with the mine engineer, based on estimated inflows and the potential to interrupt mining operations at each stage of pit development.

5.1 SUMPS AND PONDS

The preliminary storage and pumping requirements for sumps and ponds in the Portage and Vault areas based on the water management criteria presented in Section 4.2 are shown in Table 5.1 and 5.2, respectively (see Figures 3.1 to 3.7).

The Portage and Vault attenuation ponds are sized to store the runoff volume from the 24-hour, 1:100-year storm event, in addition to their peak annual operating volume under average climate conditions. For the Portage Attenuation Pond, this volume varies with time as the main basin of 2PL Arm is not completely dewatered until Year 1 (2010), and the Goose Island Pit catchment area is not active until Year 2 (2011).

The Portage Attenuation Pond within the 2PL Arm main basin has a capacity of approximately 2.8X10^{6} m^{3} to El. 116 masl (the bathymetric divide between the main and east basins) and should accommodate the storage needs to Year 3.5 (2013). If required, additional capacity would be obtained through the construction of the Central Dike before Year 4 (see Figure 3.18).

The storage volume requirements for the Reclaim Pond also vary with time. The Reclaim Pond (Years 1 through 3.5; 2010 to 2013) within the north basin of 2PL Arm will receive site contact water (runoff) from the Portage RSF only and will have limited attenuation function. During this time, the pond must provide a minimum free-water volume (under an ice cover if ice is present) of 550,000 m^{3} for process purposes, plus an allowance for winter ice formation of approximately 200,000 m^{3}, for a total of 750,000 m^{3}. Following construction of the Stormwater Dike to crest elevation 140 masl in Year -1 (2009) and 150 masl in Year 1 (2010), the Reclaim Pond will have an approximate water storage capacity of 2.5X10^{6} m^{3} and 6.5X10^{6} m^{3}, respectively, assuming a 2 m freeboard (Figure 3.20).

Table 5.1: Storage and Pumping Requirements – Portage Area

Description	Tributary Area (ha)	Storage Requirements Storage	Pumping Requirements Pumping (L/sec)
Sump 1 (Portage RSF)[a]	22	9,100	15
Sump 2 (Portage RSF)[a]	7	3,000	20
Sump 3 (Portage RSF)[a]	36	11,000	40
Sump 4 (Tear Drop Lake; Mill Area)[b]	352	144,400	170
Portage Pit Sumps[c]	68	28,000	90
Goose Pit Sumps[c]	16	6,400	55
Attenuation Pond (to Year 2)[d]	297	519,100	145
Attenuation Pond (Year 2 to 4)[d]	440	568,000	215
Reclaim Pond (to Year 4)[e]	221	958,400[f]	N/A
Reclaim Pond (Year 4 to Year 6)	661	4,800,000[f]	N/A
Reclaim Pond (Year 6 to Year 10)	309	4,667,000[f]	N/A
Reclaim Pond (Year 6 to Year 10)	309	4,304,000[g]	290[h]

Notes: a. Sump 1 assumed to report to Sump 2, which in turn is assumed to report to Sump 3. **b.** Pit, airstrip and mill runoff and sewage treatment effluent (during construction phase) will report to Sump 4 (Tear Drop Lake) for freshwater make-up to process and/or pumping to the Attenuation/Reclaim Pond **c.** Will likely be distributed among a number of sumps. **d**. The Attenuation Pond is sized to store runoff from the 1:100 year 24-hr event from tributary area, Portage Pit, Goose Pit (Year 2 to Year 3.5 only), and Sump 4 in addition to its peak annual operating volume under average climate conditions. **e**. Reclaim Pond has limited attenuation function to Year 4. **f.** Sized to store runoff from the 1:100 year 24-hr event from tributary area, Portage and Goose pits (Year 4 to Year 6 only), and Sump 4 (Year 4 to Year 6 only) in addition to peak operational water storage volume under average climate conditions. **g**. Estimated water storage volume at closure under average climate conditions. **h.** Assuming reclaim water treatment rate of 25,000 m^3/day.

Table 5.2: Storage and Pumping Requirements – Vault Area

Description	Tributary Area (ha)	Storage Volume (m^3)	Pump Rate (L/sec)
Sump 1A	47	19,000	35
Sump 2A	57	23,100	40
Vault Pit Sump[a]	42	11,400	30
Attenuation Pond	455	341,000	220
Phaser Lake[b]	152	62,400	75

Note: a. May be distributed among a number of sumps. **b**. Storage and pumping requirement above Phaser Lake water surface El. 140 masl for the 1:100 year 24-hr precipitation event. Vault Haul Road constructed to El. 143 masl to contain the 1:100-yr, wet year spring melt (370 mm; 565,000 m^3) with 1 m of freeboard above El. 140 masl.

In Year 4 (2013), tailings deposition ceases in the TSF north cell and commences in the south cell, the Portage Attenuation and Reclaim ponds combine, and tailings water reclaim is sourced from the former Portage Attenuation Pond basin. At this time, excess contact water runoff from the airstrip and mill area, and the Portage and Goose Island pits are discharged to the Reclaim Pond together with runoff from the Portage RSF. This continues until Year 6 (2015) when open pit mining has ceased in the Portage and Goose Island pits, and excess contact water runoff from the airstrip and mill area, and the Portage and Goose Island pits are redirected to assist in Portage Lake flooding. Treatment and discharge of excess Reclaim Pond water to the Portage Pit Lake may occur at this time also;

however, this WMP assumes that reclaim water treatment would not commence until the end of mine operations

The Central Dike is proposed to be constructed in the main basin of 2PL Arm in three stages. Stage 1 would be constructed to elevation 135 masl by start of Year 4 (2013) (Figure 3.3), Stage 2 would be to elevation 145 masl by start of Year 6 (2015) (Figure 3.4), and Stage 3 would be to elevation 150 masl by start of Year 8 (2017) (Figure 3.5). The approximate available water storage capacity within the TSF at each of these stages assuming 2 m freeboard and additional storage availability in the TSF north cell to elevation 148 masl are $9.2X10^6$ m^3, $10.7X10^6$ m^3, and $11.5X10^6$ m^3, respectively (Figure 3.20).

5.2 INTERCEPTOR CHANNELS

Ditches are sized to accommodate the peak runoff rate from a 1:100-year, 24-hour storm. Although no specific overburden information has been collected along the proposed ditch alignments, properly designed excavated channels are considered feasible.

Attempts will be made to avoid constructing ditches in ice-rich areas where thaw instability is a concern. A variety of mitigation measures are available where ice-rich areas cannot be avoided. For contact water ditches, mitigation may include providing training berms instead of, or in combination with, ditches, and lining and insulating channels with compact till or excess bentonite from the construction of the soil/bentonite cut off wall in the dewatering dikes to prevent sedimentation and permafrost degradation. Where thaw-related impacts affect non-contact water ditches, special care will be taken to ensure linings comprise non-acid-generating and non-metal-leaching granular materials.

Prior to ditch construction, a review of the existing topographic and geotechnical conditions will be carried out to locate, to the extent possible, the channel alignments in favourable ground with a ditch invert at or above the existing grade. If this can not be achieved, the alignment will be located in-ground with shallow excavation into the overburden soil or rock, which may require the excavation and replacement of ice-rich soils with compacted till materials. The channels have been designed as oversized structures, which will allow for the addition of insulated channel lining materials where required.

All water management channels required at closure will have been constructed and maintained throughout the operation life of the mine.

The preliminary requirements of the diversion (non-contact) and collection (contact) in the Vault and Portage areas are shown in Tables 5.3 and 5.4, respectively (see Figures 3.1 to 3.7). For practical purposes, drainage ditches with a minimum uniform base width of 1 m, channel slope of 0.5%, 2H:1V sideslopes, and depths adjusted to suit discharge requirements have been assumed.

Table 5.3: Minimum Interceptor Ditch Requirements – Portage Area

Description	**Length (m)**	**Depth[a] (m)**	**Lining D_m [b] (mm)**
Collection from east perimeter of Portage RSF (to Sump 1)	550	0.75	50
Collection from south and west perimeter of Portage RSF (two ditches to Portage Attenuation/Reclaim Pond)	1,500	0.75	50
Collection from northwest perimeter of Portage RSF (to Portage Attenuation/Reclaim Pond)	500	1.0	50
Collection from north perimeter of Portage RSF (two ditches to Sumps 2 and 3)	700	1.0	50
Diversion from Unnamed Lake north of Portage RSF (non-contact water to 2nd Portage)	300	1.5	150
Diversions to Unnamed Lake north of Portage TSF Year 1 to Year 10 (non-contact water to 2nd Portage)	550	1.0	100
Diversion north of Portage TSF Year 1 to Year 10 (non-contact water to 3rd Portage)	2,000	1.0	100
Collection from Airstrip (to Sump 4 Tear Drop Lake)	400	1.25	100
Collection from south perimeter of Mill area	1,100	0.75	50

Notes: a. Assumes trapezoidal channel with 2H:1V side slopes, 1 m base width, 0.5% longitudinal slope and includes 0.3 m freeboard. **b.** Minimum median size of rock lining material.

Table 5.4: Minimum Interceptor Ditch Requirements – Vault Area

Description	**Length (m)**	**Depth[a] (m)**	**Lining D_m[b] (mm)**
Collections leading to Sumps around Vault RSF (total of four ditches)	2,400	0.75	50
Collection from east perimeter of Vault RSF (to Vault Attenuation Pond)	700	1.00	50
Collection from southeast perimeter of Vault RSF (to Vault Attenuation Pond)	1,900	1.50	50
Diversion from Unnamed Lake (non-contact water to Phaser Lake)	380	1.10	75

Notes: a. Assumes trapezoidal channel with 2H:1V side slopes, 1 m base width, 0.5% longitudinal slope, and includes 0.3 m freeboard. **b.** Minimum median size of rock lining material.

SECTION 6 • WATER BALANCE

A water balance model was developed to assist in the evaluation of the proposed water management infrastructure on a monthly basis over the life of the mine and under closure conditions. The model includes a water balance along with a mass balance of geochemical parameters.

The following section presents the parameters and assumptions adopted in the water balance model along with a summary of the water balance results for both the Vault and Portage mining areas. Results from the mass balance portion of the model are provided in Section 7.

6.1 MODEL ASSUMPTIONS

The water balance model was developed to assist in the evaluation of the maximum operating storage volume of the proposed contact water management infrastructure under average year climate conditions over the life the mine and under closure conditions. The model focuses specifically on contact water management infrastructure and areas that have been physically or chemically affected by mining activities. Therefore, it is not impacted by water levels in the neighbouring lakes.

The model assumes average year climate conditions. Extreme events were not incorporated into the model as it was assumed that the following contact water management contingencies would be in place:

1. The contact water management infrastructure will be designed, sized and operated to intercept and contain extreme event run-off from the mine affected areas as described in Sections 4 and 5 above.
2. Any excess contact water would be directed to the TSF or to open pits if available for temporary storage prior to recycle, re-use, and/or treatment (if necessary) and release to the environment. Upon completion of pit operations, excess water would be directed to the pit lakes to assist with flooding.
3. The Portage Attenuation Pond within the 2PL Arm main basin has a capacity of approximately 2.8X10^6 m^3 to El. 116 masl (the bathymetric divide between the main and east basins) and should accommodate the storage needs to end of Year 3 (2012). Up to the end of Year 3 (2012), attenuation water is used to satisfy freshwater make-up requirements to the mill with any excess assumed to be monitored, treated (if necessary) and released to 3PL. Alternatively, excess water can be pumped untreated to the Reclaim Pond for storage and re-use as process supernatant water. If required, additional capacity within the Portage Attenuation Pond basin could be obtained through the construction of the Central Dike before Year 4 (2013).
4. Following the construction of the Stormwater Dike across 2PL Arm in Year 1 (2010), the Reclaim Pond basin would have the capacity to store up to 6.5x10^6 m^3 of water if necessary. In Year 4 (2013), the Portage Attenuation and Reclaim ponds combine, and tailings deposition begin in the TSF south cell. Following construction of the Central Dike to elevation 150 masl, the TSF would have an approximate water storage capacity of 11.5x10^6 m^3.

Based on the above, the uncontrolled release of contact water to the neighbouring lakes is not anticipated. The current mine plan allows for storage of excess water and run-off from extreme events within TSF. Starting Year 6 (2015), excess contact water and run-off can also be directed to the Portage Pit Lake to assist with flooding.

As indicated previously, one of the strategies of water management on site is to recycle and reuse contact and process water wherever practicable. From a water balance perspective, recycling and reusing excess contact water from extreme run-off events would act to reduce freshwater intake requirements from 3PL. Any remaining water would be analyzed and treated (if necessary), prior to controlled release to the environment.

A brief description of the input parameters and assumptions used in the water balance model are provided in Tables B.1 to B.9 in Appendix B. Parameters that only affect the model mass balance computations are identified by note "[geochem]." A simulation calendar correlating the simulation timesteps (in months according to both mine year and calendar year) is presented in Appendix C.

6.2 WATER BALANCE MODEL RESULTS

The results of the site water balance are summarized in Table 6.1 and in the flow logic diagrams presented on Figures 6.1 to 6.11. The results for mine years -1, 1, 2, 4, 6, 9, and 12 are presented to coincide with key periods in the mine development plan with respect to water management (Table 3.1; Figures 3.1 to 3.7). Time series of key water management facilities are presented on Figures 6.12 to 6.19.

The results presented in Tables 6.1 and 6.2 and Figures 6.1 to 6.11 are for the base case dewatering scenario only (i.e., 60% direct dewater to the environment prior to TSS treatment) as the main difference between the dewatering scenarios from an annual water balance perspective is the comparative volume of dewatering from 2PL Arm to 3PL in mine years -1 (2009) and 1 (2010).

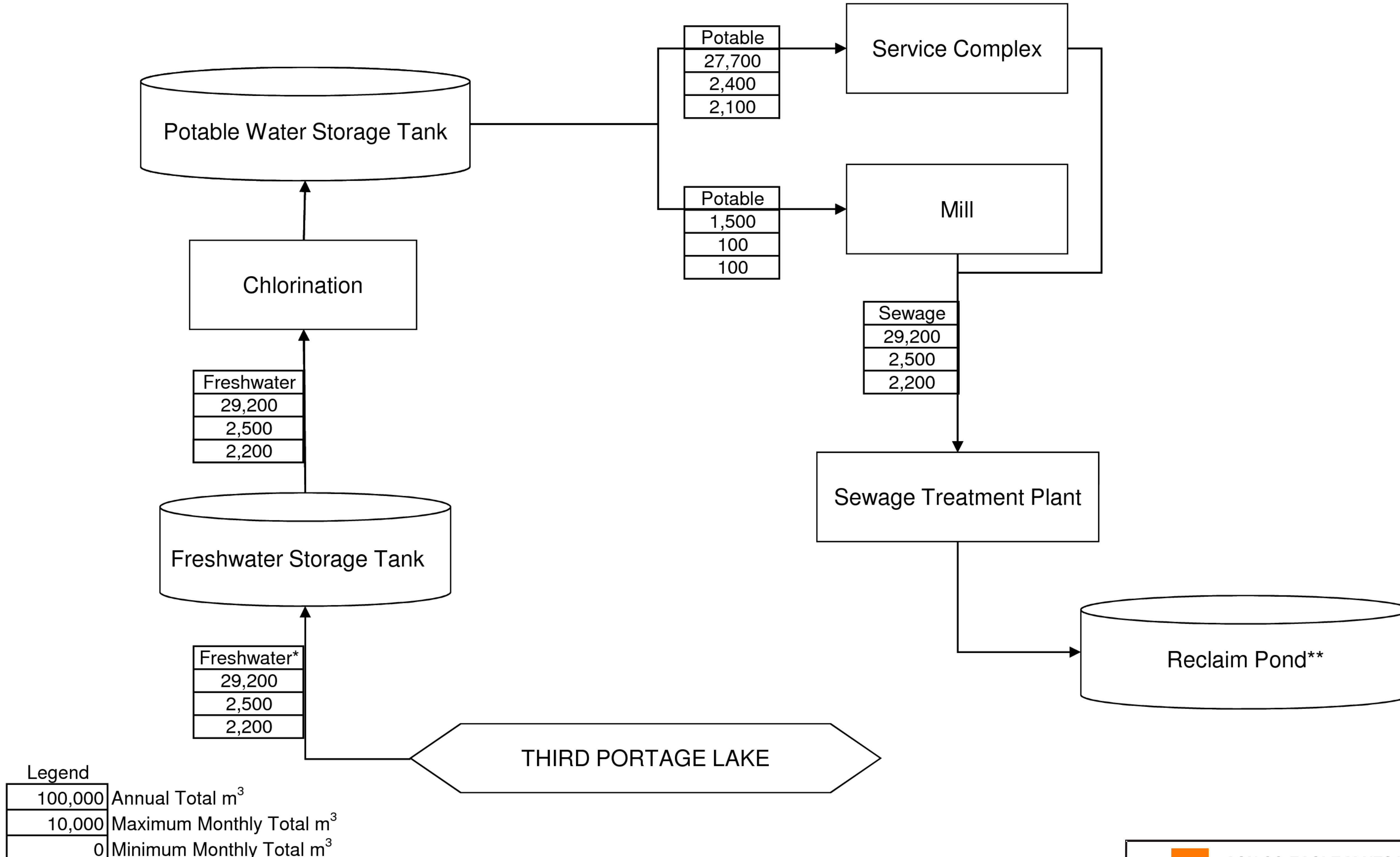
Table 6.1: Water Balance Model Summary

	Year -1		Year 1		Year 2		Year 4		Year 6		Year 9		Year 12	
	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow
	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year
Reclaim Pond (Mine Year 1 to 4)														
Tails Storage Runoff & Seepage			1,236,000		1,834,200		1,410,900							
Other Areas Runoff			140,200		95,200		19,300							
Rock Storage Runoff			18,300		24,400		18,400							
Direct Precipitation			44,000		44,500		39,500							
Decant from Attenuation			750,000											
Direct Evaporation				53,600		52,000		47,900						
Decant to Attenuation								510,900						
Reclaim Water				1,424,600		1,958,600		1,571,000						
Sub-Total			2,188,500	1,478,200	1,998,300	2,010,600	1,488,100	2,129,800						
Change in Storage			**710,300**		**-12,300**		**-641,700**							
Stormwater Attenuation Pond (Reclaim Pond Mine Year 4 to 9)														
Pumped from Goose Pit					211,100		1,119,800							
Pumped from Portage Pit	178,600		767,000		779,100		1,006,600							
Rock Storage Runoff							6,000		82,700		82,700		82,700	
Other Areas Runoff	67,600		383,100		505,800		479,700		138,000		107,100		329,000	
Decant from Reclaim Pond							510,900							
Tails Storage Runoff & Seepage							492,200		1,932,600		1,522,100			
Direct Precipitation	109,300		9,600		300		21,700		37,400		37,700			
Direct Evaporation		122,900		900		200		20,900		45,400		46,100		
Dust Control				12,000		12,000		3,000						
Decant to Reclaim Pond				750,000										
Make-Up Water to Mill				527,900		699,000		791,900						
Reclaim Water								377,700		2,266,000		1,699,500		
Dewater to Third Portage		10,660,200		3,866,800										
Decant to Third Portage Lake				846,900		785,900		1,087,500						
Treatment to Portage Pit												1,141,400		205,800
Treatment to Goose Pit												1,141,400		205,800
Sub-Total	355,500	10,783,100	1,159,700	6,004,500	1,496,300	1,497,100	3,636,900	2,281,000	2,190,700	2,311,400	1,749,600	4,028,400	411,700	411,600
Change in Storage	**-10,427,600**		**-4,844,800**		**-800**		**1,355,900**		**-120,700**		**-2,278,800**		**100**	
Mill Water Balance														
Ore Water			72,900		107,900		107,900		107,900		81,000			
Reclaim Water			1,424,600		1,958,600		1,948,700		2,266,000		1,699,500			
Freshwater from Third Portage			4,200		241,300		158,200		632,900		474,700			
Make-up from Attenuation			527,900		699,000		791,900							
Tailings Transport Water				2,029,600		3,006,800		3,006,800		3,006,800		2,255,100		
Sub-Total			2,029,600	2,029,600	3,006,800	3,006,800	3,006,700	3,006,800	3,006,800	3,006,800	2,255,200	2,255,100		
Balance			**0**		**0**		**-100**		**0**		**100**			

Table 6.1 – Continued

	Year -1		Year 1		Year 2		Year 4		Year 6		Year 9		Year 12	
	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow
	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year	m^3/year
Goose Pit (Flooding begins Mine Year 6)														
Direct Precipitation									8,100		25,300		103,600	
Other Area Runoff									168,000		164,900		124,700	
Goose Pit Runoff & Seepage					211,100		1,119,800		1,209,800		593,500		65,600	
Treated from Reclaim Pond											1,141,400		205,800	
Pumped from Third Portage									640,000		640,000		640,000	
Dewater to Third Portage						3,023,900								
Pumped to Attenuation						211,100		1,119,800						
Evaporation										11,100		31,400		132,000
Sub-Total					211,100	3,235,000	1,119,800	1,119,800	2,025,900	11,100	2,565,100	31,400	1,139,700	132,000
Change in Storage					**-3,023,900**		**0**		**2,014,800**		**2,533,700**		**1,007,700**	
Portage Pit (Flooding begins Mine Year 6)														
Direct Precipitation									19,900		101,200		171,900	
Other Area Runoff									178,200		160,300		150,600	
Portage Runoff and Seepage	178,600		767,000		779,100		1,006,600		949,800		458,500		58,800	
Treated from Reclaim Pond											1,141,400		205,800	
Pumped from Third Portage									4,640,000		4,640,000		4,640,000	
Pumped to Attenuation		178,600		767,000		779,100		1,006,600						
Evaporation										32,600		124,700		217,300
Sub-Total	178,600	178,600	767,000	767,000	779,100	779,100	1,006,600	1,006,600	5,787,900	32,600	6,501,400	124,700	5,227,100	217,300
Change in Storage	**0**		**0**		**0**		**0**		**5,755,300**		**6,736,700**		**5,009,800**	
Vault Water Attenuation Pond (Flooding begins Mine Year 9)														
Vault Pit Runoff & Seepage									48,900		48,500		24,800	
Rock Storage Runoff									24,600		104,600		178,200	
Other Areas Runoff									468,900		447,100		568,000	
Direct Runoff									3,800		5,500		59,700	
Pumped from Wally Lake											3,030,000		4,040,000	
Direct Evaporation										9,200		9,500		74,600
Dust Control										4,000		1,000		
Decant to Wally Lake										533,000		228,300		
Sub-Total									546,200	546,200	3,635,700	238,800	4,870,700	74,600
Change in Storage									**0**		**3,396,900**		**4,796,100**	

NOTE: Based on hydraulic year - October 1 of Mine Year X-1 to September 30 of Mine Year X



*Freshwater requirements for milling process circuit not shown for clarity (see Figures 6.2-6.8)

**Treated sewage water is not included in the Reclaim Pond water balance as its contribution to the annual input volume is minimal (<2%; see Figures 6.2-6.8)

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MEADOWBANK GOLD PROJECT
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POTABLE WATER BALANCE | **FIGURE 6.1**

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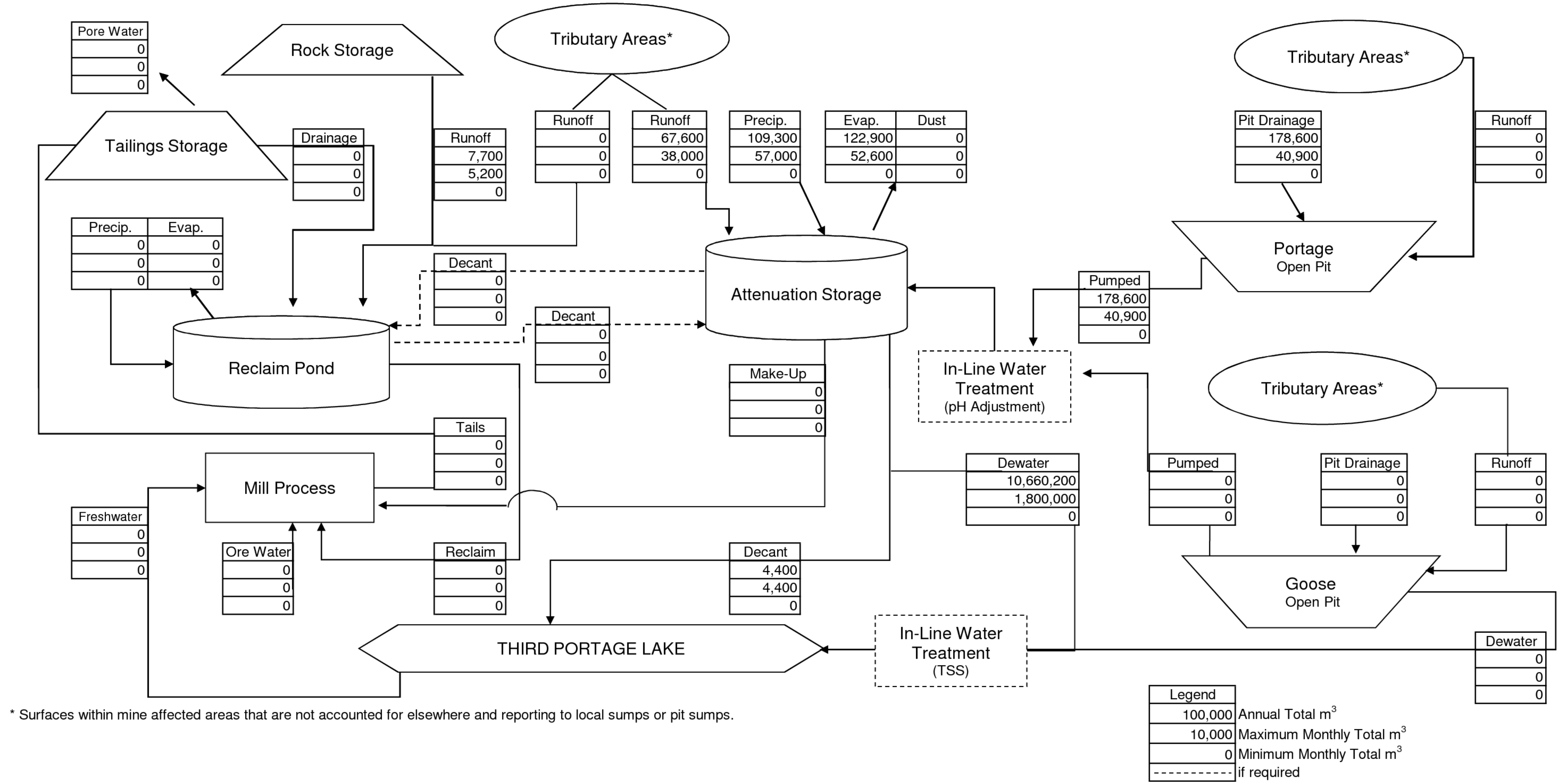

* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

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MEADOWBANK GOLD PROJECT
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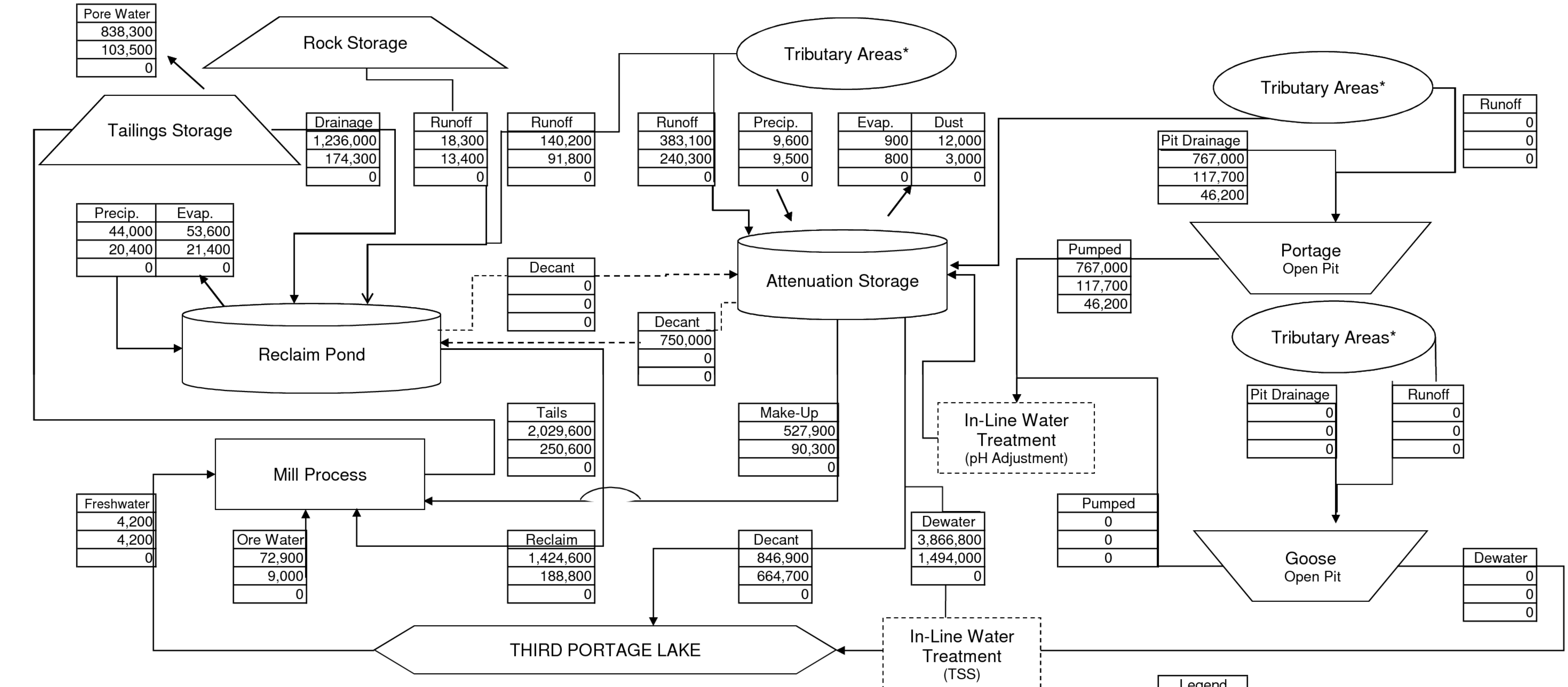
PORTAGE LOGIC DIAGRAM
YEAR -1 (2009)

FIGURE 6.2



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
- - - - - - -	if required

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MEADOWBANK GOLD PROJECT
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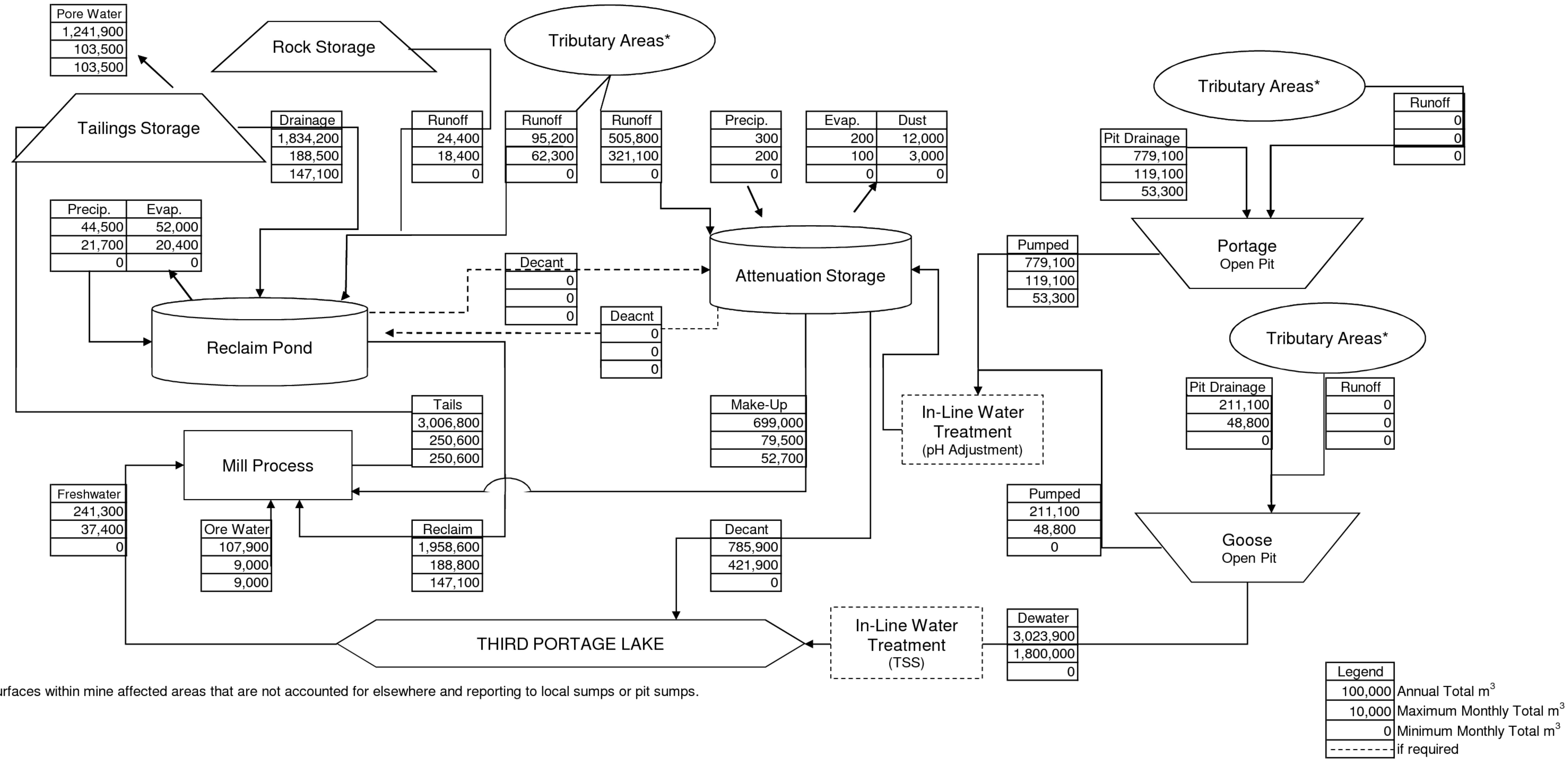
PORTAGE LOGIC DIAGRAM
YEAR 1 (2010)

FIGURE 6.3



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

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MEADOWBANK GOLD PROJECT
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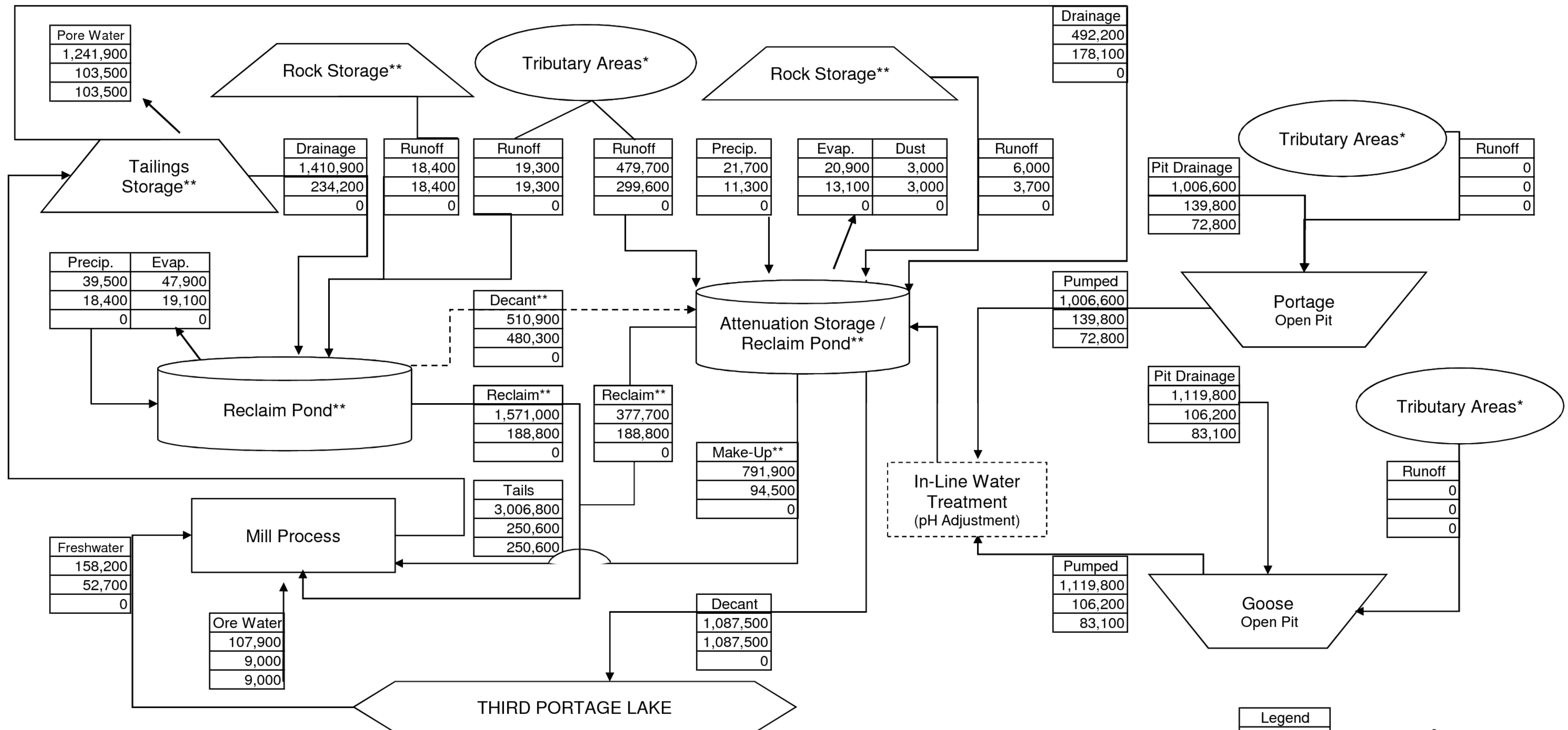
PORTAGE LOGIC DIAGRAM
YEAR 2 (2011)

FIGURE 6.4



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Reclaim Pond and Attenuation storage start to combine Mine Year 4. Reclaim from Attenuation Storage , Tailing Drainage, and Rock Storage Runnoff to Attenuation occurs once Reclaim Pond is closed. Dust control, Decant and Make-up from Attenuation Storage occurs until ponds start to combine.

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
- - - - - - -	if required

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MEADOWBANK GOLD PROJECT
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PORTAGE LOGIC DIAGRAM
YEAR 4 (2013)

FIGURE 6.5

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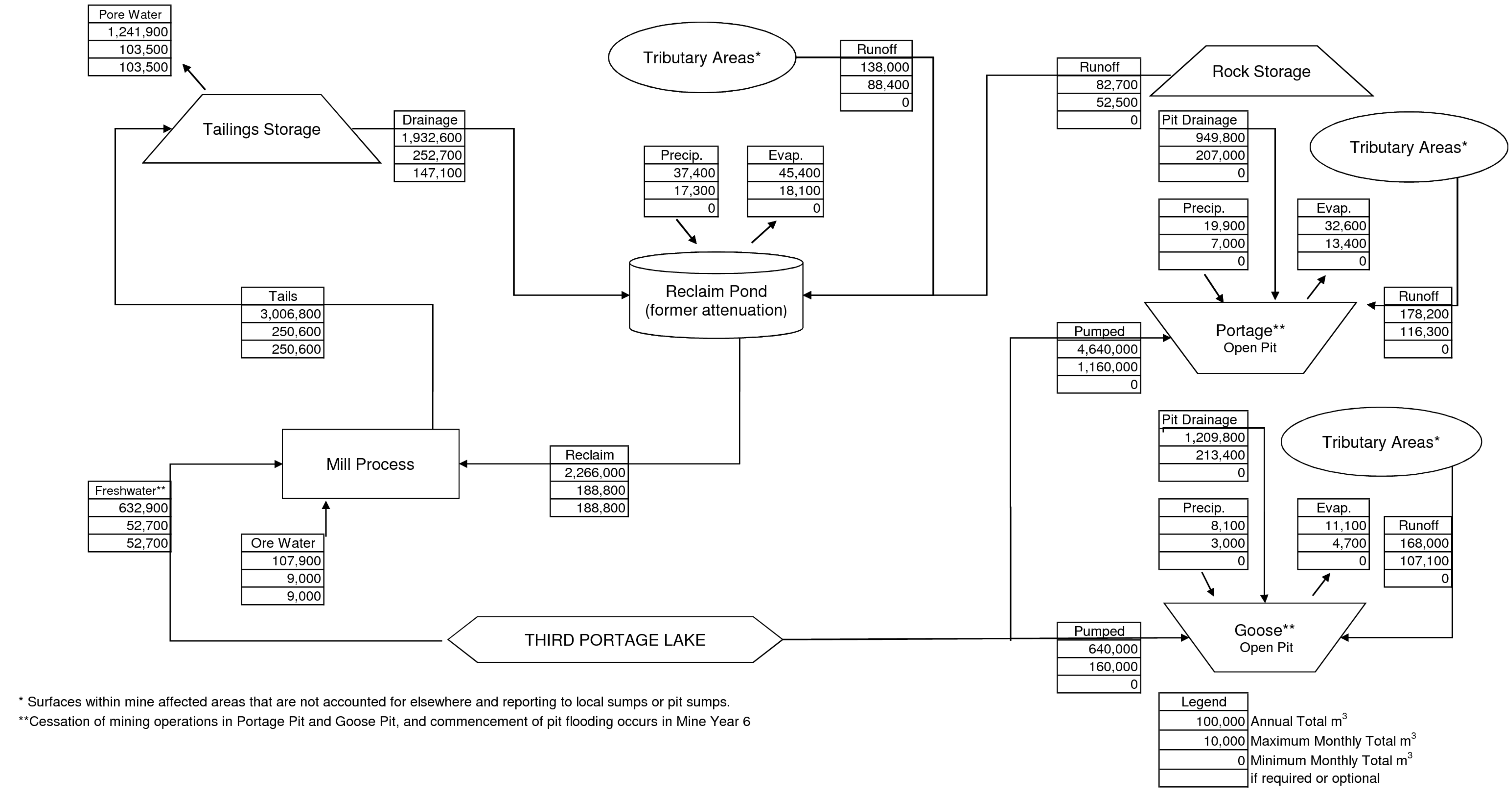

* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

**Cessation of mining operations in Portage Pit and Goose Pit, and commencement of pit flooding occurs in Mine Year 6

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MEADOWBANK GOLD PROJECT
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PORTAGE LOGIC DIAGRAM
YEAR 6 (2015)

FIGURE 6.6

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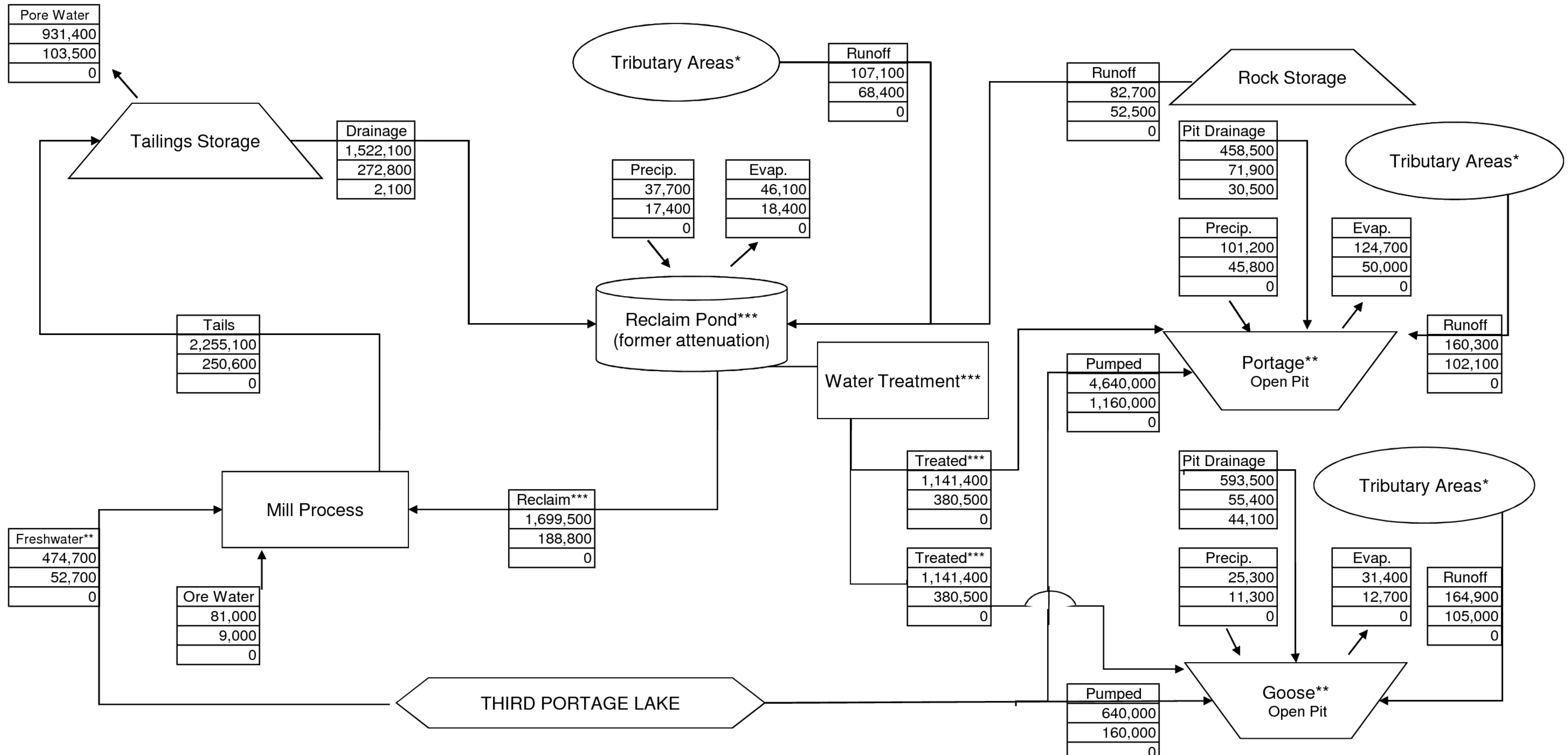

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
	if required or optional

* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

**Cessation of mining operations in Portage Pit and Goose Pit, and commencement of pit flooding occurs in Mine Year 6

***Mill operations cease in Year 9 and treatment of Reclaim Pond water begins. Treated water assumed to be discharged in equal proportions to the Portage and Goose Island pit lakes

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MEADOWBANK GOLD PROJECT
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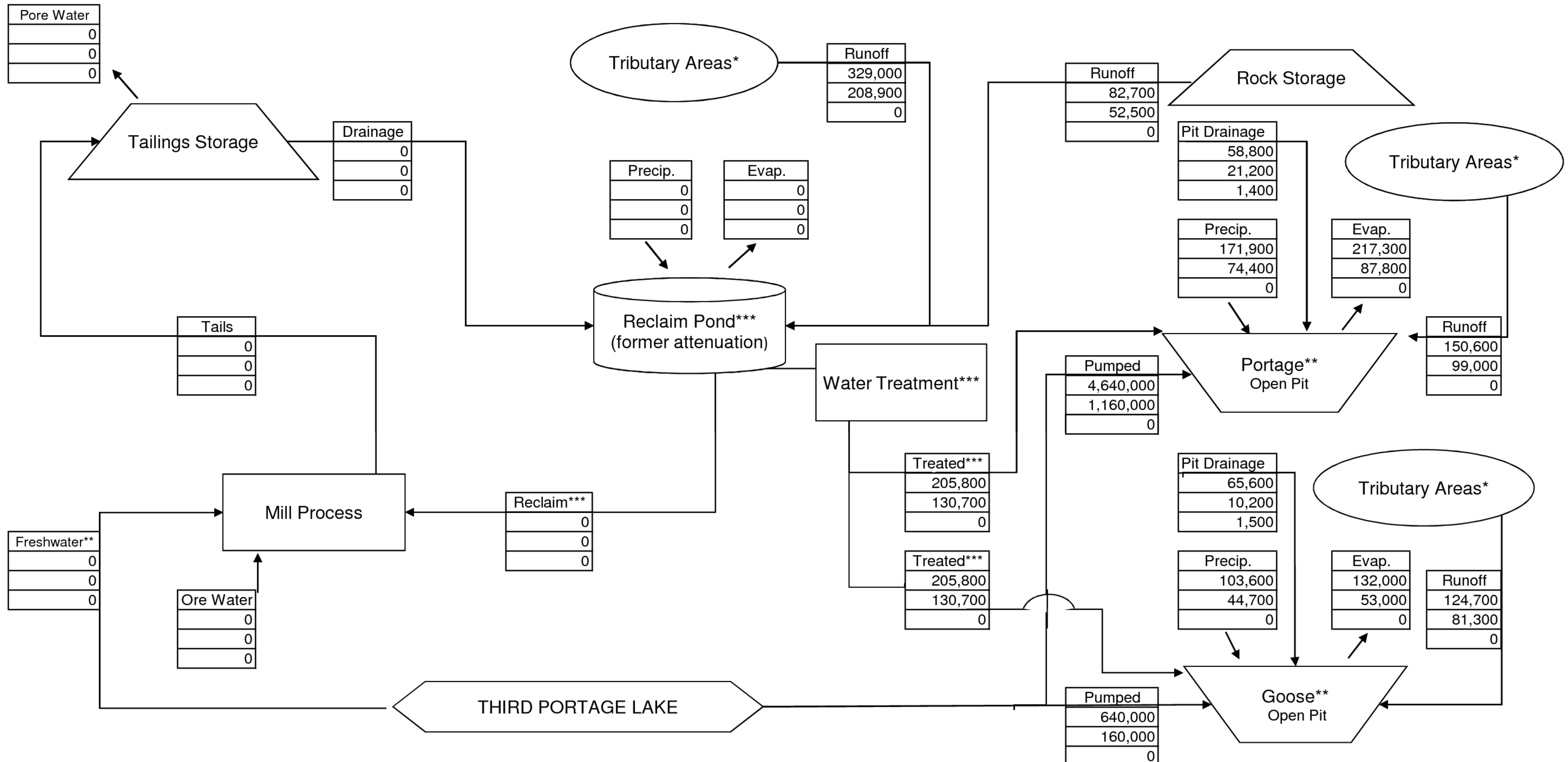
PORTAGE LOGIC DIAGRAM
YEAR 9 (2018)

FIGURE 6.7



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.
**Cessation of mining operations in Portage Pit and Goose Pit, and commencement of pit flooding occurs in Mine Year 6
***Mill operations cease in Year 9 and treatment of Reclaim Pond water begins. Treated water assumed to be discharged in equal proportions to the Portage and Goose Island pit lakes

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
	if required or optional

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MEADOWBANK GOLD PROJECT
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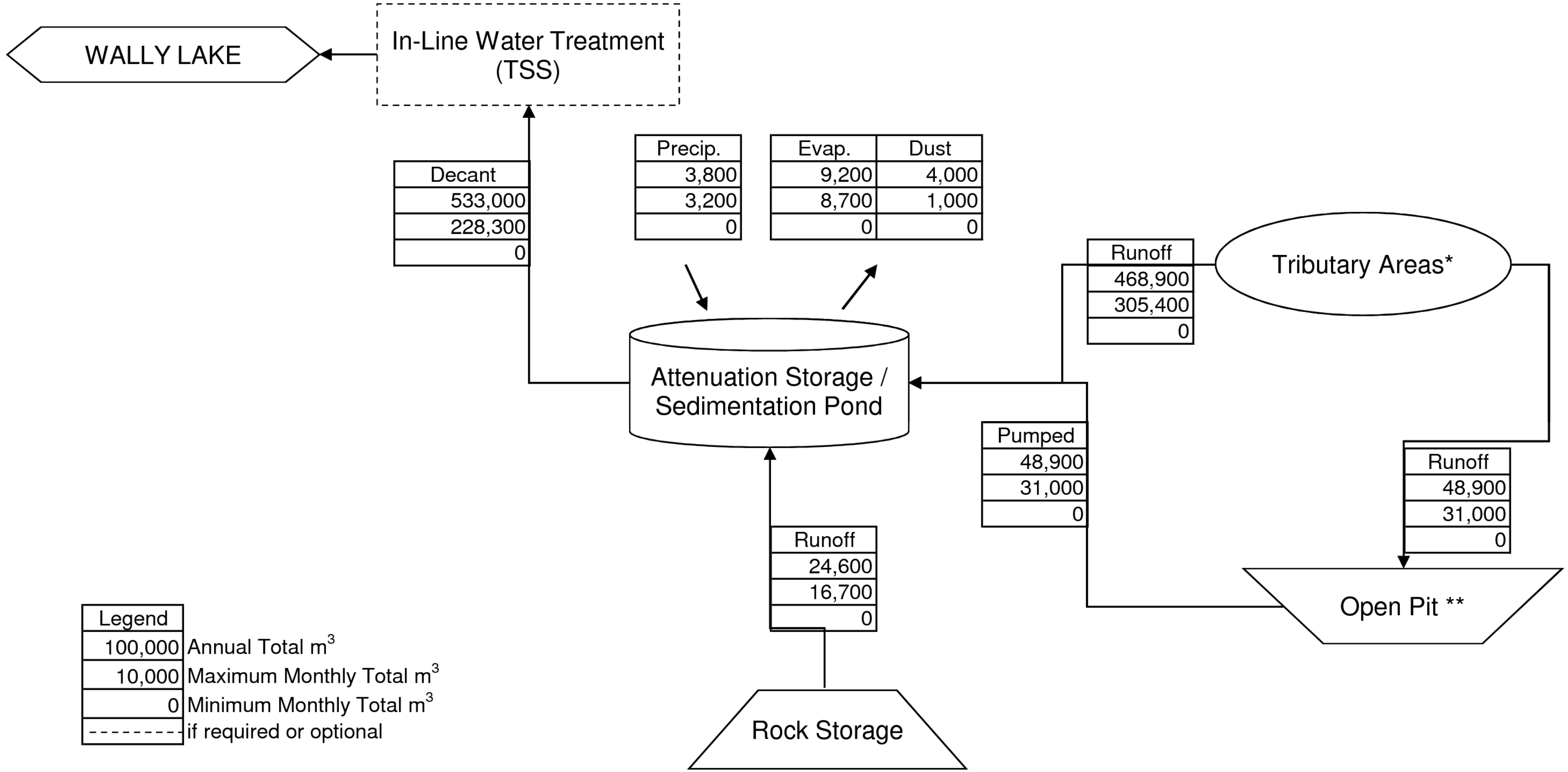
PORTAGE LOGIC DIAGRAM
YEAR 12 (2021)

FIGURE 6.8



* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.
** Vault Pit Mining commences Year 5

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MEADOWBANK GOLD PROJECT
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VAULT LOGIC DIAGRAM
YEAR 6 (2015)

FIGURE 6.9

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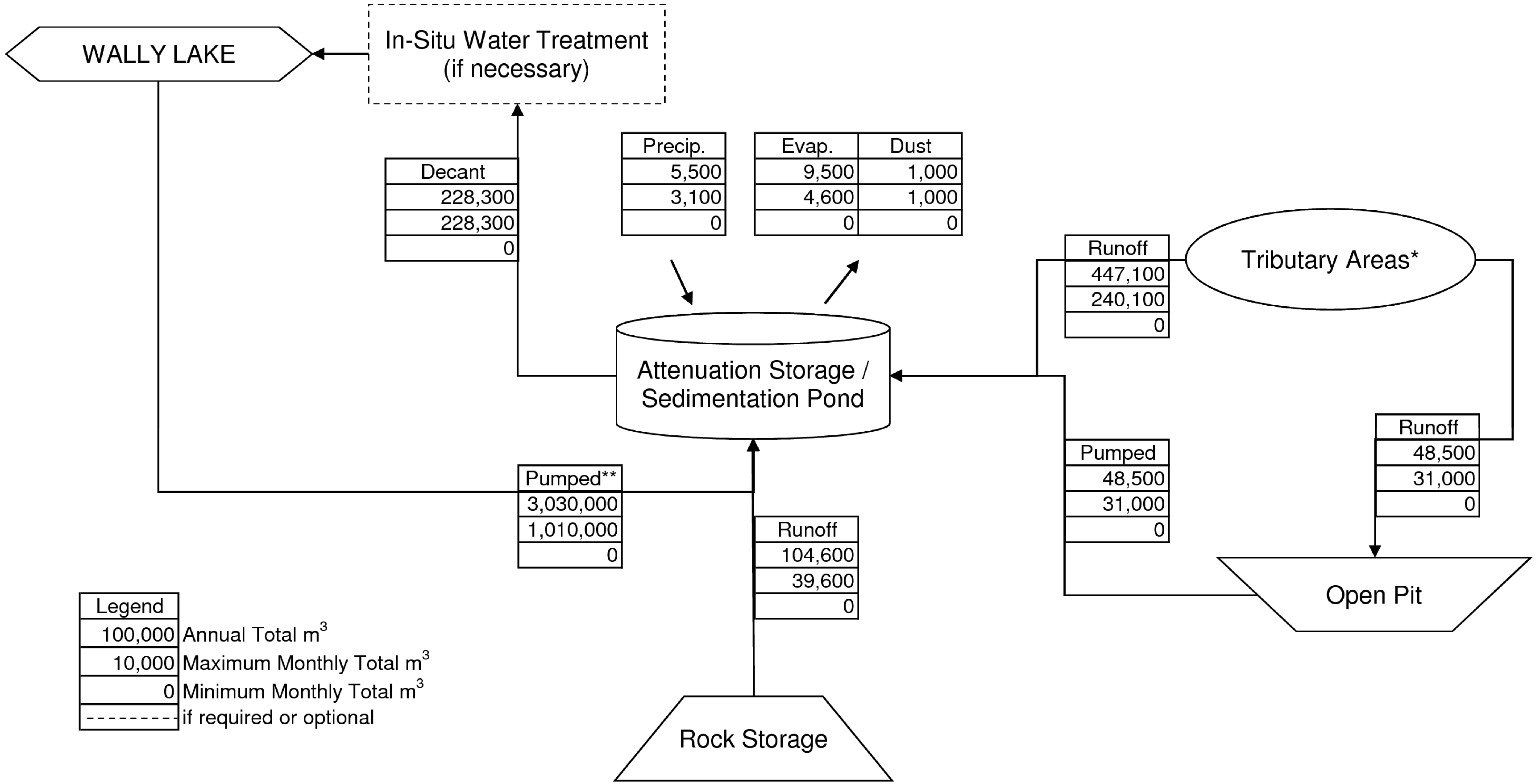

* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.
**Reflooding of Vault Lake commences in Mine Year 9

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MEADOWBANK GOLD PROJECT
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VAULT LOGIC DIAGRAM
YEAR 9 (2018)

FIGURE 6.10

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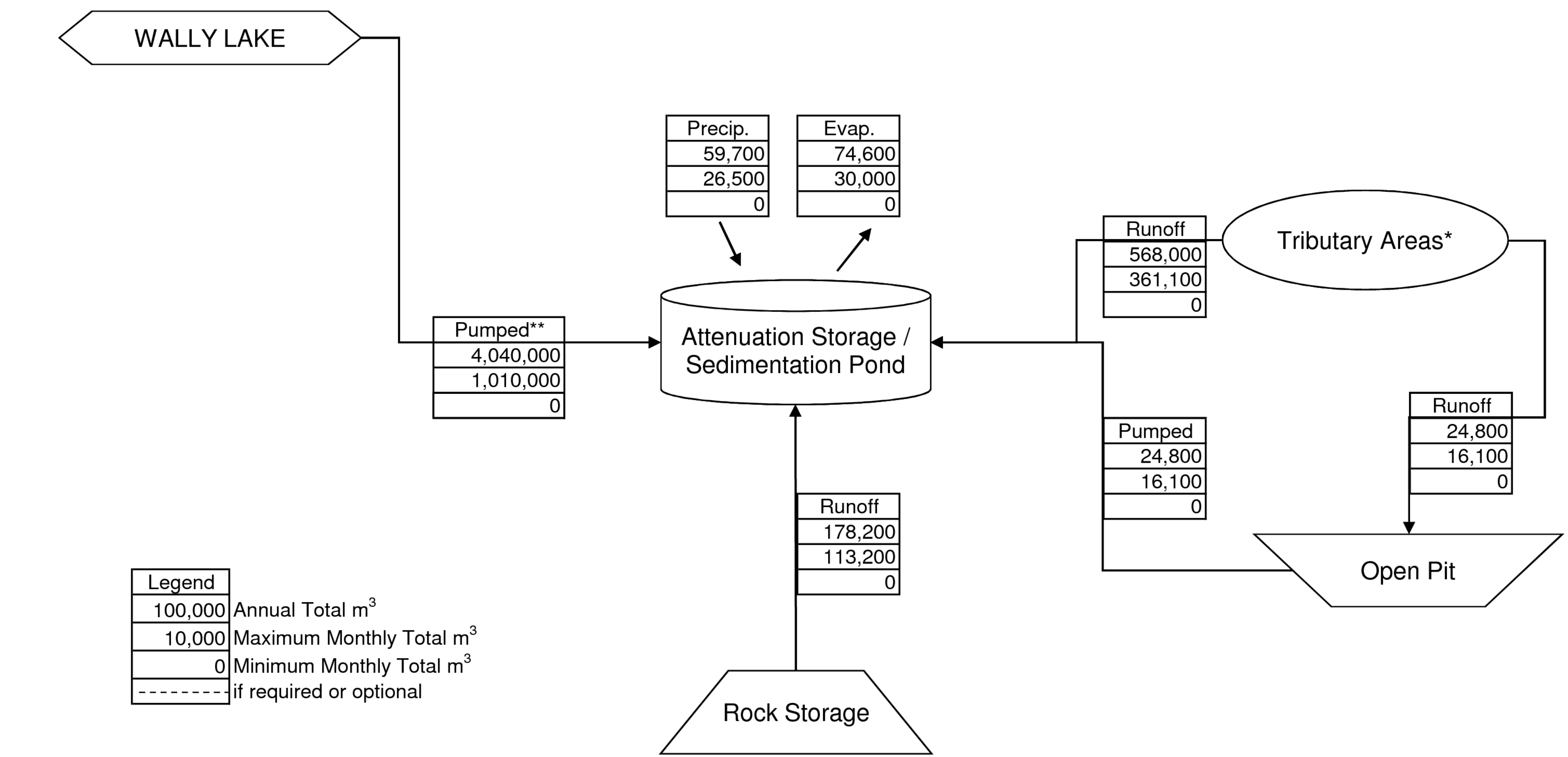

* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.
**Reflooding of Vault Lake commences in Mine Year 9

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MEADOWBANK GOLD PROJECT
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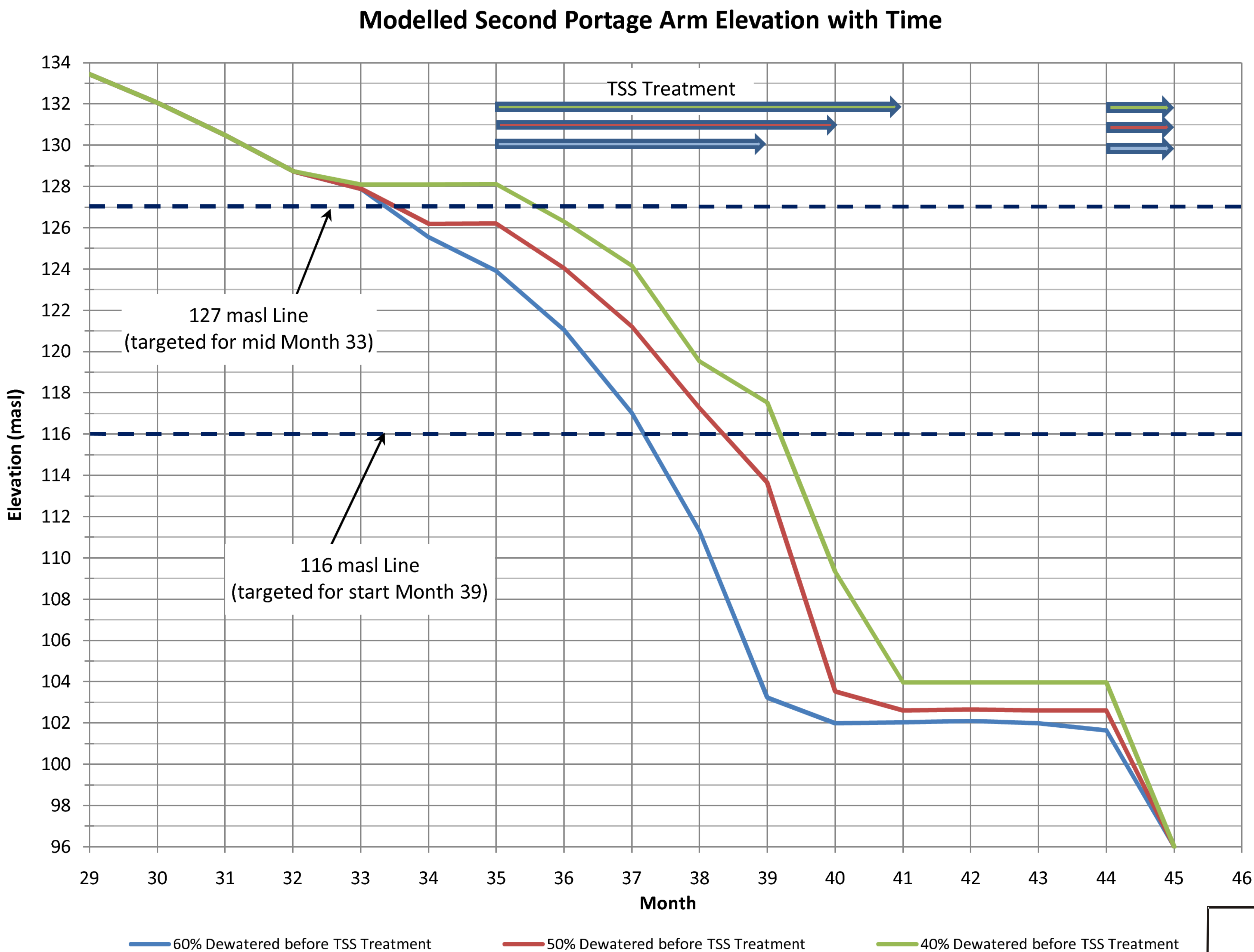
VAULT LOGIC DIAGRAM
YEAR 12 (2021)

FIGURE 6.11



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MEADOWBANK GOLD PROJECT
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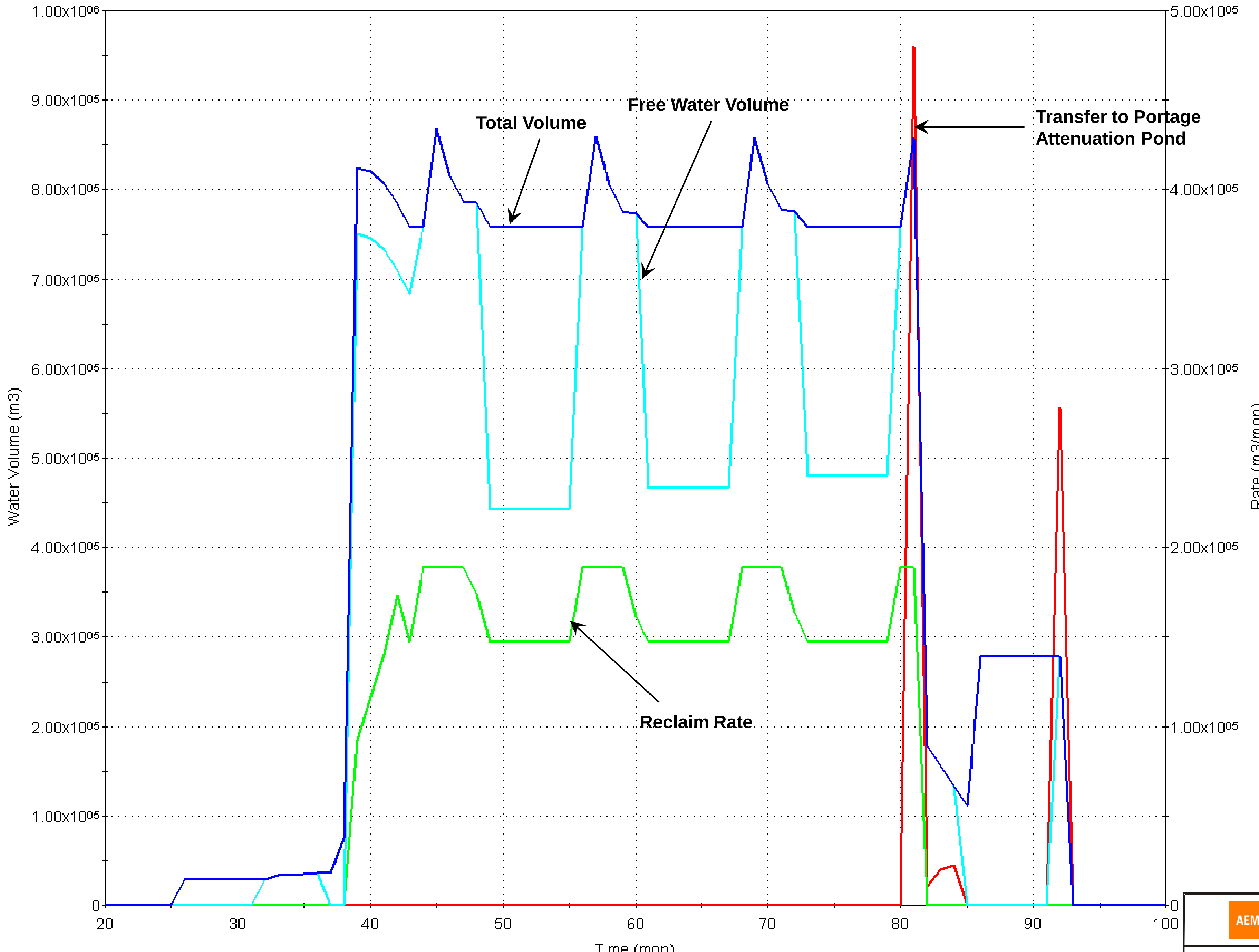
MODELLED 2PL ARM DEWATERING ELEVATION WITH TIME

FIGURE 6.12



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MEADOWBANK GOLD PROJECT
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PORTAGE RECLAIM POND
YEAR 1 TO 4 (2010 TO 2013)

FIGURE 6.13

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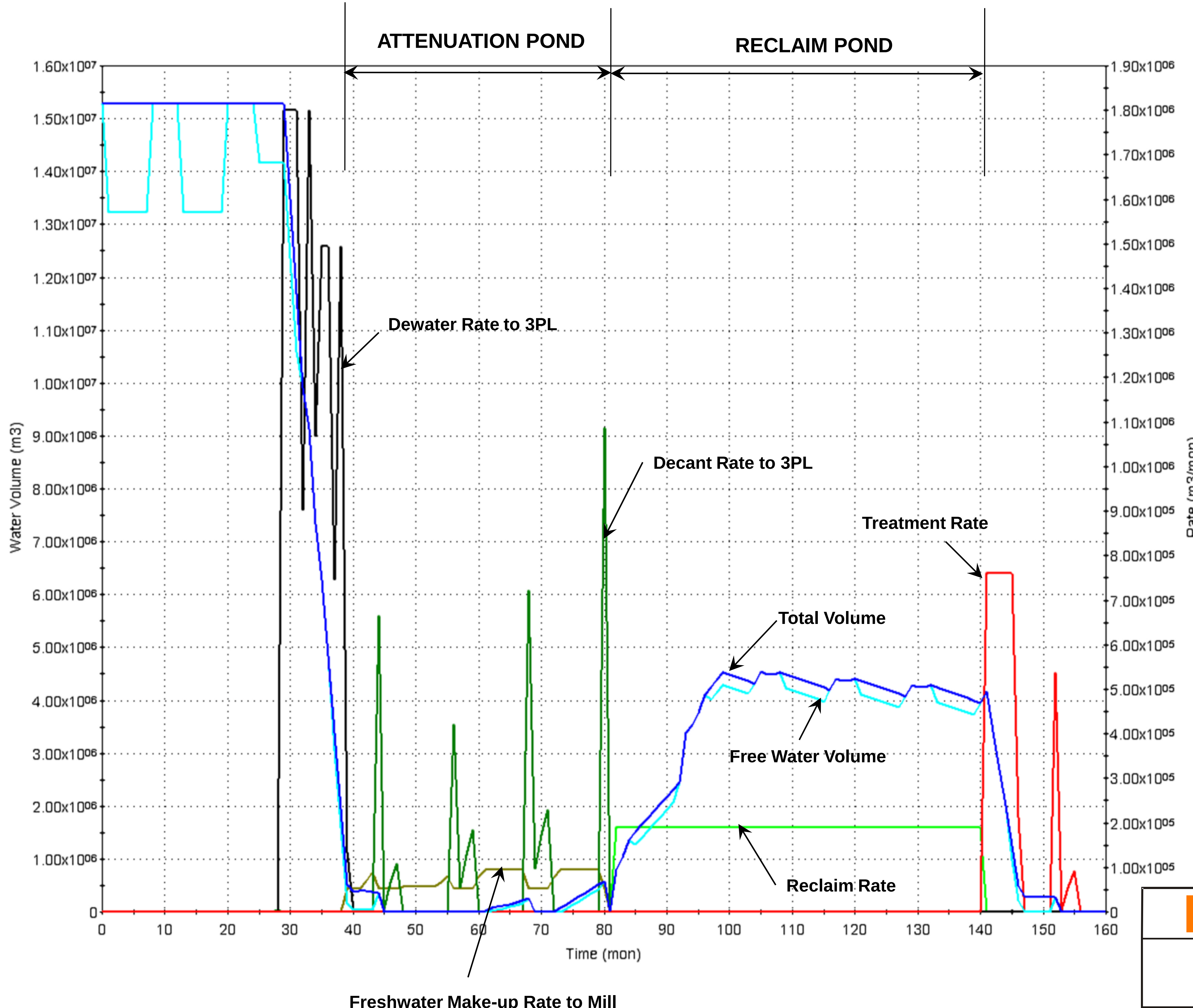

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MEADOWBANK GOLD PROJECT
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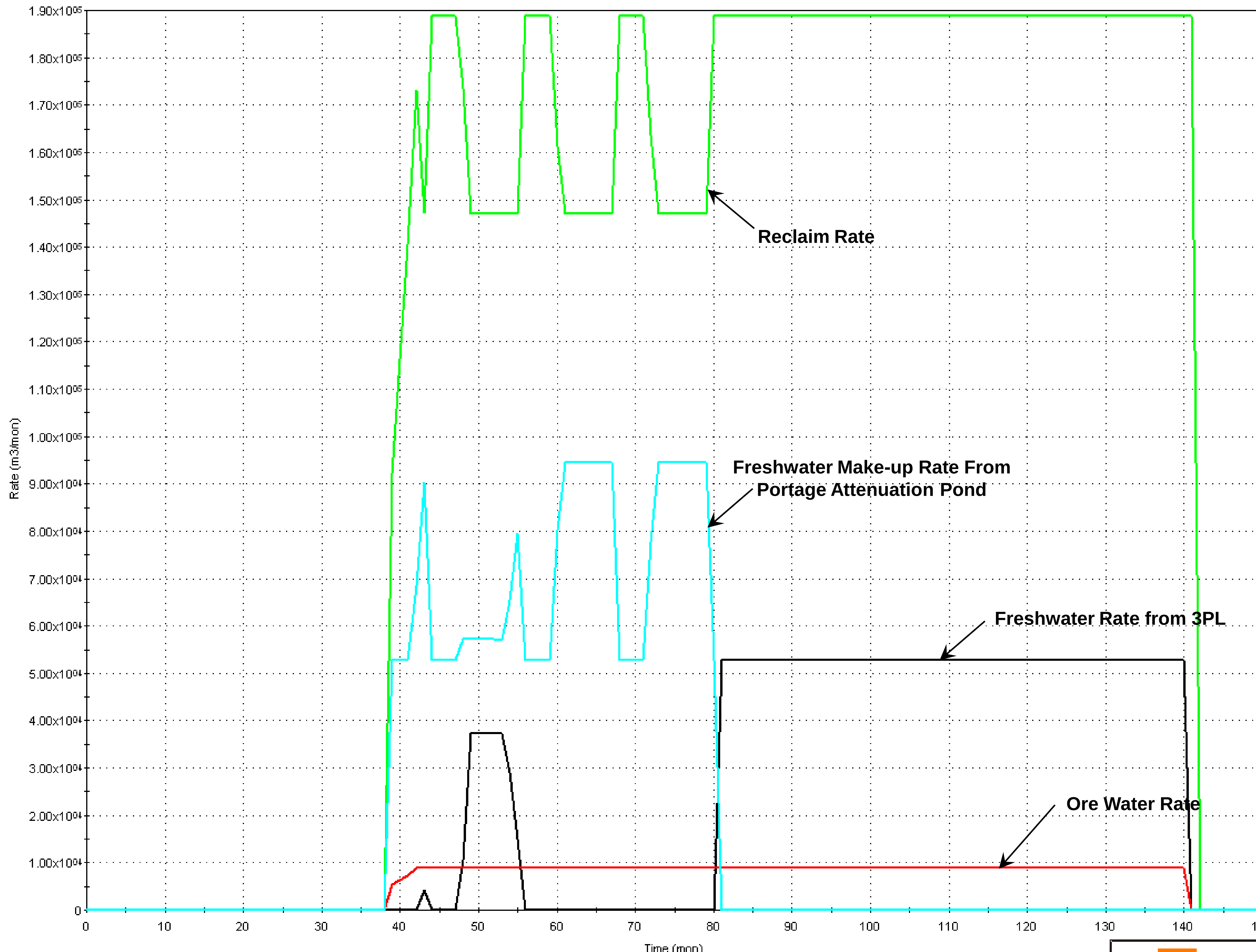
PORTAGE ATTENUATION POND
(YEAR 1 TO 4) (2010 TO 2013)
AND RECLAIM POND
(YEAR 4 TO 9) (2013 TO 2018)

FIGURE 6.14



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MEADOWBANK GOLD PROJECT
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PROCESS WATER TO MILL

FIGURE 6.15

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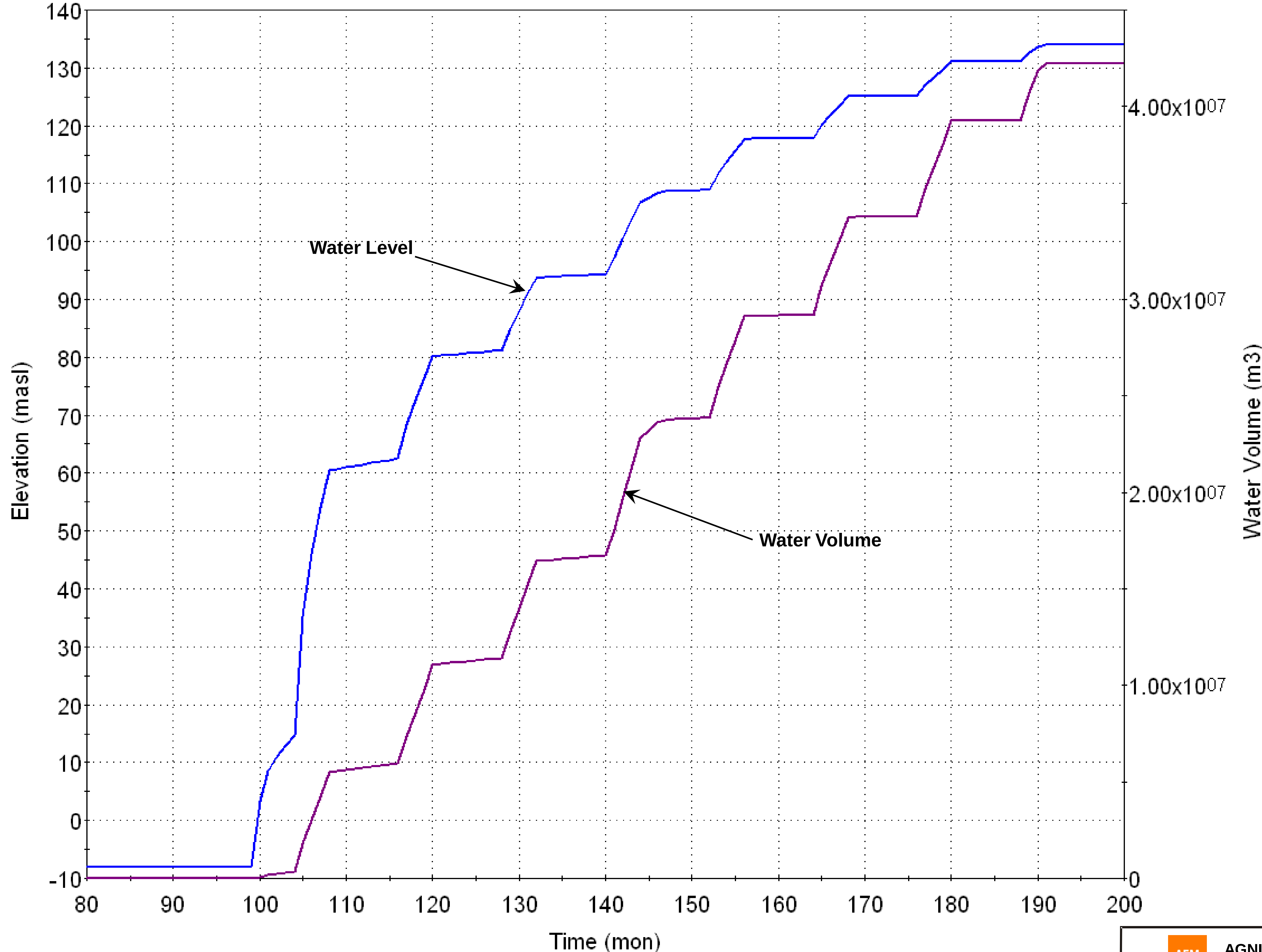

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MEADOWBANK GOLD PROJECT
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PORTAGE PIT LAKE WATER LEVEL (YEAR 6 TO 13) (2015 TO 2022)	FIGURE 6.16

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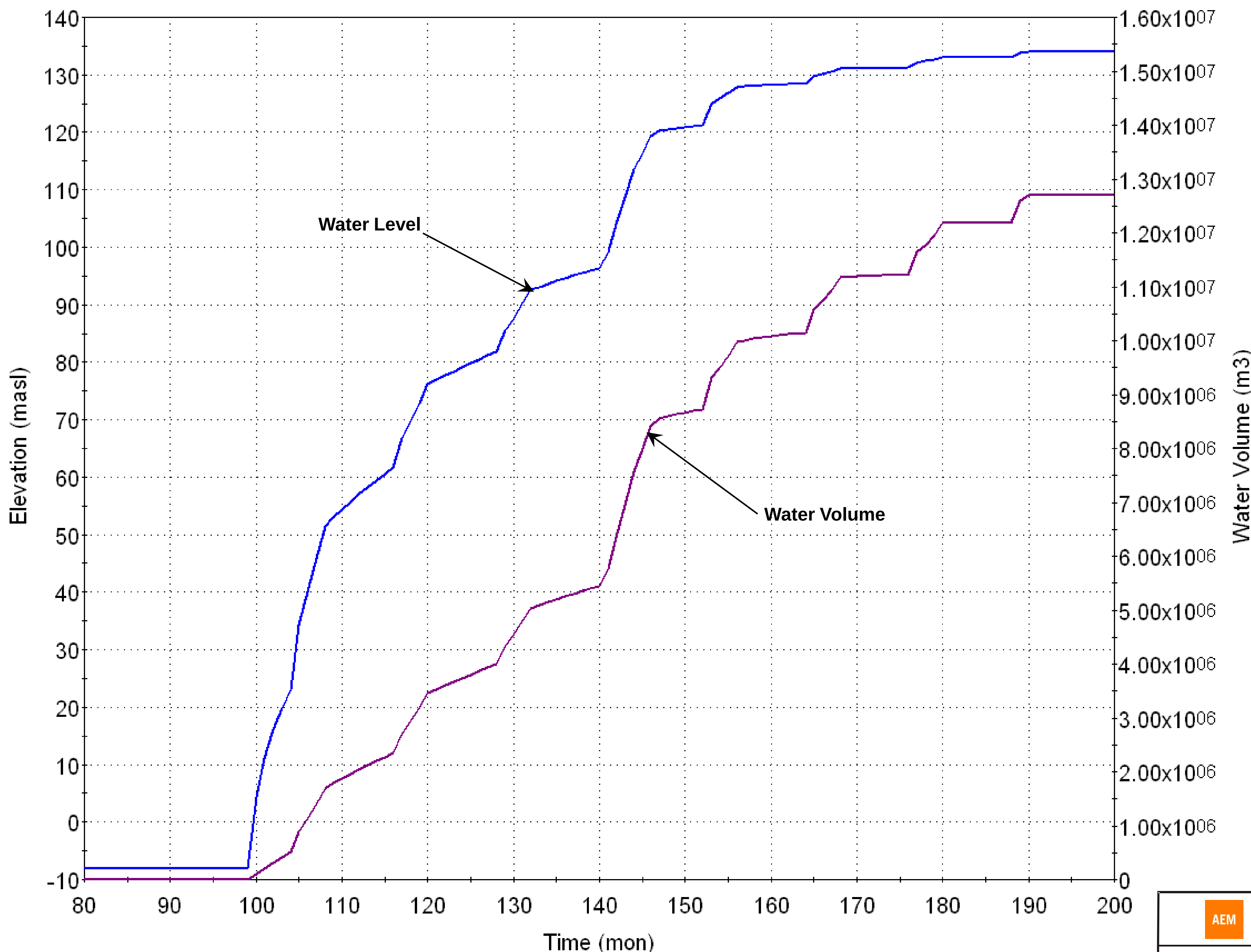

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MEADOWBANK GOLD PROJECT
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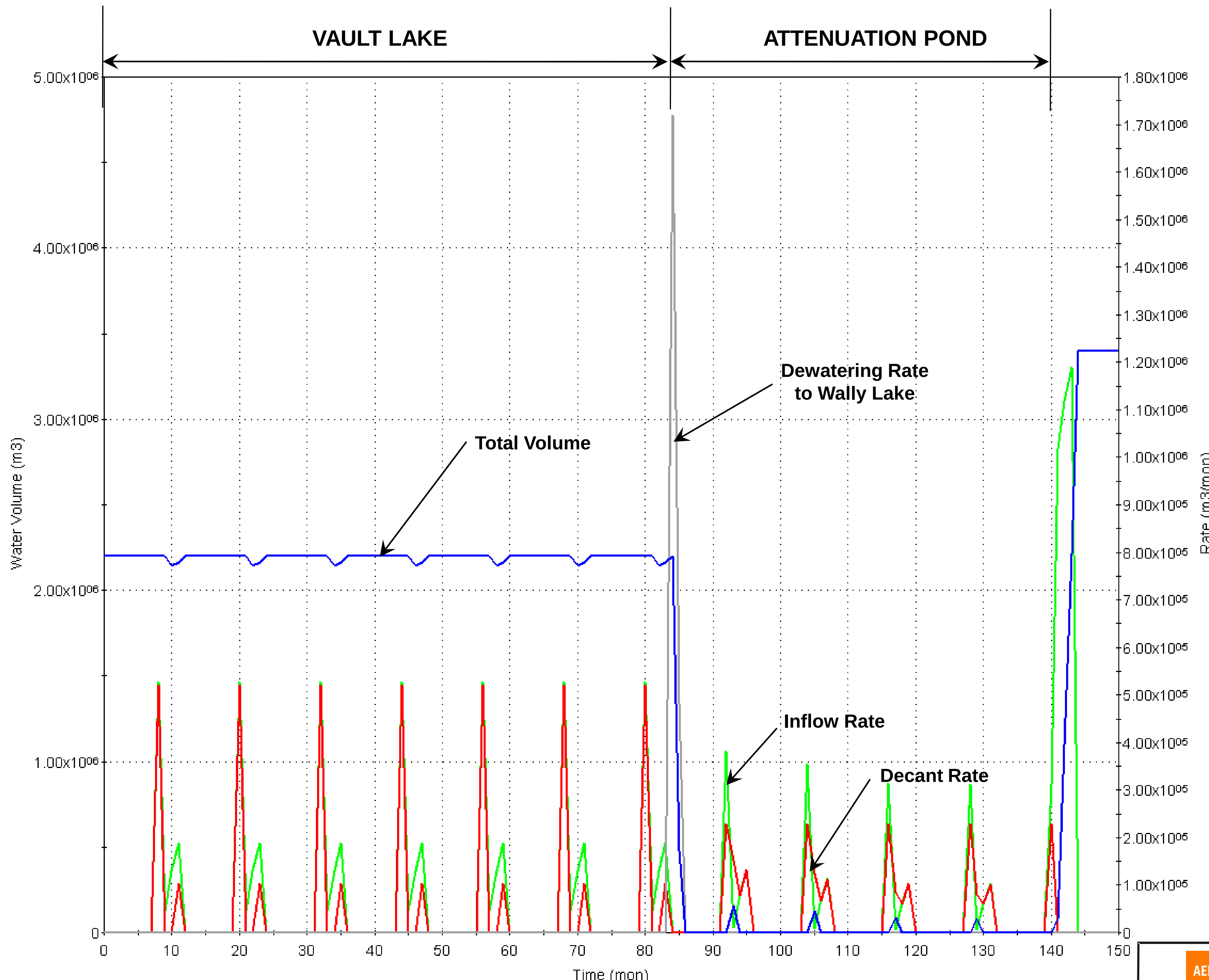
GOOSE ISLAND PIT LAKE
WATER LEVEL (YEAR 6 TO 13)
(2015 TO 2022)

FIGURE 6.17

REVISION DATE: 8JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure 6.17.ppt



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MEADOWBANK GOLD PROJECT
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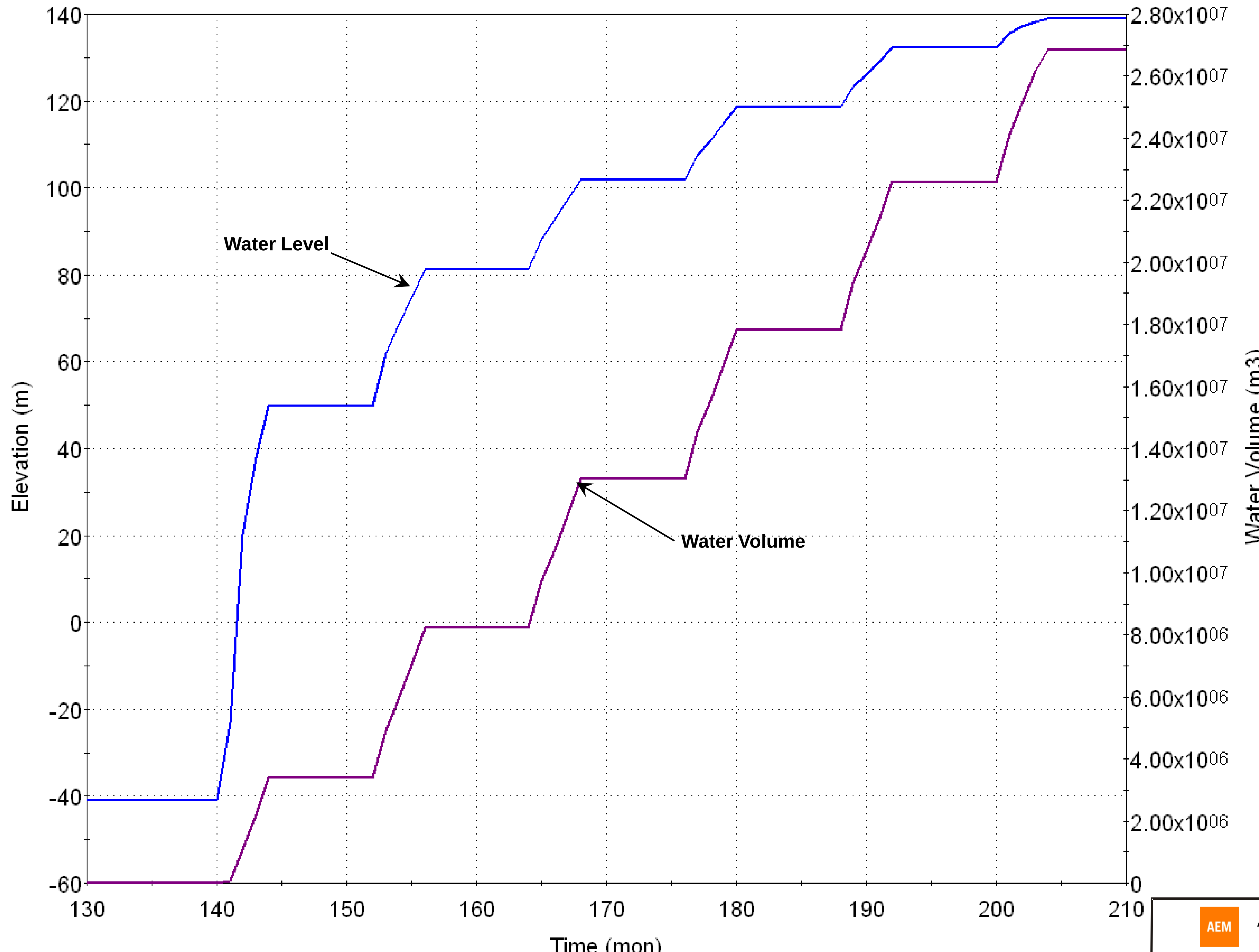
VAULT LAKE
(YEAR -2 TO 5) (2008 TO 2014)
AND ATTENUATION POND
(YEAR 5 TO 9) (2014 TO 2018)

FIGURE 6.18

REVISION DATE: 8JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure 6.18.ppt



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MEADOWBANK GOLD PROJECT
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VAULT LAKE WATER LEVEL
(YEAR 9 TO 14) (2018 TO 2023)

FIGURE 6.19

6.3 PORTAGE

The modelled 2PL Arm water elevations assuming average annual climate conditions and 40%, 50% and 60% direct dewater to 3PL prior to TSS treatment are presented in Figure 6.12. Under each dewatering scenario, the TSS treatment capacity of the Actiflo systems is predicted to be sufficient to achieve a 116 masl water elevation within the Attenuation Pond basin by December 31, 2009, complete dewatering of the remaining 2PL Arm volume by July 2010, and complete dewatering of the Bay-Goose basin by July 2011 without the need for the additional TSS management contingencies identified in Section 3.1.2 above (assuming TSS treatment in place by September 1, 2009). However, the water balance results also indicate that a minimum of approximately 50% direct dewater to 3PL will be required to achieve the 127 masl water elevation target in 2PL Arm by mid July 2009 under average annual climate conditions due additional inflows to the basin from direct precipitation and tributary runoff.

During the first 3.5 years of mill operations (Years 1 to 4; 2010 to 2013), the model results indicate that the Reclaim Pond will operate at a slight negative water balance, and will require some freshwater, Portage Attenuation Pond water or pit water as make-up to maintain a balance. This is indicated on Figure 6.13 as a reduction in the reclaim rate through the winter period in order to maintain the minimum free water requirements within the Reclaim Pond.

During the same period, the Portage Attenuation Pond will be operated in such a manner to minimize the amount of water stored within the facility during the open water season (Figure 6.14). This will facilitate the construction of the Central Dike, which will be required in future years to isolate the open pit mine operations from the TSF, and will limit water storage over the winter period thereby maximizing the storage capacity available for the spring freshet. Between roughly 790,000 m^3 and 1,220,000 m^3 of water will be decanted annually to 3PL from the Portage Attenuation Pond during this period, assuming that mill freshwater will also be sourced from this pond, where available

In Year 4 (2013), the Reclaim and Attenuation ponds combine into a single Reclaim Pond (Figure 6.14). From this point forward, the Portage Attenuation Pond is no longer available as a source for process make-up, and a comparatively greater volume of water (~630,000 m^3/year) will be required from 3PL (Figure 6.15).

The TSF facility is predicted to have sufficient capacity to store all excess water (once reclaim demands are satisfied) reporting to the Reclaim Pond during mine operations (see Section 5.1 and Figures 3.20 and 6.14). While the treatment and discharge of excess Reclaim Pond water to the Portage Pit Lake may occur as early as Year 6 (2015), this WMP assumes that reclaim water treatment would not commence until the end of mine operations. A treatment rate of 25,000 m^3/day has been assumed for water balance modelling purposes, with the treated effluent being discharged to the Portage Pit Lake. The proposed water treatment strategy for reclaim pond water will be reviewed and updated as required throughout mine life based on observed reclaim water quality and tailings facility storage volumes.

Flooding of the Portage and Goose Island pits (collectively the “Portage Pit Lake”) via controlled discharge from 3PL will commence in Year 6 (2015) and continue at an average annual rate of approximately 5.28×10^6 m^3/yr (pumped June through September) through Year 13 (Figures 6.16 and 6.17). The average annual discharge rate from 3PL was set to accommodate all of the Portage and

Goose Island pit inflows and tributary area runoff, the mill site runoff, and reclaim pond treatment discharge over an eight year period (assuming average annual conditions) without having to decant water to the environment. The flooding volumes within the Goose Island and Portage pit dike areas, including the mined out pits, is approximately $12.7x10^6$ m^3 and $42.9x10^6$ m^3, respectively.

6.4 VAULT AREA

Vault Lake dewatering and mining operations within the Vault Pit commence in Years 4 (2013) and 5 (2014), respectively (Table 6.1). Under each dewatering scenario, the TSS treatment capacity of the Actiflo systems is predicted to be sufficient to complete dewatering of Vault Lake by January 2014 (Month 87) without the need for the additional TSS management contingencies identified in Section 3.1.2 (Figure 6.18).

During mining operations, Vault Pit and RSF runoff will be redirected to the Vault Attenuation Pond prior to treatment (if necessary) and discharge to Wally Lake. The Vault Attenuation Pond will be operated such that the annual volume of water collected within the pond on a hydrologic year basis (Oct. 1 through Sept. 30) will be decanted during the open water period between June and September (Figure 6.18). This limits the amount of water that will be stored over the winter period and maximizes the storage capacity available for the spring freshet.

Flooding of the Vault Pit and Attenuation Pond via controlled discharge from Wally Lake will commence in Year 9 (2018) and continue at an average annual rate of approximately $4.0x10^6$ m^3/yr (pumped June through September) through Year 14 (2023) (Figure 6.19). The average annual pumping rate was set to accommodate all of the pit inflows and tributary area runoff for six years (assuming average annual conditions) without having to decant water to the environment. The re-watering volume within the Vault Dike, including the mined-out pit, is approximately $26.9x10^6$ m^3.

SECTION 7 • WATER QUALITY

The following presents an assessment of the probable future drainage water quality from all major mine site components within the proposed Vault and Portage area mine areas including pit lakes that will develop from flooding of the open pits.

The current water quality estimates are output from the water balance model described above. The model was updated to reflect the changes in the mine plan described herein, mostly relating to timing of development (such as dike construction and pit operation), and the modification to the tailings deposition plan, where tailing deposition will now be initiated in the northwest basin of the Second Portage Arm while the Portage Attenuation pond will be located in the main basin of the Second Portage Arm. These changes have modified the watershed areas reporting to each basin and the timing of discharges of some drainages. All chemical input values remain the same as the previous water quality assessment for this project (Golder, 2007a) because no data or material modifications to mine waste management are considered. New groundwater quality data was obtained in 2008, but results fall within the range of input values previously used and consequently have not changed for this round of water quality modelling.

Chemical inputs to the model are based on information gathered from baseline studies augmented by or calibrated with existing conditions and experience at other northern mine sites. Predicted dissolved constituent concentrations are evaluated for each mine component on a monthly time step, as monthly averages, for the duration of operation and post closure (to Year 22 or 300 months). When data was not available or sparse, conservative assumptions were used.

Three scenarios are modeled. A *Probable* scenario and a *Possible Poor End* scenario provide water quality results that are anticipated to represent the probable range of drainage qualities. The *Probable* scenario uses input values that simulate observed field conditions, realistic scaling factors and explosives management. The *Possible Poor End* scenario input values simulate probable variance on observed field characteristics and selected input parameters to capture possible natural variance. A third, *Hypothetical* scenario was also completed for the Vault and Portage RSFs, Attenuation Ponds and Pit Lakes to address concerns expressed during the NIRB review process and reflected in the Meadowbank project certificate conditions (Project Certificate NIRB no. 004, December 2006). Inputs to this *Hypothetical* scenario are presented in modeling inputs and assumptions and results are presented in Appendices for completeness but are not discussed in this report.

In consideration of the early stage and dynamic nature of the project, predicted concentrations are to be considered order-of-magnitude approximations of mine site drainage water quality.

7.1 MINE SITE COMPONENTS RELEVANT TO WATER QUALITY PREDICTIONS

The model boundary is the mine footprint area. Lakes adjacent to the mine footprint such as Wally Lake, Third Portage Lake, and Second Portage Lake outside the diked areas are excluded from the model. Mine components that contribute flow and chemical mass load to mine site drainage were considered in the mass loading portion of the model. These include the following:

- Portage and Vault area open pits, rock storage facilities (RSF), Attenuation Ponds, pit lakes and overland runoff.

- Portage area ore stockpiles, Portage pit waste rock pile, and the tailings reclaim pond.

Information on each of these components relevant to the model is provided in Section 4 of this report. Details including the geometry, construction details and hydrology related to each component are presented in Appendix B.

7.2 MASS BALANCE MODEL INPUT PARAMETERS

In general, inputs to the predictive model are based on information gathered from baseline studies augmented by or calibrated with existing conditions and experience at other northern mine sites, including the Diavik, Ekati, Lupin, Nanisivik, North Rankin Inlet, Snap Lake, Cullaton Lake, Cluff Lake and Colomac. The chemistry of discharge from the various mine components was derived from chemistry data on mine site rocks and metallurgical testing of tailings, from which lithological and mine component mass loading rates were calculated. Loading rates were factored in to simulate the particular environment of each mine component. The factored leaching rates were then multiplied by the flow component for each mine structure.

The input parameters used to predict discharge water qualities from the various mine components, are as follows:

7.2.1 Baseline Data

- Rock and tailing chemical composition from static testing;
- Tailing decant water composition from metallurgical testing;
- Lake water quality from site monitoring data;
- Groundwater quality from site monitoring data;
- Undisturbed area runnoff water quality from site investigation; and,
- Ambient temperature measured at site.

7.2.2 Calculated values

- Chemical leaching rates of exposed rock and tailings from laboratory and field scale kinetic test of representative rock samples from major rock lithologies;

- Mine site infrastructure leaching rate based on chemical leaching rates proportioned to the quantity of specific rock types exposed to drainage (Rock Storage Facilities, In-pit rock storage, ore stockpile, open pit, dike seepage, tailings). The proportion of each rock type reporting to the RSF and of the source of tailings (deposit of origin) reporting to the TSF are based on a 2007 mine plan for which an update was unavailable at the time of this report. The timing of waste rock and tailings deposition was adjusted to represent 2009 mine scheduling and proportions of tailings from each deposit was calculated assuming fixed mining rates for each deposit. The actual proportions should be reviewed when the new mining plan becomes available;

- Explosive (ammonia and nitrate) loading rate based on explosive usage rate (per tonnage of blasted rock) and anticipated wastage rate; and

- Leaching Rate Factors to account for the difference between laboratory-derived leaching rates and actual field conditions, the later typically experiencing lower rock wetting, lower temperature and larger grain size distribution than laboratory conditions.

Details on the derivation of leaching rates for mine site infrastructure components are provided in Tables D.1 to D.11 in Appendix D, and in Golder (2007a).

7.3 MODELING ASSUMPTIONS

Model assumptions pertaining to climate and hydrologic characteristics are presented in Section 6.0. Model assumptions on sources of mass load for each mine site infrastructure include:

Rock Storage Facilities:

- Infiltration through the rock mass for the RSFs is allowed up to a maximum of 1% of the volumetric water content, after which infiltration is released to drainage. Full volumetric water content is not achieved during mine life, it is assumed to be reached at closure upon placement of cover in order to force release of water and project possible water quality associated with this within a reasonable time frame. Runoff and infiltration through rock masses are modeled separately to reflect the different hydrological processes and chemical loadings.

- The amount of rock available to be leached in the RSFs during frost-free months was restricted to the active thaw zone (of 2 m depth in the *Probable* scenario and 8 m depth in the *Possible Poor End* and *Hypothetical* scenarios).

- A 4-meter thick cover of acid buffering waste rock is placed on the entire surface and edges of the Portage waste rock stockpile immediately after Portage RSF closure (fully placed at month 92).

Open Pits:

- The open pits are considered to act as sumps for drainage contacting materials within the diked areas, from: runoff over pit walls and infiltration through the pit walls fracture zones; runoff and infiltrated drainage over the exposed, downstream portions of the water retention dikes; runoff over in-pit rock storage piles; seepage of lake water through the dikes carrying a mass load from the lake and from water contacting the dike material; and groundwater seepage from pit walls in the Goose Island and Portage pits where taliks are intersected. No talik is intercepted by the Vault pit and therefore groundwater is not anticipated to affect pit drainage water quality.

Portage and Vault Attenuation Ponds:

- The Vault and Portage Attenuation Ponds will collect drainage from open pit sumps and mine site runoff (including a small ore stockpile in the Portage area). Vault RSF drainage will report to the Vault Attenuation Pond while Portage RSF drainage will report to the Reclaim Pond.

Tailings Reclaim Pond:

- Reclaim Pond water is completely re-circulated during operation, accumulating chemical mass throughout the operational period. Chemical mass loading to the Reclaim Pond is from process water and from drainage of precipitation over exposed tailings.

A description of the chemical input parameters associated with the above are provided in Tables E.1 to E.6 in Appendix E and are further described in Golder (2007a).

Elements not Considered in the Model:

- Exothermic heat of reaction of sulphide minerals in tailings and waste rock. The energy generated from tailings oxidation at the rate observed under kinetic testing was found to be too low to have a significant effect on tailings or waste rock reactivity.

- Possible super saturation of elements in water which may result is precipitation of mineral phases and consequently decreases the modeled aqueous concentrations.

- The additional mass loading on water quality that may be generated by suspended solids present in drainage waters. All predicted concentrations are for dissolved constituents in water. The presence of suspended particles (TSS) may result in higher total concentrations than dissolved phase concentrations.

7.4 SCENARIOS MODELED

7.4.1 Probable Scenario

This is considered to be the base case, using observed field characteristics for rock leaching rates and active zone depth, reasonable explosive use and scaling factors, specifically:

- Use of field-derived rock leaching rates;

- Acid rock drainage (ARD) is not generated (mine waste management strategies effective in preventing onset of ARD);

- Active layer thicknesses of 2 m;

- Pit wall runoff and RSF runoff scale factor 0.1

- Waste rock infiltration scale factor 0.01;

- Dike rock infiltration scale factor 0.1; and

- 3% explosives wastage rate (adequate management of explosives).

7.4.2 Possible Poor End Scenario

This scenario consists of a sensitivity on the base case: variance on observed field conditions and less certain input parameters to capture probable natural variance, variance only on the negative side using very conservative assumptions, specifically:

- Use of laboratory-derived, accelerated leaching rates;
- ARD generated from reactive IF rock;
- Active layer thicknesses of 8 m;
- Pit wall runoff and RSF runoff scale factor 0.1;
- Waste rock infiltration scale factor 0.1;
- Dike rock infiltration scale factor 0.1; and
- 5% explosives wastage rate (periodic overdosage of explosives).

7.4.3 Hypothetical Scenario

Hypothetical scenario completed to address concerns of NIRB reviewers and explore the effects of applying laboratory data directly to field conditions, specifically:

- Use of laboratory-derived accelerated leaching rates;
- ARD generated from all potentially reactive materials;
- Active layer thicknesses of 8 m;
- Removed particle size factor (Fps), rock wetting factor (Frw) for RSF and dikes;
- Increased thickness of layer through which RSF runoff flows from 15 cm to 50 cm depth;
- Pit wall runoff and RSF runoff scale factor 1;
- Waste rock infiltration scale factor 1;
- Dike rock infiltration scale factor 1; and
- 8% explosives wastage rate (sustained, poor management of explosives).

7.5 MODEL COMPUTATIONS

Water quality computations are derived using the following mass loading equation for infiltrated drainage through rock or tailings:

$$C_{sp} = \frac{LeachRate_{Sp} \times SurfaceArea \times \rho}{\inf iltrationRate} \times \sum_{z=1}^{5} \left[(F_{temp} \times F_{ice})_{Sp} \times Temperature(month, Z) \times LayerThickness_z \times F_l \right]$$

For runoff over waste rock, pit wall rock or tailings, mass load is derived per the following equation:

$$C_{Sp} = \frac{LeachRate_{Sp} \times SurfaceArea \times \rho}{RunoffRate} \times (F_{temp} \times F_{ice})_{Sp} \times Temperature(month) \times ContactThickness \times F_l$$

Where:

C_{sp}	Mass load of chemical species in drainage or runoff (*sp*);
Leach Rate$_{sp}$	Leaching rate for each constituent;
SurfaceArea	Surface area (footprint) of the rock or tailings mass at the particular time step;
ρ	In place density of rock (1.9 t/m^3) or tailings (1.2 t/m^3);
InfiltrationRate	Rate of infiltration: 65% and 15% for rock and tailings, respectively, during freshet (June), 80% (rock) and 40% (tailings) in summer, 0% in winter (both rock and tailings);
RunoffRate	Rate of runoff: 1-*InfiltrationRate*;
Z	In the active zone D_a, the sub-layer having a specified temperature;
LayerThickness$_z$	Thickness of the sub-layer *Z*: D_a/5 in rock piles and D_a in tailings;
ContactThickness	Thickness of the zone of runoff contact with rock or tailings (0.15 m);
F_{temp}	Temperature factor applied to leaching rate of temperature-dependant constituents (major ions), where the rate is decreased by a factor of two for every 10ºC decrease from 25ºC;
F_{ice}	Freezing factor applied to leaching rate of all temperature-independent constituents. F_{ice} of 1 allows for a nominal loading rate of 1E-10 mg/kg/wk to be used when the temperature is at or below 0ºC;
Temperature	Pore space temperature within sub-layer Z, a function of ambient air temperature; and

F_l	Leach rate factor to account for larger grain size (F_{gs}), lower rock wetting (F_{rw}) under field conditions than laboratory conditions (applied only where laboratory leaching rates are used) and/or to account for rock submergence (F_{sub}) (dike leaching).

7.6 MODEL LIMITATIONS

The level of precision and accuracy of the water quality and mass loading predictions generally is defined by the accuracy/precision of the input parameters and the assumptions made with respect to their conformity to engineering designs. The model is an oversimplification of a more complex setting and as such results are considered to be order-of-magnitude estimate.

Modelling of water quality is based on the current level of understanding of the Project. As the Project continues to evolve, continued data collection is required to verify and/or refine the stated model assumption and input parameters. The following presents some limitations of the current model, based on the most recent Project definition:

Changes to Project or Site Conditions: The project description and site conditions identified at the feasibility and design levels of the Project are the basis for this water quality model including the 2005 mining plan which has not been updated to reflect 2009 mining schedule. The data and approach used to estimate water quality are believed to represent a reasonable approximation of the discharge quality to the ultimate receiving environments of Third Portage and Wally lakes based on the current level of engineering design and information about the site available to Golder at the time of this report. Changes in the Project or site conditions are likely to affect, to variable extents, the actual site water quality.

Leaching and Loading Rates**:** The mass load estimates developed for Meadowbank are based on laboratory data and years of field data. Scaling of laboratory data and small scale field tests to expected on-site conditions is a common limitation inherent to the use of controlled test data for prediction of performance of larger natural systems. Assumptions and prediction results will need to be validated with on-site data during operation.

Hydrology of Rock Storage Area*s*: Until more site-specific data are available, it is assumed that all the water infiltrating though the stockpile reports to the toe of pile within the same time step. The field capacity of the rock pile will cause a certain volume of infiltrated water to be retained within the pile, thereby reducing the amount of seepage. Full or partial freezing of the pile and its pore water has the potential to further reduce the amount of seepage out of the pile. The resulting drainage solution, if any is generated, may then be more concentrated than predicted. The drainage contact area with the waste rock is also dependent on local conditions. Field verification is required to provide more accurate predictions of rock stockpile drainage volume and quality.

Tailings Management**:** The temperature regime that will actually develop in the tailings will not be fully understood until in-situ monitoring is initiated during operation. The development of frozen zones within the tailings and related geotechnical aspects (frost heave, cracking, etc) will affect interaction between water and tailings solids, thereby affecting water quality. The proportion of tailings reporting to the TSF from the various deposits is based on a 2007 version of the mining plan. The mine plan needs to be updated to reflect the 2009 mining schedule.

***System Complexity*:** Great care was taken to incorporate all known processes as understood during the feasibility stage of project development. However, it should be noted that in natural systems and complex man-made systems, observed conditions normally vary relative to estimated conditions, even for the most thorough system simulation.

Ultimately, even the best of models cannot compare with generation and evaluation of operational monitoring data. Once the Meadowbank site is operational, monitoring of water quality will be valuable tools to optimize waste and water management measures.

7.7 WATER QUALITY PREDICTIONS

This section presents the results of the water quality prediction modeling. Results are provided as monthly, summer or annual average concentrations for dissolved constituents, (i.e. excluding the chemical load from suspended solids), for each mine component over relevant time periods during mine life and/or post closure. Results for the *Probable* scenario are presented in Appendix F. Appendix G provides model results for the *Possible Poor End* scenario and Appendix H presents results of the *Hypothetical* scenario for RSF drainage, Attenuation Pond, and Pit Lake water quality. The *Hypothetical* scenario was conducted to address the concerns raised during the NIRB process on the effects of applying laboratory data directly to field conditions without consideration of some important differences between laboratory and site conditions. This scenario provides results that are considered to be outside reasonable expectations. Consequently, results are not discussed in this section.

7.7.1 Comparative Water Quality Guidelines

Predicted aqueous concentrations are compared against the discharge water criteria for the Portage and Vault Attenuation Ponds, respectively, as listed in the Type-A Water License (2AM-MEA0815).

Concentrations above these limits are highlighted as shaded boxed in bold font. Since most drainage waters (except for Attenuation Pond water) will not be discharged directly to any natural fresh water environment, the criteria constitute a point of reference only. The predictions being order-of-magnitude estimates, concentrations that are of the same order of magnitude as the water license discharge limits should be viewed as potential for being above the criteria.

7.7.2 Portage Area

Portage RSF drainage water quality is presented in Tables F-1 and G-1 for the *Probable* and *Possible Poor End* scenarios respectively (Appendices F and G); North Portage, Third Portage and Goose Island pit sump water quality are presented in Tables F-2 to F-4 and G-2 to G-4 respectively; Portage Attenuation Pond water quality (Years 1 to 3) in Table F-5 and G-5, and Reclaim Pond water quality (Years 1 to 9) are presented in Table F-6 and G-6; Goose Pit Lake water quality estimates are presented in Tables F-7 and G-7, while Portage Pit Lake water quality estimates are presented in Tables F-8 and G-8. These show predicted concentrations during flooding and post-closure, assuming fully mixed conditions. Appendix H tables (H-1 through H-5) show the hypothetical water quality for the Portage RSF, Attenuation Pond, Reclaim Pond, and Pit Lakes (Goose and Portage). Modeled constituent concentrations that fall above water license criteria for each mine component in the Portage Area areas are summarized in Table 7.1 and 7.2 for operation and post-closure periods, respectively.

Table 7.1: Portage Area Predicted Water Quality, Operation – Summary of Predicted Concentrations above the Water License Criteria

Mine Component Drainage	***Probable* Scenario** > **Water License**	***Possible Poor End* Scenario** > **Water License**
Rock Storage Area (2-m and 8-m Active Layers)	Total NH_3, NO_3-N	pH, As, Ni, Total NH_3, NO_3-N
North Portage Pit Sump	Total NH_3, NO_3-N	Ni, Total NH_3, NO_3-N
Third Portage Pit Sump	Total NH_3, NO_3-N	Total NH_3, NO_3-N
Goose Island Pit Sump	n.e.	Total NH_3, NO_3-N
Attenuation Pond (Years 1 to 3)	n.e.	Hg, Total NH_3
Reclaim Pond (1 to 9)	Al, Cd, CN_{total}, Cu, Hg, Ni, P,	Al, As, Cd, CN_{total}, Cu, Hg, Ni, P, Zn

n.e. no exceedances

Table 7.2: Portage Area Predicted Water Quality, Post-Closure – Summary of Predicted Concentrations above the Water License Criteria

Mine Component Drainage	***Probable* Scenario** > **Water License**	***Possible Poor End* Scenario** > **Water License**
Rock Storage Area	n.e.	As, Cd, Hg, P, PO_4
Year-20 Goose Pit Lake	n.e.	n.e.
Year-20 Portage Pit Lake	n.e.	n.e.

n.e. no exceedances

The pH of the Portage Attenuation Pond is dictated by the pH of its inflows. The majority of the flows come from Portage and Goose open pit sumps (69% and 78% in years 2 and 3 respectively) and overland runoff (30% and 22%years 2 and 3 respectively), all of slightly acidic pH. The Attenuation Pond is predicted to have a pH of between 6.2 to 6.3 in both the *Probable* scenario and the *Possible Poor End* predictions and is expected to meet the water license discharge criteria for all scenarios. Tailings water will be entirely recycled during the mine life, the tailings Reclaim water quality is predicted to contain aluminum, arsenic, cadmium, chloride, total cyanide, copper, mercury, nickel, total NH_3, NO_3-N, potassium, lead and zinc levels that will not meet Portage effluent discharge criteria. The source of copper originates mostly from the ore and from the use of a copper sulfate additive required for the SO_2/air cyanide destruction process. Cyanide species are associated exclusively with tailings water in the Reclaim Pond. Free and weak acid dissociable (WAD) cyanide are expected to attenuate naturally from exposure to sunlight and volatilisation, while cyanide destruction by-products cyanate (CNO) and thiocyanate (SCN) are predicted to accumulate in the reclaim pond (these compounds were assumed not to degrade in the model). The concentration of some constituents in the tailings reclaim water is therefore predicted to exceed Portage effluent discharge criteria at the end of mine life prior to pumping this water to the diked (enclosed) Portage pit lake. The effect of a thicker (8 m) active layer thickness on the Portage RSF drainage water quality is predicted to be higher concentration of arsenic, cadmium, mercury, phosphorous, and phosphate post-closure. Drainage from the RSF reports to the reclaim pond during operation and will not be discharged directly to the receiving environment. The long-term Portage and Goose Island pit lake water quality is predicted to meet WL Discharge Criteria for all constituents in all scenarios.

7.7.3 Vault Area

Vault RSF drainage quality predictions are present in Tables F-9 and G-9 for *Probable* and *Possible Poor End* scenarios respectively (Appendices F and G). Vault pit sump water quality predictions are presented in Tables F-10 and G-10. Vault Attenuation Pond water quality predictions are presented in Tables F-11 and G-11, and Vault pit lake water quality, including post-closure water quality assuming fully mixed conditions are presented in Tables F-12 and G-12. Appendix H tables (H-6 through H-8) show the *Hypothetical* water quality for the Vault RSF, Attenuation Pond, and Pit Lake. Modeled constituent concentrations that fall above water license criteria for each mine component in the Vault area are summarized in Table 7-3 and 7-4 for operation and post-closure periods, respectively.

Table 7.3: Vault Area Predicted Water Quality, Operation – Summary of Predicted Concentrations above the Water License Criteria

Mine Component Drainage	***Probable* Scenario**	***Possible Poor End* Scenario**
	> WL	**> WL**
RSF (2-m and 8-m Active Layer)	Total NH_3, NO_3-N	As, Total NH_3, NO_3-N
Open Pit Sump	Total NH_3, NO_3-N	As, Total NH_3, NO_3-N
Attenuation Pond, Years 5 to 9	Total NH_3	Total NH_3

n.e. no exceedances

Table 7.4: Vault Area Predicted Water Quality, Post-Closure – Summary of Predicted Concentrations above the Water License Criteria

Mine Component Drainage	***Probable* Scenario**	***Possible Poor End* Scenario**
	> WL	**> WL**
RSF (2-m and 8-m active layer)	n.e.	As
Year-20 Vault Pit Lake	n.e.	n.e.

n.e. no exceedances

Seventy five percent of the Vault pit waste rock is acid buffering. It is expected that the excess alkalinity present in bulk Vault area waste rock is sufficient to prevent acidification of Vault RSF drainage (Golder, 2005b). The pH of drainage contacting waste rock (from RSF and pit walls) is predicted to remain around 8, while the Vault Attenuation Pond is predicted to have a pH of around 6 to 7. The concentration of dissolved constituents in the Vault attenuation pond water, and consequently in the effluent to Wally Lake, is predicted to comply with the Vault effluent discharge criteria for chemical constituents throughout operation and post-closure for all scenarios, with the possible exception of Total NH_3 and NO_3-N. Explosive use will need to be carefully dosed to avoid ammonia and nitrate loading to site drainage waters in both the Portage and Vault areas. At the end of the Vault pit life, the pit will be slowly filled with water. The long-term water quality of the resulting Vault pit lake is predicted to comply with the Vault effluent discharge criteria for all chemical constituents, under the *Probable* and *Possible Poor End* scenarios. The thickness of the active layer will affect drainage quality of the Vault Rock Storage Facility (RSF), particularly arsenic concentration, where the concentration increases three orders of magnitude from the *Probable* to the *Possible Poor End* scenarios, exceeding the water license criteria under *Possible Poor End* conditions.

SECTION 8 • MONITORING AND CLOSURE

Mine closure and reclamation will utilize currently accepted management practices and appropriate mine closure techniques that will comply with accepted protocols and standards. Closure will be based on project design and operation to minimize the area of surface disturbance, stabilize disturbed land surfaces and permafrost against erosion, and return the land to post-mining uses for traditional pursuits (MMC, 2007b).

Water management during closure and reclamation will involve maintaining surface water diversions to prevent clean runoff water from coming into contact with areas affected by the mine or mining activities. The water management facilities, including the Dewatering Dikes, ponds, water collection systems (sumps and ditches), and treatment plants (if necessary), will be required to remain in place until mine closure activities are completed and monitoring results demonstrate that water quality conditions are acceptable for discharge of all contact water to the environment without further treatment.

Figure 3.7 shows the post-closure concept for the Meadowbank mine. The waste storage facilities will be progressively closed during mine operations. The surfaces of the Portage and Vault RSFs will be contoured to direct drainage to the Reclaim and Vault Attenuation pond areas, respectively.

The Reclaim Pond will remain in place until mining and milling has been completed. At this time, reclaim water will be drained from the TSF and treated, if necessary, prior to discharge to the Portage Pit Lake. If necessary, treatment of reclaim water would be completed in-situ or through a water treatment plant converted from the Process Plant. Once drained, the Reclaim Pond area will be filled with acid buffering ultramafic rock, and contoured to promote drainage. Additional surface water collecting within the Reclaim Pond area will be monitored and treated, if necessary, prior to release to the Portage Pit Lake. Once monitoring indicates that the runoff water quality is acceptable for mixing with receiving lakes, surface water runoff will be allowed to flow to 3PL untreated.

An estimated $5x10^6$ m^3 of water will be pumped from the Reclaim Pond at the end of mine operations. Water quality predictions indicate that the water may need to be treated for pH adjustment and removal/reduction of aluminum, arsenic, cadmium, copper, nickel, phosphorus and possibly sulphate.

The Goose and Portage pits will be flooded during Years 6 (2015) to 13 (2022). During this period of time, water collecting within the pit lake will be monitored, and in-situ treatment will be applied if required. Once monitoring results demonstrate that the water quality of all contact water is acceptable for discharge to the environment without further treatment, the pit lake will be hydraulically re-connected with 3PL though breaching of the Bay Goose Dike.

The Vault Attenuation Pond will be allowed to fill upon cessation of mining activities in Year 9 (2018). Water quality will be monitored, and in-situ treatment will be undertaken if necessary. Once monitoring results demonstrate that the water quality of all contact water is acceptable for discharge to the environment without further treatment, the Vault Dike will be breached, and the re-flooded Vault Lake will be hydraulically re-connected with Wally Lake.

All water management infrastructure that may be maintained for mine operations, closure and reclamation, including ditches and sumps, will be re-contoured and/or surface treated according to site specific conditions to minimize windblown dust and erosion from surface runoff, and enhance the development site area for revegetation and wildlife habitat. Rock berms will be placed around the perimeters of all pit areas remaining above water following flooding to restrict access and minimize hazards to people and wildlife.

The final Reclamation and Closure Plan for the Project will be developed in conjunction with the mine plan so that considerations for site closure can be incorporated into the mine design. Monitoring will be carried out during all stages of the mine life to demonstrate the safe performance of the mine facilities. If any non-compliant conditions are identified, then maintenance and planning for corrective measures will be completed in a timely manner to ensure successful completion of the Reclamation and Closure Plan (MMC, 2007b).

SECTION 9 • REFERENCES

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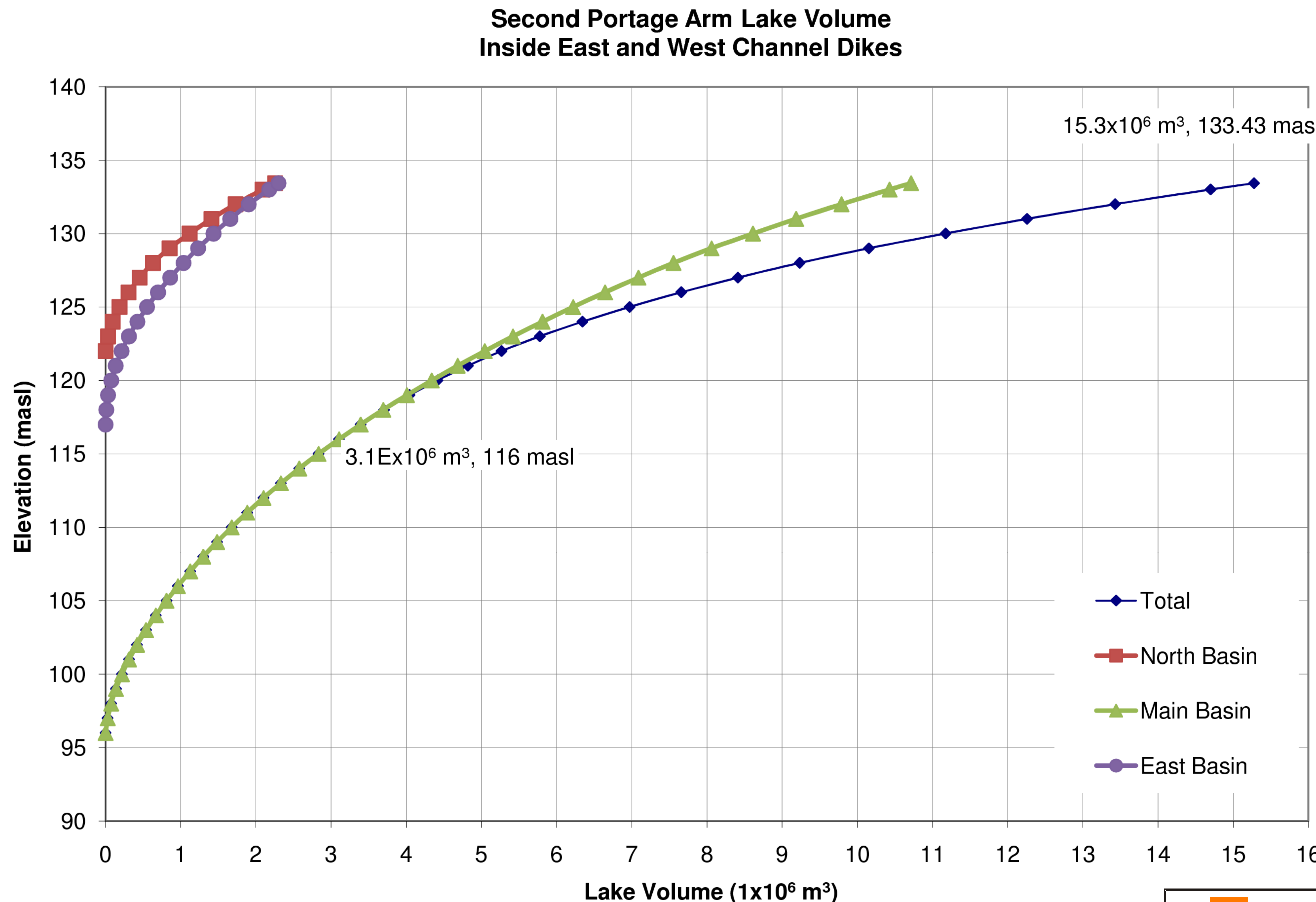
APPENDIX A

Dewatering Struck Level Curves inside Dewatering Dikes



AGNICO-EAGLE MINES LIMITED

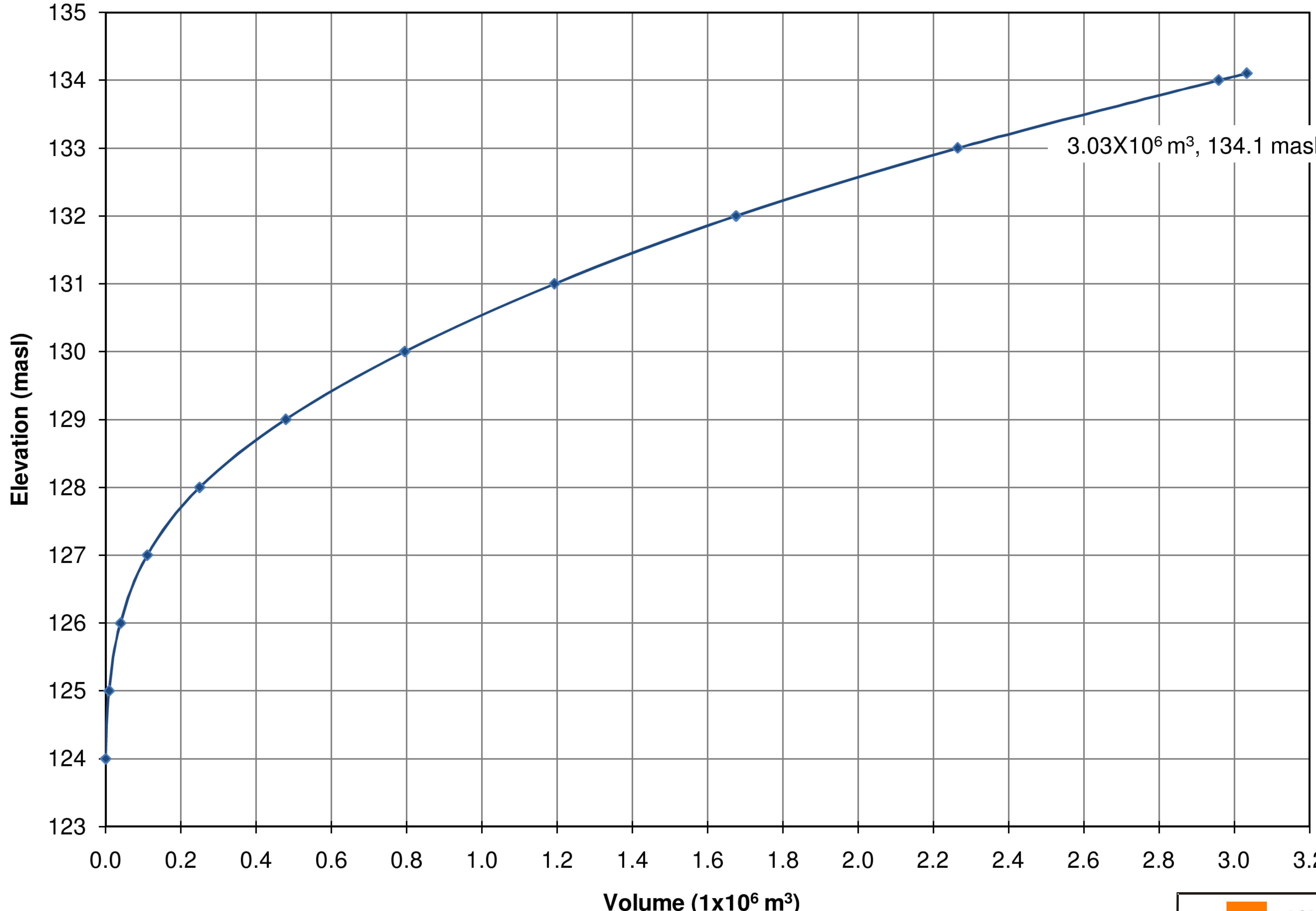
MEADOWBANK GOLD PROJECT
NUNAVUT

SECOND PORTAGE LAKE ARM VOLUME INSIDE THE EAST DIKE

FIGURE A.1

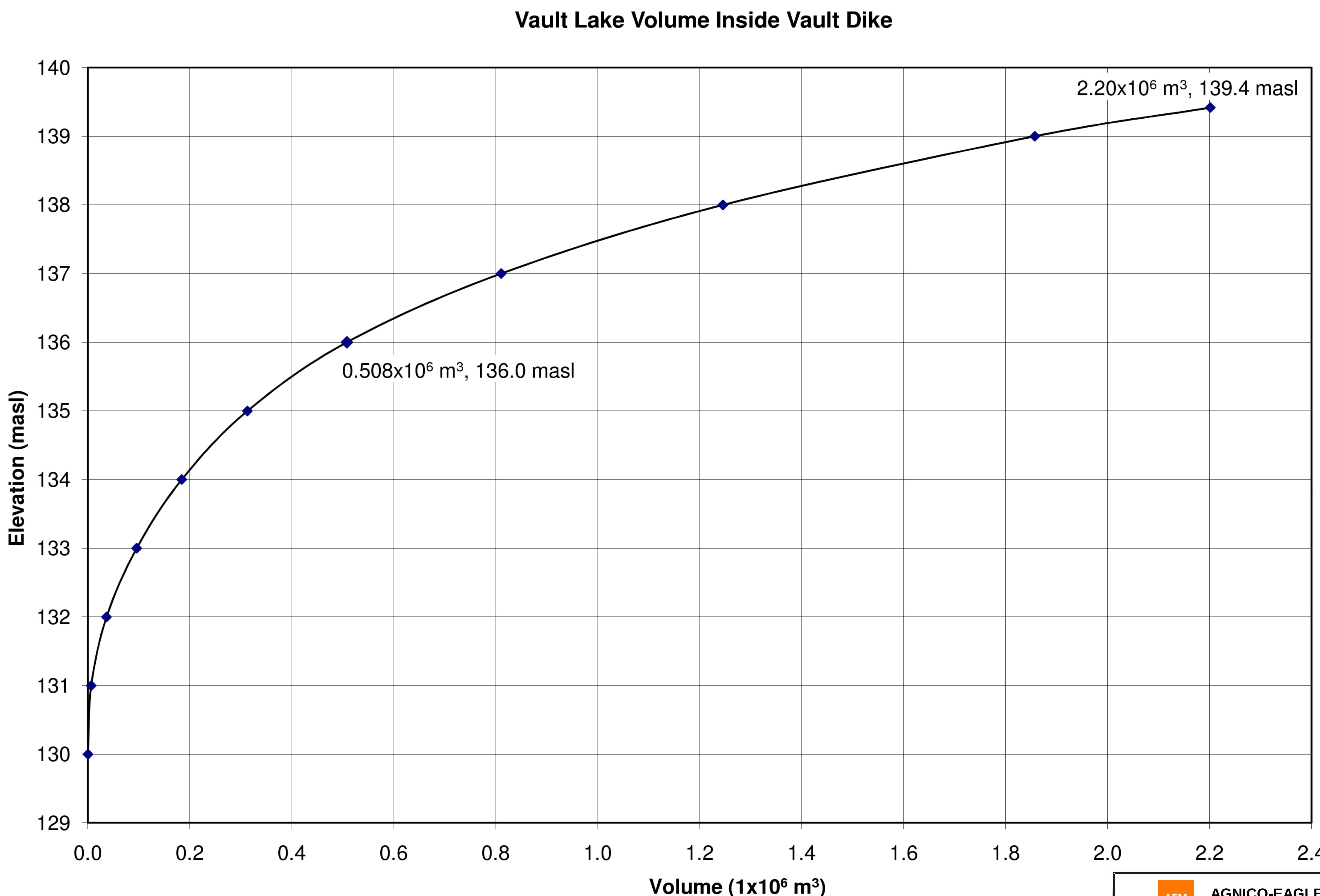
REVISION DATE: 7JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure A.1.ppt

Third Portage Lake Volume
Inside the Bay-Goose and South Camp Dikes



AEM AGNICO-EAGLE MINES LIMITED	
MEADOWBANK GOLD PROJECT NUNAVUT	
THIRD PORTAGE LAKE VOLUME INSIDE BAY-GOOSE DIKE	FIGURE A.2

REVISION DATE: 7JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure A.2.ppt



AGNICO-EAGLE MINES LIMITED

MEADOWBANK GOLD PROJECT
NUNAVUT

VAULT LAKE VOLUME INSIDE VAULT DIKE	FIGURE A.3

REVISION DATE: 7JUL09 BY: DRW FILE:O:\Active_2008\1428\08-1428-0029 Meadowbank TSF Dike Design\7000 Updated Water Management Plan\GoldSim 2008\Updated Figures\Figure A.3.ppt

APPENDIX B

Water Balance Model Assumptions

Table B.1: Water Balance Model Assumptions – General

Property	Value	Source	Comment/Assumptions
Time Step	1 month	Golder	Runoff generation based on monthly precipitation totals. Water quality regulations are generally based on mean monthly water quality
Simulation Start	Oct 1, Yr -3 (month 0)	Golder	Model is based on hydrologic year (October 1 to September 30)

Table B.2: Water Balance Model Assumptions – Mill/Process

Property	Value	Source	Comment/Assumptions
Active Life, i.e., mill operational from / to	Jan. 1, Yr 1 June 30, Yr 9	AEM	Mill is active from start of Yr 1 (month 39) to Yr 9 (month 140)
Feed Rate	354.2 t/hr	AEM	Mass including water; Mill at 60% capacity in Month 1, 70% capacity in Month 2, 80% capacity in Month 3, 100% capacity thereafter.
Feed Moisture Content	3.36%	Hatch 2007	Percentage by weight
Solids Specific Gravity	3.10	Hatch 2007	
Tails Solids Content	50.8%	Hatch 2007	Slurry to TSF
Maximum Reclaim Rate	258.5 m^3/hr	computed	Based on 20% bulking of settled tails due to ice entrapment and a corresponding water content of 40% (Ww/Ws)
Min. Freshwater Make-Up Rate to Process	72.2 m^3/hr	Hatch 2007	
Potable Freshwater Rate to Mine	3.3 m^3/hr	Hatch 2007	Approximately 230 L/person/day assuming a workforce of 344

Table B.3: Water Balance Model Assumptions – Climate/Runoff Generation

Property	Value	Source	Comment/Assumptions
Precipitation	285 mm/yr	AMEC 2003	1:2 year return period annual precipitation; equal to average conditions Deterministic modelling uses the 1:2 year total. Probabilistic modelling samples the annual total based on the frequency analysis (between 1:100yr dry and 1:100yr wet) presented by AMEC (2003)
Sublimation	9 mm/mo	Golder	Applied over 8 winter months (Oct. to May). Assumed 48% of annual snowfall of 149 mm (AMEC 2003).
Potential Evapotranspiration	80 mm/yr	Golder	Monthly distribution per site measured pan evaporation rates.
Lake Evaporation	258.4 mm/yr	AMEC 2003	Applied to attenuation storage ponds
Terrestrial Runoff	133 mm/yr	computed	Terrestrial runoff = precip. – sublimation - evapotranspiration Precipitation from October to May stored and released in June over a period of one month. Equivalent to a 47% runoff coefficient under average conditions. Seepage to/from groundwater stores assumed negligible due to permafrost

Table B.4: Water Balance Model Assumptions – Rock Storage Facilities

Property	Value	Source	Comment/Assumptions
Infiltration (shallow)	0, 65 & 80% of total runoff	Golder	Infiltration 0% (winter), 65% (June freshet) or 80% (summer) of total available runoff. Assumed shallow infiltration which reports to base of pile in same month. Surface runoff = total runoff less infiltration.
Surface Runoff	Total less Infiltration	Golder	
Water Retention	1%	Golder	Assumed percentage of infiltrated water by volume retained in rock piles until capping
Pile Area Growth Rate		Golder	Linear, assumed to reach final surface area at half their active life
Vault RSF Final Area	133.9 ha	Golder	Footprint area
Vault RSF Active Life	Jan. 1, Yr 6 to Jun. 30, Yr 9	Golder	Pile is active from Jan. 1, Yr 6 (month 87) to Jun. 30, Yr 9 (month 140)
Portage RSF Final Area	62.1 ha	Golder	Footprint area
Portage RSF Active Life	Jan. 1, Yr -1 to Jun. 30, Yr 5	Golder	Pile is active from Jan. 1, Yr -1 (month 27) to Jun. 30, Yr 5 (month 92)
Portage Pit Rock Dump Final Area	26.6 ha	Golder	Footprint area
Portage Pit Rock Dump Active Life	Jan. 1, Yr 4 to Dec. 31, Yr 5	Golder	Pile is active from Jan. 1, Yr 4 (month 75) to Dec. 31, Yr 5 (month 98)
Pile Water Content	10%	Golder	Volumetric content

Table B.5: Water Balance Model Assumptions – Attenuation/Storage Ponds

Property	Value	Source	Comment/Assumptions
Ice Thickness	1.5 m	Golder	Average value over pond surface areas, assumed to form November and thaw June.
Max Dust Control Vault	4,000 m^3/yr	Golder	1000 m^3/mon from June to September, otherwise 0 m^3/month; assumed to evaporate.
Max Dust Control Portage	12,000 m^3/yr	Golder	3000 m^3/mon from June to September, otherwise 0 m^3/month; assumed to evaporate.
Initial Water Volume Portage Attenuation Pond	15.3×10^6 m^3	Golder	Total volume of 2PL Arm inside the East and West Channel dikes prior to dewatering
Initial Water Volume Vault Attenuation Pond	2.2×10^6 m^3	Golder	Total Vault Lake volume inside the Vault Dike prior to dewatering.
Initial Water Volume Reclaim Pond	10 m^3	Golder	Assumes all water drains from the north basin during dewatering of 2PL Arm.
Dewater Transfer to Reclaim	750,000 m^3	Golder	Assumed transfer to Reclaim Pond for mill start up. Actual volume will depend on water remaining in basin following dewatering.
Min. Free Water Portage Reclaim Pond	558,000 m^3	computed	For mill reclaim/operation, excluding ice. Equal to 90 days X maximum reclaim rate of 258.5 m^3/hr. Water age of 60 to 90 days recommended for reclaim.
Optimum Water Portage Reclaim Pond	758,000 m^3	computed	For mill reclaim/operation, including ice.
Seepage		Golder	Seepage to or from ponds through taliks assumed negligible.

Table B.6: Water Balance Model Assumptions – Tributary Areas

Property	Value	Source	Comment/Assumptions
Vault Area	607 ha	Golder	Natural drainage area to Vault dike of 556 ha + 56 ha affected by north end of rock storage pile.
Vault Diversion	152 ha	Golder	Natural areas to the south of "Vault Lake" that drain to Phaser Lake and which could be diverted away from the attenuation storage.
Portage Area	519 ha	Golder	Natural drainage area to Second Portage Arm and Central Dike.
Mill Area	112.4 ha	Golder	Area of mill which does not naturally drain to Second Portage Arm is collected and directed to Portage attenuation ponds.
Goose Island Pit Area	88.3 ha	Golder	Area within dikes and to height of land to the west excluding pit footprint. Assumed that runoff from within these areas is collected and directed to the Portage Attenuation Pond. It may be possible, depending on the water quality, to direct some non-contact water from within these areas directly to the receiving environment.
Portage Pit Area	150.3 ha	Golder	
Portage Diversion	209.7 ha	Golder	Natural area to the northwest of Second Portage Arm that can be intercepted via an interceptor ditch and diverted away from the Reclaim Pond.
Haul Road		Golder	Dust control for haul roads outside of Vault or Portage tributary areas is clean lake water. Assume all dust control water evaporates.

Table B.7: Water Balance Model Assumptions – Tailings Disposal Facility

Property	Value	Source	Comment/Assumptions
Ice Bulking	20%	Golder	Expected range 10 to 30%
Solids Specific Gravity	3.10	Hatch 2007	
Settled Solids Content	71.4%	computed	Ws/(Ws+Ww)
Void Ratio	1.25	computed	Vv/Vs
Water Content	40%	computed	Ww/Ws, assumes voids saturated with ice
Infiltration (shallow)	0, 15 & 40% of total runoff	Golder	Infiltration = 0% (winter), 15% (June freshet) and 40% (summer). Assumed shallow infiltration which reports to base of tailings in same month. Surface runoff = total runoff less infiltration.
Surface Runoff	0, 85 & 60%	Golder	
Active Life - to / from	Jan. 1, Yr 1 June 30, Yr 9	AEM	Pile is active from start of Yr 1 (month 39) to Yr 9 (month 140) – same as mill
Water Content of Exposed Tails	10 and 32%	Golder	Volumetric content assuming 40% void ratio and 25% or 80% saturation respectively for the surface runoff layer or infiltration active layer.
Surface Area of Exposed Tailings		Golder	Varies with time – deposition plan.
Reclaim Treatment	25,000 m^3/day	Golder	Assumed treatment rate of reclaim pond water at mill closure. Treated water is sent in equal proportions to the Portage and Goose Island pit lakes.

Table B.8: Water Balance Model Assumptions – Open Pits

Property	Value	Source	Comment/Assumptions
Vault Dike Seepage Flux	5.87E-3 L/s/m	Golder	Most likely value - range of 6E-4 to 1.5E-2 L/s/m used in probabilistic simulation.
Portage and Goose Dike, Fault and Groundwater Seepage Flux	varies	Golder	Based on model results. Varies with pit development
Growth Rate of Pit Footprints	Linear	Golder	Pits are assumed to reach their final footprint in 12 months.
Growth Rate of Pit Surface Area	Linear	Golder	Pits assumed to reach their final surface area at the end of their life.
Runoff Volume	computed	Golder	Computed based on pit footprint (in plan).
Seepage Volume	varies	Golder	All seepages (through dikes, faults and groundwater) assumed to produce and release year round.
Pit Wall Water Content	2.8%	Golder	Volumetric content.

Note: Other pit parameters see Table B.9.

Table B.9: Water Balance Model Assumptions – Open Pit Parameters (By Pit)

Parameter Pit	**Vault**[a]	**Goose Island**	**North Portage**	**South Portage**
Final Footprint (m^2)[b]	467,178	156,289	287,299	394,588
Exposed Footprint (m^2)[c]	6,115	0	8,966	8,966
Final Surface Area (m^2)[b]	605,683	268,543	484,979	674,888
Exposed Surface Area (m^2)[c]	4,321	0	3,581	3,581
Groundwater Seepage Rate (m^3/day)	N/A	Varies	Varies	Varies
Dike Seepage Rate (m^3/day)	0	Varies	Varies	Varies
Dike Width[d] [geochem] (m)	35	39	40	Varies
Dike Length[d] [geochem] (m)	0	1,650	366	Varies
Dike Rockfill [geochem] (m^3)	0	311,625	30,418	Varies
Lake Dewatering Volume (m^3)	$2.2x10^6$	$3.0x10^6$[f]	$15.3x10^6$[e]	
Dewatering Capacity to the Environment	60,000 m^3/day			
TSS Treatment Capacity	49,800 m^3/day			
Dewatering prior to TSS Treatment	Base Case 60% of total volume, Contingencies 50% and 40%			
Lake Dewatering Period (mo)	Oct. (month 84) to Dec. Yr 4 (month 86)[f]	Mar. (month 53) to Jun. Yr 2 (month 56)[f]	Mar. (month 29) to Dec. Yr -1 (month 38)[f]	
Active Period	Jan. Yr 5 (month 87) to June Yr 9 (month 140)	Jan. Yr 4 (month 75) to Dec. Yr 5 (month 98)	Jan Yr -1 (month 27) to Dec. Yr 5 (month 98)	Jan. Yr -1 (month 27) to Dec. Yr 4 (month 86)
Lake Flooding Volume (m^3)	$26.8x10^6$	$12.7x10^6$	$42.2x10^6$	
Flooding Period	Jul. Yr 9 (month 141) to Oct. Yr 14 (month 204)	Jan. Yr 6 (month 99) to Sep. Yr 13 (month 191)		

Notes: a. Vault groundwater seepage assumed to be zero due to presence of isolated talik. **b.** Ultimate operational footprint (in plan) and surface area (including walls) of pits. **c.** Exposed footprint (in plan) and surface area (including walls) of pits once flooded. **d**. Length and width of dike producing surface runoff and infiltration to the pits. **e**. Total dewatering volume less 750,000 m^3 sent to reclaim Pond for mill start up. **f**. Base case dewatering scenario

APPENDIX C

Water Balance Simulation Calendar

Table C.1: Model Simulation Calendar – Presented in Hydrologic Years (Oct. 1 of mine year X to Sept. 30 of mine year X+1), Simulation Timestep = 1 month

Mine Year	Calendar Year	Month											
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.
-3	2006/07	0	1	2	3	4	5	6	7	8	9	10	11
-2	2007/08	12	13	14	15	16	17	18	19	20	21	22	23
-1	2008/09	24	25	26	27	28	29	30	31	32	33	34	35
1	2009/10	36	37	38	39	40	41	42	43	44	45	46	47
2	2010/11	48	49	50	51	52	53	54	55	56	57	58	59
3	2011/12	60	61	62	63	64	65	66	67	68	69	70	71
4	2012/13	72	73	74	75	76	77	78	79	80	81	82	83
5	2013/14	84	85	86	87	88	89	90	91	92	93	94	95
6	2014/15	96	97	98	99	100	101	102	103	104	105	106	107
7	2015/16	108	109	110	111	112	113	114	115	116	117	118	119
8	2016/17	120	121	122	123	124	125	126	127	128	129	130	131
9	2017/18	132	133	134	135	136	137	138	139	140	141	142	143
10	2018/19	144	145	146	147	148	149	150	151	152	153	154	155
11	2019/20	156	157	158	159	160	161	162	163	164	165	166	167
12	2020/21	168	169	170	171	172	173	174	175	176	177	178	179
13	2021/22	180	181	182	183	184	185	186	187	188	189	190	191
14	2022/23	192	193	194	195	196	197	198	199	200	201	202	203

APPENDIX D

Mass Balance Model Input Parameters

Table D.1: Tailing Decant Water Quality Input Parameters

Constituent		Whole Ore Decant Goose Island	Vault	Third Portage	Method Detection Limit
pH (s.u.)		7.1	8	7.4	0.01
Conductivity (uS/cm)		3620	3800	5880	5
Acidity - pH 4.5 (mg/L as $CaCO_3$)		0	0	0	1
Acidity - pH 8.3 (mg/L as $CaCO_3$)		7	3	9	1
Alkalinity (mg/L as $CaCO_3$)		35	85	77	1
Sulphate (mg/L)		2260	3190	3680	3
Thiosulphate (mg/L S2O3)		-	-	-	-
Hardness (mg/L as $CaCO_3$)		-	-	-	0.5
Calculated Hardness (mg/L as $CaCO_3$)		1105	1534	1947	-
Aluminum[1]	Al	0.02	0.03	<0.02	0.001
Antimony	Sb	0.001	0.006	<0.002	0.0001
Arsenic	As	0.006	0.002	0.004	0.0001
Barium	Ba	0.0885	0.096	0.117	0.00005
Beryllium	Be	<0.005	<0.01	<0.01	0.0005
Bismuth	Bi	<0.005	<0.01	<0.01	0.0005
Boron	B	<0.1	<0.2	<0.2	0.01
Cadmium[3]	Cd	<0.0005	<0.001	<0.001	0.00005
Calcium	Ca	431	579	749	0.02
Chromium[2]	Cr	<0.005	<0.01	<0.01	0.0005
Cobalt	Co	0.201	0.208	0.176	0.0001
Copper[3]	Cu	0.095	0.015	1.44	0.0001
Iron	Fe	6.49	0.09	0.24	0.03
Lead[3]	Pb	<0.0005	<0.001	<0.001	0.00005
Lithium	Li	<0.05	<0.1	<0.1	0.005
Magnesium	Mg	6.7	21.1	18.1	0.005
Manganese	Mn	0.0196	0.096	0.104	0.00005
Mercury	Hg	0.0006	0.0134	0.0021	0.00005
Molybdenum	Mo	0.153	0.211	0.1	0.0001
Nickel[3]	Ni	<0.005	<0.01	<0.01	0.0005
Phosphorous	P	<0.3	<0.3	<0.6	0.3
Potassium	K	70	43	143	2
Selenium	Se	<0.01	<0.02	<0.02	0.001
Silicon	Si	1.87	2.21	2.7	0.05
Silver	Ag	0.0004	0.0016	0.001	0.00001
Sodium	Na	653	716	1110	2
Strontium	Sr	0.459	1.46	0.897	0.0001
Thallium	Tl	<0.001	<0.002	<0.002	0.0001
Tin	Sn	<0.001	<0.002	<0.002	0.0001
Titanium	Ti	<0.01	<0.01	<0.02	0.01
Tungsten	W	-	-	-	-
Uranium	U	0.0034	0.0221	0.0112	0.00001
Vanadium	V	<0.01	<0.02	<0.02	0.001
Yttrium	Y	-	-	-	-
Zinc	Zn	0.01	<0.02	<0.02	0.001
Bromine	Br	-	-	-	-
Chloride	Cl	726	171	915	0.5
Fluoride[4]	F	0.19	0.16	0.18	0.02
Nitrate Nitrogen[5]	N	19.5	81.3	55.8	0.005
Nitrite Nitrogen	NO3	<0.5	<0.5	<0.5	0.001
Nitrate + Nitrite	$N0_2$+$N0_3$	-	-	-	0.005
Ammonia	NH_3	-	-	-	-
Ammonia + Ammonium	NH_3+NH_4	-	-	-	-
Total Phosphate	P	0.009	0.035	0.015	0.002
Cyanate	CNO	-	-	-	-
Free Cyanide	CN	0.021	0.021	<0.001	0.005
Total Cyanide	CN	15.8	0.575	0.93	0.005
Thiocyanate	SCN	274	135	561	-
WAD Cyanide	CN	0.36	0.096	0.16	0.005

NOTES:

< = less than the analytical detection limit.

Source: Golder, 2005b.

Table D.2: Groundwater Quality Input Parameters

North and Third Portage Pit Groundwater Quality (mg/L)

Year	Ag	Al	Alkalinity	As	B	Ba	Be	Bi	**Ca**	Cd	**Cl**	Co	Cr	Cu	F	Fe	Hardness	Hg	**K**	Li	**Mg**	Mn	Mo	**Na**	Ni	NO3_N	P	Pb	Sb	Se	Si	SO4	Sr	Tl	U	V	Zn
-1	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	71.95	0.00013	413	0.0030	0.00045	0.0021	0.30	0.53	194.9	0.00001	6.57	0.020	29.4	0.48	0.011	85.4	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
1	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**67.8**	0.00013	**304**	0.0030	0.00045	0.0021	0.30	0.53	285.5	0.00001	**26.6**	0.02	**52.5**	0.48	0.011	**93.5**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
2	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**67.8**	0.00013	**304**	0.0030	0.00045	0.0021	0.30	0.53	285.5	0.00001	**26.6**	0.02	**52.5**	0.48	0.011	**93.5**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
3	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	0.00001	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
4	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	0.00001	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
5	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	0.00001	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
6	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	0.00001	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
7	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	0.00001	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
8	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	0.00001	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
9	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	0.00001	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012

Goose Island Pit Groundwater Quality (mg/L)

4	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**54.4**	0.00013	**224**	0.0030	0.00045	0.0021	0.30	0.53	228.2	0.00001	**21.0**	0.02	**41.8**	0.48	0.011	**76.3**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
5	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**43.6**	0.00013	**160**	0.0030	0.00045	0.0021	0.30	0.53	182.3	0.00001	**16.6**	0.02	**33.2**	0.48	0.011	**62.4**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
6	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**55.5**	0.00013	**230**	0.0030	0.00045	0.0021	0.30	0.53	232.7	0.00001	**21.5**	0.02	**42.6**	0.48	0.011	**77.6**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012
7	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**55.5**	0.00013	**230**	0.0030	0.00045	0.0021	0.30	0.53	232.7	0.00001	**21.5**	0.02	**42.6**	0.48	0.011	**77.6**	0.007	0.0025	0.13	0.00075	0.0004	0.0005	4.7	83.2	0.7	0.00005	0.0025	0.0005	0.012

Note:

Bold indicates affected by salinity increase from deep groundwater upwelling (Golder, 2004b).

Table: D.3 Average Over land Drainage Water Quality Input Parameter

Constituent	Input Chemistry (mg/L)
Ag	0.000025
Al	0.66
Alkalinity	14
As	0.00012
B	0.005
Ba	0.005
Be	0.0002
Bi	0.0001
Ca	3.1
Cd	0.00026
Cl	0.75
Co	0.013
Cr	0.00035
Cu	0.0034
F	0.35
Fe	0.33
Hardness	12
Hg	0.0001
K	0.39
Li	0.0014
Mg	1.05
Mn	0.063
Mo	0.00005
Na	0.48
Ni	0.010
NO3_N	0.037
P	0.015
Pb	0.0002
Sb	0.0001
Se	0.0001
Si	1.7
SO4	19
Sr	0.014
Tl	0.00001
U	0.0011
V	0.0001
Zn	0.0092

Source: Golder, 2005b

Table D.4: Ambient Air and Lake Water Temperature Model Input Parameters

Months	Actual Mean Ambient Air Temperature (ºC)	Lake Water Temperature Input (ºC)
October	-6.6	2
November	-16	2
December	-27	2
January	-33	2
February	-30	2
March	-26	2
April	-17	2
May	-6.1	2
June	3.9	5
July	12	9
August	10	12
September	3.2	5

Table D.5: Explosive Composition (Based on Data from Manufacturers)

Components	Ammonium Nitrate/Fuel Oil (ANFO)	Emulsion (non-aluminized)
NH_4NO_3	94 %	63 %
$NaNO_3$	0 %	18 %
H_2O	0 %	9 %
Fuel Oil	6 %	6 %
microballoons (glass)	0 %	4 %

Table D.6: Derivation of Chemical Leaching Rates by Lithology from Accelerated Weathering Tests

Area	Lithology	Test Sample	Propor-tion	Rationale
Goose Island, Third and North Portages	Intermediate Volcanic (IV)	100-kg composite IV	100%	• Non-PAG composite sample consisting of the unused portion of all Goose and Portage IV samples characterized under the static test program.
	Iron Formation (IF)	1-kg TP023-01	50%	• Represents median contents of sulphur, neutralization potential, nickel and lead; • 75th percentile zinc content.
		1-kg G051-01	25%	• 37th percentile sulphur and neutralization potential; and • Median contents of chromium, nickel, lead, zinc.
		1-kg TP344-03	20%	• Conservative proportion of sulphur content (sample is 90th percentile) with below median neutralization potential; and • Median chromium, 75th percentile nickel and zinc.
		1-kg G103-03	5%	• Low-grade ore sample; represents 95th percentile sulphur content for IF rock; and • Represents expected low-grade ore proportion (5%) of waste rock stockpile anticipated to be distributed evenly throughout the storage area (no low-grade ore stockpile planned).
	Ultramafic (UM)	1-kg G108-01	90%	• Represents conservative proportion of sulphur content (sample is 75th percentile); and • Conservative proportion of arsenic (sample is 75th percentile) and median concentrations of chromium, nickel, lead.
		1-kg NP40-02	10%	• Represents conservative proportion of arsenic content (sample is 95th percentile).
Vault	Intermediate Volcanic (IV)	100-kg composite Vault IV	100%	• Non-PAG composite sample consisting of the unused portion of all Vault IV samples characterized under the static test program.

Table D.7: Annual Proportion of Rock Types Stored in Portage RSF – TO BE UPDATED

Mining Year	IV	IF*	UM
1	25%	44%	31%
2	28%	22%	50%
3	37%	20%	43%
4	25%	36%	39%
5**	0%	0%	100%

Table D.8: Cumulative Proportion of Rock Types Stored in Portage Pit – TO BE UPDATED

IV	IF*	UM
23%	37%	40%

Table D.9: Derivation of Constituent Leaching Rates for the Ore Stockpile

Sample	Proportion	Rationale
NP40-03	50%	• Portage area; • IV rock type; and • High sulphur content and conservative (elevated) chemical loading rates.
G103-03	50%	• Goose area; • IF rock type; and • High sulphur content and conservative (elevated) chemical loading rates.

Table D.10: Lithological Exposures in Final Pit Outlines – TO BE UPDATED

Pit	IV	IF*	UM	Reference Section
Goose Island	51%	18%	31%	12+50 South
Third Portage	27%	57%	16%	1+20 South
North Portage	61%	27%	12%	10+25 North
Vault	100 %	0%	0%	-

* Proportion includes quartzite rock
Source: CRL, 2003

Table D.11 Source of Tailings in the Tailings Storage Facility – TO BE UPDATED

Mining Year	Annual Proportion of Processed Ore to TSF		
	Goose Island	Portage	Vault
1	0%	100%	0%
2	0%	100%	0%
3	0%	100%	0%
4	25%	75%	0%
5	28%	64%	8%
6	20%	25%	56%
7	0%	0%	100%
8	0%	0%	100%
9	0%	0%	100%

Based on 2007 total, end of mine ore proportions as follows: Goose 10%; Portage 51%; Vault 39%
Source: AMEC, 2005b

APPENDIX E

Mass Balance Model Assumptions and Computations

ROCK STORAGE AREAS

Table E.1: Water Quality Assumptions – Rock Storage Facilities

Property	Assumptions/Comments	Source
Stockpile Footprint	Grows linearly on a monthly basis until it reaches its full footprint at half their active life, then rises in elevation.	MMC, 2007a
Thickness of Active (thaw) Layer	D_a: 2 m (*Probable* scenario) and 8 m (*Possible Poor End* and *Hypothetical* scenarios) active zones modeled throughout mine life and post closure.	BGC, 2004; Golder, 2003a; Ekati Diamond Mine, 2005.
Rock Pile Runoff	*ContactThickness*: For *Probable* and *Possible Poor End* scenarios, runoff is assumed to contact the top 15 cm of rock in the pile. Within this layer, water is assumed to contact 10% of the rock (F_{rw} = 0.1). For the *Hypothetical* scenario, this layer is increased to 50 cm and the rock contact is 100% (F_{rw} = 1).	Empirical Values Supported by Observations at Similar Sites
Scale-up Effects on Laboratory Leaching Rates	F_{ps}: For the *Probable* and *Possible Poor End* scenarios, F_{ps} of 10% (F_{ps} = 0.1) applied to laboratory leaching rates. No scale factor applied in the *Hypothetical* scenario.	ASTM, 1996
Temperature Effect on Leaching Rates	F_{temp}: For all scenarios, leaching rates halved for every 10 ^{o}C decrease from 25 ^{o}C, for: Ca, Mg, Na, K, Si, Fe, SO_4, Cl, NO_3, and alkalinity.	Diavik, 1998; Davé and Clulow, 1996; Davé and Blanchette, 1999
	F_{ice}: for all scenarios, either 1 or 0 depending on constituent. Constituent leaching rates assumed to be 1E-10 mg/kg when pore space temperature in active zone is below 0 ^{o}C, all accumulated reaction products are released during June spring flush; Temperature gradient within active layer (D_a): monthly average air temperature at rock pile surface to 0 ^{o}C at D_a bottom, in five temperature zones (Z).	Snap Lake, 2002
Explosives	Powder factor of 0.23 kg/tonne of rock mined with 3%, 5% or 8% wastage rate for the *Probable*, *Possible Poor End* and *Hypothetical* scenario, respectively.	Golder, 2004c and 2003b
	Composition: Source of nitrate, ammonia and sodium loading to rock pile drainage and runoff.	Generic Manufacturer MSDS
	Constituent load from explosives is based on the quantity of rock. Explosives assumed to dissolve entirely. 100% explosives mass released from runoff zone, 15% released from infiltration zone	Diavik, 2005; SRK, 2005
Rock Composition	Portage RSF: Representative of annual proportion of each rock type (see Table D-7). Vault RSF: Assumed 100% Vault IV rock type Portage pit rock pile: (see Table D-8)	AMEC, 2005b
ARD Onset	Portage: *Probable* scenario: Per field cell weathering characteristics; ARD management techniques are effective in preventing onset of ARD (freezing occurs before development of ARD) Poor End: Based on accelerated weathering characteristics, portions of waste rock and tailings develop ARD before freezing.	Golder, 2005b and 2005c; BGC, 2004.
	Vault: Expected not to generate ARD.	Golder, 2005b and 2005c
Portage Rock Pile Cover	At closure, run-of-mine UM rock cover is placed instantaneously over the surface and sides of the Portage pile. 4-m cover thickness equivalent to D_a thickness for *Probable* scenario predictions but short of the full active thaw depth for *Possible Poor End* and *Hypothetical* scenarios (some reactive waste rock generate leachate perpetually).	MMC, 2007b
Geochemical Control	Assigned pH value to drainage and runoff based on PHREEQC modeling of mixed kinetic test leachate pH, proportioned according to lithological distribution in rock piles.	Calculated

OPEN PITS

Table E.2: Water Quality Assumptions – Open Pits

Property	Comment/Assumptions	Source
All Pits		
Surface Areas and Footprints	Linear growth of surface area and footprint until end of pit life.	MMC, 2007a
Damaged Rock Zone	The reactive thickness (of 1 m) corresponds to the damaged rock zone where fractures allow contact of rock with air and water. F_{ps} (10%) and F_{rw} (10%) (combined factor of 1%) scaling factors applied to leaching rates for *Probable* scenario. The combined factor decreased to 10% for the *Possible Poor End* and *Hypothetical* scenarios.	Siskind and Fumanti, 1974
Proportion of Exposed Lithologies	Provided by cross-sections through final pit shell. Same lithological proportions assumed throughout pit life (see Table D-10).	CRL, 2003
Explosives	15% of the waste explosives mass report to pit walls (85% report to waste rock pile) and this explosives mass fully dissolves at each time step. The value of 15% results from calibration against concentration of explosives in pit sump water documented at other mine sites.	Ekati Diamond Mine, 2005; Diavik, 2005.
Temperature Effect on Leaching Rates	For all scenarios, F_{temp}: leaching rates halved for every 10°C decrease from 25°C, for: Ca, Mg, Na, K, Si, Fe, SO_4, Cl, NO_3, and alkalinity.	Diavik, 1998; Davé and Clulow, 1996; Davé and Blanchette, 1999
	For all scenarios, F_{ice}: leaching rate is assumed to be 1E-10 mg/kg/wk when ambient air is at or below 0ºC in D_a. All accumulated reaction products are released during June (spring) flush. For all scenarios, temperature gradient within the fracture zone thickness (D_a): monthly average air temperature at pit wall surface to 0°C at the based of the fracture zone (D_a), split into five temperature zones (Z).	Snap Lake, 2002
Chemical Controls	pH value assigned to pit waters based on relative proportion of pit wall drainage, groundwater infiltration and direct runoff in each pit (see Table E.6).	Calculated
Goose Island, Third and North Portage		
Pit Inflows	Direct precipitation, runoff, groundwater inflow, dike seepage and runoff all collect in the pit and are transferred to the storm/Attenuation Pond.	MMC, 2007a
Groundwater seepage	TDS (major ions) concentration increases with time from upwelling of saline groundwater. Other constituents constant through time.	Golder 2007b
Onset of ARD	(same as RSF)	Golder, 2005b
Vault		
Pit Inflows	Direct precipitation and runoff only (no dike seepage, frozen groundwater). Water collect in pits then are pumped to Attenuation Pond.	Golder, 2004b
Onset of ARD	(same as RSF)	Golder 2005b
Water Retention Dikes		
Configuration of Dikes	Double dikes with low-permeability soil-bentonite seepage cutoff between the two halves.	Golder, 2007c
Construction Material	IF material on submerged (upstream) half, IV on downstream half (dry until closure).	Golder, 2007c

Property	Comment/Assumptions	Source
Leaching Rates and Factors	Laboratory-derived loading rates from the IF rock (for seepage through dikes), UM and IV rock (for runoff over pit half of dike). F_{ps} (10%), F_{sub} (1%) and F_{temp} applied to submerged rock (based on temperature of lake water). Dike runoff leaching rate factors same as RSF.	Diavik, 2003; Golder, 2005b; 2004a; Lappako, 1994; Aubé et al., 1995;

TAILINGS STORAGE FACILITY

Table E.3: Water Quality Assumptions – Tailings Storage Facility

Property	Comment/Assumptions	Source
Impoundment Footprint Area	Tailings assumed to be deposited over entire impoundment footprint and exposed to air (ARD generation).	Golder, 2007d
Tailings Composition	Tailings composition representative of the final proportion of (whole ore) tailings processed from each deposit.	AMEC, 2005b
Tailings Reactive Zone	Oxygen diffusion causing oxidation and leaching of tailings are assumed to reach a depth of 0.65 m (D_a=0.65m). Oxidation and leaching assumed not to occur below this depth because of saturated conditions.	Al *et al*., 1994; Meldrum *et al*., 2001
Temperature Effects on Leaching Rates	Tailings temperature assumed 10^{o}C in frost-free months of June to September, 2^{o}C at other times during operation: Z = 1 layer; F_{ice} = 1.	Golder, 2007d Diavik, 1998
Scale-up Effects on Laboratory Leaching Rates	Full laboratory leaching rate applied to tailings in reactive zone: F_{gs} = 1; F_{rw} = 1	Empirical values supported by observations at similar sites
Final Cover	At closure a cover of run-of-mine UM rock is assumed to be placed instantaneously over entire footprint of exposed tailings. 2-m thickness to host active zone.	MMC, 2007b
Tailings Decant Water		
Reclaim Pond	Reclaim Pond merges with Attenuation Pond water at Year 4. Reclaim pond receives RSF drainage. Tailings decant water is containted (not mixed with other waters or discharged) until end of mine life.	MMC, 2007a
Chemical Controls	Loading of constituents in tailings decant increases with time, with the exception of cyanide concentration which is controlled by the cyanide destruction process, assumed to remain constant throughout operation. pH of decant assigned that of process water (pH 8).	Golder 2005b; MMC, 2007a
	SO_2/air CN destruction process provides constant CN loading to impoundment with time but increasing CNO and CNS.	Empirical Values Supported by Observations at Similar Sites
Cyanide	Free and WAD CN assumed to readily degrade to HCN and volatilize (within 48 hours in summer months), therefore not considered in model. Other CN-products including ammonia and nitrates are assumed not to degrade. This conservatively estimates the amount of ammonia in water as some proportion of ammonia is likely to volatilize and be removed from the system in the summer.	Experience at other Sites, and Simovic *et al*., 1984
	Total cyanide degradation rate according to Simovic *et al*. (1984) applies to metal cyanides which represent the majority of total cyanide in decant. Degradation occurring in summer months only.	Golder, 2005b; Simovic *et al*., 1984.

STORM WATER ATTENUATION PONDS

Table E.4: Water Quality Assumptions –Attenuation Ponds

Property	Comment/Assumptions	Source
Pond Inflows	Portage (up to year 4) and Vault Attenuation Ponds collect direct precipitation, part of mine area runoff, and pit water. During year 4, the tailings Reclaim Pond merges with the Portage Attenuation.	MMC, 2007a
Chemical Controls	pH value assigned based on relative proportion of flow inputs to pond (see Table E.6 attached).	Calculated from MMC, 2007a
Nitrogen Speciation	All nitrogen species are conserved; denitrification is not considered nor is final nitrogen speciation equilibrated to the predicted water pH or redox state.	Conservative estimate considering site climate
Cyanide	(same as Table E.3)	
Effluent Chemistry	Based on Attenuation Pond chemistry. Reported chemistry is prior to any water treatment.	

CLOSURE SCENARIO

Table E-5: Summary of Closure Plan for Components Relevant to Water Quality

Mine Component	Closure Activity	Assumption/Comment
Portage Mine Area		
Rock Storage Area	UM pit rock cover, 4 m thick to coincide with active thaw layer thickness.	Drainage infiltrates through and reacts with UM cover only below which rock assumed to be frozen (2-m active layer case), or water infiltrates through an additional 6 m of unfrozen waste rock of different lithologies (8-m active layer cases, *Possible Poor End* and *Hypothetical* scenarios).
Goose Island and Portage Pits	Flooded after end of pit life. Small pit wall surface area remaining at Portage pit while Goose Island pit completely flooded. Pit inflows consist mainly of Third Portage Lake flood waters and a smaller proportion of runoff from areas tributary to pits. No groundwater inflows once flooded (pit lakes are groundwater recharge). In-pit waste rock is flooded along with pit. Waste rock piles are completely submerged once pits are fully flooded.	Linear decrease in pit surface area over 5 summers. Mass load from pit walls linearly decreases from closure to post-closure year 5. Increased mass load from in-pit waste rock and pit walls occurs upon flooding, loading rate based on "first flush" characteristics to account for dissolving metal salts accumulated during exposure. Rock pile in Portage Pit releases remaining explosives load during flooding. Chemical loading stops once flooded. Leaching rate factors: F_{temp} = 0.35 (10^{o}C lake water), F_{ice} = 1. Flooding water assigned lake water quality (Azimuth, 2003).
Dikes	Flooded to within approximately 1 m of dike crests. Water retention dikes are breached once pit lake waters are of acceptable quality (dike breach not modeled).	Mass load from seepage during flooding is similar to operational load. Chemical loading stops once flooded (no hydraulic gradient across dike). Mass load from exposed dike rock flooding based on IV rock leaching, with F_{temp} = 0.35 (10^{o}C lake water), F_{ice}

Mine Component	Closure Activity	Assumption/Comment
		= 1 and F_{rw} =1;
Ore Stockpile	Not present	No load
Tailings Storage Area	2-m thick UM rock cover.	Drainage infiltrates through UM cover only, tailings assumed to be frozen and/or water saturated below the cover.
Attenuation Pond	Portage Attenuation Pond assumed not to exist after Year 4 (attenuation is re-directed to open pits).	
Vault Mine Area		
Rock Storage Area	No cover, graded to enhance runoff.	Infiltration through active (thaw) layer of 2 m and 8 m thick. Rock mass assumed frozen below active layer with minimal leaching.
Pit and Attenuation Pond	Flooded over a number of years after closure, with small pit wall surface area remaining (MMC, 2007a). Pit inflows include runoff from areas tributary to pits and Wally lake water. Flooded Vault Pit Lake mixes with Vault Attenuation Pond.	Flooding causes linear decrease in exposed pit surface area over the flooding period. Mass load from pit walls linearly decreases during flooding. Mass load based on pit wall leaching rate, with F_{temp} = 0.35 (10^{o}C lake water), F_{ice} = 1 and F_{rw} = 1; Flooding water assigned Wally lake water quality (Azimuth, 2003).

Table: E-6: Estimated pH of Portage and Vault Attenuation Pond Water

PORTAGE ATTENUATION POND

	Year 2		Year 3	
	Inflow m³/year	% of Total Inflow	Inflow m³/year	% of Total Inflow
Precipitation	300	0%	8,100	0%
Overland Runoff	487,000	36%	480,300	24%
Portage Rock Storage Pile Drainage	0	0%	0	0%
Portage Pit Sump	675,300	51%	787,100	39%
Goose Pit Sump	171,800	13%	725,300	36%
Sub-total	*1,334,400*	*100%*	*2,000,800*	*100%*

Expected Case		
Source Water pH	Sum of [H+]	
	Year 2	Year 3
5.5	7.1E-10	1.3E-08
6.5	1.2E-07	7.6E-08
7.0	0.0E+00	0.0E+00
6.3	2.5E-07	2.0E-07
6.1	1.0E-07	0
Sum [H+]	*4.7E-07*	*5.7E-07*
pH	***6.3***	***6.2***

Poor End (active ARD)		
Source Water pH	Sum of [H+]	
	Year 2	Year 3
5.5	7.1E-10	1.3E-08
6.5	1.2E-07	7.6E-08
5.3	0.0E+00	0.0E+00
6.1	4.0E-07	3.1E-07
6.1	1.0E-07	2.9E-07
Sum [H+]	*6.2E-07*	*6.9E-07*
pH	***6.2***	***6.2***

VAULT ATTENUATION POND

	Year 6		Year 10	
	Inflow m³/year	% of Total Inflow	Inflow m³/year	% of Total Inflow
Precipitation	3,900	1%	5,500	1%
Overland Runoff	516,900	91%	364,500	63%
Rock Storage Pile Drainage	15,700	3%	149,300	26%
Pit Wall Rock Runoff	32,200	6%	55,100	10%
Sub-total	*568,700*	*100%*	*574,400*	*100%*

Expected Case		
Source Water pH	Sum of [H+]	
	Year 6	Year 8
5.5	2.2E-08	3.0E-08
6.5	2.9E-07	2.0E-07
8.0	2.8E-10	2.6E-09
8.0	5.7E-10	9.6E-10
Sum [H+]	*3.1E-07*	*2.3E-07*
pH	***6.5***	***6.6***

note: Vault developed in Year 5, flooded starting in Year 9

APPENDIX F

Probable Scenario Mass Balance Model Results

Table F-1
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5					0.1		
2 METER ACTIVE ZONE																						
	44	June	7	4.8E-06	8.2E-04	4.7E-01	7.52E-04	1.3E-03	2.1E-04	3.8E-06	3.8E-06	1.1E-01	3.84E-06	6.36E-03	0.00E+00	0.0E+00	0.0E+00	1.9E-05	2.9E-05	2.28E-05	2.9E-05	2.9E-04
	45	July	7	8.8E-06	1.0E-03	5.6E-01	6.46E-04	2.0E-03	2.8E-04	7.5E-06	7.5E-06	1.3E-01	7.11E-06	9.50E-03	0.00E+00	0.0E+00	0.0E+00	3.5E-05	3.2E-05	8.08E-05	5.1E-05	4.8E-04
	46	August	7	1.6E-05	1.7E-03	1.2E+00	9.10E-04	3.6E-03	4.8E-04	1.4E-05	1.4E-05	2.7E-01	1.29E-05	2.13E-02	0.00E+00	0.0E+00	0.0E+00	6.4E-05	5.0E-05	1.61E-04	1.2E-04	1.1E-03
1	47	September	7	1.9E-05	1.9E-03	1.5E+00	9.74E-04	4.2E-03	5.6E-04	1.7E-05	1.7E-05	3.5E-01	1.54E-05	2.85E-02	0.00E+00	0.0E+00	0.0E+00	7.6E-05	5.6E-05	1.97E-04	1.6E-04	1.5E-03
	56	June	7	1.0E-05	1.0E-03	7.2E-01	4.88E-04	2.3E-03	2.9E-04	8.9E-06	8.9E-06	1.6E-01	8.29E-06	1.35E-02	0.00E+00	0.0E+00	0.0E+00	4.1E-05	2.9E-05	1.08E-04	7.7E-05	7.2E-04
	57	July	7	1.0E-05	1.3E-03	6.5E-01	6.80E-04	2.3E-03	3.1E-04	9.0E-06	9.0E-06	1.5E-01	8.20E-06	1.17E-02	0.00E+00	0.0E+00	0.0E+00	4.1E-05	3.6E-05	1.08E-04	7.0E-05	7.0E-04
	58	August	7	1.6E-05	2.2E-03	1.2E+00	1.21E-03	3.7E-03	5.0E-04	1.4E-05	1.4E-05	2.8E-01	1.30E-05	2.12E-02	0.00E+00	0.0E+00	0.0E+00	6.4E-05	6.3E-05	1.72E-04	1.3E-04	1.4E-03
2	59	September	7	1.8E-05	2.6E-03	1.6E+00	1.46E-03	4.2E-03	5.8E-04	1.6E-05	1.6E-05	3.7E-01	1.48E-05	2.70E-02	0.00E+00	0.0E+00	0.0E+00	7.3E-05	7.5E-05	1.97E-04	1.7E-04	1.8E-03
	68	June	7	1.1E-05	1.6E-03	8.4E-01	8.98E-04	2.5E-03	3.5E-04	9.8E-06	9.8E-06	2.0E-01	8.81E-06	1.44E-02	0.00E+00	0.0E+00	0.0E+00	4.4E-05	4.6E-05	1.18E-04	9.0E-05	9.6E-04
	69	July	7	1.0E-05	1.6E-03	6.8E-01	8.33E-04	2.4E-03	3.2E-04	9.4E-06	9.4E-06	1.6E-01	8.29E-06	1.19E-02	0.00E+00	0.0E+00	0.0E+00	4.1E-05	4.4E-05	1.19E-04	7.8E-05	8.6E-04
	70	August	7	1.6E-05	2.5E-03	1.2E+00	1.28E-03	3.7E-03	4.9E-04	1.5E-05	1.5E-05	2.8E-01	1.28E-05	2.09E-02	0.00E+00	0.0E+00	0.0E+00	6.3E-05	6.9E-05	1.91E-04	1.4E-04	1.6E-03
3	71	September	7	1.8E-05	2.9E-03	1.5E+00	1.44E-03	4.1E-03	5.5E-04	1.7E-05	1.7E-05	3.5E-01	1.45E-05	2.62E-02	0.00E+00	0.0E+00	0.0E+00	7.2E-05	7.8E-05	2.19E-04	1.8E-04	2.0E-03
	80	June	7	1.1E-05	1.7E-03	7.8E-01	8.49E-04	2.4E-03	3.2E-04	9.9E-06	9.9E-06	1.9E-01	8.55E-06	1.39E-02	0.00E+00	0.0E+00	0.0E+00	4.2E-05	4.6E-05	1.31E-04	9.6E-05	1.1E-03
	81	July	7	1.1E-05	1.5E-03	7.1E-01	7.67E-04	2.6E-03	3.4E-04	1.0E-05	1.0E-05	1.7E-01	9.11E-06	1.29E-02	0.00E+00	0.0E+00	0.0E+00	4.5E-05	4.2E-05	1.29E-04	8.3E-05	8.8E-04
	82	August	7	1.8E-05	2.3E-03	1.3E+00	1.16E-03	4.1E-03	5.5E-04	1.6E-05	1.6E-05	3.1E-01	1.49E-05	2.44E-02	0.00E+00	0.0E+00	0.0E+00	7.4E-05	6.4E-05	2.03E-04	1.5E-04	1.5E-03
4	83	September	7	2.1E-05	2.5E-03	1.7E+00	1.30E-03	4.8E-03	6.3E-04	1.9E-05	1.9E-05	4.0E-01	1.72E-05	3.15E-02	0.00E+00	0.0E+00	0.0E+00	8.5E-05	7.2E-05	2.31E-04	1.9E-04	1.9E-03
	92	June	7	2.0E-16	4.2E-14	7.5E-11	3.93E-14	5.4E-14	9.7E-15	1.6E-16	1.6E-16	1.8E-11	1.60E-16	9.47E-13	0.00E+00	0.0E+00	0.0E+00	7.8E-16	1.5E-15	6.87E-16	4.2E-15	4.6E-14
	93	July	7	1.2E-06	2.4E-04	8.8E-02	2.30E-04	3.3E-04	5.7E-05	9.6E-07	9.6E-07	2.1E-02	9.61E-07	1.11E-03	0.00E+00	0.0E+00	0.0E+00	4.7E-06	8.8E-06	4.59E-06	5.0E-06	5.6E-05
	94	August	7	2.8E-06	5.7E-04	2.7E-01	5.39E-04	7.8E-04	1.3E-04	2.3E-06	2.3E-06	6.6E-02	2.26E-06	3.44E-03	0.00E+00	0.0E+00	0.0E+00	1.1E-05	2.1E-05	1.08E-05	1.5E-05	1.7E-04
5	95	September	7	3.9E-06	7.8E-04	4.1E-01	7.33E-04	1.1E-03	1.8E-04	3.1E-06	3.1E-06	1.0E-01	3.07E-06	5.22E-03	0.00E+00	0.0E+00	0.0E+00	1.5E-05	2.8E-05	1.47E-05	2.3E-05	2.6E-04
Placement of UM Rock Cover																						
Post Closure Water Quality																						
20	272 - 275	Summer Average	7	7.2E-06	1.5E-03	6.2E-01	1.38E-03	2.0E-03	3.4E-04	5.8E-06	5.8E-06	1.5E-01	5.76E-06	7.90E-03	0.00E+00	0.0E+00	0.0E+00	2.8E-05	5.2E-05	2.75E-05	3.5E-05	3.9E-04

Year	GoldSim Month	Actual Month	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria[2]				0.0004							0.2		16	20	0.1	1									0.4		
2 METER ACTIVE ZONE																											
	44	June	4.2E-01	3.84E-07	5.1E-02	1.0E-05	3.5E-02	3.7E-04	2.1E-05	1.5E+01	1.34E-04	8.2E+01	1.00E+02	9.12E+01	3.84E-06	3.82E-03	3.8E-06	1.9E-05	2.7E-02	4.2E-02	2.7E-03	9.7E-06	4.6E-05	6.9E-05	1.90E-04	1.9E+02	13,420
	45	July	4.8E-01	7.03E-07	6.4E-02	1.2E-05	3.8E-02	2.1E-03	4.7E-05	1.2E+01	3.68E-04	6.9E+01	8.43E+01	7.66E+01	1.22E-05	5.66E-03	1.1E-05	3.5E-05	3.1E-02	1.0E-01	3.1E-03	1.8E-05	6.4E-05	1.5E-04	3.59E-04	1.6E+02	131
	46	August	9.8E-01	1.28E-06	1.4E-01	2.4E-05	7.5E-02	4.4E-03	8.9E-05	1.5E+01	7.14E-04	8.5E+01	1.03E+02	9.36E+01	2.40E-05	1.27E-02	2.1E-05	6.4E-05	6.3E-02	2.5E-01	4.9E-03	3.2E-05	1.1E-04	2.9E-04	6.57E-04	2.0E+02	1,722
1	47	September	1.3E+00	1.52E-06	1.8E-01	3.2E-05	9.6E-02	5.5E-03	1.1E-04	1.5E+01	8.65E-04	8.3E+01	1.01E+02	9.16E+01	2.93E-05	1.70E-02	2.6E-05	7.6E-05	8.3E-02	3.4E-01	5.6E-03	3.8E-05	1.3E-04	3.5E-04	7.82E-04	1.9E+02	3,034
	56	June	5.9E-01	8.18E-07	8.4E-02	1.5E-05	4.5E-02	3.0E-03	5.8E-05	2.2E+01	4.72E-04	1.2E+02	1.48E+02	1.35E+02	1.61E-05	8.01E-03	1.4E-05	4.1E-05	3.9E-02	1.6E-01	2.9E-03	2.1E-05	6.7E-05	1.9E-04	4.22E-04	2.8E+02	18,376
	57	July	5.5E-01	8.06E-07	7.4E-02	1.4E-05	4.2E-02	2.5E-03	5.6E-05	1.5E+01	4.39E-04	8.4E+01	1.03E+02	9.32E+01	1.78E-05	6.97E-03	1.5E-05	4.1E-05	3.6E-02	1.3E-01	3.3E-03	2.0E-05	7.3E-05	1.8E-04	4.19E-04	1.9E+02	176
	58	August	1.0E+00	1.27E-06	1.4E-01	2.6E-05	8.1E-02	3.6E-03	8.6E-05	1.8E+01	6.73E-04	9.7E+01	1.19E+02	1.08E+02	2.95E-05	1.27E-02	2.5E-05	6.4E-05	6.9E-02	2.2E-01	5.6E-03	3.2E-05	1.2E-04	2.8E-04	6.63E-04	2.2E+02	2,194
2	59	September	1.4E+00	1.45E-06	1.8E-01	3.3E-05	1.1E-01	3.9E-03	9.8E-05	1.7E+01	7.59E-04	9.4E+01	1.14E+02	1.03E+02	3.44E-05	1.62E-02	3.0E-05	7.3E-05	8.9E-02	2.8E-01	6.5E-03	3.7E-05	1.4E-04	3.2E-04	7.58E-04	2.2E+02	3,665
	68	June	7.3E-01	8.64E-07	9.4E-02	1.8E-05	5.7E-02	2.3E-03	5.8E-05	2.5E+01	4.48E-04	1.4E+02	1.72E+02	1.56E+02	2.08E-05	8.65E-03	1.8E-05	4.4E-05	4.8E-02	1.5E-01	3.9E-03	2.2E-05	8.4E-05	1.9E-04	4.51E-04	3.2E+02	18,376
	69	July	6.0E-01	8.09E-07	7.6E-02	1.5E-05	4.7E-02	2.1E-03	5.5E-05	1.7E+01	4.25E-04	9.6E+01	1.17E+02	1.06E+02	2.18E-05	7.15E-03	1.8E-05	4.1E-05	4.0E-02	1.2E-01	3.6E-03	2.0E-05	8.0E-05	1.8E-04	4.27E-04	2.2E+02	176
	70	August	1.0E+00	1.25E-06	1.3E-01	2.6E-05	8.1E-02	3.2E-03	8.5E-05	2.0E+01	6.59E-04	1.1E+02	1.34E+02	1.22E+02	3.54E-05	1.26E-02	3.0E-05	6.3E-05	6.9E-02	2.1E-01	5.6E-03	3.1E-05	1.2E-04	2.7E-04	6.61E-04	2.5E+02	2,194
3	71	September	1.3E+00	1.41E-06	1.7E-01	3.2E-05	1.0E-01	3.6E-03	9.6E-05	1.9E+01	7.47E-04	1.1E+02	1.28E+02	1.16E+02	4.09E-05	1.58E-02	3.4E-05	7.2E-05	8.7E-02	2.7E-01	6.3E-03	3.5E-05	1.4E-04	3.1E-04	7.49E-04	2.4E+02	3,665
	80	June	6.9E-01	8.32E-07	8.8E-02	1.7E-05	5.4E-02	2.1E-03	5.7E-05	2.0E+01	4.42E-04	1.1E+02	1.34E+02	1.21E+02	2.45E-05	8.38E-03	2.1E-05	4.2E-05	4.6E-02	1.4E-01	3.7E-03	2.1E-05	8.3E-05	1.8E-04	4.43E-04	2.5E+02	18,376
	81	July	6.2E-01	8.92E-07	8.1E-02	1.5E-05	4.8E-02	2.7E-03	6.2E-05	1.1E+01	4.88E-04	6.2E+01	7.60E+01	6.90E+01	2.21E-05	7.70E-03	1.9E-05	4.5E-05	4.1E-02	1.4E-01	3.7E-03	2.2E-05	8.2E-05	2.0E-04	4.68E-04	1.4E+02	176
	82	August	1.1E+00	1.46E-06	1.5E-01	2.8E-05	8.8E-02	4.6E-03	1.0E-04	1.1E+01	8.08E-04	6.2E+01	7.60E+01	6.91E+01	3.35E-05	1.45E-02	2.9E-05	7.4E-05	7.5E-02	2.7E-01	5.8E-03	3.7E-05	1.3E-04	3.3E-04	7.61E-04	1.5E+02	2,194
4	83	September	1.5E+00	1.69E-06	2.0E-01	3.6E-05	1.1E-01	5.5E-03	1.2E-04	9.8E+00	9.41E-04	5.3E+01	6.49E+01	5.90E+01	3.75E-05	1.88E-02	3.2E-05	8.5E-05	9.6E-02	3.6E-01	6.6E-03	4.3E-05	1.5E-04	3.8E-04	8.80E-04	1.3E+02	3,665
	92	June	6.9E-11	1.64E-17	7.9E-12	1.6E-15	5.7E-12	-4.0E-15	7.7E-16	4.6E-01	4.35E-15	2.5E+00	3.09E+00	2.81E+00	1.43E-16	5.53E-13	1.5E-16	7.9E-16	4.4E-12	4.3E-12	1.3E-13	4.1E-16	2.2E-15	2.6E-15	7.79E-15	5.8E+00	18,376
	93	July	8.2E-02	9.61E-08	9.4E-03	1.9E-06	6.7E-03	4.7E-06	4.7E-06	3.1E-01	2.73E-05	1.7E+00	2.09E+00	1.90E+00	9.61E-07	6.73E-04	9.6E-07	4.7E-06	5.3E-03	5.3E-03	7.7E-04	2.4E-06	1.3E-05	1.6E-05	4.74E-05	4.1E+00	882
	94	August	2.5E-01	2.26E-07	2.9E-02	6.0E-06	2.1E-02	1.1E-05	1.1E-05	3.8E-01	6.40E-05	2.0E+00	2.47E+00	2.24E+00	2.26E-06	2.08E-03	2.3E-06	1.1E-05	1.6E-02	1.6E-02	1.8E-03	5.7E-06	3.0E-05	3.7E-05	1.11E-04	5.1E+00	10,970
5	95	September	3.8E-01	3.07E-07	4.4E-02	9.1E-06	3.2E-02	1.5E-05	1.5E-05	2.9E-01	8.71E-05	1.5E+00	1.80E+00	1.63E+00	3.07E-06	3.16E-03	3.1E-06	1.5E-05	2.5E-02	2.5E-02	2.5E-03	7.8E-06	4.1E-05	5.0E-05	1.51E-04	4.1E+00	18,325
Placement of UM Rock Cover																											
Post Closure Water Quality																											
20	272 - 275	Summer Average	5.8E-01	5.76E-07	6.6E-02	1.4E-05	4.8E-02	2.8E-05	2.8E-05	4.2E-02	1.63E-04	1.1E-14	1.38E-14	3.53E-05	5.76E-06	4.78E-03	5.8E-06	2.8E-05	3.7E-02	3.7E-02	4.6E-03	1.5E-05	7.7E-05	9.5E-05	2.84E-04	1.0E+00	20,670

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-2
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
North Portage Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[1]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5		
North Portage Pit																	
1	44-47	Summer Average	6.3	9.1E-06	1.5E-03	5.7E-01	3.2E-04	1.9E-03	2.0E-04	9.3E-06	9.3E-06	1.4E-01	7.4E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00
2	56-59	Summer Average	6.3	1.2E-05	2.0E-03	7.2E-01	4.1E-04	2.5E-03	2.6E-04	1.2E-05	1.2E-05	1.7E-01	9.5E-06	1.6E-02	0.0E+00	0.0E+00	0.0E+00
3	68-71	Summer Average	6.3	1.5E-05	2.5E-03	9.0E-01	5.2E-04	3.1E-03	3.3E-04	1.5E-05	1.5E-05	2.2E-01	1.2E-05	2.0E-02	0.0E+00	0.0E+00	0.0E+00
4	80-83	Summer Average	6.3	1.8E-05	3.0E-03	1.1E+00	6.3E-04	3.7E-03	3.9E-04	1.8E-05	1.8E-05	2.6E-01	1.4E-05	2.4E-02	0.0E+00	0.0E+00	0.0E+00
5	92-95	Summer Average	6.3	2.1E-05	3.4E-03	1.3E+00	7.5E-04	4.4E-03	4.7E-04	2.1E-05	2.1E-05	3.1E-01	1.7E-05	2.8E-02	0.0E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[1]					0.1				0.0004							0.2	
North Portage Pit																	
1	44-47	Summer Average	3.7E-05	3.2E-05	1.6E-04	1.1E-04	1.4E-03	5.0E-01	7.0E-07	6.5E-02	1.3E-05	3.7E-02	2.3E-03	5.4E-05	8.5E-02	4.6E-04	0.0E+00
2	56-59	Summer Average	4.7E-05	4.1E-05	2.1E-04	1.4E-04	1.7E-03	6.3E-01	9.0E-07	8.2E-02	1.6E-05	4.6E-02	3.0E-03	7.0E-05	1.1E+00	5.9E-04	5.8E+00
3	68-71	Summer Average	5.9E-05	5.2E-05	2.6E-04	1.8E-04	2.1E-03	7.9E-01	1.1E-06	1.0E-01	2.0E-05	5.8E-02	3.8E-03	8.8E-05	1.9E+00	7.4E-04	1.0E+01
4	80-83	Summer Average	7.1E-05	6.2E-05	3.2E-04	2.1E-04	2.5E-03	9.4E-01	1.4E-06	1.2E-01	2.4E-05	6.9E-02	4.6E-03	1.1E-04	2.7E+00	8.9E-04	1.4E+01
5	92-95	Summer Average	8.4E-05	7.3E-05	3.7E-04	2.5E-04	2.9E-03	1.1E+00	1.6E-06	1.5E-01	2.9E-05	8.1E-02	5.4E-03	1.2E-04	4.4E+00	1.0E-03	2.3E+01

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			16	20	1	0.1	1									0.4	
North Portage Pit																	
1	44-47	Summer Average	0.0E+00	6.4E-05	0.0E+00	3.2E-05	7.7E-03	2.6E-05	3.7E-05	3.5E-02	1.6E-01	2.0E-03	1.8E-05	6.2E-05	1.7E-04	4.0E-04	1.1E+00
2	56-59	Summer Average	7.0E+00	6.4E+00	0.0E+00	4.1E-05	9.6E-03	3.3E-05	4.7E-05	4.4E-02	2.0E-01	2.5E-03	2.3E-05	8.0E-05	2.2E-04	5.1E-04	1.5E+01
3	68-71	Summer Average	1.2E+01	1.1E+01	0.0E+00	5.2E-05	1.2E-02	4.2E-05	5.9E-05	5.5E-02	2.5E-01	3.2E-03	2.9E-05	1.0E-04	2.7E-04	6.4E-04	2.5E+01
4	80-83	Summer Average	1.7E+01	1.6E+01	0.0E+00	6.2E-05	1.4E-02	5.0E-05	7.1E-05	6.5E-02	2.9E-01	3.9E-03	3.4E-05	1.2E-04	3.3E-04	7.7E-04	3.5E+01
5	92-95	Summer Average	2.9E+01	2.6E+01	0.0E+00	7.1E-05	1.7E-02	5.8E-05	8.4E-05	7.7E-02	3.4E-01	4.6E-03	4.0E-05	1.4E-04	3.9E-04	9.1E-04	5.6E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-3
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Third Portage Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
Water License Discharge Criteria[1]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**					**0.1**			
Third Portage Pit																							
1	44-47	Summer Average	6.3	4.2E-05	1.4E-01	5.2E+01	3.2E-03	3.5E-01	5.2E-02	3.8E-04	3.8E-04	9.5E+01	1.0E-04	7.9E+02	0.0E+00	0.0E+00	0.0E+00	1.9E-03	4.3E-04	1.8E-03	2.5E-01	4.7E-01	3.8E+02
2	56-59	Summer Average	6.3	4.3E-05	1.4E-01	5.0E+01	3.1E-03	3.4E-01	5.0E-02	3.6E-04	3.6E-04	9.4E+01	9.8E-05	7.9E+02	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.2E-04	1.8E-03	2.4E-01	4.5E-01	3.8E+02
3	68-71	Summer Average	6.3	4.3E-05	1.3E-01	4.7E+01	3.0E-03	3.2E-01	4.8E-02	3.5E-04	3.5E-04	8.8E+01	9.5E-05	7.3E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-03	4.0E-04	1.7E-03	2.2E-01	4.3E-01	3.5E+02
4	80-83	Summer Average	6.3	4.4E-05	1.3E-01	4.6E+01	3.0E-03	3.1E-01	4.7E-02	3.4E-04	3.4E-04	8.6E+01	9.5E-05	7.1E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-03	4.0E-04	1.7E-03	2.2E-01	4.2E-01	3.4E+02
5	92-95	Summer Average	6.3	4.3E-05	1.2E-01	4.2E+01	2.8E-03	2.9E-01	4.3E-02	3.1E-04	3.1E-04	7.8E+01	8.9E-05	6.5E+02	0.0E+00	0.0E+00	0.0E+00	1.6E-03	3.7E-04	1.6E-03	2.0E-01	3.8E-01	3.1E+02

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			**0.0004**							**0.2**		**16**	**20**	**1**	**0.1**	**1**									**0.4**	
Third Portage Pit																										
1	44-47	Summer Average	7.9E-06	7.5E+00	1.0E-02	3.4E+01	2.5E-01	1.6E-02	1.8E+02	4.0E-03	1.5E+01	1.8E+01	1.6E+01	6.9E-02	2.1E-03	2.1E-01	5.0E-04	3.9E-04	3.4E+00	4.0E+01	3.7E-01	4.8E-05	3.6E-03	7.0E-04	9.9E-03	1.2E+03
2	56-59	Summer Average	7.7E-06	7.4E+00	1.0E-02	3.4E+01	2.4E-01	1.6E-02	1.8E+02	3.9E-03	2.8E+00	3.5E+00	3.1E+00	6.6E-02	2.0E-03	2.1E-01	4.8E-04	3.8E-04	3.3E+00	3.9E+01	3.5E-01	5.0E-05	3.5E-03	7.1E-04	9.6E-03	1.2E+03
3	68-71	Summer Average	7.5E-06	6.9E+00	9.5E-03	3.1E+01	2.3E-01	1.5E-02	1.7E+02	3.8E-03	2.5E+00	3.0E+00	2.7E+00	6.3E-02	1.9E-03	2.0E-01	4.6E-04	3.7E-04	3.2E+00	3.7E+01	3.3E-01	5.1E-05	3.3E-03	7.1E-04	9.2E-03	1.1E+03
4	80-83	Summer Average	7.5E-06	6.8E+00	9.3E-03	3.1E+01	2.2E-01	1.5E-02	1.7E+02	3.8E-03	2.2E+00	2.7E+00	2.4E+00	6.2E-02	1.9E-03	1.9E-01	4.6E-04	3.7E-04	3.1E+00	3.6E+01	3.3E-01	5.4E-05	3.2E-03	7.3E-04	9.0E-03	1.1E+03
5	92-95	Summer Average	7.0E-06	6.2E+00	8.5E-03	2.8E+01	2.0E-01	1.3E-02	1.5E+02	3.6E-03	3.7E-01	4.5E-01	4.1E-01	5.6E-02	1.7E-03	1.8E-01	4.2E-04	3.5E-04	2.8E+00	3.3E+01	3.0E-01	5.5E-05	3.0E-03	7.3E-04	8.4E-03	9.9E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-4
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Goose Island Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[1]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**	
Goose Island Pit																
4	80-83	Summer Average	6.1	2.6E-05	9.7E-02	3.5E+01	2.1E-03	2.4E-01	3.6E-02	2.6E-04	2.6E-04	6.6E+01	6.7E-05	5.5E+02	0.0E+00	0.0E+00
5	92-95	Summer Average	6.1	2.2E-05	8.0E-02	2.9E+01	1.8E-03	2.0E-01	3.0E-02	2.1E-04	2.1E-04	5.5E+01	5.6E-05	4.5E+02	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[1]						**0.1**				**0.0004**							**0.2**	
Goose Island Pit																		
4	80-83	Summer Average	0.0E+00	1.3E-03	2.9E-04	1.2E-03	1.7E-01	3.2E-01	2.6E+02	5.1E-06	5.2E+00	7.1E-03	2.4E+01	1.7E-01	1.1E-02	1.3E+02	2.6E-03	1.1E+01
5	92-95	Summer Average	0.0E+00	1.1E-03	2.5E-04	1.0E-03	1.4E-01	2.7E-01	2.2E+02	4.3E-06	4.3E+00	5.9E-03	1.9E+01	1.4E-01	9.3E-03	1.0E+02	2.2E-03	7.1E-02

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			**16**	**20**	**1**	**0.1**	**1**									**0.4**	
Goose Island Pit																	
4	80-83	Summer Average	1.3E+01	1.2E+01	4.7E-02	1.4E-03	1.4E-01	3.4E-04	2.6E-04	2.3E+00	2.8E+01	2.5E-01	2.6E-05	2.5E-03	4.1E-04	6.6E-03	8.6E+02
5	92-95	Summer Average	8.6E-02	8.0E-02	3.9E-02	1.2E-03	1.2E-01	2.8E-04	2.2E-04	1.9E+00	2.3E+01	2.1E-01	2.3E-05	2.0E-03	3.6E-04	5.5E-03	6.9E+02

Start Flooding Goose Pit

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-5
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**
2 METER ACTIVE ZONE															
	44	June	6.3	4.4E-06	1.3E-01	6.8E+00	3.13E-04	3.1E-02	4.7E-03	3.4E-05	3.4E-05	8.1E+00	9.53E-06	6.65E+01	0.00E+00
	45	July	6.3	1.3E-04	1.3E-01	6.8E+00	8.75E-03	4.0E-01	7.3E-02	1.3E-03	7.7E-04	1.1E+02	1.11E-03	7.92E+02	0.00E+00
	46	August	6.3	2.5E-05	1.3E-01	6.8E+00	4.39E-03	2.0E-01	2.8E-02	2.6E-04	2.1E-04	5.1E+01	7.29E-05	4.19E+02	0.00E+00
1	47	September	6.3	2.7E-05	1.3E-01	6.8E+00	3.30E-03	1.5E-01	2.2E-02	2.5E-04	1.8E-04	3.9E+01	1.29E-04	3.19E+02	0.00E+00
	56	June	6.3	8.2E-06	1.3E-01	6.8E+00	5.62E-04	5.7E-02	8.5E-03	6.2E-05	6.2E-05	1.6E+01	1.75E-05	1.36E+02	0.00E+00
	57	July	6.3	1.0E-04	1.3E-01	6.8E+00	5.81E-03	3.1E-01	5.7E-02	9.6E-04	6.0E-04	8.8E+01	8.65E-04	6.62E+02	0.00E+00
	58	August	6.3	2.4E-05	1.3E-01	6.8E+00	3.44E-03	1.9E-01	2.7E-02	2.4E-04	2.0E-04	5.0E+01	6.64E-05	4.18E+02	0.00E+00
2	59	September	6.3	2.7E-05	1.3E-01	6.8E+00	2.73E-03	1.5E-01	2.2E-02	2.4E-04	1.8E-04	4.0E+01	1.19E-04	3.23E+02	0.00E+00
	68	June	6.2	1.7E-05	1.3E-01	6.8E+00	1.27E-03	1.4E-01	2.0E-02	1.5E-04	1.5E-04	3.8E+01	3.98E-05	3.14E+02	0.00E+00
	69	July	6.2	8.3E-05	1.3E-01	6.8E+00	4.93E-03	3.1E-01	5.4E-02	7.7E-04	5.2E-04	8.6E+01	6.31E-04	6.63E+02	0.00E+00
	70	August	6.2	2.5E-05	1.3E-01	6.8E+00	3.25E-03	2.0E-01	2.9E-02	2.5E-04	2.2E-04	5.4E+01	6.84E-05	4.49E+02	0.00E+00
3	71	September	6.2	2.8E-05	1.3E-01	6.8E+00	2.71E-03	1.7E-01	2.5E-02	2.5E-04	2.0E-04	4.5E+01	1.13E-04	3.68E+02	0.00E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]							**0.1**				**0.0004**						
2 METER ACTIVE ZONE																	
	44	June	0.0E+00	0.0E+00	1.7E-04	4.1E-05	1.73E-04	2.2E-02	4.0E-02	3.3E+01	7.52E-07	6.5E-01	9.3E-04	2.9E+00	2.2E-02	1.5E-03	1.7E+01
	45	July	0.0E+00	0.0E+00	5.3E-02	1.8E-03	1.55E-02	1.6E+00	4.0E-02	4.3E+02	3.92E-04	9.1E+00	1.6E-02	3.8E+01	5.2E-01	1.7E-02	1.8E+02
	46	August	0.0E+00	0.0E+00	1.9E-03	2.5E-04	1.41E-03	1.4E-01	4.0E-02	2.0E+02	8.39E-06	4.1E+00	5.6E-03	1.8E+01	1.5E-01	8.6E-03	9.7E+01
1	47	September	0.0E+00	0.0E+00	5.1E-03	2.9E-04	2.03E-03	2.1E-01	4.0E-02	1.6E+02	3.49E-05	3.2E+00	4.5E-03	1.4E+01	1.3E-01	6.3E-03	7.4E+01
	56	June	0.0E+00	0.0E+00	3.1E-04	7.4E-05	3.17E-04	4.0E-02	4.0E-02	6.5E+01	1.38E-06	1.3E+00	1.7E-03	5.8E+00	4.1E-02	2.7E-03	3.2E+01
	57	July	0.0E+00	0.0E+00	4.1E-02	1.4E-03	1.20E-02	1.3E+00	4.0E-02	3.5E+02	3.06E-04	7.3E+00	1.3E-02	3.1E+01	4.0E-01	1.3E-02	1.5E+02
	58	August	0.0E+00	0.0E+00	1.6E-03	2.4E-04	1.26E-03	1.4E-01	4.0E-02	2.0E+02	7.46E-06	4.0E+00	5.4E-03	1.8E+01	1.4E-01	8.3E-03	9.7E+01
2	59	September	0.0E+00	0.0E+00	4.6E-03	2.8E-04	1.87E-03	2.0E-01	4.0E-02	1.6E+02	3.14E-05	3.2E+00	4.5E-03	1.4E+01	1.2E-01	6.5E-03	7.5E+01
	68	June	0.0E+00	0.0E+00	7.4E-04	1.7E-04	7.29E-04	9.6E-02	4.0E-02	1.5E+02	3.10E-06	3.0E+00	4.1E-03	1.3E+01	9.7E-02	6.4E-03	7.3E+01
	69	July	0.0E+00	0.0E+00	2.9E-02	1.1E-03	8.86E-03	9.4E-01	4.0E-02	3.4E+02	2.16E-04	7.1E+00	1.2E-02	3.1E+01	3.5E-01	1.4E-02	1.5E+02
	70	August	0.0E+00	0.0E+00	1.6E-03	2.6E-04	1.29E-03	1.5E-01	4.0E-02	2.2E+02	7.14E-06	4.3E+00	5.9E-03	1.9E+01	1.5E-01	9.2E-03	1.0E+02
3	71	September	0.0E+00	0.0E+00	4.1E-03	2.9E-04	1.81E-03	2.0E-01	4.0E-02	1.8E+02	2.75E-05	3.6E+00	5.1E-03	1.6E+01	1.4E-01	7.6E-03	8.5E+01

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**0.2**		**16**	**20**	**1**	**0.1**	**1**									**0.4**	
2 METER ACTIVE ZONE																			
	44	June	3.85E-04	7.9E+00	9.59E+00	8.72E+00	6.17E-03	1.88E-04	1.9E-02	4.6E-05	3.8E-05	3.1E-01	3.6E+00	3.3E-02	5.5E-06	3.3E-04	7.4E-05	9.09E-04	1.2E+02
	45	July	5.31E-02	4.4E-01	5.41E-01	6.36E-01	1.29E-01	3.39E-03	2.1E-01	9.6E-04	7.8E-04	1.0E+01	1.2E+02	4.3E-01	8.0E-05	7.7E-03	1.0E-03	6.43E-02	1.3E+03
	46	August	7.75E-03	2.8E+00	3.41E+00	3.10E+00	3.77E-02	1.36E-03	1.1E-01	3.1E-04	2.3E-04	1.9E+00	2.3E+01	2.0E-01	3.1E-05	1.9E-03	4.1E-04	1.54E-02	6.3E+02
1	47	September	8.68E-03	2.6E+00	3.18E+00	2.91E+00	3.19E-02	1.06E-03	8.4E-02	2.6E-04	2.0E-04	1.9E+00	2.2E+01	1.5E-01	2.7E-05	1.7E-03	3.5E-04	1.41E-02	4.9E+02
	56	June	7.11E-04	6.7E+00	8.14E+00	7.40E+00	1.12E-02	3.43E-04	3.5E-02	8.4E-05	6.9E-05	5.6E-01	6.6E+00	6.0E-02	1.0E-05	5.9E-04	1.4E-04	1.66E-03	2.2E+02
	57	July	3.94E-02	2.5E-01	3.05E-01	3.90E-01	1.01E-01	2.55E-03	1.7E-01	7.4E-04	6.1E-04	7.8E+00	9.1E+01	3.3E-01	6.2E-05	6.0E-03	7.9E-04	4.64E-02	1.1E+03
	58	August	5.85E-03	2.1E+00	2.53E+00	2.30E+00	3.63E-02	1.24E-03	1.1E-01	2.9E-04	2.1E-04	1.8E+00	2.2E+01	1.9E-01	2.8E-05	1.9E-03	3.9E-04	1.19E-02	6.2E+02
2	59	September	7.19E-03	2.3E+00	2.79E+00	2.54E+00	3.20E-02	1.02E-03	8.7E-02	2.5E-04	2.0E-04	1.9E+00	2.2E+01	1.5E-01	2.8E-05	1.7E-03	3.6E-04	1.16E-02	4.9E+02
	68	June	1.57E-03	5.1E+00	6.19E+00	5.63E+00	2.71E-02	8.22E-04	8.3E-02	2.0E-04	1.6E-04	1.3E+00	1.6E+01	1.4E-01	1.9E-05	1.4E-03	2.8E-04	3.89E-03	4.8E+02
	69	July	2.86E-02	2.1E-01	2.59E-01	3.14E-01	8.89E-02	2.34E-03	1.7E-01	6.5E-04	5.2E-04	6.4E+00	7.4E+01	3.3E-01	5.3E-05	5.1E-03	7.1E-04	3.52E-02	1.0E+03
	70	August	5.30E-03	1.9E+00	2.35E+00	2.14E+00	3.96E-02	1.32E-03	1.2E-01	3.1E-04	2.3E-04	2.0E+00	2.4E+01	2.1E-01	3.0E-05	2.1E-03	4.2E-04	1.11E-02	6.7E+02
3	71	September	6.57E-03	2.3E+00	2.74E+00	2.50E+00	3.56E-02	1.12E-03	1.0E-01	2.8E-04	2.2E-04	2.0E+00	2.4E+01	1.7E-01	3.0E-05	1.9E-03	4.0E-04	1.10E-02	5.6E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table F-6
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Portage Reclaim Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5			
1	39-50	Annual Average	8	2.8E-04	7.0E-02	3.6E+01	6.98E-03	3.8E-01	1.0E-01	5.2E-03	2.8E-03	4.4E+01	4.44E-04	1.56E+02	2.80E+00	1.4E+02	2.8E+02	1.8E-01
2	51-62	Annual Average	8	7.4E-04	1.9E-01	1.2E+02	1.88E-02	5.2E-01	2.0E-01	1.1E-02	9.0E-03	1.0E+02	1.08E-03	3.79E+02	1.07E+01	4.3E+02	8.7E+02	5.8E-01
3	63-74	Annual Average	8	9.0E-04	2.4E-01	1.7E+02	2.36E-02	5.3E-01	2.3E-01	1.2E-02	1.1E-02	1.5E+02	1.29E-03	5.05E+02	1.04E+01	5.3E+02	1.1E+03	7.1E-01
4	75-86	Annual Average	8	7.4E-04	3.9E-01	2.1E+02	2.15E-02	4.9E-01	2.1E-01	1.0E-02	1.0E-02	2.0E+02	1.14E-03	5.50E+02	9.66E+00	4.3E+02	8.8E+02	6.0E-01
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)																		
5	87-98	Annual Average	8	2.1E-04	3.5E-01	1.4E+02	8.49E-03	2.7E-01	8.7E-02	3.4E-03	3.3E-03	1.4E+02	4.12E-04	4.06E+02	1.78E+00	1.1E+02	2.4E+02	1.8E-01
6	99-110	Annual Average	8	2.3E-04	3.1E-01	1.4E+02	1.05E-02	2.8E-01	1.1E-01	4.3E-03	4.2E-03	2.3E+02	4.97E-04	3.59E+02	1.30E+00	1.4E+02	2.6E+02	2.1E-01
7	111-122	Annual Average	8	2.6E-04	3.6E-01	1.8E+02	1.48E-02	3.3E-01	1.5E-01	6.1E-03	6.0E-03	4.0E+02	6.69E-04	3.15E+02	5.43E-01	2.1E+02	2.9E+02	2.4E-01
8	123-134	Annual Average	8	2.7E-04	4.2E-01	2.2E+02	1.87E-02	3.7E-01	2.0E-01	7.7E-03	7.5E-03	5.8E+02	8.24E-04	2.76E+02	8.15E-02	2.9E+02	2.9E+02	2.5E-01
9	135-146	Annual Average	8	8.0E-04	1.4E+00	7.6E+02	6.49E-02	1.2E+00	7.0E-01	2.6E-02	2.6E-02	2.2E+03	2.80E-03	6.93E+02	8.06E-02	1.0E+03	8.3E+02	7.3E-01

Year	GoldSim Month	Actual Month	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)
Water License Discharge Criteria[2]				0.1				0.0004							0.2		16	20
1	39-50	Annual Average	5.2E-03	1.09E-01	5.5E-01	6.2E+00	1.8E+02	1.49E-04	8.9E+01	4.1E-02	1.7E+01	9.6E-02	3.8E-02	5.8E+02	1.11E-02	1.4E-01	1.73E-01	4.95E-01
2	51-62	Annual Average	1.1E-02	3.39E-01	9.7E-01	1.9E+01	4.3E+02	1.86E-04	2.7E+02	9.9E-02	4.1E+01	2.6E-01	1.1E-01	1.8E+03	2.83E-02	3.1E-01	3.78E-01	1.38E+00
3	63-74	Annual Average	1.2E-02	4.21E-01	1.0E+00	2.4E+01	5.9E+02	1.86E-04	3.3E+02	1.2E-01	5.5E+01	4.3E-01	1.4E-01	2.2E+03	3.40E-02	3.5E-01	4.31E-01	1.67E+00
4	75-86	Annual Average	1.0E-02	3.94E-01	8.9E-01	1.9E+01	7.4E+02	1.84E-04	2.8E+02	9.9E-02	5.6E+01	5.2E-01	1.2E-01	1.9E+03	2.99E-02	4.5E-01	5.51E-01	1.60E+00
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)																		
5	87-98	Annual Average	3.5E-03	1.45E-01	3.8E-01	6.1E+00	4.9E+02	9.06E-05	8.0E+01	3.3E-02	3.1E+01	3.2E-01	4.5E-02	5.8E+02	1.20E-02	5.9E-01	7.22E-01	1.00E+00
6	99-110	Annual Average	4.4E-03	1.82E-01	4.2E-01	6.3E+00	7.1E+02	1.16E-04	9.1E+01	4.0E-02	3.5E+01	3.9E-01	7.5E-02	6.6E+02	1.81E-02	6.7E-01	8.20E-01	1.19E+00
7	111-122	Annual Average	6.1E-03	2.14E-01	5.1E-01	6.5E+00	1.2E+03	1.68E-04	1.1E+02	5.4E-02	4.4E+01	5.4E-01	1.5E-01	8.1E+02	3.46E-02	5.8E-01	7.02E-01	1.25E+00
8	123-134	Annual Average	7.7E-03	2.11E-01	5.7E-01	5.5E+00	1.7E+03	2.22E-04	1.2E+02	6.6E-02	5.5E+01	7.2E-01	2.5E-01	9.1E+02	5.42E-02	4.9E-01	5.91E-01	1.27E+00
9	135-146	Annual Average	2.7E-02	5.98E-01	1.8E+00	1.4E+01	6.2E+03	7.93E-04	3.8E+02	2.2E-01	1.9E+02	2.6E+00	9.7E-01	2.9E+03	2.08E-01	1.2E+00	1.41E+00	3.73E+00

Year	GoldSim Month	Actual Month	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			1	0.1	1									0.4	
1	39-50	Annual Average	1.88E-01	1.97E-03	1.5E-01	3.7E-03	8.0E-03	3.0E+00	1.5E+03	5.0E-01	1.0E-03	4.7E-03	7.6E-02	2.22E-02	2.8E+03
2	51-62	Annual Average	5.88E-01	2.75E-03	3.9E-01	9.0E-03	1.9E-02	8.6E+00	4.6E+03	1.6E+00	2.1E-03	1.3E-02	6.8E-02	4.20E-02	8.6E+03
3	63-74	Annual Average	7.82E-01	2.75E-03	4.9E-01	1.2E-02	2.3E-02	1.1E+01	5.7E+03	2.3E+00	2.4E-03	1.7E-02	4.1E-02	5.46E-02	1.1E+04
4	75-86	Annual Average	7.52E-01	2.56E-03	4.8E-01	1.1E-02	2.0E-02	1.0E+01	4.9E+03	2.3E+00	2.0E-03	1.6E-02	2.6E-02	5.80E-02	9.4E+03
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)															
5	87-98	Annual Average	3.06E-01	1.47E-03	2.3E-01	5.3E-03	6.5E-03	4.7E+00	1.6E+03	1.0E+00	6.6E-04	7.0E-03	8.1E-03	2.98E-02	3.3E+03
6	99-110	Annual Average	3.91E-01	1.45E-03	2.5E-01	1.2E-02	8.4E-03	5.3E+00	2.1E+03	1.4E+00	8.4E-04	1.0E-02	1.0E-02	3.84E-02	4.7E+03
7	111-122	Annual Average	5.39E-01	1.54E-03	2.7E-01	3.1E-02	1.2E-02	6.4E+00	3.2E+03	2.1E+00	1.2E-03	1.8E-02	1.5E-02	5.70E-02	6.8E+03
8	123-134	Annual Average	6.67E-01	1.63E-03	2.5E-01	5.4E-02	1.5E-02	7.2E+00	4.3E+03	2.8E+00	1.5E-03	2.7E-02	1.9E-02	7.68E-02	8.7E+03
9	135-146	Annual Average	2.27E+00	4.94E-03	6.8E-01	2.2E-01	5.2E-02	2.3E+01	1.5E+04	1.0E+01	5.3E-03	1.0E-01	6.4E-02	2.76E-01	3.0E+04

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-7
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**	
2 Meter Active Zone																
Filling of Goose Pit Lake																
6	99 - 110	Annual Average	6.7	1.8E-05	8.9E-02	2.3E+01	6.5E-03	1.6E-01	2.4E-02	2.6E-04	1.7E-04	4.1E+01	6.1E-05	3.3E+02	0.0E+00	0.0E+00
7	111 - 122	Annual Average	6.7	1.7E-05	9.8E-02	1.8E+01	2.4E-03	1.2E-01	1.9E-02	2.9E-04	1.2E-04	3.0E+01	6.0E-05	2.4E+02	0.0E+00	0.0E+00
8	123 - 134	Annual Average	6.7	1.6E-05	9.9E-02	1.7E+01	2.1E-03	1.1E-01	1.8E-02	3.0E-04	1.1E-04	2.7E+01	6.0E-05	2.2E+02	0.0E+00	0.0E+00
9	135 - 146	Annual Average	6.7	1.5E-05	9.2E-02	1.5E+01	1.7E-03	1.0E-01	1.6E-02	2.8E-04	9.9E-05	2.4E+01	5.5E-05	1.9E+02	0.0E+00	0.0E+00
10	147 - 158	Annual Average	6.7	1.2E-05	7.8E-02	1.2E+01	1.2E-03	7.9E-02	1.3E-02	2.4E-04	7.7E-05	1.8E+01	4.6E-05	1.4E+02	0.0E+00	0.0E+00
11	159 - 170	Annual Average	6.7	1.2E-05	7.9E-02	1.1E+01	1.1E-03	7.5E-02	1.2E-02	2.4E-04	7.2E-05	1.7E+01	4.7E-05	1.3E+02	0.0E+00	0.0E+00
12	171 - 182	Annual Average	6.7	1.2E-05	8.0E-02	1.1E+01	1.1E-03	7.2E-02	1.2E-02	2.5E-04	6.7E-05	1.6E+01	4.7E-05	1.2E+02	0.0E+00	0.0E+00
Long-term Goose Pit Lake Water Quality																
20	267 - 278	Annual Average	6.7	1.1E-05	8.4E-02	9.4E+00	8.7E-04	6.1E-02	1.0E-02	2.4E-04	5.7E-05	1.3E+01	4.7E-05	9.8E+01	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]						**0.1**				**0.0004**							**0.2**	
2 Meter Active Zone																		
Filling of Goose Pit Lake																		
6	99 - 110	Annual Average	0.0E+00	1.7E-03	2.9E-04	1.6E-03	1.3E-01	2.2E-01	1.6E+02	1.2E-05	3.5E+00	4.8E-03	1.4E+01	1.2E-01	7.0E-03	7.7E+01	6.3E-03	5.6E-04
7	111 - 122	Annual Average	0.0E+00	1.8E-03	3.2E-04	1.1E-03	1.2E-01	1.8E-01	1.2E+02	1.9E-05	2.7E+00	4.0E-03	1.1E+01	8.2E-02	5.1E-03	5.6E+01	3.2E-03	5.7E-04
8	123 - 134	Annual Average	0.0E+00	1.8E-03	3.3E-04	1.1E-03	1.2E-01	1.7E-01	1.1E+02	2.0E-05	2.5E+00	3.8E-03	9.8E+00	7.6E-02	4.7E-03	5.1E+01	3.0E-03	3.7E-01
9	135 - 146	Annual Average	0.0E+00	1.7E-03	3.0E-04	9.9E-04	1.1E-01	1.5E-01	9.4E+01	1.9E-05	2.2E+00	3.4E-03	8.4E+00	6.5E-02	4.0E-03	4.4E+01	2.7E-03	6.3E-01
10	147 - 158	Annual Average	0.0E+00	1.4E-03	2.6E-04	8.1E-04	9.0E-02	1.2E-01	7.3E+01	1.7E-05	1.7E+00	2.7E-03	6.5E+00	5.1E-02	3.1E-03	3.4E+01	2.1E-03	4.3E-01
11	159 - 170	Annual Average	0.0E+00	1.5E-03	2.7E-04	8.1E-04	9.0E-02	1.1E-01	6.8E+01	1.8E-05	1.6E+00	2.7E-03	6.1E+00	4.8E-02	2.9E-03	3.1E+01	2.1E-03	3.8E-01
12	171 - 182	Annual Average	0.0E+00	1.5E-03	2.7E-04	8.0E-04	8.9E-02	1.1E-01	6.3E+01	1.9E-05	1.6E+00	2.6E-03	5.6E+00	4.4E-02	2.7E-03	2.9E+01	2.0E-03	3.4E-01
Long-term Goose Pit Lake Water Quality																		
20	267 - 278	Annual Average	0.0E+00	1.6E-03	2.6E-04	7.8E-04	8.6E-02	9.6E-02	5.1E+01	2.0E-05	1.3E+00	2.3E-03	4.6E+00	3.7E-02	2.2E-03	2.3E+01	2.0E-03	2.7E-01

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**16**	**20**	**1**	**0.1**	**1**									**0.4**	
2 Meter Active Zone																	
Filling of Goose Pit Lake																	
6	99 - 110	Annual Average	6.8E-04	3.3E-03	3.3E-02	9.5E-04	8.7E-02	1.1E-03	2.6E-04	1.5E+00	1.9E+01	1.6E-01	3.5E-05	1.6E-03	2.6E-03	1.5E-02	5.1E+02
7	111 - 122	Annual Average	6.9E-04	5.0E-03	2.3E-02	7.3E-04	6.3E-02	4.7E-04	2.8E-04	1.2E+00	1.4E+01	1.1E-01	4.5E-05	1.2E-03	4.8E-03	7.2E-03	3.7E+02
8	123 - 134	Annual Average	4.5E-01	4.1E-01	2.1E-02	6.8E-04	5.8E-02	4.2E-04	2.9E-04	1.1E+00	1.4E+01	1.0E-01	4.7E-05	1.1E-03	5.3E-03	6.5E-03	3.4E+02
9	135 - 146	Annual Average	7.7E-01	7.0E-01	1.8E-02	6.0E-04	5.0E-02	3.6E-04	2.7E-04	9.6E-01	1.2E+01	8.8E-02	4.5E-05	9.7E-04	5.2E-03	5.7E-03	3.0E+02
10	147 - 158	Annual Average	5.2E-01	4.8E-01	1.4E-02	4.7E-04	3.8E-02	2.8E-04	2.3E-04	7.6E-01	9.4E+00	6.7E-02	3.9E-05	7.6E-04	4.6E-03	4.4E-03	2.3E+02
11	159 - 170	Annual Average	4.6E-01	4.2E-01	1.3E-02	4.5E-04	3.6E-02	2.6E-04	2.4E-04	7.2E-01	9.0E+00	6.3E-02	4.1E-05	7.2E-04	5.0E-03	4.2E-03	2.1E+02
12	171 - 182	Annual Average	4.2E-01	3.8E-01	1.2E-02	4.3E-04	3.3E-02	2.5E-04	2.4E-04	6.8E-01	8.6E+00	5.8E-02	4.3E-05	6.8E-04	5.4E-03	4.1E-03	2.0E+02
Long-term Goose Pit Lake Water Quality																	
20	267 - 278	Annual Average	3.3E-01	3.1E-01	1.0E-02	3.6E-04	2.6E-02	2.2E-04	2.3E-04	5.9E-01	7.6E+00	4.6E-02	4.1E-05	5.8E-04	5.3E-03	3.7E-03	1.6E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-8
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**	
2 Meter Active Zone																
Filling of Pit Lake																
6	99 - 110	Annual Average	6.7	3.0E-05	1.0E-01	3.6E+01	9.86E-02	3.3E-01	4.4E-02	1.5E-03	5.6E-04	4.7E+01	1.87E-04	3.35E+02	0.00E+00	0.0E+00
7	111 - 122	Annual Average	6.7	1.5E-05	4.2E-02	1.2E+01	1.12E-02	9.7E-02	1.6E-02	5.6E-04	9.1E-05	1.3E+01	5.36E-05	9.19E+01	0.00E+00	0.0E+00
8	123 - 134	Annual Average	6.7	1.5E-05	3.9E-02	1.1E+01	9.37E-03	9.0E-02	1.5E-02	5.5E-04	7.7E-05	1.2E+01	5.05E-05	7.89E+01	0.00E+00	0.0E+00
9	135 - 146	Annual Average	6.7	1.4E-05	3.6E-02	9.8E+00	8.46E-03	8.4E-02	1.4E-02	5.4E-04	6.9E-05	1.0E+01	4.77E-05	6.81E+01	0.00E+00	0.0E+00
10	147 - 158	Annual Average	6.7	1.3E-05	3.3E-02	8.8E+00	7.11E-03	7.5E-02	1.3E-02	5.0E-04	5.8E-05	8.9E+00	4.33E-05	5.67E+01	0.00E+00	0.0E+00
11	159 - 170	Annual Average	6.7	1.2E-05	3.1E-02	8.3E+00	5.96E-03	7.1E-02	1.2E-02	4.9E-04	5.0E-05	8.1E+00	4.15E-05	5.00E+01	0.00E+00	0.0E+00
12	171 - 182	Annual Average	6.7	1.2E-05	3.0E-02	7.9E+00	5.17E-03	6.8E-02	1.2E-02	4.9E-04	4.4E-05	7.3E+00	4.01E-05	4.35E+01	0.00E+00	0.0E+00
Long-term Portage Pit Lake Water Quality																
20	267 - 278	Annual Average	6.7	1.1E-05	3.2E-02	7.0E+00	3.98E-03	6.0E-02	1.1E-02	4.6E-04	3.5E-05	5.9E+00	3.82E-05	3.32E+01	0.00E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]						**0.1**				**0.0004**						
2 Meter Active Zone																
Filling of Pit Lake																
6	99 - 110	Annual Average	0.0E+00	6.9E-03	1.1E-03	1.57E-02	1.3E-01	8.9E-01	2.0E+02	5.37E-05	8.6E+00	6.8E-03	1.8E+01	4.7E-01	9.1E-03	8.0E+01
7	111 - 122	Annual Average	0.0E+00	1.4E-03	5.3E-04	2.31E-03	8.5E-02	1.5E-01	5.4E+01	2.75E-05	2.2E+00	3.3E-03	5.0E+00	7.1E-02	2.5E-03	2.2E+01
8	123 - 134	Annual Average	0.0E+00	1.2E-03	5.2E-04	2.03E-03	8.3E-02	1.3E-01	4.8E+01	2.76E-05	2.0E+00	3.2E-03	4.4E+00	6.0E-02	2.2E-03	1.9E+01
9	135 - 146	Annual Average	0.0E+00	1.1E-03	5.1E-04	1.87E-03	7.9E-02	1.2E-01	4.2E+01	2.70E-05	1.9E+00	3.1E-03	3.9E+00	5.4E-02	2.0E-03	1.7E+01
10	147 - 158	Annual Average	0.0E+00	1.0E-03	4.8E-04	1.63E-03	7.3E-02	1.0E-01	3.6E+01	2.55E-05	1.7E+00	2.8E-03	3.3E+00	4.5E-02	1.7E-03	1.4E+01
11	159 - 170	Annual Average	0.0E+00	9.4E-04	4.8E-04	1.45E-03	7.3E-02	8.9E-02	3.3E+01	2.54E-05	1.6E+00	2.8E-03	3.0E+00	3.9E-02	1.5E-03	1.2E+01
12	171 - 182	Annual Average	0.0E+00	8.8E-04	4.8E-04	1.33E-03	7.2E-02	8.0E-02	3.0E+01	2.55E-05	1.5E+00	2.7E-03	2.7E+00	3.4E-02	1.4E-03	1.1E+01
Long-term Portage Pit Lake Water Quality																
20	267 - 278	Annual Average	0.0E+00	8.7E-04	4.5E-04	1.14E-03	6.9E-02	6.8E-02	2.4E+01	2.49E-05	1.3E+00	2.5E-03	2.2E+00	2.7E-02	1.1E-03	8.5E+00

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**0.2**		**16**	**20**	**1**	**0.1**	**1**									**0.4**	
2 Meter Active Zone																			
Filling of Pit Lake																			
6	99 - 110	Annual Average	9.66E-02	6.4E+00	7.82E+00	7.11E+00	1.21E-01	2.43E-03	8.83E-02	2.7E-02	1.1E-03	2.9E+00	3.5E+01	2.9E-01	1.7E-04	2.0E-03	1.1E-02	3.62E-01	5.8E+02
7	111 - 122	Annual Average	8.93E-03	7.6E-01	9.22E-01	8.41E-01	1.84E-02	5.99E-04	2.63E-02	3.1E-03	5.2E-04	6.1E-01	8.6E+00	5.7E-02	9.7E-05	5.7E-04	1.2E-02	3.62E-02	1.6E+02
8	123 - 134	Annual Average	7.59E-03	6.2E-01	7.50E-01	6.85E-01	1.56E-02	5.47E-04	2.30E-02	2.6E-03	5.2E-04	5.3E-01	7.7E+00	4.8E-02	9.7E-05	5.1E-04	1.3E-02	3.06E-02	1.4E+02
9	135 - 146	Annual Average	6.89E-03	5.5E-01	6.66E-01	6.09E-01	1.38E-02	5.05E-04	2.01E-02	2.4E-03	5.1E-04	4.6E-01	7.0E+00	4.2E-02	9.5E-05	4.6E-04	1.3E-02	2.78E-02	1.2E+02
10	147 - 158	Annual Average	5.86E-03	4.6E-01	5.55E-01	5.07E-01	1.16E-02	4.48E-04	1.70E-02	2.0E-03	4.7E-04	3.9E-01	6.1E+00	3.5E-02	9.0E-05	3.9E-04	1.2E-02	2.35E-02	1.0E+02
11	159 - 170	Annual Average	5.01E-03	3.8E-01	4.61E-01	4.22E-01	9.94E-03	4.18E-04	1.52E-02	1.7E-03	4.7E-04	3.5E-01	5.6E+00	3.1E-02	9.0E-05	3.6E-04	1.2E-02	2.00E-02	9.0E+01
12	171 - 182	Annual Average	4.43E-03	3.3E-01	3.97E-01	3.64E-01	8.65E-03	3.94E-04	1.35E-02	1.5E-03	4.7E-04	3.1E-01	5.2E+00	2.7E-02	9.1E-05	3.3E-04	1.2E-02	1.76E-02	8.0E+01
Long-term Portage Pit Lake Water Quality																			
20	267 - 278	Annual Average	3.60E-03	2.5E-01	3.03E-01	2.78E-01	6.80E-03	3.44E-04	1.07E-02	1.2E-03	4.4E-04	2.6E-01	4.5E+00	2.1E-02	8.6E-05	2.8E-04	1.2E-02	1.40E-02	6.4E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-9
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al² (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr³ (mg/L)	Cu⁴ (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
Water License Discharge Criteria²			6.0 - 9.0		1.5		0.1						0.002	500						0.1			
2 METER ACTIVE ZONE																							
	92	June	8	3.8E-16	1.0E-14	1.1E-10	2.3E-14	7.8E-14	8.4E-15	3.0E-16	3.0E-16	4.5E-11	3.0E-16	3.9E-12	0.0E+00	0.0E+00	0.0E+00	1.5E-15	3.0E-16	2.3E-15	7.8E-15	7.8E-14	1.4E-10
	93	July	8	2.7E-06	7.2E-05	1.8E-01	1.7E-04	5.5E-04	6.0E-05	2.1E-06	2.1E-06	7.1E-02	2.1E-06	6.2E-03	0.0E+00	0.0E+00	0.0E+00	1.1E-05	2.1E-06	1.7E-05	1.2E-05	1.2E-04	2.3E-01
	94	August	8	5.7E-06	1.5E-04	5.3E-01	3.5E-04	1.2E-03	1.3E-04	4.5E-06	4.5E-06	2.1E-01	4.5E-06	1.8E-02	0.0E+00	0.0E+00	0.0E+00	2.3E-05	4.5E-06	3.5E-05	3.6E-05	3.6E-04	6.6E-01
5	95	September	8	7.1E-06	1.9E-04	7.4E-01	4.4E-04	1.5E-03	1.6E-04	5.6E-06	5.6E-06	2.9E-01	5.6E-06	2.5E-02	0.0E+00	0.0E+00	0.0E+00	2.8E-05	5.6E-06	4.4E-05	5.1E-05	5.1E-04	9.3E-01
	104	June	8	5.5E-07	1.5E-05	4.9E-02	3.4E-05	1.1E-04	1.2E-05	4.4E-07	4.4E-07	1.9E-02	4.4E-07	1.7E-03	0.0E+00	0.0E+00	0.0E+00	2.2E-06	4.4E-07	3.4E-06	3.3E-06	3.3E-05	6.1E-02
	105	July	8	3.0E-06	8.1E-05	2.1E-01	1.9E-04	6.2E-04	6.6E-05	2.4E-06	2.4E-06	8.1E-02	2.4E-06	7.0E-03	0.0E+00	0.0E+00	0.0E+00	1.2E-05	2.4E-06	1.9E-05	1.4E-05	1.4E-04	2.6E-01
	106	August	8	6.1E-06	1.6E-04	5.6E-01	3.7E-04	1.2E-03	1.3E-04	4.8E-06	4.8E-06	2.2E-01	4.8E-06	1.9E-02	0.0E+00	0.0E+00	0.0E+00	2.4E-05	4.8E-06	3.7E-05	3.8E-05	3.8E-04	7.0E-01
6	107	September	8	7.5E-06	2.0E-04	7.8E-01	4.6E-04	1.5E-03	1.7E-04	5.9E-06	5.9E-06	3.1E-01	5.9E-06	2.7E-02	0.0E+00	0.0E+00	0.0E+00	3.0E-05	5.9E-06	4.6E-05	5.3E-05	5.3E-04	9.7E-01
	116	June	8	3.6E-06	9.7E-05	3.2E-01	2.2E-04	7.4E-04	8.0E-05	2.8E-06	2.8E-06	1.3E-01	2.8E-06	1.1E-02	0.0E+00	0.0E+00	0.0E+00	1.4E-05	2.8E-06	2.2E-05	2.2E-05	2.2E-04	4.0E-01
	117	July	8	4.9E-06	1.3E-04	3.7E-01	3.1E-04	1.0E-03	1.1E-04	3.9E-06	3.9E-06	1.5E-01	3.9E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	2.0E-05	3.9E-06	3.1E-05	2.5E-05	2.5E-04	4.6E-01
	118	August	8	8.8E-06	2.4E-04	7.9E-01	5.4E-04	1.8E-03	2.0E-04	7.0E-06	7.0E-06	3.1E-01	7.0E-06	2.7E-02	0.0E+00	0.0E+00	0.0E+00	3.5E-05	7.0E-06	5.4E-05	5.4E-05	5.4E-04	9.9E-01
7	119	September	8	1.1E-05	2.8E-04	1.1E+00	6.5E-04	2.2E-03	2.3E-04	8.3E-06	8.3E-06	4.2E-01	8.3E-06	3.6E-02	0.0E+00	0.0E+00	0.0E+00	4.2E-05	8.3E-06	6.5E-05	7.2E-05	7.2E-04	1.3E+00
	128	June	8	6.3E-06	1.7E-04	5.7E-01	3.9E-04	1.3E-03	1.4E-04	5.0E-06	5.0E-06	2.2E-01	5.0E-06	1.9E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.0E-06	3.9E-05	3.9E-05	3.9E-04	7.1E-01
	129	July	8	6.3E-06	1.7E-04	4.9E-01	3.9E-04	1.3E-03	1.4E-04	5.0E-06	5.0E-06	2.0E-01	5.0E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.0E-06	3.9E-05	3.4E-05	3.4E-04	6.2E-01
	130	August	8	1.0E-05	2.7E-04	9.0E-01	6.2E-04	2.1E-03	2.2E-04	8.0E-06	8.0E-06	3.6E-01	8.0E-06	3.1E-02	0.0E+00	0.0E+00	0.0E+00	4.0E-05	8.0E-06	6.2E-05	6.2E-05	6.2E-04	1.1E+00
8	131	September	8	1.2E-05	3.1E-04	1.2E+00	7.1E-04	2.4E-03	2.6E-04	9.1E-06	9.1E-06	4.5E-01	9.1E-06	3.9E-02	0.0E+00	0.0E+00	0.0E+00	4.6E-05	9.1E-06	7.1E-05	7.9E-05	7.9E-04	1.4E+00
	140	June	8	6.9E-06	1.9E-04	6.2E-01	4.3E-04	1.4E-03	1.5E-04	5.4E-06	5.4E-06	2.4E-01	5.4E-06	2.1E-02	0.0E+00	0.0E+00	0.0E+00	2.7E-05	5.4E-06	4.3E-05	4.2E-05	4.2E-04	7.7E-01
	141	July	8	5.8E-06	1.6E-04	3.8E-01	3.6E-04	1.2E-03	1.3E-04	4.6E-06	4.6E-06	1.5E-01	4.6E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	2.3E-05	4.6E-06	3.6E-05	2.6E-05	2.6E-04	4.7E-01
	142	August	8	6.7E-06	1.8E-04	4.7E-01	4.2E-04	1.4E-03	1.5E-04	5.3E-06	5.3E-06	1.9E-01	5.3E-06	1.6E-02	0.0E+00	0.0E+00	0.0E+00	2.7E-05	5.3E-06	4.2E-05	3.2E-05	3.2E-04	5.9E-01
9	143	September	8	6.9E-06	1.9E-04	5.3E-01	4.3E-04	1.4E-03	1.5E-04	5.5E-06	5.5E-06	2.1E-01	5.5E-06	1.8E-02	0.0E+00	0.0E+00	0.0E+00	2.8E-05	5.5E-06	4.3E-05	3.6E-05	3.6E-04	6.6E-01
	152	June	8	5.9E-06	1.6E-04	4.3E-01	3.6E-04	1.2E-03	1.3E-04	4.7E-06	4.7E-06	1.7E-01	4.7E-06	1.5E-02	0.0E+00	0.0E+00	0.0E+00	2.3E-05	4.7E-06	3.6E-05	2.9E-05	2.9E-04	5.4E-01
	153	July	8	5.4E-06	1.5E-04	3.5E-01	3.3E-04	1.1E-03	1.2E-04	4.3E-06	4.3E-06	1.4E-01	4.3E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	2.1E-05	4.3E-06	3.3E-05	2.4E-05	2.4E-04	4.4E-01
	154	August	8	6.3E-06	1.7E-04	4.5E-01	3.9E-04	1.3E-03	1.4E-04	5.0E-06	5.0E-06	1.8E-01	5.0E-06	1.5E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.0E-06	3.9E-05	3.1E-05	3.1E-04	5.6E-01
10	155	September	8	6.6E-06	1.8E-04	5.0E-01	4.1E-04	1.4E-03	1.5E-04	5.2E-06	5.2E-06	2.0E-01	5.2E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	2.6E-05	5.2E-06	4.1E-05	3.4E-05	3.4E-04	6.3E-01
Long-Term Drainage Water Quality																							
20	272-275	Summer Average	8	5.4E-06	1.5E-04	4.0E-01	3.4E-04	1.1E-03	1.2E-04	4.3E-06	4.3E-06	1.6E-01	4.3E-06	1.4E-02	0.0E+00	0.0E+00	0.0E+00	2.2E-05	4.3E-06	3.4E-05	2.7E-05	2.7E-04	5.0E-01

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni⁴ (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb⁴ (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria²			0.004							0.2		20	50	0.1	1.5									0.2		
2 METER ACTIVE ZONE																										
	92	June	3.0E-17	4.4E-12	3.5E-15	7.2E-12	6.6E-15	6.0E-14	6.0E+00	4.6E-15	3.3E+01	4.1E+01	3.7E+01	3.0E-16	9.7E-13	3.0E-16	1.5E-15	5.7E-12	1.3E-11	2.2E-13	7.8E-16	1.0E-13	7.8E-15	1.5E-14	7.6E+01	1,104
	93	July	2.1E-07	6.9E-03	5.6E-06	1.1E-02	4.7E-05	4.3E-04	4.7E+00	3.3E-05	2.6E+01	3.2E+01	2.9E+01	2.1E-06	1.5E-03	2.1E-06	1.1E-05	9.0E-03	2.0E-02	1.6E-03	5.5E-06	7.2E-04	5.5E-05	1.1E-04	6.0E+01	13
	94	August	4.5E-07	2.0E-02	1.6E-05	3.3E-02	9.9E-05	9.0E-04	5.4E+00	6.9E-05	3.0E+01	3.7E+01	3.4E+01	4.5E-06	4.4E-03	4.5E-06	2.3E-05	2.6E-02	5.8E-02	3.3E-03	1.2E-05	1.5E-03	1.2E-04	2.3E-04	7.0E+01	185
5	95	September	5.6E-07	2.9E-02	2.3E-05	4.7E-02	1.2E-04	1.1E-03	5.0E+00	8.7E-05	2.8E+01	3.4E+01	3.1E+01	5.6E-06	6.3E-03	5.6E-06	2.8E-05	3.7E-02	8.2E-02	4.2E-03	1.5E-05	1.9E-03	1.5E-04	2.8E-04	6.5E+01	352
	104	June	4.4E-08	1.9E-03	1.5E-06	3.1E-03	9.6E-06	8.8E-05	1.5E+01	6.7E-06	8.1E+01	9.9E+01	9.0E+01	4.4E-07	4.1E-04	4.4E-07	2.2E-06	2.4E-03	5.4E-03	3.2E-04	1.1E-06	1.5E-04	1.1E-05	2.2E-05	1.9E+02	16,741
	105	July	2.4E-07	7.9E-03	6.4E-06	1.3E-02	5.2E-05	4.7E-04	1.2E+01	3.7E-05	6.4E+01	7.8E+01	7.1E+01	2.4E-06	1.7E-03	2.4E-06	1.2E-05	1.0E-02	2.3E-02	1.8E-03	6.2E-06	8.1E-04	6.2E-05	1.2E-04	1.5E+02	188
	106	August	4.8E-07	2.1E-02	1.7E-05	3.5E-02	1.1E-04	9.6E-04	1.3E+01	7.4E-05	7.5E+01	9.2E+01	8.3E+01	4.8E-06	4.7E-03	4.8E-06	2.4E-05	2.8E-02	6.2E-02	3.6E-03	1.2E-05	1.6E-03	1.2E-04	2.4E-04	1.7E+02	2,672
6	107	September	5.9E-07	3.0E-02	2.4E-05	4.9E-02	1.3E-04	1.2E-03	1.3E+01	9.1E-05	7.0E+01	8.6E+01	7.8E+01	5.9E-06	6.5E-03	5.9E-06	3.0E-05	3.9E-02	8.6E-02	4.4E-03	1.5E-05	2.0E-03	1.5E-04	3.0E-04	1.6E+02	5,025
	116	June	2.8E-07	1.2E-02	9.9E-06	2.0E-02	6.3E-05	5.7E-04	1.3E+01	4.4E-05	7.5E+01	9.1E+01	8.3E+01	2.8E-06	2.7E-03	2.8E-06	1.4E-05	1.6E-02	3.5E-02	2.1E-03	7.4E-06	9.7E-04	7.4E-05	1.4E-04	1.7E+02	37,775
	117	July	3.9E-07	1.4E-02	1.1E-05	2.3E-02	8.6E-05	7.9E-04	8.7E+00	6.0E-05	4.9E+01	5.9E+01	5.4E+01	3.9E-06	3.1E-03	3.9E-06	2.0E-05	1.8E-02	4.1E-02	2.9E-03	1.0E-05	1.3E-03	1.0E-04	2.0E-04	1.1E+02	365
	118	August	7.0E-07	3.0E-02	2.5E-05	5.0E-02	1.5E-04	1.4E-03	9.7E+00	1.1E-04	5.4E+01	6.5E+01	6.0E+01	7.0E-06	6.6E-03	7.0E-06	3.5E-05	3.9E-02	8.7E-02	5.2E-03	1.8E-05	2.4E-03	1.8E-04	3.5E-04	1.2E+02	4,573
7	119	September	8.3E-07	4.1E-02	3.3E-05	6.7E-02	1.8E-04	1.7E-03	9.0E+00	1.3E-04	5.0E+01	6.1E+01	5.5E+01	8.3E-06	8.9E-03	8.3E-06	4.2E-05	5.3E-02	1.2E-01	6.2E-03	2.2E-05	2.8E-03	2.2E-04	4.2E-04	1.2E+02	7,691
	128	June	5.0E-07	2.2E-02	1.8E-05	3.6E-02	1.1E-04	1.0E-03	9.4E+00	7.7E-05	5.3E+01	6.4E+01	5.8E+01	5.0E-06	4.8E-03	5.0E-06	2.5E-05	2.8E-02	6.3E-02	3.7E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	1.2E+02	39,604
	129	July	5.0E-07	1.9E-02	1.5E-05	3.1E-02	1.1E-04	1.0E-03	5.6E+00	7.7E-05	3.1E+01	3.8E+01	3.5E+01	5.0E-06	4.2E-03	5.0E-06	2.5E-05	2.5E-02	5.5E-02	3.7E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	7.2E+01	380
	130	August	8.0E-07	3.5E-02	2.8E-05	5.7E-02	1.8E-04	1.6E-03	5.9E+00	1.2E-04	3.3E+01	4.0E+01	3.6E+01	8.0E-06	7.6E-03	8.0E-06	4.0E-05	4.5E-02	1.0E-01	5.9E-03	2.1E-05	2.7E-03	2.1E-04	4.0E-04	7.6E+01	4,729
8	131	September	9.1E-07	4.4E-02	3.6E-05	7.3E-02	2.0E-04	1.8E-03	5.2E+00	1.4E-04	2.9E+01	3.5E+01	3.2E+01	9.1E-06	9.7E-03	9.1E-06	4.6E-05	5.8E-02	1.3E-01	6.8E-03	2.4E-05	3.1E-03	2.4E-04	4.6E-04	6.8E+01	7,899
	140	June	5.4E-07	2.4E-02	1.9E-05	3.9E-02	1.2E-04	1.1E-03	4.8E+00	8.4E-05	2.7E+01	3.2E+01	2.9E+01	5.4E-06	5.2E-03	5.4E-06	2.7E-05	3.1E-02	6.8E-02	4.0E-03	1.4E-05	1.9E-03	1.4E-04	2.7E-04	6.2E+01	39,604
	141	July	4.6E-07	1.4E-02	1.2E-05	2.4E-02	1.0E-04	9.2E-04	5.7E-01	7.1E-05	3.1E+00	3.8E+00	3.4E+00	4.6E-06	3.2E-03	4.6E-06	2.3E-05	1.9E-02	4.2E-02	3.4E-03	1.2E-05	1.6E-03	1.2E-04	2.3E-04	7.8E+00	1,901
	142	August	5.3E-07	1.8E-02	1.5E-05	3.0E-02	1.2E-04	1.1E-03	5.3E-01	8.2E-05	2.9E+00	3.5E+00	3.2E+00	5.3E-06	4.0E-03	5.3E-06	2.7E-05	2.4E-02	5.2E-02	3.9E-03	1.4E-05	1.8E-03	1.4E-04	2.7E-04	7.4E+00	23,643
9	143	September	5.5E-07	2.0E-02	1.6E-05	3.3E-02	1.2E-04	1.1E-03	3.9E-01	8.5E-05	2.1E+00	2.5E+00	2.3E+00	5.5E-06	4.4E-03	5.5E-06	2.8E-05	2.6E-02	5.8E-02	4.1E-03	1.4E-05	1.9E-03	1.4E-04	2.8E-04	5.7E+00	39,495
	152	June	4.7E-07	1.7E-02	1.3E-05	2.7E-02	1.0E-04	9.3E-04	2.4E-01	7.2E-05	1.3E+00	1.6E+00	1.4E+00	4.7E-06	3.6E-03	4.7E-06	2.3E-05	2.2E-02	4.8E-02	3.4E-03	1.2E-05	1.6E-03	1.2E-04	2.3E-04	3.7E+00	113,160
	153	July	4.3E-07	1.4E-02	1.1E-05	2.2E-02	9.4E-05	8.6E-04	7.5E-02	6.6E-05	3.6E-01	4.4E-01	4.0E-01	4.3E-06	3.0E-03	4.3E-06	2.1E-05	1.8E-02	3.9E-02	3.2E-03	1.1E-05	1.5E-03	1.1E-04	2.1E-04	1.4E+00	1,901
	154	August	5.0E-07	1.7E-02	1.4E-05	2.8E-02	1.1E-04	1.0E-03	7.0E-02	7.8E-05	3.1E-01	3.8E-01	3.4E-01	5.0E-06	3.8E-03	5.0E-06	2.5E-05	2.3E-02	5.0E-02	3.7E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	1.5E+00	23,643
10	155	September	5.2E-07	1.9E-02	1.6E-05	3.2E-02	1.2E-04	1.0E-03	5.6E-02	8.1E-05	2.3E-01	2.7E-01	2.5E-01	5.2E-06	4.2E-03	5.2E-06	2.6E-05	2.5E-02	5.6E-02	3.9E-03	1.4E-05	1.8E-03	1.4E-04	2.6E-04	1.4E+00	39,495
Long-Term Drainage Water Quality																										
20	272-275	Summer Average	4.3E-07	1.5E-02	1.2E-05	2.5E-02	9.5E-05	8.6E-04	1.2E-02	6.6E-05	1.2E-10	1.4E-10	2.7E-05	4.3E-06	3.3E-03	4.3E-06	2.2E-05	2.0E-02	4.4E-02	3.2E-03	1.1E-05	1.5E-03	1.1E-04	2.2E-04	6.9E-01	4.5E+04

1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-10
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Vault Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[1]			6.0 - 9.0		1.5		0.1						0.002	500			
5	92 - 95	Summer Average	8	8.7E-06	2.3E-04	7.7E-01	5.4E-04	1.8E-03	1.9E-04	6.9E-06	6.9E-06	3.1E-01	6.9E-06	2.6E-02	0.0E+00	0.0E+00	0.0E+00
6	104 - 107	Summer Average	8	1.5E-05	3.9E-04	1.3E+00	9.1E-04	3.0E-03	3.3E-04	1.2E-05	1.2E-05	5.2E-01	1.2E-05	4.5E-02	0.0E+00	0.0E+00	0.0E+00
7	116 - 119	Summer Average	8	2.1E-05	5.6E-04	1.9E+00	1.3E-03	4.3E-03	4.6E-04	1.7E-05	1.7E-05	7.4E-01	1.7E-05	6.4E-02	0.0E+00	0.0E+00	0.0E+00
8	128 - 131	Summer Average	8	2.7E-05	7.3E-04	2.4E+00	1.7E-03	5.6E-03	6.0E-04	2.2E-05	2.2E-05	9.6E-01	2.2E-05	8.3E-02	0.0E+00	0.0E+00	0.0E+00
9	140 - 143	Summer Average	8	3.4E-05	9.2E-04	3.1E+00	2.1E-03	7.0E-03	7.5E-04	2.7E-05	2.7E-05	1.2E+00	2.7E-05	1.0E-01	0.0E+00	0.0E+00	0.0E+00

Year	GoldSim Month		Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]					0.1				0.004							0.2		20	50	0.1	1.5									0.2	
5	92 - 95	Summer Average	3.4E-05	6.9E-06	5.4E-05	5.3E-05	5.3E-04	9.7E-01	6.9E-07	3.0E-02	2.4E-05	4.9E-02	1.5E-04	1.4E-03	2.8E+01	1.1E-04	1.6E+02	1.9E+02	1.7E+02	6.9E-06	6.5E-03	6.9E-06	3.4E-05	3.9E-02	8.6E-02	5.1E-03	1.8E-05	2.3E-03	1.8E-04	3.4E-04	3.6E+02
6	104 - 107	Summer Average	5.8E-05	1.2E-05	9.1E-05	9.0E-05	9.0E-04	1.6E+00	1.2E-06	5.0E-02	4.1E-05	8.3E-02	2.6E-04	2.3E-03	6.5E+00	1.8E-04	3.6E+01	4.4E+01	4.0E+01	1.2E-05	1.1E-02	1.2E-05	5.8E-05	6.6E-02	1.4E-01	8.6E-03	3.0E-05	3.9E-03	3.0E-04	5.8E-04	8.5E+01
7	116 - 119	Summer Average	8.3E-05	1.7E-05	1.3E-04	1.3E-04	1.3E-03	2.3E+00	1.7E-06	7.2E-02	5.8E-05	1.2E-01	3.6E-04	3.3E-03	1.6E+00	2.5E-04	8.7E+00	1.1E+01	9.6E+00	1.7E-05	1.6E-02	1.7E-05	8.3E-05	9.4E-02	2.1E-01	1.2E-02	4.3E-05	5.6E-03	4.3E-04	8.3E-04	2.3E+01
8	128 - 131	Summer Average	1.1E-04	2.2E-05	1.7E-04	1.7E-04	1.7E-03	3.1E+00	2.2E-06	9.4E-02	7.6E-05	1.5E-01	4.7E-04	4.3E-03	1.9E-01	3.3E-04	6.1E-01	7.4E-01	6.7E-01	2.2E-05	2.1E-02	2.2E-05	1.1E-04	1.2E-01	2.7E-01	1.6E-02	5.6E-05	7.3E-03	5.6E-04	1.1E-03	5.7E+00
9	140 - 143	Summer Average	1.3E-04	2.7E-05	2.1E-04	2.1E-04	2.1E-03	3.8E+00	2.7E-06	1.2E-01	9.5E-05	1.9E-01	5.9E-04	5.4E-03	1.0E-01	4.1E-04	2.9E-02	3.5E-02	3.2E-02	2.7E-05	2.6E-02	2.7E-05	1.3E-04	1.5E-01	3.4E-01	2.0E-02	7.0E-05	9.2E-03	7.0E-04	1.3E-03	5.4E+00

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table F-11
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.1**						**0.002**
2 METER ACTIVE ZONE													
	92	June	6.5	7.8E-14	1.7E-10	3.3E-08	3.9E-13	3.3E-11	1.3E-11	4.8E-13	3.0E-13	7.0E-09	1.2E-12
	93	July	6.5	5.9E-05	1.3E-01	2.3E+01	2.4E-04	1.2E-02	7.3E-03	2.4E-04	2.4E-04	4.5E+00	1.2E-05
	94	August	6.5	3.4E-06	6.0E-03	1.1E+00	5.7E-05	6.8E-04	3.4E-04	1.1E-05	1.1E-05	2.3E-01	1.1E-06
5	95	September	6.5	1.5E-05	3.2E-02	5.5E+00	8.9E-05	2.9E-03	1.8E-03	5.7E-05	5.7E-05	1.1E+00	3.2E-06
	104	June	6.5	1.1E-05	2.4E-02	4.2E+00	6.0E-05	2.2E-03	1.3E-03	4.3E-05	4.3E-05	8.1E-01	2.3E-06
	105	July	6.5	6.7E-05	1.5E-01	2.6E+01	2.8E-04	1.3E-02	8.3E-03	2.7E-04	2.7E-04	5.1E+00	1.4E-05
	106	August	6.5	5.0E-06	6.0E-03	1.2E+00	1.5E-04	1.0E-03	3.8E-04	1.2E-05	1.2E-05	2.8E-01	2.4E-06
6	107	September	6.5	1.5E-05	3.0E-02	5.3E+00	1.8E-04	3.0E-03	1.7E-03	5.4E-05	5.4E-05	1.1E+00	4.2E-06
	116	June	6.5	1.1E-05	2.1E-02	3.8E+00	1.2E-04	2.1E-03	1.2E-03	3.8E-05	3.8E-05	7.5E-01	2.9E-06
	117	July	6.5	7.6E-05	1.7E-01	2.9E+01	3.7E-04	1.5E-02	9.3E-03	3.0E-04	3.0E-04	5.7E+00	1.6E-05
	118	August	6.5	6.5E-06	6.4E-03	1.4E+00	2.4E-04	1.3E-03	4.2E-04	1.4E-05	1.4E-05	3.4E-01	3.5E-06
7	119	September	6.5	1.6E-05	2.8E-02	5.2E+00	2.8E-04	3.2E-03	1.6E-03	5.2E-05	5.2E-05	1.1E+00	5.4E-06
	128	June	6.6	1.1E-05	1.9E-02	3.4E+00	1.8E-04	2.1E-03	1.1E-03	3.5E-05	3.5E-05	7.0E-01	3.5E-06
	129	July	6.6	7.8E-05	1.7E-01	3.0E+01	4.4E-04	1.6E-02	9.4E-03	3.0E-04	3.0E-04	5.8E+00	1.7E-05
	130	August	6.6	7.3E-06	6.5E-03	1.5E+00	2.9E-04	1.5E-03	4.4E-04	1.5E-05	1.5E-05	3.7E-01	4.1E-06
8	131	September	6.6	1.7E-05	2.8E-02	5.2E+00	3.4E-04	3.4E-03	1.6E-03	5.2E-05	5.2E-05	1.1E+00	6.2E-06
	140	June	6.6	1.1E-05	1.8E-02	3.4E+00	2.2E-04	2.3E-03	1.1E-03	3.5E-05	3.5E-05	7.2E-01	4.1E-06
	141	July	6.6	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	142	August	6.6	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
9	143	September	6.6	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Attenuation Pond transfer to Vault Pit													

GoldSim Month	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)
Water License Discharge Criteria[2]	**500**						**0.1**				**0.004**				
92	2.1E-09	0.0E+00	0.0E+00	0.0E+00	3.5E-13	7.8E-13	3.8E-12	1.9E-10	3.5E-11	2.6E-08	3.1E-13	1.4E-09	2.1E-12	2.1E-09	4.5E-12
93	1.4E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-04	4.7E-04	2.8E-03	1.3E-01	2.4E-02	1.7E+01	2.4E-04	7.9E-01	9.5E-04	1.3E+00	3.3E-03
94	6.6E-02	0.0E+00	0.0E+00	0.0E+00	1.3E-05	2.1E-05	1.3E-04	5.7E-03	1.1E-03	8.3E-01	1.0E-05	3.8E-02	4.4E-05	6.3E-02	1.6E-04
95	3.4E-01	0.0E+00	0.0E+00	0.0E+00	5.8E-05	1.1E-04	6.8E-04	3.1E-02	5.7E-03	4.1E+00	5.6E-05	1.9E-01	2.3E-04	3.2E-01	8.0E-04
104	2.6E-01	0.0E+00	0.0E+00	0.0E+00	4.4E-05	8.5E-05	5.1E-04	2.3E-02	4.3E-03	3.0E+00	4.2E-05	1.4E-01	1.7E-04	2.4E-01	6.0E-04
105	1.6E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	5.3E-04	3.2E-03	1.5E-01	2.7E-02	1.9E+01	2.7E-04	8.9E-01	1.1E-03	1.5E+00	3.7E-03
106	7.1E-02	0.0E+00	0.0E+00	0.0E+00	2.0E-05	2.3E-05	1.4E-04	5.8E-03	1.2E-03	1.0E+00	1.1E-05	4.3E-02	4.9E-05	7.2E-02	1.9E-04
107	3.3E-01	0.0E+00	0.0E+00	0.0E+00	6.1E-05	1.1E-04	6.4E-04	2.9E-02	5.4E-03	4.0E+00	5.3E-05	1.8E-01	2.2E-04	3.1E-01	7.7E-04
116	2.3E-01	0.0E+00	0.0E+00	0.0E+00	4.3E-05	7.6E-05	4.6E-04	2.1E-02	3.8E-03	2.8E+00	3.8E-05	1.3E-01	1.5E-04	2.2E-01	5.5E-04
117	1.8E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-04	6.0E-04	3.6E-03	1.6E-01	3.0E-02	2.1E+01	3.0E-04	1.0E+00	1.2E-03	1.7E+00	4.2E-03
118	7.9E-02	0.0E+00	0.0E+00	0.0E+00	2.6E-05	2.5E-05	1.6E-04	6.1E-03	1.3E-03	1.2E+00	1.1E-05	5.0E-02	5.5E-05	8.3E-02	2.2E-04
119	3.1E-01	0.0E+00	0.0E+00	0.0E+00	6.4E-05	1.0E-04	6.1E-04	2.7E-02	5.2E-03	4.0E+00	4.9E-05	1.8E-01	2.1E-04	3.0E-01	7.5E-04
128	2.1E-01	0.0E+00	0.0E+00	0.0E+00	4.2E-05	6.7E-05	4.1E-04	1.8E-02	3.4E-03	2.6E+00	3.3E-05	1.2E-01	1.4E-04	2.0E-01	5.0E-04
129	1.9E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04	6.1E-04	3.6E-03	1.7E-01	3.0E-02	2.2E+01	3.0E-04	1.0E+00	1.2E-03	1.7E+00	4.3E-03
130	8.2E-02	0.0E+00	0.0E+00	0.0E+00	2.9E-05	2.6E-05	1.6E-04	6.1E-03	1.4E-03	1.3E+00	1.1E-05	5.3E-02	5.7E-05	8.8E-02	2.3E-04
131	3.1E-01	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.0E-04	6.1E-04	2.7E-02	5.2E-03	4.1E+00	4.9E-05	1.8E-01	2.1E-04	3.0E-01	7.6E-04
140	2.1E-01	0.0E+00	0.0E+00	0.0E+00	4.5E-05	6.7E-05	4.1E-04	1.8E-02	3.4E-03	2.6E+00	3.3E-05	1.2E-01	1.4E-04	2.0E-01	5.1E-04
141	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
142	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
143	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

GoldSim Month	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
Water License Discharge Criteria[2]			**0.2**		**20**	**50**	**1.5**	**0.1**	**1.5**									**0.2**		
92	3.3E-13	3.1E+00	2.4E-12	1.7E+01	2.1E+01	1.9E+01	1.2E-10	8.0E-13	1.5E-12	3.9E-13	4.8E-13	6.1E-09	9.3E-09	2.8E-11	6.6E-14	6.4E-13	5.7E-12	6.9E-12	4.0E+01	228280
93	1.2E-04	3.5E+00	1.8E-03	1.3E+01	1.6E+01	1.5E+01	9.5E-02	2.4E-04	1.4E-05	2.4E-04	2.4E-04	4.8E+00	6.5E+00	2.3E-02	2.4E-05	4.8E-04	2.4E-04	4.7E-03	7.4E+01	152520
94	1.3E-04	9.3E-01	8.7E-05	4.9E+00	6.0E+00	5.4E+00	4.2E-03	1.1E-05	6.1E-04	1.1E-05	1.3E-05	2.2E-01	2.9E-01	1.4E-03	2.6E-06	2.2E-04	2.6E-05	2.4E-04	1.3E+01	78347
95	1.1E-04	7.5E-01	4.3E-04	2.6E+00	3.2E+00	2.9E+00	2.2E-02	5.7E-05	4.9E-04	5.7E-05	5.8E-05	1.2E+00	1.6E+00	5.7E-03	6.7E-06	2.5E-04	6.7E-05	1.1E-03	1.7E+01	131680
104	6.6E-05	1.9E+00	3.2E-04	9.3E+00	1.1E+01	1.0E+01	1.7E-02	4.3E-05	1.8E-04	4.3E-05	4.4E-05	8.7E-01	1.2E+00	4.2E-03	4.8E-06	1.6E-04	4.8E-05	8.6E-04	2.9E+01	228280
105	1.8E-04	2.9E+00	2.0E-03	8.7E+00	1.1E+01	9.7E+00	1.1E-01	2.7E-04	1.8E-04	2.7E-04	2.7E-04	5.4E+00	7.3E+00	2.6E-02	2.7E-05	6.1E-04	2.7E-04	5.3E-03	7.0E+01	123310
106	3.8E-04	1.1E+00	1.1E-04	5.9E+00	7.2E+00	6.6E+00	4.2E-03	1.2E-05	1.8E-03	1.2E-05	2.0E-05	2.2E-01	3.1E-01	2.4E-03	5.9E-06	6.5E-04	5.9E-05	3.0E-04	1.6E+01	68398
107	3.5E-04	1.2E+00	4.2E-04	5.2E+00	6.3E+00	5.7E+00	2.1E-02	5.4E-05	1.8E-03	5.4E-05	6.1E-05	1.1E+00	1.5E+00	6.2E-03	9.4E-06	6.5E-04	9.4E-05	1.1E-03	2.2E+01	112990
116	2.2E-04	2.2E+00	3.0E-04	1.1E+01	1.4E+01	1.2E+01	1.5E-02	3.8E-05	9.0E-04	3.8E-05	4.3E-05	7.7E-01	1.0E+00	4.3E-03	6.4E-06	4.2E-04	6.4E-05	8.0E-04	3.3E+01	228280
117	3.4E-04	3.4E+00	2.3E-03	1.1E+01	1.3E+01	1.2E+01	1.2E-01	3.0E-04	8.2E-04	3.0E-04	3.0E-04	6.1E+00	8.2E+00	2.9E-02	3.2E-05	9.2E-04	3.2E-04	6.0E-03	8.0E+01	84269
118	6.0E-04	8.6E-01	1.3E-04	4.4E+00	5.4E+00	4.9E+00	4.4E-03	1.4E-05	2.8E-03	1.4E-05	2.6E-05	2.4E-01	3.4E-01	3.2E-03	8.8E-06	1.0E-03	8.8E-05	3.7E-04	1.3E+01	60794
119	6.1E-04	9.7E-01	4.1E-04	4.0E+00	4.9E+00	4.4E+00	2.0E-02	5.2E-05	3.2E-03	5.2E-05	6.4E-05	1.0E+00	1.4E+00	6.8E-03	1.3E-05	1.1E-03	1.3E-04	1.1E-03	1.9E+01	102330
128	3.9E-04	1.4E+00	2.7E-04	7.0E+00	8.5E+00	7.7E+00	1.3E-02	3.5E-05	1.7E-03	3.5E-05	4.2E-05	6.8E-01	9.2E-01	4.5E-03	8.1E-06	7.0E-04	8.1E-05	7.5E-04	2.2E+01	228280
129	5.0E-04	2.7E+00	2.3E-03	6.6E+00	8.1E+00	7.3E+00	1.2E-01	3.0E-04	1.6E-03	3.0E-04	3.1E-04	6.2E+00	8.3E+00	3.0E-02	3.5E-05	1.2E-03	3.5E-04	6.1E-03	7.2E+01	80887
130	7.2E-04	5.2E-01	1.4E-04	2.5E+00	3.1E+00	2.8E+00	4.4E-03	1.5E-05	3.4E-03	1.5E-05	2.9E-05	2.5E-01	3.5E-01	3.7E-03	1.0E-05	1.2E-03	1.0E-04	4.0E-04	8.5E+00	60170
131	7.7E-04	6.5E-01	4.2E-04	2.2E+00	2.7E+00	2.5E+00	1.9E-02	5.2E-05	4.1E-03	5.2E-05	6.7E-05	1.0E+00	1.4E+00	7.4E-03	1.5E-05	1.4E-03	1.5E-04	1.2E-03	1.5E+01	101490
140	5.1E-04	7.9E-01	2.8E-04	3.5E+00	4.2E+00	3.8E+00	1.3E-02	3.5E-05	2.3E-03	3.5E-05	4.5E-05	6.7E-01	9.2E-01	4.9E-03	9.6E-06	9.0E-04	9.6E-05	7.7E-04	1.4E+01	228280
141	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0
142	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0
143	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table F-12
Predicted Water Quality (Dissolved Constituents) - Probable Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.1						0.002	500	
2 m Expected Case															
9	140 - 143	Summer Average	6.7	7.1E-06	8.7E-03	4.1E+00	1.4E-04	1.4E-02	3.1E-03	1.5E-04	1.5E-05	1.3E+00	8.0E-06	2.5E-01	0.0E+00
10	152 - 155	Summer Average	6.7	1.0E-05	8.7E-03	8.1E+00	2.0E-03	3.5E-02	7.3E-03	3.6E-04	1.3E-05	2.9E+00	2.0E-05	4.8E-01	0.0E+00
11	164 - 167	Summer Average	6.7	1.1E-05	9.2E-03	8.9E+00	3.0E-03	3.9E-02	8.0E-03	3.9E-04	1.4E-05	3.1E+00	2.3E-05	5.3E-01	0.0E+00
12	176 - 179	Summer Average	6.7	1.1E-05	9.3E-03	9.1E+00	3.4E-03	4.0E-02	8.3E-03	4.0E-04	1.4E-05	3.2E+00	2.4E-05	5.4E-01	0.0E+00
13	188 - 191	Summer Average	6.7	1.1E-05	9.5E-03	9.3E+00	3.6E-03	4.1E-02	8.4E-03	4.1E-04	1.4E-05	3.3E+00	2.5E-05	5.5E-01	0.0E+00
14	200 - 203	Summer Average	6.7	1.2E-05	9.5E-03	9.4E+00	3.8E-03	4.1E-02	8.5E-03	4.2E-04	1.4E-05	3.3E+00	2.5E-05	5.6E-01	0.0E+00
Long-term Vault Pit Lake Water Quality															
20	267 - 266	Annual Average	6.7	1.3E-05	1.4E-02	9.6E+00	3.3E-03	3.9E-02	8.3E-03	4.0E-04	2.2E-05	3.3E+00	2.4E-05	5.7E-01	0.0E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)
Water License Discharge Criteria[2]							0.1				0.004							0.2
2 m Expected Case																		
9	140 - 143	Summer Average	0.0E+00	0.0E+00	5.7E-05	1.6E-04	3.1E-04	1.8E-02	5.4E-03	4.8E+00	2.1E-05	3.1E-01	7.2E-04	3.7E-01	3.2E-04	2.9E-04	5.0E-01	2.5E-04
10	152 - 155	Summer Average	0.0E+00	0.0E+00	1.2E-04	3.7E-04	5.1E-04	3.4E-02	1.2E-02	1.1E+01	2.9E-05	7.5E-01	1.8E-03	8.3E-01	5.9E-04	1.0E-03	7.7E-01	4.5E-04
11	164 - 167	Summer Average	0.0E+00	0.0E+00	1.3E-04	4.0E-04	5.5E-04	3.7E-02	1.3E-02	1.2E+01	3.1E-05	8.3E-01	1.9E-03	9.1E-01	7.0E-04	1.4E-03	8.3E-01	4.9E-04
12	176 - 179	Summer Average	0.0E+00	0.0E+00	1.3E-04	4.2E-04	5.7E-04	3.8E-02	1.3E-02	1.2E+01	3.1E-05	8.6E-01	2.0E-03	9.4E-01	7.5E-04	1.5E-03	8.5E-01	5.0E-04
13	188 - 191	Summer Average	0.0E+00	0.0E+00	1.4E-04	4.2E-04	5.8E-04	3.8E-02	1.3E-02	1.2E+01	3.2E-05	8.8E-01	2.0E-03	9.6E-01	7.7E-04	1.6E-03	8.7E-01	5.1E-04
14	200 - 203	Summer Average	0.0E+00	0.0E+00	1.4E-04	4.3E-04	5.9E-04	3.9E-02	1.3E-02	1.2E+01	3.2E-05	8.9E-01	2.1E-03	9.7E-01	7.8E-04	1.6E-03	8.8E-01	5.2E-04
Long-term Vault Pit Lake Water Quality																		
20	267 - 266	Annual Average	0.0E+00	0.0E+00	1.4E-04	4.2E-04	6.5E-04	4.1E-02	1.3E-02	1.2E+01	3.9E-05	8.6E-01	2.0E-03	9.6E-01	8.3E-04	1.5E-03	8.6E-01	5.5E-04

Year	GoldSim Month	Actual Month	NH4_N (mg/L)	Total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]				20	50	1.5	0.1	1.5									0.2	
2 m Expected Case																		
9	140 - 143	Summer Average	9.4E-01	1.1E+00	1.0E+00	5.6E-03	8.1E-05	1.5E-03	8.1E-05	1.5E-04	2.9E-01	1.7E+00	1.9E-03	3.0E-05	3.1E-04	4.0E-03	9.8E-04	1.1E+01
10	152 - 155	Summer Average	1.1E-01	1.4E-01	1.0E-01	4.8E-03	1.8E-04	2.4E-03	3.4E-04	3.6E-04	2.4E-01	3.8E+00	1.8E-03	7.2E-05	3.8E-04	1.0E-02	2.2E-03	1.8E+01
11	164 - 167	Summer Average	8.0E-02	9.7E-02	6.1E-02	5.0E-03	2.0E-04	2.6E-03	4.4E-04	4.0E-04	2.5E-01	4.2E+00	2.1E-03	7.9E-05	4.7E-04	1.1E-02	2.5E-03	2.0E+01
12	176 - 179	Summer Average	6.5E-02	7.9E-02	4.4E-02	5.1E-03	2.1E-04	2.7E-03	4.8E-04	4.1E-04	2.5E-01	4.3E+00	2.2E-03	8.2E-05	5.0E-04	1.2E-02	2.6E-03	2.0E+01
13	188 - 191	Summer Average	5.7E-02	6.9E-02	3.4E-02	5.1E-03	2.1E-04	2.7E-03	5.1E-04	4.2E-04	2.5E-01	4.4E+00	2.2E-03	8.3E-05	5.1E-04	1.2E-02	2.7E-03	2.1E+01
14	200 - 203	Summer Average	5.2E-02	6.3E-02	2.8E-02	5.1E-03	2.1E-04	2.7E-03	5.2E-04	4.3E-04	2.5E-01	4.4E+00	2.2E-03	8.4E-05	5.2E-04	1.2E-02	2.7E-03	2.1E+01
Long-term Vault Pit Lake Water Quality																		
20	267 - 266	Annual Average	4.5E-02	5.5E-02	2.3E-02	8.2E-03	2.1E-04	2.7E-03	4.7E-04	4.1E-04	4.1E-01	4.4E+00	2.9E-03	8.0E-05	5.2E-04	1.1E-02	2.7E-03	2.1E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

APPENDIX G

Possible Poor End Scenario Mass Balance Model Results

Table G-1
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5		
8 METER ACTIVE ZONE																	
	44	June	5.3	1.4E-05	3.0E-02	9.5E+00	2.02E-01	1.1E-01	9.8E-03	2.5E-02	5.7E-04	2.1E+00	7.85E-05	2.10E-01	0.00E+00	0.0E+00	0.0E+00
	45	July	5.3	2.8E-05	1.6E-01	7.1E+00	1.71E-01	1.1E-01	2.3E-02	2.3E-02	7.2E-04	2.4E+00	2.02E-04	3.83E-01	0.00E+00	0.0E+00	0.0E+00
	46	August	5.3	5.2E-05	3.3E-01	1.1E+01	2.39E-01	1.6E-01	4.4E-02	3.4E-02	1.2E-03	4.9E+00	3.89E-04	9.06E-01	0.00E+00	0.0E+00	0.0E+00
1	47	September	5.3	6.2E-05	4.0E-01	1.3E+01	2.55E-01	1.8E-01	5.3E-02	3.7E-02	1.4E-03	6.4E+00	4.70E-04	1.23E+00	0.00E+00	0.0E+00	0.0E+00
	56	June	5.3	3.4E-05	2.2E-01	5.9E+00	1.27E-01	9.1E-02	2.9E-02	1.9E-02	7.2E-04	3.0E+00	2.56E-04	5.86E-01	0.00E+00	0.0E+00	0.0E+00
	57	July	5.3	3.2E-05	1.9E-01	6.9E+00	1.78E-01	1.1E-01	2.7E-02	2.4E-02	7.8E-04	2.9E+00	2.29E-04	4.75E-01	0.00E+00	0.0E+00	0.0E+00
	58	August	5.3	4.9E-05	2.7E-01	1.5E+01	3.19E-01	2.0E-01	4.1E-02	4.2E-02	1.3E-03	5.6E+00	3.45E-04	8.23E-01	0.00E+00	0.0E+00	0.0E+00
2	59	September	5.3	5.5E-05	2.9E-01	2.0E+01	3.82E-01	2.3E-01	4.6E-02	5.0E-02	1.5E-03	7.3E+00	3.86E-04	1.03E+00	0.00E+00	0.0E+00	0.0E+00
	68	June	5.3	3.3E-05	1.7E-01	1.1E+01	2.36E-01	1.4E-01	2.7E-02	3.1E-02	9.0E-04	3.9E+00	2.26E-04	5.44E-01	0.00E+00	0.0E+00	0.0E+00
	69	July	5.3	3.0E-05	1.6E-01	8.8E+00	2.18E-01	1.3E-01	2.6E-02	2.8E-02	8.2E-04	3.3E+00	2.07E-04	4.41E-01	0.00E+00	0.0E+00	0.0E+00
	70	August	5.3	4.6E-05	2.4E-01	1.5E+01	3.33E-01	2.0E-01	3.9E-02	4.3E-02	1.3E-03	5.9E+00	3.16E-04	7.64E-01	0.00E+00	0.0E+00	0.0E+00
3	71	September	5.3	5.1E-05	2.7E-01	1.9E+01	3.75E-01	2.2E-01	4.5E-02	4.8E-02	1.4E-03	7.4E+00	3.56E-04	9.53E-01	0.00E+00	0.0E+00	0.0E+00
	80	June	5.3	3.0E-05	1.6E-01	1.0E+01	2.21E-01	1.3E-01	2.6E-02	2.8E-02	8.3E-04	3.9E+00	2.09E-04	5.05E-01	0.00E+00	0.0E+00	0.0E+00
	81	July	5.3	3.4E-05	2.0E-01	8.1E+00	2.00E-01	1.3E-01	2.9E-02	2.7E-02	8.6E-04	3.4E+00	2.47E-04	4.99E-01	0.00E+00	0.0E+00	0.0E+00
	82	August	5.3	5.7E-05	3.5E-01	1.4E+01	3.03E-01	2.0E-01	4.9E-02	4.2E-02	1.4E-03	6.1E+00	4.19E-04	9.85E-01	0.00E+00	0.0E+00	0.0E+00
4	83	September	5.3	6.7E-05	4.1E-01	1.7E+01	3.40E-01	2.2E-01	5.7E-02	4.7E-02	1.6E-03	7.7E+00	4.93E-04	1.29E+00	0.00E+00	0.0E+00	0.0E+00
	92	June	5.3	5.4E-16	2.3E-13	1.7E-09	1.06E-11	5.6E-12	3.5E-13	1.3E-12	2.7E-14	3.5E-10	2.54E-15	2.74E-11	0.00E+00	0.0E+00	0.0E+00
	93	July	5.3	1.2E-05	4.8E-03	6.1E+00	2.21E-01	1.2E-01	7.7E-03	2.7E-02	5.7E-04	1.2E+00	5.67E-05	9.69E-02	0.00E+00	0.0E+00	0.0E+00
	94	August	5.3	3.0E-05	1.2E-02	2.0E+01	5.58E-01	3.0E-01	1.9E-02	6.7E-02	1.4E-03	4.0E+00	1.43E-04	3.12E-01	0.00E+00	0.0E+00	0.0E+00
5	95	September	5.3	4.6E-05	1.9E-02	3.3E+01	8.55E-01	4.6E-01	3.0E-02	1.0E-01	2.2E-03	6.7E+00	2.19E-04	5.27E-01	0.00E+00	0.0E+00	0.0E+00
Placement of UM Rock Cover																	
Post Closure Water Quality																	
20	272 - 275	Summer Average	7	4.2E-04	1.7E-01	2.6E+02	7.82E+00	4.2E+00	2.7E-01	9.5E-01	2.0E-02	5.3E+01	2.00E-03	4.16E+00	0.00E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)
Water License Discharge Criteria[2]					0.1				0.0004							0.2
8 METER ACTIVE ZONE																
	44	June	1.8E-03	5.7E-04	2.37E-03	1.3E-02	6.1E-01	8.8E+00	5.65E-05	7.1E-01	1.7E-03	8.5E-01	8.3E-02	8.0E-05	5.3E+01	1.42E-02
	45	July	9.2E-03	7.2E-04	1.30E-02	3.6E-02	2.8E+00	1.0E+01	7.20E-05	1.0E+00	1.8E-03	1.1E+00	4.2E-01	3.9E-04	4.5E+01	8.03E-02
	46	August	1.9E-02	1.2E-03	2.68E-02	9.3E-02	7.5E+00	2.2E+01	1.19E-04	2.3E+00	3.7E-03	2.2E+00	8.6E-01	8.0E-04	5.5E+01	1.65E-01
1	47	September	2.3E-02	1.4E-03	3.31E-02	1.3E-01	1.0E+01	2.8E+01	1.37E-04	3.1E+00	4.8E-03	2.9E+00	1.1E+00	9.9E-04	5.4E+01	2.04E-01
	56	June	1.3E-02	7.2E-04	1.83E-02	6.2E-02	5.0E+00	1.3E+01	7.24E-05	1.5E+00	2.2E-03	1.4E+00	5.9E-01	5.4E-04	7.8E+01	1.13E-01
	57	July	1.1E-02	7.8E-04	1.51E-02	4.8E-02	3.7E+00	1.2E+01	7.82E-05	1.4E+00	2.1E-03	1.3E+00	4.9E-01	6.7E-04	5.4E+01	9.29E-02
	58	August	1.5E-02	1.3E-03	2.19E-02	8.2E-02	6.0E+00	2.4E+01	1.28E-04	2.6E+00	4.0E-03	2.4E+00	7.0E-01	1.1E-03	6.3E+01	1.34E-01
2	59	September	1.7E-02	1.5E-03	2.39E-02	1.0E-01	7.2E+00	3.1E+01	1.49E-04	3.4E+00	5.2E-03	3.1E+00	7.7E-01	1.3E-03	6.1E+01	1.46E-01
	68	June	9.7E-03	9.0E-04	1.38E-02	5.3E-02	3.8E+00	1.7E+01	8.96E-05	1.8E+00	2.8E-03	1.6E+00	4.5E-01	8.2E-04	9.0E+01	8.42E-02
	69	July	8.9E-03	8.2E-04	1.27E-02	4.4E-02	3.0E+00	1.4E+01	8.24E-05	1.5E+00	2.3E-03	1.4E+00	4.1E-01	9.1E-04	6.2E+01	7.72E-02
	70	August	1.4E-02	1.3E-03	1.94E-02	7.7E-02	5.3E+00	2.5E+01	1.26E-04	2.8E+00	4.1E-03	2.4E+00	6.2E-01	1.5E-03	7.1E+01	1.18E-01
3	71	September	1.5E-02	1.4E-03	2.18E-02	9.7E-02	6.6E+00	3.1E+01	1.42E-04	3.5E+00	5.1E-03	3.0E+00	7.0E-01	1.7E-03	6.8E+01	1.32E-01
	80	June	8.9E-03	8.3E-04	1.28E-02	5.1E-02	3.5E+00	1.7E+01	8.34E-05	1.9E+00	2.7E-03	1.6E+00	4.1E-01	1.1E-03	7.0E+01	7.78E-02
	81	July	1.1E-02	8.6E-04	1.62E-02	5.1E-02	3.8E+00	1.4E+01	8.59E-05	1.6E+00	2.4E-03	1.4E+00	5.2E-01	8.8E-04	4.0E+01	9.93E-02
	82	August	2.0E-02	1.4E-03	2.82E-02	1.0E-01	7.8E+00	2.6E+01	1.38E-04	2.9E+00	4.4E-03	2.6E+00	9.0E-01	1.3E-03	4.1E+01	1.73E-01
4	83	September	2.3E-02	1.6E-03	3.34E-02	1.3E-01	1.0E+01	3.3E+01	1.59E-04	3.7E+00	5.6E-03	3.3E+00	1.1E+00	1.4E-03	3.6E+01	2.05E-01
	92	June	3.9E-15	2.7E-14	-5.50E-15	1.1E-12	1.7E-12	1.4E-09	2.71E-15	1.1E-10	2.7E-13	1.3E-10	7.4E-13	3.4E-15	1.6E+00	-4.49E-14
	93	July	3.1E-04	5.7E-04	2.27E-04	4.0E-03	6.0E-03	5.1E+00	5.67E-05	4.0E-01	9.7E-04	4.8E-01	1.5E-02	8.2E-05	1.5E+00	8.24E-04
	94	August	7.8E-04	1.4E-03	5.71E-04	1.3E-02	1.9E-02	1.6E+01	1.43E-04	1.3E+00	3.1E-03	1.6E+00	3.9E-02	2.1E-04	2.6E+00	2.07E-03
5	95	September	1.2E-03	2.2E-03	8.75E-04	2.2E-02	3.3E-02	2.8E+01	2.19E-04	2.2E+00	5.3E-03	2.6E+00	6.0E-02	3.2E-04	3.1E+00	3.18E-03
Placement of UM Rock Cover																
Post Closure Water Quality																
20	272 - 275	Summer Average	1.1E-02	2.0E-02	8.01E-03	1.7E-01	2.6E-01	2.2E+02	2.00E-03	1.7E+01	4.2E-02	2.1E+01	5.5E-01	2.9E-03	1.7E+01	2.91E-02

Year	GoldSim Month	Actual Month	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria[2]				16	20	1	0.1	1									0.4		
8 METER ACTIVE ZONE																			
	44	June	1.4E+02	1.69E+02	1.56E+02	4.27E-02	9.49E-04	3.87E-02	1.5E-02	1.2E-03	3.0E-01	3.7E+00	4.4E-02	1.2E-04	1.7E-04	4.6E-03	1.46E-02	3.7E+02	13,420
	45	July	1.2E+02	1.42E+02	1.31E+02	4.76E-02	5.35E-03	2.93E-02	1.3E-02	1.5E-03	7.6E-01	1.0E+01	7.2E-02	1.5E-04	1.4E-03	4.4E-03	7.02E-02	3.2E+02	131
	46	August	1.4E+02	1.73E+02	1.61E+02	9.57E-02	1.10E-02	4.62E-02	1.8E-02	2.4E-03	1.9E+00	2.6E+01	1.3E-01	2.4E-04	3.0E-03	6.4E-03	1.43E-01	4.2E+02	1,722
1	47	September	1.4E+02	1.70E+02	1.57E+02	1.24E-01	1.36E-02	5.47E-02	1.9E-02	2.7E-03	2.7E+00	3.6E+01	1.5E-01	2.7E-04	3.7E-03	7.1E-03	1.76E-01	4.3E+02	3,034
	56	June	2.1E+02	2.50E+02	2.31E+02	5.79E-02	7.52E-03	2.45E-02	9.8E-03	1.4E-03	1.3E+00	1.7E+01	8.0E-02	1.4E-04	2.0E-03	3.6E-03	9.72E-02	5.5E+02	18,376
	57	July	1.4E+02	1.73E+02	1.60E+02	5.31E-02	6.20E-03	2.85E-02	1.4E-02	1.6E-03	1.0E+00	1.4E+01	8.4E-02	1.6E-04	2.3E-03	4.6E-03	8.10E-02	3.9E+02	176
	58	August	1.6E+02	2.00E+02	1.85E+02	1.00E-01	8.92E-03	6.10E-02	2.4E-02	2.6E-03	1.7E+00	2.3E+01	1.4E-01	2.6E-04	3.9E-03	8.0E-03	1.17E-01	4.7E+02	2,194
2	59	September	1.6E+02	1.92E+02	1.77E+02	1.29E-01	9.75E-03	8.21E-02	2.9E-02	3.0E-03	2.1E+00	2.9E+01	1.6E-01	3.0E-04	4.6E-03	9.6E-03	1.29E-01	4.7E+02	3,665
	68	June	2.4E+02	2.89E+02	2.68E+02	6.96E-02	5.62E-03	4.50E-02	1.8E-02	1.8E-03	1.1E+00	1.5E+01	9.3E-02	1.8E-04	2.8E-03	5.9E-03	7.43E-02	6.4E+02	18,376
	69	July	1.6E+02	1.97E+02	1.82E+02	5.62E-02	5.15E-03	3.64E-02	1.7E-02	1.7E-03	9.2E-01	1.2E+01	8.9E-02	1.7E-04	3.0E-03	5.4E-03	6.81E-02	4.4E+02	176
	70	August	1.9E+02	2.26E+02	2.09E+02	9.71E-02	7.84E-03	6.31E-02	2.6E-02	2.6E-03	1.6E+00	2.2E+01	1.4E-01	2.6E-04	5.0E-03	8.3E-03	1.04E-01	5.2E+02	2,194
3	71	September	1.8E+02	2.15E+02	1.99E+02	1.21E-01	8.82E-03	7.87E-02	2.9E-02	2.9E-03	2.0E+00	2.8E+01	1.6E-01	2.9E-04	5.8E-03	9.3E-03	1.17E-01	5.2E+02	3,665
	80	June	1.9E+02	2.25E+02	2.08E+02	6.41E-02	5.19E-03	4.17E-02	1.7E-02	1.7E-03	1.1E+00	1.5E+01	9.2E-02	1.7E-04	3.5E-03	5.5E-03	6.87E-02	5.0E+02	18,376
	81	July	1.1E+02	1.28E+02	1.18E+02	5.82E-02	6.62E-03	3.37E-02	1.5E-02	1.7E-03	1.1E+00	1.4E+01	9.4E-02	1.7E-04	3.0E-03	5.2E-03	8.67E-02	3.0E+02	176
	82	August	1.1E+02	1.28E+02	1.18E+02	1.09E-01	1.15E-02	5.81E-02	2.3E-02	2.8E-03	2.1E+00	2.9E+01	1.5E-01	2.8E-04	4.5E-03	8.0E-03	1.50E-01	3.3E+02	2,194
4	83	September	9.0E+01	1.09E+02	1.01E+02	1.41E-01	1.37E-02	7.24E-02	2.6E-02	3.2E-03	2.8E+00	3.7E+01	1.7E-01	3.2E-04	5.0E-03	9.0E-03	1.78E-01	3.1E+02	3,665
	92	June	4.3E+00	5.21E+00	4.82E+00	6.91E-12	-4.59E-15	6.90E-12	7.6E-13	5.6E-14	2.8E-11	3.3E-10	1.9E-12	5.6E-15	3.8E-15	2.4E-13	9.00E-14	1.1E+01	18,376
	93	July	2.9E+00	3.52E+00	3.28E+00	2.47E-02	5.67E-05	2.47E-02	1.6E-02	1.2E-03	1.1E-01	1.2E+00	4.2E-02	1.2E-04	1.2E-04	4.9E-03	3.45E-03	1.8E+01	882
	94	August	3.4E+00	4.16E+00	3.91E+00	7.95E-02	1.43E-04	7.95E-02	4.0E-02	3.0E-03	3.4E-01	4.0E+00	1.1E-01	3.0E-04	3.1E-04	1.2E-02	8.69E-03	4.2E+01	10,970
5	95	September	2.5E+00	3.03E+00	2.91E+00	1.34E-01	2.19E-04	1.34E-01	6.2E-02	4.6E-03	5.7E-01	6.7E+00	1.6E-01	4.6E-04	4.8E-04	1.9E-02	1.33E-02	6.3E+01	18,325
Placement of UM Rock Cover																			
Post Closure Water Quality																			
20	272 - 275	Summer Average	1.9E-14	2.32E-14	8.33E-01	1.06E+00	2.00E-03	1.06E+00	5.6E-01	4.2E-02	4.5E+00	5.3E+01	1.5E+00	4.2E-03	4.4E-03	1.7E-01	1.22E-01	4.5E+02	20,670

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-2
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
North Portage Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[1]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5
North Portage Pit															
1	44-47	Summer Average	6.1	2.5E-05	1.8E-01	3.1E+00	7.8E-02	5.5E-02	2.5E-02	1.0E-02	5.0E-04	3.4E+00	1.9E-04	4.7E-01	0.0E+00
2	56-59	Summer Average	6.1	3.2E-05	2.3E-01	4.4E+00	1.1E-01	7.7E-02	3.2E-02	1.5E-02	6.7E-04	4.4E+00	2.5E-04	6.0E-01	0.0E+00
3	68-71	Summer Average	6.1	4.1E-05	2.9E-01	5.7E+00	1.5E-01	9.9E-02	4.1E-02	1.9E-02	8.6E-04	5.6E+00	3.2E-04	7.6E-01	0.0E+00
4	80-83	Summer Average	6.1	5.0E-05	3.5E-01	7.0E+00	1.8E-01	1.2E-01	5.0E-02	2.3E-02	1.0E-03	6.7E+00	3.8E-04	9.1E-01	0.0E+00
5	92-95	Summer Average	#DIV/0!	5.9E-05	4.1E-01	8.4E+00	2.1E-01	1.4E-01	5.8E-02	2.8E-02	1.2E-03	7.9E+00	4.5E-04	1.1E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[1]							0.1				0.0004						
North Portage Pit																	
1	44-47	Summer Average	0.0E+00	0.0E+00	9.8E-03	5.0E-04	1.4E-02	6.0E-02	4.2E+00	1.4E+01	5.0E-05	2.1E+00	2.0E-03	1.4E+00	4.5E-01	1.5E-03	6.3E-01
2	56-59	Summer Average	0.0E+00	0.0E+00	1.3E-02	6.7E-04	1.8E-02	7.6E-02	5.3E+00	1.8E+01	6.7E-05	2.6E+00	2.6E-03	1.8E+00	5.8E-01	2.0E-03	4.5E+00
3	68-71	Summer Average	0.0E+00	0.0E+00	1.6E-02	8.6E-04	2.3E-02	9.6E-02	6.7E+00	2.3E+01	8.6E-05	3.4E+00	3.3E-03	2.3E+00	7.3E-01	2.6E-03	7.4E+00
4	80-83	Summer Average	0.0E+00	0.0E+00	1.9E-02	1.0E-03	2.8E-02	1.1E-01	8.0E+00	2.8E+01	1.0E-04	4.0E+00	3.9E-03	2.7E+00	8.8E-01	3.1E-03	1.0E+01
5	92-95	Summer Average	0.0E+00	0.0E+00	2.3E-02	1.2E-03	3.3E-02	1.3E-01	9.3E+00	3.3E+01	1.2E-04	4.7E+00	4.6E-03	3.2E+00	1.0E+00	3.5E-03	1.6E+01

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			0.2		16	20	1	0.1	1									0.4	
North Portage Pit																			
1	44-47	Summer Average	8.7E-02	0.0E+00	0.0E+00	1.7E-02	4.1E-02	5.8E-03	1.4E-02	7.5E-03	9.9E-04	1.2E+00	1.7E+01	7.9E-02	9.8E-05	5.1E-03	2.4E-03	7.5E-02	3.5E+01
2	56-59	Summer Average	1.1E-01	9.7E+00	1.2E+01	1.1E+01	5.4E-02	7.4E-03	2.0E-02	1.1E-02	1.3E-03	1.5E+00	2.2E+01	1.0E-01	1.3E-04	6.8E-03	3.4E-03	9.6E-02	6.9E+01
3	68-71	Summer Average	1.4E-01	1.7E+01	2.0E+01	1.9E+01	6.8E-02	9.4E-03	2.6E-02	1.4E-02	1.7E-03	1.9E+00	2.7E+01	1.3E-01	1.7E-04	8.7E-03	4.4E-03	1.2E-01	9.9E+01
4	80-83	Summer Average	1.7E-01	2.4E+01	2.9E+01	2.7E+01	8.2E-02	1.1E-02	3.2E-02	1.7E-02	2.1E-03	2.3E+00	3.2E+01	1.6E-01	2.1E-04	1.0E-02	5.3E-03	1.5E-01	1.3E+02
5	92-95	Summer Average	2.0E-01	3.9E+01	4.8E+01	4.4E+01	9.7E-02	1.3E-02	3.8E-02	2.0E-02	2.4E-03	2.7E+00	3.8E+01	1.9E-01	2.4E-04	1.2E-02	6.3E-03	1.7E-01	1.8E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-3
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Case
Third Portage Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[1]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**	
Third Portage Pit																
1	44-47	Summer Average	6.1	5.5E-05	2.8E-01	5.3E+01	3.4E-02	3.8E-01	6.8E-02	6.4E-03	6.9E-04	9.7E+01	2.4E-04	7.9E+02	0.0E+00	0.0E+00
2	56-59	Summer Average	6.1	6.0E-05	3.2E-01	5.1E+01	5.0E-02	3.8E-01	7.2E-02	9.1E-03	8.1E-04	9.6E+01	2.9E-04	7.9E+02	0.0E+00	0.0E+00
3	68-71	Summer Average	6.1	6.4E-05	3.5E-01	5.0E+01	6.5E-02	3.8E-01	7.4E-02	1.1E-02	8.9E-04	9.0E+01	3.3E-04	7.3E+02	0.0E+00	0.0E+00
4	80-83	Summer Average	6.1	6.9E-05	3.9E-01	4.9E+01	7.9E-02	3.8E-01	7.8E-02	1.4E-02	1.0E-03	8.9E+01	3.7E-04	7.1E+02	0.0E+00	0.0E+00
5	92-95	Summer Average	6.1	7.4E-05	4.4E-01	4.6E+01	9.6E-02	3.7E-01	8.1E-02	1.7E-02	1.1E-03	8.2E+01	4.3E-04	6.5E+02	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[1]						**0.1**				**0.0004**							**0.2**	
Third Portage Pit																		
1	44-47	Summer Average	0.0E+00	9.6E-03	7.5E-04	1.3E-02	2.8E-01	3.8E+00	3.9E+02	4.0E-05	8.2E+00	1.2E-02	3.5E+01	6.0E-01	1.7E-02	1.9E+02	7.2E-02	2.5E+01
2	56-59	Summer Average	0.0E+00	1.2E-02	8.6E-04	1.7E-02	2.9E-01	4.8E+00	3.9E+02	5.2E-05	8.4E+00	1.1E-02	3.5E+01	7.1E-01	1.6E-02	1.8E+02	9.6E-02	4.8E+00
3	68-71	Summer Average	0.0E+00	1.4E-02	9.4E-04	2.0E-02	2.9E-01	5.6E+00	3.6E+02	6.2E-05	8.2E+00	1.1E-02	3.2E+01	8.0E-01	1.5E-02	1.7E+02	1.2E-01	4.1E+00
4	80-83	Summer Average	0.0E+00	1.7E-02	1.0E-03	2.3E-02	2.9E-01	6.7E+00	3.6E+02	7.4E-05	8.3E+00	1.1E-02	3.2E+01	9.1E-01	1.5E-02	1.7E+02	1.4E-01	3.7E+00
5	92-95	Summer Average	0.0E+00	2.0E-02	1.2E-03	2.8E-02	2.9E-01	8.0E+00	3.3E+02	8.8E-05	8.0E+00	1.1E-02	3.0E+01	1.0E+00	1.4E-02	1.5E+02	1.7E-01	6.2E-01

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			**16**	**20**	**1**	**0.1**	**1**									**0.4**	
Third Portage Pit																	
1	44-47	Summer Average	3.0E+01	2.8E+01	9.8E-02	6.7E-03	2.1E-01	3.1E-03	1.0E-03	4.2E+00	5.1E+01	4.0E-01	1.0E-04	4.7E-03	1.8E-03	6.8E-02	1.3E+03
2	56-59	Summer Average	5.8E+00	5.4E+00	1.0E-01	8.2E-03	2.1E-01	4.3E-03	1.2E-03	4.3E+00	5.3E+01	4.0E-01	1.2E-04	5.0E-03	2.2E-03	8.9E-02	1.2E+03
3	68-71	Summer Average	5.0E+00	4.7E+00	1.1E-01	9.4E-03	2.0E-01	5.5E-03	1.4E-03	4.4E+00	5.4E+01	4.0E-01	1.4E-04	5.2E-03	2.7E-03	1.0E-01	1.2E+03
4	80-83	Summer Average	4.5E+00	4.2E+00	1.2E-01	1.1E-02	2.0E-01	6.7E-03	1.6E-03	4.6E+00	5.7E+01	4.1E-01	1.6E-04	5.6E-03	3.1E-03	1.2E-01	1.1E+03
5	92-95	Summer Average	7.6E-01	7.3E-01	1.3E-01	1.3E-02	1.9E-01	8.0E-03	1.9E-03	4.6E+00	5.8E+01	3.9E-01	1.9E-04	5.8E-03	3.7E-03	1.5E-01	1.0E+03

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-4
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Goose Island Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[1]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**	
Goose Island Pit																
4	80-83	Summer Average	6.1	2.7E-05	1.0E-01	3.6E+01	1.2E-02	2.5E-01	3.7E-02	1.4E-03	2.9E-04	6.6E+01	7.4E-05	5.5E+02	0.0E+00	0.0E+00
5	92-95	Summer Average	6.1	2.5E-05	9.6E-02	3.1E+01	3.4E-02	2.2E-01	3.3E-02	4.1E-03	3.2E-04	5.5E+01	7.9E-05	4.5E+02	0.0E+00	0.0E+00
6	99 - 110	Summer Average	6.1	2.4E-05	1.0E-01	2.7E+01	4.1E-02	2.0E-01	3.1E-02	5.0E-03	3.4E-04	4.9E+01	8.8E-05	4.0E+02	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[1]						**0.1**				**0.0004**						
Goose Island Pit																
4	80-83	Summer Average	0.0E+00	1.6E-03	3.3E-04	1.7E-03	1.7E-01	4.6E-01	2.6E+02	8.4E-06	5.3E+00	7.3E-03	2.4E+01	1.8E-01	1.1E-02	1.3E+02
5	92-95	Summer Average	0.0E+00	2.0E-03	3.5E-04	2.3E-03	1.5E-01	6.3E-01	2.2E+02	1.5E-05	4.6E+00	6.3E-03	2.0E+01	1.8E-01	9.5E-03	1.0E+02
6	99 - 110	Summer Average	0.0E+00	2.7E-03	3.6E-04	3.5E-03	1.3E-01	9.4E-01	2.0E+02	1.9E-05	4.2E+00	5.7E-03	1.7E+01	2.0E-01	8.5E-03	9.2E+01

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			**0.2**		**16**	**20**	**1**	**0.1**	**1**									**0.4**	
Goose Island Pit																			
4	80-83	Summer Average	5.5E-03	1.9E+01	2.3E+01	2.1E+01	5.0E-02	1.6E-03	1.4E-01	1.1E-03	3.3E-04	2.4E+00	2.8E+01	2.5E-01	3.2E-05	2.7E-03	6.5E-04	9.2E-03	8.9E+02
5	92-95	Summer Average	1.0E-02	1.2E-01	1.5E-01	1.4E-01	4.8E-02	1.7E-03	1.2E-01	2.9E-03	4.3E-04	2.1E+00	2.5E+01	2.2E-01	4.3E-05	2.8E-03	1.1E-03	1.3E-02	7.0E+02
6	99 - 110	Summer Average	1.7E-02	5.9E-03	7.2E-03	1.4E-02	4.6E-02	2.1E-03	1.1E-01	3.5E-03	4.9E-04	1.9E+00	2.3E+01	2.0E-01	4.9E-05	2.9E-03	1.3E-03	1.8E-02	6.2E+02

Start Flooding Goose Pit

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-5
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5		
8 METER ACTIVE ZONE																	
1	44	June	6.2	6.9E-06	1.3E-01	6.8E+00	1.05E-02	3.9E-02	7.8E-03	1.6E-03	1.0E-04	8.5E+00	3.64E-05	6.66E+01	0.00E+00	0.0E+00	0.0E+00
	45	July	6.2	1.4E-04	1.3E-01	6.8E+00	5.89E-02	6.3E-01	7.8E-02	2.9E-03	8.7E-04	1.1E+02	1.28E-03	7.92E+02	0.00E+00	0.0E+00	0.0E+00
	46	August	6.2	3.7E-05	1.3E-01	6.8E+00	6.19E-02	3.4E-01	4.4E-02	6.5E-03	5.2E-04	5.4E+01	2.70E-04	4.19E+02	0.00E+00	0.0E+00	0.0E+00
	47	September	6.2	3.7E-05	1.3E-01	6.8E+00	5.40E-02	2.6E-01	3.6E-02	6.2E-03	4.8E-04	4.2E+01	2.98E-04	3.19E+02	0.00E+00	0.0E+00	0.0E+00
2	56	June	6.2	1.3E-05	1.3E-01	6.8E+00	1.94E-02	7.2E-02	1.5E-02	3.1E-03	2.0E-04	1.7E+01	7.19E-05	1.36E+02	0.00E+00	0.0E+00	0.0E+00
	57	July	6.2	1.1E-04	1.3E-01	6.8E+00	3.57E-02	4.4E-01	6.0E-02	2.0E-03	6.6E-04	8.9E+01	9.65E-04	6.62E+02	0.00E+00	0.0E+00	0.0E+00
	58	August	6.2	3.4E-05	1.3E-01	6.8E+00	5.13E-02	2.9E-01	4.0E-02	5.8E-03	4.7E-04	5.2E+01	2.22E-04	4.18E+02	0.00E+00	0.0E+00	0.0E+00
	59	September	6.2	3.8E-05	1.3E-01	6.8E+00	5.40E-02	2.4E-01	3.7E-02	6.8E-03	4.9E-04	4.2E+01	2.78E-04	3.24E+02	0.00E+00	0.0E+00	0.0E+00
3	68	June	6.2	2.2E-05	1.3E-01	6.8E+00	2.37E-02	1.5E-01	2.7E-02	3.6E-03	2.9E-04	3.8E+01	9.55E-05	3.14E+02	0.00E+00	0.0E+00	0.0E+00
	69	July	6.2	8.5E-05	1.3E-01	6.8E+00	2.69E-02	4.0E-01	5.6E-02	1.6E-03	5.7E-04	8.7E+01	7.02E-04	6.63E+02	0.00E+00	0.0E+00	0.0E+00
	70	August	6.2	3.5E-05	1.3E-01	6.8E+00	4.81E-02	2.9E-01	4.2E-02	5.7E-03	4.8E-04	5.6E+01	2.09E-04	4.49E+02	0.00E+00	0.0E+00	0.0E+00
	71	September	6.2	4.0E-05	1.3E-01	6.8E+00	5.60E-02	2.5E-01	4.1E-02	7.4E-03	5.4E-04	4.7E+01	2.76E-04	3.68E+02	0.00E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]					0.1				0.0004							0.2	
8 METER ACTIVE ZONE																	
1	44	June	1.6E-03	1.1E-04	2.22E-03	2.9E-02	4.0E-02	3.4E+01	7.75E-06	8.2E-01	1.2E-03	3.0E+00	8.8E-02	1.5E-03	2.0E+01	1.30E-02	1.3E+01
	45	July	6.0E-02	1.9E-03	2.16E-02	1.6E+00	4.0E-02	4.4E+02	4.02E-04	9.8E+00	1.7E-02	4.0E+01	8.4E-01	1.7E-02	1.8E+02	1.50E-01	7.5E-01
	46	August	1.2E-02	5.6E-04	1.32E-02	1.7E-01	4.0E-02	2.2E+02	4.02E-05	5.5E+00	6.9E-03	2.0E+01	5.9E-01	9.0E-03	9.9E+01	1.11E-01	4.7E+00
	47	September	1.4E-02	5.7E-04	1.26E-02	2.4E-01	4.0E-02	1.7E+02	6.44E-05	4.4E+00	5.8E-03	1.5E+01	5.1E-01	6.7E-03	7.6E+01	9.64E-02	4.4E+00
2	56	June	3.2E-03	2.1E-04	4.50E-03	5.3E-02	4.0E-02	6.7E+01	1.51E-05	1.6E+00	2.1E-03	6.0E+00	1.7E-01	2.8E-03	3.6E+01	2.65E-02	1.1E+01
	57	July	4.6E-02	1.5E-03	1.58E-02	1.3E+00	4.0E-02	3.6E+02	3.12E-04	7.8E+00	1.3E-02	3.2E+01	5.9E-01	1.3E-02	1.5E+02	9.75E-02	4.2E-01
	58	August	9.6E-03	5.1E-04	1.10E-02	1.6E-01	4.0E-02	2.1E+02	3.49E-05	5.1E+00	6.5E-03	1.9E+01	4.9E-01	8.7E-03	9.8E+01	8.62E-02	3.5E+00
	59	September	1.3E-02	5.9E-04	1.23E-02	2.3E-01	4.0E-02	1.7E+02	6.27E-05	4.4E+00	5.9E-03	1.5E+01	4.9E-01	6.9E-03	7.7E+01	8.73E-02	3.9E+00
3	68	June	3.7E-03	3.2E-04	4.96E-03	1.1E-01	4.0E-02	1.5E+02	1.78E-05	3.3E+00	4.5E-03	1.4E+01	2.3E-01	6.6E-03	7.6E+01	2.76E-02	8.6E+00
	69	July	3.2E-02	1.1E-03	1.16E-02	9.4E-01	4.0E-02	3.5E+02	2.20E-04	7.4E+00	1.2E-02	3.1E+01	4.8E-01	1.4E-02	1.5E+02	7.02E-02	3.6E-01
	70	August	8.9E-03	5.2E-04	1.03E-02	1.7E-01	4.0E-02	2.3E+02	3.35E-05	5.3E+00	6.9E-03	2.0E+01	4.7E-01	9.5E-03	1.0E+02	7.73E-02	3.3E+00
	71	September	1.3E-02	6.2E-04	1.29E-02	2.4E-01	4.0E-02	1.9E+02	6.13E-05	4.8E+00	6.5E-03	1.7E+01	5.2E-01	8.0E-03	8.7E+01	8.80E-02	3.8E+00

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			16	20	1	0.1	1									0.4	
8 METER ACTIVE ZONE																	
1	44	June	1.62E+01	1.50E+01	1.20E-02	1.03E-03	2.1E-02	8.8E-04	1.7E-04	4.5E-01	5.6E+00	4.1E-02	1.7E-05	6.3E-04	3.7E-04	1.17E-02	1.4E+02
	45	July	9.11E-01	9.88E-01	1.40E-01	8.27E-03	2.1E-01	1.9E-03	9.7E-04	1.0E+01	1.3E+02	4.8E-01	1.0E-04	7.9E-03	1.3E-03	2.42E-01	1.3E+03
	46	August	5.74E+00	5.33E+00	7.02E-02	7.46E-03	1.2E-01	3.5E-03	8.4E-04	2.9E+00	4.4E+01	2.6E-01	8.8E-05	3.4E-03	1.5E-03	1.53E-01	6.6E+02
	47	September	5.36E+00	4.98E+00	6.42E-02	6.31E-03	8.7E-02	3.3E-03	7.7E-04	2.8E+00	4.0E+01	2.0E-01	8.0E-05	3.1E-03	1.4E-03	1.25E-01	5.2E+02
2	56	June	1.37E+01	1.27E+01	2.14E-02	2.06E-03	3.7E-02	1.6E-03	3.4E-04	8.2E-01	1.0E+01	7.7E-02	3.3E-05	1.2E-03	7.0E-04	2.38E-02	2.4E+02
	57	July	5.14E-01	5.89E-01	1.07E-01	5.49E-03	1.7E-01	1.3E-03	7.3E-04	8.0E+00	9.9E+01	3.7E-01	7.7E-05	6.1E-03	9.5E-04	1.51E-01	1.1E+03
	58	August	4.26E+00	3.95E+00	6.27E-02	6.06E-03	1.1E-01	3.2E-03	7.5E-04	2.6E+00	3.8E+01	2.4E-01	7.7E-05	3.2E-03	1.4E-03	1.13E-01	6.5E+02
	59	September	4.69E+00	4.36E+00	6.41E-02	5.95E-03	9.1E-02	3.7E-03	8.0E-04	2.8E+00	3.8E+01	2.0E-01	8.2E-05	3.2E-03	1.6E-03	1.05E-01	5.2E+02
3	68	June	1.04E+01	9.66E+00	3.84E-02	2.56E-03	8.6E-02	2.1E-03	4.4E-04	1.6E+00	2.0E+01	1.6E-01	4.4E-05	2.1E-03	9.2E-04	2.62E-02	4.9E+02
	69	July	4.36E-01	4.83E-01	9.38E-02	4.46E-03	1.7E-01	1.1E-03	6.2E-04	6.5E+00	8.0E+01	3.6E-01	6.5E-05	5.3E-03	8.4E-04	1.10E-01	1.0E+03
	70	August	3.96E+00	3.68E+00	6.42E-02	5.68E-03	1.2E-01	3.2E-03	7.4E-04	2.7E+00	3.7E+01	2.5E-01	7.6E-05	3.3E-03	1.4E-03	9.87E-02	6.9E+02
	71	September	4.61E+00	4.29E+00	6.91E-02	6.21E-03	1.0E-01	4.1E-03	8.7E-04	2.9E+00	3.9E+01	2.3E-01	8.9E-05	3.6E-03	1.7E-03	1.01E-01	5.8E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table G-6
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Portage Reclaim Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5
1	39-50	Annual Average	8	2.8E-04	7.0E-02	3.6E+01	8.52E-03	3.8E-01	1.0E-01	5.4E-03	2.9E-03	4.4E+01	4.48E-04	1.56E+02	2.80E+00
2	51-62	Annual Average	8	7.4E-04	1.9E-01	1.2E+02	2.55E-02	5.4E-01	2.0E-01	1.1E-02	9.0E-03	1.0E+02	1.10E-03	3.79E+02	1.07E+01
3	63-74	Annual Average	8	9.0E-04	2.4E-01	1.7E+02	3.22E-02	5.5E-01	2.3E-01	1.3E-02	1.2E-02	1.5E+02	1.32E-03	5.05E+02	1.04E+01
4	75-86	Annual Average	8	7.4E-04	4.6E-01	2.1E+02	3.53E-02	5.3E-01	2.1E-01	1.2E-02	1.0E-02	2.0E+02	1.18E-03	5.50E+02	9.66E+00
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)															
5	87-98	Annual Average	8	2.1E-04	4.4E-01	1.4E+02	2.66E-02	3.0E-01	9.1E-02	5.6E-03	3.4E-03	1.4E+02	4.59E-04	4.06E+02	1.78E+00
6	99-110	Annual Average	8	2.3E-04	3.8E-01	1.4E+02	4.38E-02	3.2E-01	1.1E-01	8.4E-03	4.4E-03	2.3E+02	5.56E-04	3.59E+02	1.30E+00
7	111-122	Annual Average	8	2.6E-04	4.2E-01	1.8E+02	7.32E-02	3.9E-01	1.6E-01	1.3E-02	6.2E-03	4.0E+02	7.34E-04	3.15E+02	5.43E-01
8	123-134	Annual Average	8	2.7E-04	4.7E-01	2.3E+02	1.12E-01	4.5E-01	2.1E-01	1.9E-02	7.8E-03	5.8E+02	8.98E-04	2.76E+02	8.15E-02
9	135-146	Annual Average	8	8.3E-04	1.5E+00	7.8E+02	6.00E-01	1.6E+00	7.3E-01	9.0E-02	2.7E-02	2.2E+03	3.07E-03	6.94E+02	8.06E-02

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)
Water License Discharge Criteria[2]							0.1				0.0004							0.2
1	39-50	Annual Average	1.4E+02	2.8E+02	1.8E-01	5.3E-03	1.10E-01	5.5E-01	6.2E+00	1.8E+02	1.50E-04	8.9E+01	4.2E-02	1.7E+01	1.0E-01	3.8E-02	5.8E+02	1.32E-02
2	51-62	Annual Average	4.3E+02	8.7E+02	5.8E-01	1.1E-02	3.40E-01	9.7E-01	1.9E+01	4.3E+02	1.89E-04	2.7E+02	9.9E-02	4.1E+01	3.0E-01	1.1E-01	1.8E+03	4.01E-02
3	63-74	Annual Average	5.3E+02	1.1E+03	7.2E-01	1.2E-02	4.23E-01	1.0E+00	2.4E+01	6.0E+02	1.90E-04	3.3E+02	1.2E-01	5.5E+01	4.9E-01	1.4E-01	2.2E+03	4.89E-02
4	75-86	Annual Average	4.3E+02	8.8E+02	6.0E-01	1.0E-02	3.96E-01	9.0E-01	2.1E+01	7.4E+02	1.91E-04	2.8E+02	9.9E-02	5.6E+01	6.1E-01	1.2E-01	1.9E+03	5.20E-02
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)																		
5	87-98	Annual Average	1.1E+02	2.4E+02	1.8E-01	3.6E-03	1.48E-01	3.9E-01	8.7E+00	4.9E+02	1.00E-04	8.0E+01	3.3E-02	3.1E+01	4.3E-01	4.5E-02	5.8E+02	3.57E-02
6	99-110	Annual Average	1.4E+02	2.6E+02	2.1E-01	4.5E-03	1.86E-01	4.3E-01	8.3E+00	7.2E+02	1.31E-04	9.2E+01	4.0E-02	3.5E+01	5.2E-01	7.5E-02	6.6E+02	4.63E-02
7	111-122	Annual Average	2.1E+02	2.9E+02	2.4E-01	6.3E-03	2.18E-01	5.2E-01	8.2E+00	1.2E+03	1.88E-04	1.1E+02	5.4E-02	4.5E+01	6.7E-01	1.5E-01	8.1E+02	6.32E-02
8	123-134	Annual Average	2.9E+02	2.9E+02	2.5E-01	8.0E-03	2.14E-01	5.8E-01	7.1E+00	1.7E+03	2.50E-04	1.2E+02	6.6E-02	5.5E+01	8.4E-01	2.5E-01	9.1E+02	8.31E-02
9	135-146	Annual Average	1.0E+03	8.3E+02	7.4E-01	2.8E-02	6.06E-01	1.9E+00	1.8E+01	6.2E+03	9.36E-04	3.8E+02	2.2E-01	1.9E+02	2.9E+00	9.7E-01	2.9E+03	2.90E-01

Year	GoldSim Month	Actual Month	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]				16	20	1	0.1	1									0.4	
1	39-50	Annual Average	2.4E-01	2.89E-01	6.05E-01	1.88E-01	2.08E-03	1.5E-01	3.8E-03	8.0E-03	3.0E+00	1.5E+03	5.0E-01	1.0E-03	4.8E-03	7.6E-02	2.54E-02	2.8E+03
2	51-62	Annual Average	5.2E-01	6.30E-01	1.62E+00	5.91E-01	3.40E-03	3.9E-01	9.3E-03	1.9E-02	8.7E+00	4.6E+03	1.6E+00	2.1E-03	1.3E-02	6.8E-02	6.03E-02	8.6E+03
3	63-74	Annual Average	5.9E-01	7.17E-01	1.94E+00	7.86E-01	3.59E-03	4.9E-01	1.2E-02	2.3E-02	1.1E+01	5.8E+03	2.3E+00	2.4E-03	1.7E-02	4.1E-02	7.69E-02	1.1E+04
4	75-86	Annual Average	7.6E-01	9.20E-01	1.95E+00	7.59E-01	3.84E-03	4.8E-01	1.2E-02	2.0E-02	1.1E+01	4.9E+03	2.3E+00	2.0E-03	1.6E-02	2.6E-02	8.88E-02	9.5E+03
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)																		
5	87-98	Annual Average	1.0E+00	1.21E+00	1.47E+00	3.14E-01	2.91E-03	2.4E-01	6.5E-03	6.7E-03	4.9E+00	1.6E+03	1.1E+00	6.8E-04	7.5E-03	8.5E-03	5.80E-02	3.3E+03
6	99-110	Annual Average	1.1E+00	1.38E+00	1.72E+00	4.03E-01	3.18E-03	2.6E-01	1.5E-02	8.6E-03	5.6E+00	2.1E+03	1.4E+00	8.7E-04	1.1E-02	1.1E-02	7.19E-02	4.7E+03
7	111-122	Annual Average	9.7E-01	1.18E+00	1.71E+00	5.54E-01	3.24E-03	2.8E-01	3.5E-02	1.2E-02	6.6E+00	3.2E+03	2.1E+00	1.2E-03	1.9E-02	1.6E-02	9.46E-02	6.8E+03
8	123-134	Annual Average	8.1E-01	9.90E-01	1.66E+00	6.86E-01	3.30E-03	2.6E-01	6.1E-02	1.6E-02	7.5E+00	4.3E+03	2.8E+00	1.6E-03	2.7E-02	2.1E-02	1.18E-01	8.8E+03
9	135-146	Annual Average	1.9E+00	2.35E+00	4.69E+00	2.36E+00	9.60E-03	7.5E-01	2.6E-01	5.5E-02	2.4E+01	1.5E+04	1.0E+01	5.5E-03	1.0E-01	7.6E-02	4.02E-01	3.0E+04

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-7
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**		
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
6	99 - 110	Annual Average	6.7	1.9E-05	9.3E-02	2.3E+01	1.1E-02	1.6E-01	2.4E-02	8.4E-04	1.9E-04	4.1E+01	6.6E-05	3.3E+02	0.0E+00	0.0E+00	0.0E+00
7	111 - 122	Annual Average	6.7	1.8E-05	1.0E-01	1.9E+01	1.1E-02	1.3E-01	2.0E-02	1.3E-03	1.6E-04	3.0E+01	6.8E-05	2.4E+02	0.0E+00	0.0E+00	0.0E+00
8	123 - 134	Annual Average	6.7	1.7E-05	1.1E-01	1.7E+01	1.1E-02	1.2E-01	1.9E-02	1.4E-03	1.5E-04	2.8E+01	6.9E-05	2.2E+02	0.0E+00	0.0E+00	0.0E+00
9	135 - 146	Annual Average	6.7	1.6E-05	9.9E-02	1.5E+01	1.0E-02	1.0E-01	1.7E-02	1.3E-03	1.3E-04	2.4E+01	6.4E-05	1.9E+02	0.0E+00	0.0E+00	0.0E+00
10	147 - 158	Annual Average	6.7	1.3E-05	8.4E-02	1.2E+01	8.4E-03	8.3E-02	1.4E-02	1.1E-03	1.0E-04	1.8E+01	5.4E-05	1.4E+02	0.0E+00	0.0E+00	0.0E+00
11	159 - 170	Annual Average	6.7	1.3E-05	8.5E-02	1.2E+01	8.3E-03	8.0E-02	1.3E-02	1.1E-03	1.0E-04	1.7E+01	5.4E-05	1.3E+02	0.0E+00	0.0E+00	0.0E+00
12	171 - 182	Annual Average	6.7	1.2E-05	8.6E-02	1.1E+01	8.2E-03	7.6E-02	1.3E-02	1.1E-03	9.4E-05	1.6E+01	5.4E-05	1.2E+02	0.0E+00	0.0E+00	0.0E+00
Long-term Goose Pit Lake Water Quality																	
20	267 - 278	Annual Average	6.7	1.1E-05	8.9E-02	9.7E+00	6.9E-03	6.4E-02	1.1E-02	9.8E-04	8.0E-05	1.3E+01	5.3E-05	9.8E+01	0.0E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]					**0.1**				**0.0004**							**0.2**	
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
6	99 - 110	Annual Average	1.9E-03	3.1E-04	1.9E-03	1.3E-01	3.1E-01	1.6E+02	1.4E-05	3.6E+00	4.9E-03	1.5E+01	1.3E-01	7.0E-03	7.7E+01	8.4E-03	9.4E-04
7	111 - 122	Annual Average	2.1E-03	3.5E-04	1.7E-03	1.2E-01	3.3E-01	1.2E+02	2.2E-05	2.7E+00	4.1E-03	1.1E+01	9.9E-02	5.2E-03	5.6E+01	6.6E-03	9.6E-04
8	123 - 134	Annual Average	2.2E-03	3.6E-04	1.7E-03	1.2E-01	3.3E-01	1.1E+02	2.3E-05	2.6E+00	4.0E-03	9.8E+00	9.4E-02	4.7E-03	5.1E+01	6.7E-03	6.2E-01
9	135 - 146	Annual Average	2.1E-03	3.4E-04	1.6E-03	1.1E-01	3.0E-01	9.5E+01	2.2E-05	2.3E+00	3.5E-03	8.5E+00	8.3E-02	4.1E-03	4.4E+01	6.2E-03	1.1E+00
10	147 - 158	Annual Average	1.8E-03	2.9E-04	1.3E-03	9.2E-02	2.5E-01	7.4E+01	2.0E-05	1.8E+00	2.8E-03	6.6E+00	6.5E-02	3.2E-03	3.4E+01	5.1E-03	7.2E-01
11	159 - 170	Annual Average	1.8E-03	2.9E-04	1.3E-03	9.2E-02	2.4E-01	6.9E+01	2.1E-05	1.7E+00	2.8E-03	6.1E+00	6.2E-02	3.0E-03	3.1E+01	5.0E-03	6.3E-01
12	171 - 182	Annual Average	1.8E-03	3.0E-04	1.3E-03	9.1E-02	2.4E-01	6.4E+01	2.1E-05	1.6E+00	2.7E-03	5.7E+00	5.9E-02	2.8E-03	2.9E+01	5.0E-03	5.8E-01
Long-term Goose Pit Lake Water Quality																	
20	267 - 278	Annual Average	1.9E-03	2.9E-04	1.2E-03	8.8E-02	2.1E-01	5.2E+01	2.2E-05	1.4E+00	2.4E-03	4.6E+00	4.9E-02	2.2E-03	2.3E+01	4.4E-03	4.6E-01

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**16**	**20**	**1**	**0.1**	**1**									**0.4**	
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
6	99 - 110	Annual Average	1.1E-03	4.6E-03	3.4E-02	1.1E-03	8.7E-02	1.5E-03	3.0E-04	1.6E+00	1.9E+01	1.6E-01	3.8E-05	1.7E-03	2.7E-03	1.7E-02	5.1E+02
7	111 - 122	Annual Average	1.2E-03	6.8E-03	2.5E-02	9.6E-04	6.4E-02	1.2E-03	3.5E-04	1.2E+00	1.5E+01	1.2E-01	5.0E-05	1.4E-03	5.0E-03	1.0E-02	3.7E+02
8	123 - 134	Annual Average	7.5E-01	7.0E-01	2.4E-02	9.3E-04	5.9E-02	1.2E-03	3.6E-04	1.2E+00	1.4E+01	1.1E-01	5.3E-05	1.4E-03	5.5E-03	9.8E-03	3.5E+02
9	135 - 146	Annual Average	1.3E+00	1.2E+00	2.1E-02	8.3E-04	5.1E-02	1.1E-03	3.4E-04	1.0E+00	1.3E+01	9.2E-02	5.1E-05	1.2E-03	5.4E-03	8.7E-03	3.0E+02
10	147 - 158	Annual Average	8.8E-01	8.2E-01	1.6E-02	6.7E-04	3.9E-02	8.7E-04	2.9E-04	8.0E-01	1.0E+01	7.1E-02	4.4E-05	9.6E-04	4.8E-03	7.0E-03	2.3E+02
11	159 - 170	Annual Average	7.7E-01	7.2E-01	1.5E-02	6.5E-04	3.7E-02	8.5E-04	2.9E-04	7.6E-01	9.6E+00	6.6E-02	4.5E-05	9.2E-04	5.2E-03	6.8E-03	2.1E+02
12	171 - 182	Annual Average	7.0E-01	6.5E-01	1.4E-02	6.2E-04	3.4E-02	8.4E-04	3.0E-04	7.2E-01	9.2E+00	6.1E-02	4.7E-05	8.8E-04	5.5E-03	6.7E-03	2.0E+02
Long-term Goose Pit Lake Water Quality																	
20	267 - 278	Annual Average	5.6E-01	5.2E-01	1.2E-02	5.3E-04	2.7E-02	7.2E-04	2.8E-04	6.2E-01	8.1E+00	4.9E-02	4.6E-05	7.5E-04	5.5E-03	5.9E-03	1.6E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table G-8
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**			
8 METER ACTIVE ZONE																		
Filling of Pit Lake																		
6	99 - 110	Annual Average	6.7	3.2E-05	1.2E-01	3.6E+01	1.04E-01	3.4E-01	4.6E-02	2.4E-03	6.1E-04	4.7E+01	2.07E-04	3.35E+02	0.00E+00	0.0E+00	0.0E+00	8.0E-03
7	111 22	Annual Average	6.7	1.8E-05	7.1E-02	1.2E+01	1.92E-02	1.0E-01	1.9E-02	2.0E-03	1.6E-04	1.4E+01	8.41E-05	9.20E+01	0.00E+00	0.0E+00	0.0E+00	3.0E-03
8	123 34	Annual Average	6.7	1.7E-05	6.7E-02	1.1E+01	1.72E-02	9.7E-02	1.9E-02	1.9E-03	1.5E-04	1.2E+01	8.03E-05	7.90E+01	0.00E+00	0.0E+00	0.0E+00	2.9E-03
9	135 46	Annual Average	6.7	1.6E-05	6.3E-02	1.0E+01	1.58E-02	9.0E-02	1.7E-02	1.8E-03	1.3E-04	1.1E+01	7.54E-05	6.82E+01	0.00E+00	0.0E+00	0.0E+00	2.7E-03
10	147 - 158	Annual Average	6.7	1.5E-05	5.6E-02	9.0E+00	1.37E-02	8.1E-02	1.6E-02	1.6E-03	1.2E-04	9.2E+00	6.81E-05	5.68E+01	0.00E+00	0.0E+00	0.0E+00	2.4E-03
11	159 - 170	Annual Average	6.7	1.5E-05	5.4E-02	8.5E+00	1.22E-02	7.7E-02	1.5E-02	1.6E-03	1.1E-04	8.3E+00	6.50E-05	5.00E+01	0.00E+00	0.0E+00	0.0E+00	2.2E-03
12	171 - 182	Annual Average	6.7	1.4E-05	5.1E-02	8.0E+00	1.11E-02	7.3E-02	1.5E-02	1.5E-03	9.6E-05	7.5E+00	6.22E-05	4.35E+01	0.00E+00	0.0E+00	0.0E+00	2.1E-03
Long-term Portage Pit Lake Water Quality																		
20	267 - 278	Annual Average	6.7	1.3E-05	5.0E-02	7.2E+00	8.82E-03	6.4E-02	1.3E-02	1.3E-03	7.7E-05	6.1E+00	5.62E-05	3.33E+01	0.00E+00	0.0E+00	0.0E+00	1.9E-03

Year	GoldSim Month	Actual Month	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]				**0.1**				**0.0004**							**0.2**	
8 METER ACTIVE ZONE																
Filling of Pit Lake																
6	99 - 110	Annual Average	1.1E-03	1.72E-02	1.3E-01	1.3E+00	2.0E+02	5.83E-05	8.7E+00	7.0E-03	1.9E+01	5.2E-01	9.1E-03	8.3E+01	1.04E-01	1.1E+01
7	111 22	Annual Average	6.0E-04	4.70E-03	9.3E-02	8.3E-01	5.6E+01	3.47E-05	2.4E+00	3.6E-03	5.1E+00	1.5E-01	2.6E-03	2.3E+01	2.37E-02	1.3E+00
8	123 34	Annual Average	5.9E-04	4.37E-03	9.1E-02	7.9E-01	4.9E+01	3.46E-05	2.2E+00	3.5E-03	4.5E+00	1.3E-01	2.3E-03	2.0E+01	2.20E-02	1.0E+00
9	135 46	Annual Average	5.7E-04	4.05E-03	8.7E-02	7.4E-01	4.4E+01	3.36E-05	2.0E+00	3.3E-03	4.0E+00	1.2E-01	2.0E-03	1.7E+01	2.03E-02	9.2E-01
10	147 - 158	Annual Average	5.4E-04	3.57E-03	8.0E-02	6.5E-01	3.7E+01	3.13E-05	1.8E+00	3.0E-03	3.5E+00	1.1E-01	1.8E-03	1.4E+01	1.79E-02	7.7E-01
11	159 - 170	Annual Average	5.3E-04	3.29E-03	7.9E-02	6.1E-01	3.4E+01	3.10E-05	1.7E+00	2.9E-03	3.1E+00	9.7E-02	1.6E-03	1.3E+01	1.64E-02	6.4E-01
12	171 - 182	Annual Average	5.3E-04	3.06E-03	7.8E-02	5.7E-01	3.1E+01	3.07E-05	1.6E+00	2.9E-03	2.8E+00	8.9E-02	1.5E-03	1.1E+01	1.51E-02	5.5E-01
Long-term Portage Pit Lake Water Quality																
20	267 - 278	Annual Average	4.9E-04	2.55E-03	7.4E-02	4.7E-01	2.5E+01	2.92E-05	1.4E+00	2.6E-03	2.3E+00	7.2E-02	1.2E-03	8.6E+00	1.23E-02	4.2E-01

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**16**	**20**	**1**	**0.1**	**1**									**0.4**	
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
6	99 - 110	Annual Average	1.32E+01	1.22E+01	1.25E-01	3.08E-03	8.86E-02	2.7E-02	1.2E-03	3.1E+00	3.7E+01	2.9E-01	1.8E-04	2.2E-03	1.1E-02	3.71E-01	5.9E+02
7	111 22	Annual Average	1.55E+00	1.44E+00	2.44E-02	1.59E-03	2.68E-02	3.8E-03	6.6E-04	7.7E-01	1.1E+01	6.6E-02	1.1E-04	9.4E-04	1.2E-02	4.88E-02	1.6E+02
8	123 34	Annual Average	1.26E+00	1.17E+00	2.14E-02	1.51E-03	2.35E-02	3.3E-03	6.5E-04	6.9E-01	1.0E+01	5.8E-02	1.1E-04	8.7E-04	1.3E-02	4.29E-02	1.4E+02
9	135 46	Annual Average	1.12E+00	1.04E+00	1.93E-02	1.40E-03	2.06E-02	3.0E-03	6.3E-04	6.1E-01	9.1E+00	5.1E-02	1.1E-04	7.9E-04	1.3E-02	3.93E-02	1.3E+02
10	147 - 158	Annual Average	9.34E-01	8.69E-01	1.65E-02	1.25E-03	1.74E-02	2.6E-03	5.9E-04	5.3E-01	8.0E+00	4.3E-02	1.0E-04	7.0E-04	1.2E-02	3.38E-02	1.1E+02
11	159 - 170	Annual Average	7.77E-01	7.23E-01	1.46E-02	1.18E-03	1.57E-02	2.3E-03	5.8E-04	4.7E-01	7.4E+00	3.8E-02	9.9E-05	6.5E-04	1.2E-02	2.97E-02	9.5E+01
12	171 - 182	Annual Average	6.69E-01	6.23E-01	1.30E-02	1.11E-03	1.39E-02	2.0E-03	5.7E-04	4.3E-01	6.9E+00	3.3E-02	9.9E-05	6.0E-04	1.3E-02	2.67E-02	8.4E+01
Long-term Portage Pit Lake Water Quality																	
20	267 - 278	Annual Average	5.10E-01	4.77E-01	1.04E-02	9.25E-04	1.10E-02	1.6E-03	5.2E-04	3.6E-01	5.9E+00	2.6E-02	9.3E-05	5.0E-04	1.2E-02	2.14E-02	6.7E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table G-9
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.1						0.002	500						0.1			
8 METER ACTIVE ZONE																							
5	92	June	8	8.4E-17	1.0E-12	1.2E-09	2.0E-12	2.0E-13	4.3E-13	4.1E-15	4.1E-15	6.0E-10	4.1E-16	4.1E-12	0.0E+00	0.0E+00	0.0E+00	5.3E-15	4.1E-15	2.8E-14	1.6E-12	2.5E-13	2.4E-09
	93	July	8	6.0E-07	7.2E-03	1.9E+00	1.4E-02	1.4E-03	3.1E-03	2.9E-05	2.9E-05	9.5E-01	2.9E-06	6.5E-03	0.0E+00	0.0E+00	0.0E+00	3.8E-05	2.9E-05	2.0E-04	2.6E-03	4.0E-04	3.7E+00
	94	August	8	1.3E-06	1.5E-02	5.6E+00	2.9E-02	3.0E-03	6.5E-03	6.2E-05	6.2E-05	2.8E+00	6.2E-06	1.9E-02	0.0E+00	0.0E+00	0.0E+00	8.0E-05	6.2E-05	4.1E-04	7.5E-03	1.2E-03	1.1E+01
	95	September	8	1.6E-06	1.9E-02	7.9E+00	3.6E-02	3.7E-03	8.1E-03	7.8E-05	7.8E-05	3.9E+00	7.8E-06	2.7E-02	0.0E+00	0.0E+00	0.0E+00	1.0E-04	7.8E-05	5.2E-04	1.1E-02	1.6E-03	1.5E+01
6	104	June	8	1.2E-07	1.5E-03	5.2E-01	2.8E-03	2.9E-04	6.3E-04	6.0E-06	6.0E-06	2.6E-01	6.0E-07	1.8E-03	0.0E+00	0.0E+00	0.0E+00	7.8E-06	6.0E-06	4.0E-05	6.9E-04	1.1E-04	1.0E+00
	105	July	8	6.6E-07	8.1E-03	2.2E+00	1.5E-02	1.6E-03	3.4E-03	3.3E-05	3.3E-05	1.1E+00	3.3E-06	7.5E-03	0.0E+00	0.0E+00	0.0E+00	4.2E-05	3.3E-05	2.2E-04	2.9E-03	4.5E-04	4.2E+00
	106	August	8	1.3E-06	1.6E-02	5.9E+00	3.1E-02	3.2E-03	6.9E-03	6.6E-05	6.6E-05	2.9E+00	6.6E-06	2.0E-02	0.0E+00	0.0E+00	0.0E+00	8.6E-05	6.6E-05	4.4E-04	7.9E-03	1.2E-03	1.2E+01
	107	September	8	1.7E-06	2.0E-02	8.2E+00	3.8E-02	3.9E-03	8.5E-03	8.2E-05	8.2E-05	4.1E+00	8.2E-06	2.8E-02	0.0E+00	0.0E+00	0.0E+00	1.1E-04	8.2E-05	5.5E-04	1.1E-02	1.7E-03	1.6E+01
7	116	June	8	8.0E-07	9.7E-03	3.4E+00	1.8E-02	1.9E-03	4.1E-03	3.9E-05	3.9E-05	1.7E+00	3.9E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	5.1E-05	3.9E-05	2.6E-04	4.5E-03	7.0E-04	6.6E+00
	117	July	8	1.1E-06	1.3E-02	3.9E+00	2.5E-02	2.6E-03	5.7E-03	5.4E-05	5.4E-05	1.9E+00	5.4E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	7.0E-05	5.4E-05	3.6E-04	5.2E-03	8.2E-04	7.6E+00
	118	August	8	2.0E-06	2.4E-02	8.4E+00	4.5E-02	4.6E-03	1.0E-02	9.6E-05	9.6E-05	4.2E+00	9.6E-06	2.9E-02	0.0E+00	0.0E+00	0.0E+00	1.2E-04	9.6E-05	6.4E-04	1.1E-02	1.7E-03	1.6E+01
	119	September	8	2.3E-06	2.8E-02	1.1E+01	5.3E-02	5.5E-03	1.2E-02	1.2E-04	1.2E-04	5.6E+00	1.2E-05	3.8E-02	0.0E+00	0.0E+00	0.0E+00	1.5E-04	1.2E-04	7.7E-04	1.5E-02	2.3E-03	2.2E+01
8	128	June	8	1.4E-06	1.7E-02	6.0E+00	3.2E-02	3.3E-03	7.2E-03	6.9E-05	6.9E-05	3.0E+00	6.9E-06	2.1E-02	0.0E+00	0.0E+00	0.0E+00	9.0E-05	6.9E-05	4.6E-04	8.1E-03	1.3E-03	1.2E+01
	129	July	8	1.4E-06	1.7E-02	5.2E+00	3.2E-02	3.3E-03	7.2E-03	6.9E-05	6.9E-05	2.6E+00	6.9E-06	1.8E-02	0.0E+00	0.0E+00	0.0E+00	8.9E-05	6.9E-05	4.6E-04	7.0E-03	1.1E-03	1.0E+01
	130	August	8	2.2E-06	2.7E-02	9.6E+00	5.1E-02	5.3E-03	1.1E-02	1.1E-04	1.1E-04	4.8E+00	1.1E-05	3.3E-02	0.0E+00	0.0E+00	0.0E+00	1.4E-04	1.1E-04	7.3E-04	1.3E-02	2.0E-03	1.9E+01
	131	September	8	2.6E-06	3.1E-02	1.2E+01	5.8E-02	6.0E-03	1.3E-02	1.3E-04	1.3E-04	6.1E+00	1.3E-05	4.2E-02	0.0E+00	0.0E+00	0.0E+00	1.6E-04	1.3E-04	8.4E-04	1.6E-02	2.5E-03	2.4E+01
9	140	June	8	1.5E-06	1.9E-02	6.5E+00	3.5E-02	3.6E-03	7.8E-03	7.5E-05	7.5E-05	3.2E+00	7.5E-06	2.2E-02	0.0E+00	0.0E+00	0.0E+00	9.7E-05	7.5E-05	5.0E-04	8.8E-03	1.4E-03	1.3E+01
	141	July	8	1.0E-05	1.2E-01	3.0E+01	2.3E-01	2.4E-02	5.3E-02	5.0E-04	5.0E-04	1.5E+01	5.0E-05	1.0E-01	0.0E+00	0.0E+00	0.0E+00	6.5E-04	5.0E-04	3.4E-03	4.0E-02	6.3E-03	5.9E+01
	142	August	8	1.1E-05	1.4E-01	3.4E+01	2.6E-01	2.6E-02	5.8E-02	5.5E-04	5.5E-04	1.7E+01	5.5E-05	1.2E-01	0.0E+00	0.0E+00	0.0E+00	7.1E-04	5.5E-04	3.7E-03	4.5E-02	7.0E-03	6.6E+01
	143	September	8	1.2E-05	1.4E-01	3.7E+01	2.7E-01	2.8E-02	6.1E-02	5.9E-04	5.9E-04	1.8E+01	5.9E-05	1.3E-01	0.0E+00	0.0E+00	0.0E+00	7.6E-04	5.9E-04	3.9E-03	4.9E-02	7.7E-03	7.2E+01
10	152	June	8	1.0E-05	1.2E-01	3.1E+01	2.4E-01	2.4E-02	5.3E-02	5.1E-04	5.1E-04	1.6E+01	5.1E-05	1.1E-01	0.0E+00	0.0E+00	0.0E+00	6.5E-04	5.1E-04	3.4E-03	4.2E-02	6.5E-03	6.1E+01
	153	July	8	1.3E-05	1.5E-01	3.7E+01	2.9E-01	3.0E-02	6.5E-02	6.2E-04	6.2E-04	1.8E+01	6.2E-05	1.3E-01	0.0E+00	0.0E+00	0.0E+00	8.0E-04	6.2E-04	4.1E-03	5.0E-02	7.7E-03	7.2E+01
	154	August	8	1.4E-05	1.6E-01	4.1E+01	3.1E-01	3.2E-02	6.9E-02	6.7E-04	6.7E-04	2.0E+01	6.7E-05	1.4E-01	0.0E+00	0.0E+00	0.0E+00	8.6E-04	6.7E-04	4.4E-03	5.4E-02	8.5E-03	7.9E+01
	155	September	8	1.4E-05	1.7E-01	4.3E+01	3.2E-01	3.3E-02	7.3E-02	7.0E-04	7.0E-04	2.2E+01	7.0E-05	1.5E-01	0.0E+00	0.0E+00	0.0E+00	9.0E-04	7.0E-04	4.6E-03	5.8E-02	9.1E-03	8.5E+01
Long-Term Drainage Water Quality																							
21	272-275	Summer Average	8	2.5E-05	3.0E-01	7.5E+01	5.7E-01	5.9E-02	1.3E-01	1.2E-03	1.2E-03	3.7E+01	1.2E-04	2.6E-01	0.0E+00	0.0E+00	0.0E+00	1.6E-03	1.2E-03	8.2E-03	1.0E-01	1.6E-02	1.5E+02

Year	GoldSim Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria[2]		0.004							0.2		20	50	0.1	1.5									0.2		
8 METER ACTIVE ZONE																									
5	92	4.1E-16	1.1E-10	4.1E-14	2.0E-10	8.4E-14	1.2E-12	2.1E+01	4.1E-15	5.6E+01	6.8E+01	6.3E+01	4.1E-16	5.8E-13	3.0E-13	2.0E-14	5.8E-11	1.3E-09	3.6E-12	8.4E-16	7.3E-13	1.5E-14	1.9E-14	1.4E+02	1,104
	93	2.9E-06	1.7E-01	6.5E-05	3.2E-01	6.0E-04	8.1E-03	1.7E+01	2.9E-05	4.4E+01	5.4E+01	5.0E+01	2.9E-06	9.1E-04	2.1E-03	1.4E-04	9.1E-02	2.0E+00	2.6E-02	6.0E-06	5.1E-03	1.1E-04	1.4E-04	1.2E+02	13
	94	6.2E-06	5.0E-01	1.9E-04	9.4E-01	1.3E-03	1.7E-02	1.9E+01	6.2E-05	5.1E+01	6.2E+01	5.8E+01	6.2E-06	2.7E-03	4.4E-03	3.1E-04	2.7E-01	5.8E+00	5.4E-02	1.3E-05	1.1E-02	2.3E-04	2.9E-04	1.4E+02	185
	95	7.8E-06	7.0E-01	2.7E-04	1.3E+00	1.6E-03	2.1E-02	1.8E+01	7.8E-05	4.7E+01	5.8E+01	5.3E+01	7.8E-06	3.8E-03	5.5E-03	3.8E-04	3.8E-01	8.2E+00	6.8E-02	1.6E-05	1.4E-02	2.8E-04	3.6E-04	1.4E+02	352
6	104	6.0E-07	4.6E-02	1.8E-05	8.7E-02	1.2E-04	1.7E-03	5.1E+01	6.0E-06	1.4E+02	1.7E+02	1.5E+02	6.0E-07	2.5E-04	4.3E-04	3.0E-05	2.5E-02	5.4E-01	5.3E-03	1.2E-06	1.1E-03	2.2E-05	2.8E-05	3.4E+02	16,741
	105	3.3E-06	1.9E-01	7.5E-05	3.7E-01	6.6E-04	9.0E-03	4.1E+01	3.3E-05	1.1E+02	1.3E+02	1.2E+02	3.3E-06	1.0E-03	2.3E-03	1.6E-04	1.0E-01	2.3E+00	2.8E-02	6.6E-06	5.7E-03	1.2E-04	1.5E-04	2.8E+02	188
	106	6.6E-06	5.3E-01	2.0E-04	1.0E+00	1.3E-03	1.8E-02	4.8E+01	6.6E-05	1.3E+02	1.5E+02	1.4E+02	6.6E-06	2.8E-03	4.7E-03	3.3E-04	2.8E-01	6.2E+00	5.8E-02	1.3E-05	1.2E-02	2.4E-04	3.1E-04	3.3E+02	2,672
	107	8.2E-06	7.4E-01	2.8E-04	1.4E+00	1.7E-03	2.3E-02	4.5E+01	8.2E-05	1.2E+02	1.4E+02	1.3E+02	8.2E-06	3.9E-03	5.8E-03	4.0E-04	3.9E-01	8.6E+00	7.1E-02	1.7E-05	1.4E-02	3.0E-04	3.8E-04	3.2E+02	5,025
7	116	3.9E-06	3.0E-01	1.2E-04	5.7E-01	8.0E-04	1.1E-02	4.7E+01	3.9E-05	1.3E+02	1.5E+02	1.4E+02	3.9E-06	1.6E-03	2.8E-03	1.9E-04	1.6E-01	3.5E+00	3.4E-02	8.0E-06	6.8E-03	1.4E-04	1.8E-04	3.3E+02	37,775
	117	5.4E-06	3.5E-01	1.3E-04	6.6E-01	1.1E-03	1.5E-02	3.1E+01	5.4E-05	8.2E+01	1.0E+02	9.2E+01	5.4E-06	1.9E-03	3.8E-03	2.7E-04	1.9E-01	4.1E+00	4.7E-02	1.1E-05	9.4E-03	2.0E-04	2.5E-04	2.2E+02	365
	118	9.6E-06	7.5E-01	2.9E-04	1.4E+00	2.0E-03	2.7E-02	3.4E+01	9.6E-05	9.1E+01	1.1E+02	1.0E+02	9.6E-06	4.0E-03	6.8E-03	4.7E-04	4.0E-01	8.7E+00	8.4E-02	2.0E-05	1.7E-02	3.5E-04	4.5E-04	2.5E+02	4,573
	119	1.2E-05	1.0E+00	3.8E-04	1.9E+00	2.3E-03	3.2E-02	3.2E+01	1.2E-04	8.4E+01	1.0E+02	9.5E+01	1.2E-05	5.4E-03	8.2E-03	5.7E-04	5.4E-01	1.2E+01	1.0E-01	2.3E-05	2.0E-02	4.2E-04	5.3E-04	2.4E+02	7,691
8	128	6.9E-06	5.4E-01	2.1E-04	1.0E+00	1.4E-03	1.9E-02	3.3E+01	6.9E-05	8.9E+01	1.1E+02	1.0E+02	6.9E-06	2.9E-03	4.9E-03	3.4E-04	2.9E-01	6.3E+00	6.0E-02	1.4E-05	1.2E-02	2.5E-04	3.2E-04	2.4E+02	39,604
	129	6.9E-06	4.7E-01	1.8E-04	8.9E-01	1.4E-03	1.9E-02	2.0E+01	6.9E-05	5.3E+01	6.4E+01	5.9E+01	6.9E-06	2.5E-03	4.9E-03	3.4E-04	2.5E-01	5.5E+00	6.0E-02	1.4E-05	1.2E-02	2.5E-04	3.2E-04	1.5E+02	380
	130	1.1E-05	8.6E-01	3.3E-04	1.6E+00	2.2E-03	3.0E-02	2.1E+01	1.1E-04	5.5E+01	6.7E+01	6.2E+01	1.1E-05	4.6E-03	7.8E-03	5.4E-04	4.6E-01	1.0E+01	9.6E-02	2.2E-05	1.9E-02	4.0E-04	5.1E-04	1.6E+02	4,729
	131	1.3E-05	1.1E+00	4.2E-04	2.1E+00	2.6E-03	3.5E-02	1.8E+01	1.3E-04	4.8E+01	5.9E+01	5.5E+01	1.3E-05	5.8E-03	9.0E-03	6.2E-04	5.8E-01	1.3E+01	1.1E-01	2.6E-05	2.2E-02	4.6E-04	5.8E-04	1.6E+02	7,899
9	140	7.5E-06	5.8E-01	2.2E-04	1.1E+00	1.5E-03	2.1E-02	1.7E+01	7.5E-05	4.5E+01	5.5E+01	5.0E+01	7.5E-06	3.1E-03	5.3E-03	3.7E-04	3.1E-01	6.8E+00	6.5E-02	1.5E-05	1.3E-02	2.7E-04	3.5E-04	1.3E+02	39,604
	141	5.0E-05	2.7E+00	1.0E-03	5.1E+00	1.0E-02	1.4E-01	2.4E+00	5.0E-04	5.2E+00	6.4E+00	5.9E+00	5.0E-05	1.4E-02	3.6E-02	2.5E-03	1.4E+00	3.1E+01	4.4E-01	1.0E-04	8.8E-02	1.8E-03	2.3E-03	1.0E+02	1,901
	142	5.5E-05	3.0E+00	1.2E-03	5.7E+00	1.1E-02	1.5E-01	2.3E+00	5.5E-04	4.8E+00	5.9E+00	5.4E+00	5.5E-05	1.6E-02	3.9E-02	2.7E-03	1.6E+00	3.5E+01	4.8E-01	1.1E-04	9.6E-02	2.0E-03	2.6E-03	1.1E+02	23,643
	143	5.9E-05	3.3E+00	1.3E-03	6.2E+00	1.2E-02	1.6E-01	1.8E+00	5.9E-04	3.5E+00	4.3E+00	4.0E+00	5.9E-05	1.8E-02	4.2E-02	2.9E-03	1.8E+00	3.8E+01	5.1E-01	1.2E-04	1.0E-01	2.1E-03	2.7E-03	1.2E+02	39,495
10	152	5.1E-05	2.8E+00	1.1E-03	5.3E+00	1.0E-02	1.4E-01	1.2E+00	5.1E-04	2.2E+00	2.6E+00	2.4E+00	5.1E-05	1.5E-02	3.6E-02	2.5E-03	1.5E+00	3.3E+01	4.4E-01	1.0E-04	8.8E-02	1.8E-03	2.4E-03	9.6E+01	113,160
	153	6.2E-05	3.3E+00	1.3E-03	6.3E+00	1.3E-02	1.7E-01	7.4E-01	6.2E-04	6.0E-01	7.4E-01	6.8E-01	6.2E-05	1.8E-02	4.4E-02	3.1E-03	1.8E+00	3.9E+01	5.4E-01	1.3E-04	1.1E-01	2.2E-03	2.9E-03	1.1E+02	1,901
	154	6.7E-05	3.6E+00	1.4E-03	6.8E+00	1.4E-02	1.8E-01	7.6E-01	6.7E-04	5.2E-01	6.3E-01	5.9E-01	6.7E-05	1.9E-02	4.7E-02	3.3E-03	1.9E+00	4.2E+01	5.8E-01	1.4E-04	1.2E-01	2.4E-03	3.1E-03	1.2E+02	23,643
	155	7.0E-05	3.9E+00	1.5E-03	7.3E+00	1.4E-02	1.9E-01	7.5E-01	7.0E-04	3.8E-01	4.6E-01	4.3E-01	7.0E-05	2.1E-02	5.0E-02	3.4E-03	2.1E+00	4.5E+01	6.1E-01	1.4E-04	1.2E-01	2.5E-03	3.2E-03	1.3E+02	39,495
Long-Term Drainage Water Quality																									
21	272-275	1.2E-04	6.7E+00	2.6E-03	1.3E+01	2.5E-02	3.4E-01	1.0E+00	1.2E-03	2.0E-10	2.4E-10	2.6E-03	1.2E-04	3.6E-02	8.7E-02	6.1E-03	3.6E+00	7.8E+01	1.1E+00	2.5E-04	2.1E-01	4.5E-03	5.7E-03	2.2E+02	44,550

1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-10
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Vault Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
Water License Discharge Criteria[1]			6.0 - 9.0		1.5		0.1						0.002	500						0.1			
5	92-95	Summer Average	8	1.9E-06	2.3E-02	8.2E+00	4.4E-02	4.6E-03	9.9E-03	9.5E-05	9.5E-05	4.1E+00	9.5E-06	2.8E-02	0.0E+00	0.0E+00	0.0E+00	1.2E-04	9.5E-05	6.3E-04	1.1E-02	1.7E-03	1.6E+01
6	104-107	Summer Average	8	3.3E-06	3.9E-02	1.4E+01	7.4E-02	7.7E-03	1.7E-02	1.6E-04	1.6E-04	6.9E+00	1.6E-05	4.8E-02	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.6E-04	1.1E-03	1.9E-02	2.9E-03	2.7E+01
7	116-119	Summer Average	8	4.6E-06	5.6E-02	2.0E+01	1.1E-01	1.1E-02	2.4E-02	2.3E-04	2.3E-04	9.9E+00	2.3E-05	6.8E-02	0.0E+00	0.0E+00	0.0E+00	2.9E-04	2.3E-04	1.5E-03	2.7E-02	4.1E-03	3.9E+01
8	128-131	Summer Average	8	6.0E-06	7.3E-02	2.6E+01	1.4E-01	1.4E-02	3.1E-02	3.0E-04	3.0E-04	1.3E+01	3.0E-05	8.9E-02	0.0E+00	0.0E+00	0.0E+00	3.8E-04	3.0E-04	2.0E-03	3.5E-02	5.4E-03	5.0E+01
9	140-143	Summer Average	8	7.5E-06	9.2E-02	3.2E+01	1.7E-01	1.8E-02	3.9E-02	3.7E-04	3.7E-04	1.6E+01	3.7E-05	1.1E-01	0.0E+00	0.0E+00	0.0E+00	4.8E-04	3.7E-04	2.5E-03	4.4E-02	6.8E-03	6.3E+01

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[1]			0.004							0.2		20	50	0.1	1.5									0.2	
5	92-95	Summer Average	9.5E-06	7.3E-01	2.8E-04	1.4E+00	1.9E-03	2.6E-02	9.9E+01	9.5E-05	2.6E+02	3.2E+02	3.0E+02	9.5E-06	3.9E-03	6.8E-03	4.7E-04	3.9E-01	8.6E+00	8.3E-02	1.9E-05	1.7E-02	3.4E-04	4.4E-04	6.8E+02
6	104-107	Summer Average	1.6E-05	1.2E+00	4.8E-04	2.3E+00	3.3E-03	4.4E-02	2.3E+01	1.6E-04	6.1E+01	7.4E+01	6.9E+01	1.6E-05	6.6E-03	1.1E-02	7.9E-04	6.6E-01	1.4E+01	1.4E-01	3.3E-05	2.8E-02	5.8E-04	7.4E-04	1.9E+02
7	116-119	Summer Average	2.3E-05	1.8E+00	6.8E-04	3.4E+00	4.6E-03	6.3E-02	5.7E+00	2.3E-04	1.5E+01	1.8E+01	1.6E+01	2.3E-05	9.5E-03	1.6E-02	1.1E-03	9.5E-01	2.1E+01	2.0E-01	4.6E-05	4.0E-02	8.3E-04	1.1E-03	9.4E+01
8	128-131	Summer Average	3.0E-05	2.3E+00	8.9E-04	4.4E+00	6.0E-03	8.2E-02	7.4E-01	3.0E-04	1.0E+00	1.2E+00	1.2E+00	3.0E-05	1.2E-02	2.1E-02	1.5E-03	1.2E+00	2.7E+01	2.6E-01	6.0E-05	5.2E-02	1.1E-03	1.4E-03	7.7E+01
9	140-143	Summer Average	3.7E-05	2.9E+00	1.1E-03	5.5E+00	7.5E-03	1.0E-01	4.7E-01	3.7E-04	4.9E-02	5.9E-02	5.6E-02	3.7E-05	1.5E-02	2.6E-02	1.8E-03	1.5E+00	3.4E+01	3.2E-01	7.5E-05	6.5E-02	1.3E-03	1.7E-03	9.4E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table G-11
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.1**						**0.002**	**500**						**0.1**				**0.004**
8 METER ACTIVE ZONE																								
5	92	June	6.5	7.8E-14	1.7E-10	3.3E-08	5.2E-13	3.3E-11	1.3E-11	4.8E-13	3.0E-13	7.1E-09	1.2E-12	2.1E-09	0.0E+00	0.0E+00	0.0E+00	3.5E-13	7.8E-13	3.8E-12	1.9E-10	3.5E-11	2.6E-08	3.1E-13
	93	July	6.5	5.9E-05	1.3E-01	2.3E+01	3.6E-04	1.2E-02	7.4E-03	2.4E-04	2.4E-04	4.5E+00	1.2E-05	1.4E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-04	4.7E-04	2.8E-03	1.3E-01	2.4E-02	1.7E+01	2.4E-04
	94	August	6.5	2.8E-06	8.0E-03	1.8E+00	3.8E-03	9.2E-04	1.2E-03	1.9E-05	1.9E-05	5.8E-01	1.3E-06	6.6E-02	0.0E+00	0.0E+00	0.0E+00	2.1E-05	2.9E-05	1.8E-04	6.8E-03	1.2E-03	2.2E+00	1.1E-05
	95	September	6.5	1.4E-05	3.3E-02	6.1E+00	2.7E-03	3.1E-03	2.3E-03	6.2E-05	6.2E-05	1.4E+00	3.4E-06	3.4E-01	0.0E+00	0.0E+00	0.0E+00	6.4E-05	1.2E-04	7.1E-04	3.2E-02	5.7E-03	5.2E+00	5.7E-05
6	104	June	6.5	1.1E-05	2.5E-02	4.4E+00	1.5E-03	2.3E-03	1.6E-03	4.5E-05	4.5E-05	9.2E-01	2.4E-06	2.6E-01	0.0E+00	0.0E+00	0.0E+00	4.6E-05	8.8E-05	5.3E-04	2.4E-02	4.3E-03	3.4E+00	4.3E-05
	105	July	6.5	6.7E-05	1.5E-01	2.6E+01	1.7E-03	1.3E-02	8.6E-03	2.7E-04	2.7E-04	5.2E+00	1.4E-05	1.6E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	5.4E-04	3.2E-03	1.5E-01	2.7E-02	1.9E+01	2.7E-04
	106	August	6.5	3.1E-06	1.2E-02	3.3E+00	1.2E-02	1.7E-03	3.0E-03	3.6E-05	3.6E-05	1.3E+00	3.1E-06	7.2E-02	0.0E+00	0.0E+00	0.0E+00	4.3E-05	4.6E-05	3.0E-04	8.8E-03	1.5E-03	5.2E+00	1.3E-05
	107	September	6.5	1.4E-05	3.5E-02	7.4E+00	1.0E-02	3.7E-03	3.9E-03	7.5E-05	7.5E-05	2.1E+00	4.8E-06	3.3E-01	0.0E+00	0.0E+00	0.0E+00	8.1E-05	1.3E-04	7.8E-04	3.2E-02	5.7E-03	8.2E+00	5.5E-05
7	116	June	6.5	9.6E-06	2.5E-02	4.8E+00	6.5E-03	2.5E-03	2.6E-03	5.1E-05	5.1E-05	1.3E+00	3.3E-06	2.3E-01	0.0E+00	0.0E+00	0.0E+00	5.5E-05	8.9E-05	5.4E-04	2.2E-02	4.0E-03	4.9E+00	3.9E-05
	117	July	6.5	7.5E-05	1.7E-01	3.0E+01	6.3E-03	1.6E-02	1.1E-02	3.1E-04	3.1E-04	6.2E+00	1.6E-05	1.8E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-04	6.1E-04	3.7E-03	1.7E-01	3.0E-02	2.3E+01	3.0E-04
	118	August	6.5	3.6E-06	1.6E-02	4.6E+00	1.9E-02	2.5E-03	4.6E-03	5.2E-05	5.2E-05	2.0E+00	4.6E-06	8.0E-02	0.0E+00	0.0E+00	0.0E+00	6.4E-05	6.3E-05	4.0E-04	1.1E-02	1.8E-03	7.7E+00	1.5E-05
	119	September	6.5	1.3E-05	3.8E-02	8.8E+00	1.9E-02	4.4E-03	5.7E-03	8.9E-05	8.9E-05	3.0E+00	6.5E-06	3.1E-01	0.0E+00	0.0E+00	0.0E+00	1.0E-04	1.4E-04	8.6E-04	3.2E-02	5.7E-03	1.1E+01	5.3E-05
8	128	June	6.6	8.7E-06	2.5E-02	5.3E+00	1.2E-02	2.9E-03	3.7E-03	5.8E-05	5.8E-05	1.7E+00	4.2E-06	2.1E-01	0.0E+00	0.0E+00	0.0E+00	6.6E-05	9.1E-05	5.6E-04	2.1E-02	3.7E-03	6.5E+00	3.5E-05
	129	July	6.6	7.6E-05	1.8E-01	3.1E+01	1.2E-02	1.6E-02	1.2E-02	3.3E-04	3.3E-04	6.7E+00	1.8E-05	1.9E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-04	6.3E-04	3.8E-03	1.7E-01	3.1E-02	2.5E+01	3.0E-04
	130	August	6.6	3.8E-06	1.9E-02	5.4E+00	2.3E-02	2.9E-03	5.5E-03	6.1E-05	6.1E-05	2.3E+00	5.5E-06	8.3E-02	0.0E+00	0.0E+00	0.0E+00	7.5E-05	7.2E-05	4.6E-04	1.2E-02	2.0E-03	9.2E+00	1.6E-05
	131	September	6.6	1.3E-05	4.0E-02	9.8E+00	2.4E-02	4.9E-03	6.9E-03	1.0E-04	1.0E-04	3.5E+00	7.6E-06	3.1E-01	0.0E+00	0.0E+00	0.0E+00	1.2E-04	1.5E-04	9.3E-04	3.4E-02	5.9E-03	1.3E+01	5.4E-05
9	140	June	6.6	8.8E-06	2.7E-02	6.0E+00	1.6E-02	3.2E-03	4.6E-03	6.6E-05	6.6E-05	2.0E+00	5.0E-06	2.1E-01	0.0E+00	0.0E+00	0.0E+00	7.6E-05	9.9E-05	6.1E-04	2.2E-02	3.8E-03	7.9E+00	3.6E-05
Attenuation Pond transfer to Vault Pit																								

Year	GoldSim Month	Actual Month	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
Water License Discharge Criteria[2]									**0.2**		**20**	**50**	**1.5**	**0.1**	**1.5**									**0.2**		
8 METER ACTIVE ZONE																										
5	92	June	1.4E-09	2.1E-12	2.1E-09	4.5E-12	4.1E-13	1.1E+01	2.4E-12	2.9E+01	3.5E+01	3.3E+01	1.2E-10	8.0E-13	1.5E-12	4.1E-13	4.8E-13	6.1E-09	9.4E-09	2.9E-11	6.6E-14	6.8E-13	5.7E-12	6.9E-12	7.3E+01	228280
	93	July	7.9E-01	9.5E-04	1.3E+00	3.3E-03	1.9E-04	9.5E+00	1.8E-03	2.2E+01	2.7E+01	2.5E+01	9.5E-02	2.4E-04	8.5E-06	2.6E-04	2.4E-04	4.8E+00	6.5E+00	2.3E-02	2.4E-05	5.2E-04	2.4E-04	4.7E-03	1.0E+02	152520
	94	August	1.0E-01	6.8E-05	1.9E-01	3.1E-04	2.3E-03	3.2E+00	8.6E-05	8.3E+00	1.0E+01	9.3E+00	4.2E-03	1.1E-05	3.7E-04	6.0E-04	5.1E-05	2.5E-01	1.1E+00	8.2E-03	2.7E-06	1.5E-03	4.0E-05	2.5E-04	2.5E+01	78347
	95	September	2.4E-01	2.5E-04	4.2E-01	9.0E-04	1.6E-03	1.9E+00	4.3E-04	4.4E+00	5.4E+00	5.0E+00	2.2E-02	5.7E-05	3.0E-04	4.6E-04	8.5E-05	1.2E+00	2.2E+00	1.0E-02	6.8E-06	1.1E-03	7.7E-05	1.2E-03	2.3E+01	131680
6	104	June	1.6E-01	1.8E-04	2.8E-01	6.6E-04	8.8E-04	6.1E+00	3.2E-04	1.6E+01	1.9E+01	1.8E+01	1.7E-02	4.3E-05	1.1E-04	2.6E-04	5.8E-05	8.8E-01	1.4E+00	6.8E-03	4.9E-06	6.3E-04	5.4E-05	8.6E-04	4.8E+01	228280
	105	July	9.1E-01	1.1E-03	1.5E+00	3.8E-03	1.0E-03	6.8E+00	2.0E-03	1.5E+01	1.8E+01	1.7E+01	1.1E-01	2.7E-04	1.1E-04	4.9E-04	2.8E-04	5.4E+00	7.5E+00	2.8E-02	2.7E-05	1.1E-03	2.8E-04	5.3E-03	8.7E+01	123310
	106	August	2.4E-01	1.2E-04	4.4E-01	6.7E-04	7.0E-03	3.8E+00	1.0E-04	1.0E+01	1.2E+01	1.1E+01	4.2E-03	1.3E-05	1.1E-03	1.8E-03	1.4E-04	3.2E-01	2.7E+00	2.3E-02	6.2E-06	4.5E-03	1.0E-04	3.3E-04	3.4E+01	68398
	107	September	3.8E-01	2.9E-04	6.8E-01	1.2E-03	6.1E-03	3.6E+00	4.2E-04	8.7E+00	1.1E+01	9.8E+00	2.1E-02	5.5E-05	1.1E-03	1.6E-03	1.6E-04	1.2E+00	3.8E+00	2.4E-02	9.7E-06	4.0E-03	1.3E-04	1.2E-03	3.8E+01	112990
7	116	June	2.3E-01	1.9E-04	4.0E-01	8.1E-04	3.9E-03	7.3E+00	2.9E-04	1.9E+01	2.3E+01	2.1E+01	1.5E-02	3.9E-05	5.4E-04	1.0E-03	1.1E-04	8.2E-01	2.2E+00	1.6E-02	6.6E-06	2.5E-03	8.8E-05	8.1E-04	5.8E+01	228280
	117	July	1.1E+00	1.2E-03	1.9E+00	4.5E-03	3.7E-03	8.2E+00	2.3E-03	1.8E+01	2.2E+01	2.0E+01	1.2E-01	3.0E-04	4.9E-04	1.2E-03	3.6E-04	6.2E+00	9.3E+00	4.0E-02	3.3E-05	2.9E-03	3.5E-04	6.0E-03	1.0E+02	102330
	118	August	3.6E-01	1.7E-04	6.6E-01	9.8E-04	1.1E-02	2.9E+00	1.2E-04	7.5E+00	9.1E+00	8.4E+00	4.4E-03	1.5E-05	1.7E-03	2.9E-03	2.1E-04	4.0E-01	4.0E+00	3.7E-02	9.4E-06	7.1E-03	1.6E-04	4.1E-04	3.1E+01	60794
	119	September	5.3E-01	3.4E-04	9.6E-01	1.5E-03	1.1E-02	2.8E+00	4.1E-04	6.8E+00	8.2E+00	7.6E+00	2.0E-02	5.3E-05	1.9E-03	2.9E-03	2.5E-04	1.2E+00	5.6E+00	4.0E-02	1.3E-05	7.1E-03	2.0E-04	1.2E-03	3.8E+01	102330
8	128	June	3.0E-01	2.0E-04	5.5E-01	9.8E-04	7.1E-03	4.6E+00	2.7E-04	1.2E+01	1.4E+01	1.3E+01	1.3E-02	3.5E-05	1.0E-03	1.9E-03	1.6E-04	7.7E-01	3.1E+00	2.5E-02	8.5E-06	4.5E-03	1.3E-04	7.7E-04	4.2E+01	228280
	129	July	1.2E+00	1.3E-03	2.0E+00	4.7E-03	6.8E-03	5.7E+00	2.3E-03	1.1E+01	1.4E+01	1.3E+01	1.2E-01	3.0E-04	9.6E-04	2.0E-03	4.2E-04	6.3E+00	1.0E+01	5.0E-02	3.5E-05	4.8E-03	3.9E-04	6.2E-03	9.0E+01	80887
	130	August	4.2E-01	1.9E-04	7.9E-01	1.2E-03	1.4E-02	1.7E+00	1.3E-04	4.2E+00	5.2E+00	4.8E+00	4.4E-03	1.6E-05	2.0E-03	3.5E-03	2.5E-04	4.3E-01	4.8E+00	4.4E-02	1.1E-05	8.6E-03	1.9E-04	4.5E-04	2.5E+01	60170
	131	September	6.2E-01	3.7E-04	1.1E+00	1.7E-03	1.4E-02	1.7E+00	4.2E-04	3.8E+00	4.6E+00	4.3E+00	1.9E-02	5.4E-05	2.4E-03	3.7E-03	3.0E-04	1.2E+00	6.7E+00	5.0E-02	1.5E-05	9.1E-03	2.4E-04	1.2E-03	3.3E+01	101490
9	140	June	3.7E-01	2.3E-04	6.7E-01	1.1E-03	9.4E-03	2.4E+00	2.8E-04	5.8E+00	7.1E+00	6.6E+00	1.3E-02	3.6E-05	1.4E-03	2.4E-03	2.0E-04	8.0E-01	3.9E+00	3.3E-02	1.0E-05	6.0E-03	1.6E-04	8.0E-04	2.9E+01	228280
Attenuation Pond transfer to Vault Pit																										

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table G-12
Predicted Water Quality (Dissolved Constituents) - Possible Poor End Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.1**						**0.002**	**500**	
8 METER ACTIVE ZONE															
9	140 - 143	Summer Average	6.8	6.6E-06	1.4E-02	5.7E+00	1.0E-02	1.5E-02	5.3E-03	1.7E-04	3.5E-05	2.1E+00	9.4E-06	2.5E-01	0.0E+00
10	152 - 155	Summer Average	6.8	1.0E-05	1.4E-02	9.6E+00	1.2E-02	3.6E-02	9.7E-03	3.8E-04	3.5E-05	3.6E+00	2.2E-05	4.9E-01	0.0E+00
11	164 - 167	Summer Average	6.8	1.1E-05	1.5E-02	1.1E+01	1.5E-02	4.0E-02	1.1E-02	4.2E-04	3.9E-05	4.0E+00	2.5E-05	5.3E-01	0.0E+00
12	176 - 179	Summer Average	6.8	1.1E-05	1.6E-02	1.1E+01	1.6E-02	4.1E-02	1.1E-02	4.3E-04	4.1E-05	4.1E+00	2.6E-05	5.5E-01	0.0E+00
13	188 - 191	Summer Average	6.8	1.2E-05	1.7E-02	1.1E+01	1.7E-02	4.2E-02	1.1E-02	4.4E-04	4.3E-05	4.2E+00	2.7E-05	5.6E-01	0.0E+00
14	200 - 203	Summer Average	6.8	1.2E-05	1.7E-02	1.1E+01	1.8E-02	4.3E-02	1.2E-02	4.5E-04	4.4E-05	4.3E+00	2.8E-05	5.6E-01	0.0E+00
Long-term Vault Pit Lake Water Quality															
20	267 - 266	Annual Average	6.8	1.4E-05	2.9E-02	1.4E+01	3.3E-02	4.2E-02	1.5E-02	4.6E-04	8.5E-05	5.3E+00	3.0E-05	5.9E-01	0.0E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]							**0.1**				**0.004**						
8 METER ACTIVE ZONE																	
9	140 - 143	Summer Average	0.0E+00	0.0E+00	8.1E-05	1.8E-04	4.4E-04	2.1E-02	5.7E-03	8.1E+00	2.3E-05	4.7E-01	7.7E-04	6.6E-01	7.3E-04	6.0E-03	1.3E+00
10	152 - 155	Summer Average	0.0E+00	0.0E+00	1.5E-04	3.9E-04	6.5E-04	3.6E-02	1.2E-02	1.4E+01	3.1E-05	8.9E-01	1.8E-03	1.1E+00	1.0E-03	7.2E-03	9.2E-01
11	164 - 167	Summer Average	0.0E+00	0.0E+00	1.6E-04	4.3E-04	7.2E-04	3.9E-02	1.3E-02	1.5E+01	3.3E-05	9.8E-01	2.0E-03	1.2E+00	1.2E-03	8.3E-03	9.5E-01
12	176 - 179	Summer Average	0.0E+00	0.0E+00	1.7E-04	4.4E-04	7.5E-04	4.0E-02	1.3E-02	1.6E+01	3.4E-05	1.0E+00	2.1E-03	1.2E+00	1.3E-03	9.0E-03	9.6E-01
13	188 - 191	Summer Average	0.0E+00	0.0E+00	1.7E-04	4.5E-04	7.7E-04	4.1E-02	1.4E-02	1.6E+01	3.5E-05	1.0E+00	2.1E-03	1.3E+00	1.3E-03	9.5E-03	9.6E-01
14	200 - 203	Summer Average	0.0E+00	0.0E+00	1.7E-04	4.6E-04	7.9E-04	4.1E-02	1.4E-02	1.6E+01	3.5E-05	1.1E+00	2.1E-03	1.3E+00	1.4E-03	9.9E-03	9.6E-01
Long-term Vault Pit Lake Water Quality																	
20	267 - 266	Annual Average	0.0E+00	0.0E+00	2.2E-04	4.8E-04	1.1E-03	4.6E-02	1.4E-02	2.0E+01	4.5E-05	1.2E+00	2.1E-03	1.6E+00	2.1E-03	1.9E-02	9.6E-01

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**0.2**		**20**	**50**	**1.5**	**0.1**	**1.5**									**0.2**	
8 METER ACTIVE ZONE																			
9	140 - 143	Summer Average	2.6E-04	2.4E+00	3.0E+00	2.7E+00	5.6E-03	8.2E-05	1.6E-03	1.6E-03	2.5E-04	3.7E-01	3.5E+00	2.0E-02	3.2E-05	3.8E-03	4.0E-03	1.0E-03	2.0E+01
10	152 - 155	Summer Average	4.6E-04	4.2E-01	5.2E-01	4.5E-01	4.8E-03	1.9E-04	2.8E-03	1.9E-03	4.7E-04	3.1E-01	5.4E+00	2.1E-02	7.5E-05	4.2E-03	1.0E-02	2.3E-03	2.3E+01
11	164 - 167	Summer Average	5.1E-04	3.2E-01	3.9E-01	3.3E-01	5.0E-03	2.0E-04	3.1E-03	2.2E-03	5.2E-04	3.3E-01	6.0E+00	2.4E-02	8.3E-05	4.7E-03	1.1E-02	2.6E-03	2.5E+01
12	176 - 179	Summer Average	5.2E-04	2.6E-01	3.1E-01	2.6E-01	5.1E-03	2.1E-04	3.2E-03	2.4E-03	5.5E-04	3.3E-01	6.2E+00	2.6E-02	8.6E-05	5.1E-03	1.2E-02	2.7E-03	2.6E+01
13	188 - 191	Summer Average	5.4E-04	2.1E-01	2.6E-01	2.1E-01	5.1E-03	2.1E-04	3.3E-03	2.6E-03	5.6E-04	3.4E-01	6.4E+00	2.7E-02	8.8E-05	5.4E-03	1.2E-02	2.8E-03	2.7E+01
14	200 - 203	Summer Average	5.4E-04	1.8E-01	2.2E-01	1.8E-01	5.1E-03	2.2E-04	3.4E-03	2.7E-03	5.7E-04	3.4E-01	6.5E+00	2.8E-02	8.9E-05	5.6E-03	1.2E-02	2.8E-03	2.7E+01
Long-term Vault Pit Lake Water Quality																			
20	267 - 266	Annual Average	6.1E-04	1.5E-01	1.8E-01	1.4E-01	8.2E-03	2.2E-04	4.2E-03	5.0E-03	7.2E-04	6.0E-01	8.6E+00	5.7E-02	9.2E-05	1.1E-02	1.2E-02	2.9E-03	3.3E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

APPENDIX H

Hypothetical Scenario Mass Balance Model Results

Table H-1
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5		
8 METER ACTIVE ZONE																	
1	44	June	5.3	3.0E-04	6.5E-01	2.1E+02	4.28E+00	2.4E+00	2.1E-01	5.3E-01	1.2E-02	4.5E+01	1.66E-03	4.55E+00	0.00E+00	0.0E+00	0.0E+00
	45	July	5.3	4.5E-04	2.0E+00	1.9E+02	4.11E+00	2.4E+00	3.5E-01	5.3E-01	1.4E-02	5.0E+01	2.97E-03	6.42E+00	0.00E+00	0.0E+00	0.0E+00
	46	August	5.3	7.3E-04	3.9E+00	2.3E+02	4.80E+00	3.0E+00	5.9E-01	6.5E-01	1.9E-02	7.7E+01	5.11E-03	1.23E+01	0.00E+00	0.0E+00	0.0E+00
	47	September	5.3	9.3E-04	5.4E+00	2.6E+02	5.16E+00	3.3E+00	7.7E-01	7.1E-01	2.3E-02	1.0E+02	6.73E-03	1.76E+01	0.00E+00	0.0E+00	0.0E+00
2	56	June	5.3	8.1E-04	5.0E+00	1.8E+02	3.89E+00	2.6E+00	6.8E-01	5.5E-01	1.9E-02	7.8E+01	5.98E-03	1.41E+01	0.00E+00	0.0E+00	0.0E+00
	57	July	5.3	8.0E-04	4.8E+00	1.9E+02	4.28E+00	2.8E+00	6.7E-01	5.9E-01	1.9E-02	7.7E+01	5.83E-03	1.32E+01	0.00E+00	0.0E+00	0.0E+00
	58	August	5.3	1.0E-03	5.7E+00	2.7E+02	5.89E+00	3.7E+00	8.4E-01	8.0E-01	2.5E-02	1.1E+02	7.17E-03	1.71E+01	0.00E+00	0.0E+00	0.0E+00
	59	September	5.3	1.1E-03	6.3E+00	3.5E+02	7.08E+00	4.4E+00	9.5E-01	9.5E-01	2.9E-02	1.3E+02	8.06E-03	2.05E+01	0.00E+00	0.0E+00	0.0E+00
3	68	June	5.3	1.0E-03	5.6E+00	3.1E+02	6.68E+00	4.1E+00	8.5E-01	8.8E-01	2.7E-02	1.2E+02	7.16E-03	1.74E+01	0.00E+00	0.0E+00	0.0E+00
	69	July	5.3	9.5E-04	5.2E+00	2.9E+02	6.38E+00	3.9E+00	8.0E-01	8.4E-01	2.5E-02	1.1E+02	6.71E-03	1.57E+01	0.00E+00	0.0E+00	0.0E+00
	70	August	5.3	1.1E-03	6.1E+00	3.6E+02	7.68E+00	4.7E+00	9.6E-01	1.0E+00	3.0E-02	1.4E+02	7.90E-03	1.91E+01	0.00E+00	0.0E+00	0.0E+00
	71	September	5.3	1.2E-03	6.6E+00	4.1E+02	8.49E+00	5.1E+00	1.1E+00	1.1E+00	3.3E-02	1.6E+02	8.62E-03	2.19E+01	0.00E+00	0.0E+00	0.0E+00
4	80	June	5.3	1.1E-03	5.7E+00	3.5E+02	7.43E+00	4.5E+00	9.1E-01	9.6E-01	2.9E-02	1.3E+02	7.43E-03	1.82E+01	0.00E+00	0.0E+00	0.0E+00
	81	July	5.3	1.0E-03	5.8E+00	3.1E+02	6.87E+00	4.2E+00	9.0E-01	9.0E-01	2.8E-02	1.2E+02	7.41E-03	1.71E+01	0.00E+00	0.0E+00	0.0E+00
	82	August	5.3	1.3E-03	7.4E+00	3.7E+02	7.99E+00	5.0E+00	1.1E+00	1.1E+00	3.3E-02	1.5E+02	9.32E-03	2.23E+01	0.00E+00	0.0E+00	0.0E+00
	83	September	5.3	1.5E-03	8.5E+00	4.2E+02	8.62E+00	5.4E+00	1.3E+00	1.2E+00	3.7E-02	1.7E+02	1.06E-02	2.69E+01	0.00E+00	0.0E+00	0.0E+00
5	92	June	5.3	8.3E-15	3.7E-12	2.7E-08	1.67E-10	8.8E-11	5.3E-12	2.0E-11	4.1E-13	5.4E-09	3.85E-14	4.35E-10	0.00E+00	0.0E+00	0.0E+00
	93	July	5.3	1.2E-04	4.8E-02	6.1E+01	2.22E+00	1.2E+00	7.7E-02	2.7E-01	5.7E-03	1.2E+01	5.67E-04	9.71E-01	0.00E+00	0.0E+00	0.0E+00
	94	August	5.3	3.0E-04	1.2E-01	2.0E+02	5.68E+00	3.0E+00	2.0E-01	6.9E-01	1.5E-02	4.1E+01	1.45E-03	3.19E+00	0.00E+00	0.0E+00	0.0E+00
	95	September	5.3	4.8E-04	1.9E-01	3.5E+02	8.92E+00	4.8E+00	3.1E-01	1.1E+00	2.3E-02	7.1E+01	2.28E-03	5.57E+00	0.00E+00	0.0E+00	0.0E+00
Placement of UM Rock Cover																	
Post Closure Water Quality																	
20	272 - 275	Summer Average	7	4.3E-03	1.8E+00	2.8E+03	8.12E+01	4.3E+01	2.8E+00	9.8E+00	2.1E-01	5.6E+02	2.08E-02	4.39E+01	0.00E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]					0.1				0.0004							0.2	
8 METER ACTIVE ZONE																	
1	44	June	3.8E-02	1.2E-02	5.02E-02	2.7E-01	1.3E+01	1.9E+02	1.20E-03	1.5E+01	3.6E-02	1.8E+01	1.8E+00	1.7E-03	6.2E+01	3.01E-01	1.2E+02
	45	July	1.1E-01	1.4E-02	1.59E-01	5.2E-01	3.5E+01	2.1E+02	1.39E-03	1.9E+01	3.9E-02	2.1E+01	5.2E+00	4.9E-03	6.2E+01	9.76E-01	1.2E+02
	46	August	2.3E-01	1.9E-02	3.20E-01	1.2E+00	8.8E+01	3.3E+02	1.92E-03	3.3E+01	5.9E-02	3.4E+01	1.0E+01	9.7E-03	7.5E+01	1.97E+00	1.3E+02
	47	September	3.1E-01	2.3E-02	4.44E-01	1.7E+00	1.4E+02	4.4E+02	2.28E-03	4.6E+01	7.7E-02	4.5E+01	1.4E+01	1.3E-02	8.2E+01	2.74E+00	1.4E+02
2	56	June	2.9E-01	1.9E-02	4.08E-01	1.4E+00	1.1E+02	3.4E+02	1.88E-03	3.6E+01	5.9E-02	3.5E+01	1.3E+01	1.2E-02	1.0E+02	2.52E+00	2.1E+02
	57	July	2.7E-01	1.9E-02	3.89E-01	1.3E+00	1.0E+02	3.3E+02	1.94E-03	3.6E+01	5.7E-02	3.4E+01	1.3E+01	1.4E-02	9.6E+01	2.39E+00	1.9E+02
	58	August	3.3E-01	2.5E-02	4.67E-01	1.7E+00	1.3E+02	4.6E+02	2.51E-03	4.9E+01	7.9E-02	4.6E+01	1.5E+01	1.9E-02	1.1E+02	2.87E+00	2.1E+02
	59	September	3.6E-01	2.9E-02	5.17E-01	2.0E+00	1.5E+02	5.8E+02	2.92E-03	6.2E+01	9.8E-02	5.7E+01	1.7E+01	2.4E-02	1.2E+02	3.17E+00	2.1E+02
3	68	June	3.2E-01	2.7E-02	4.52E-01	1.7E+00	1.3E+02	5.0E+02	2.68E-03	5.4E+01	8.5E-02	5.0E+01	1.5E+01	2.2E-02	1.4E+02	2.77E+00	2.9E+02
	69	July	2.9E-01	2.5E-02	4.21E-01	1.5E+00	1.1E+02	4.6E+02	2.53E-03	5.0E+01	7.8E-02	4.6E+01	1.4E+01	2.3E-02	1.3E+02	2.58E+00	2.6E+02
	70	August	3.5E-01	3.0E-02	4.94E-01	1.9E+00	1.4E+02	5.8E+02	3.01E-03	6.3E+01	9.7E-02	5.7E+01	1.6E+01	3.0E-02	1.4E+02	3.02E+00	2.7E+02
	71	September	3.7E-01	3.3E-02	5.37E-01	2.2E+00	1.6E+02	6.8E+02	3.31E-03	7.5E+01	1.1E-01	6.6E+01	1.7E+01	3.5E-02	1.4E+02	3.27E+00	2.7E+02
4	80	June	3.2E-01	2.9E-02	4.62E-01	1.8E+00	1.3E+02	5.7E+02	2.88E-03	6.3E+01	9.4E-02	5.5E+01	1.5E+01	3.2E-02	1.4E+02	2.81E+00	2.8E+02
	81	July	3.3E-01	2.8E-02	4.70E-01	1.7E+00	1.2E+02	5.2E+02	2.76E-03	5.7E+01	8.6E-02	5.1E+01	1.5E+01	2.9E-02	1.2E+02	2.87E+00	2.4E+02
	82	August	4.2E-01	3.3E-02	6.03E-01	2.3E+00	1.7E+02	6.4E+02	3.33E-03	7.1E+01	1.1E-01	6.4E+01	1.9E+01	3.3E-02	1.3E+02	3.69E+00	2.3E+02
	83	September	4.9E-01	3.7E-02	6.96E-01	2.7E+00	2.1E+02	7.5E+02	3.70E-03	8.3E+01	1.2E-01	7.4E+01	2.2E+01	3.6E-02	1.3E+02	4.26E+00	2.2E+02
5	92	June	-2.4E-14	4.2E-13	-2.16E-13	1.7E-11	2.7E-11	2.2E-08	4.22E-14	1.7E-09	4.3E-12	2.1E-09	1.2E-11	4.7E-14	1.2E+00	6.25E-13	3.2E+00
	93	July	3.1E-03	5.7E-03	2.27E-03	4.0E-02	6.0E-02	5.1E+01	5.67E-04	4.0E+00	9.7E-03	4.9E+00	1.5E-01	8.3E-04	4.7E+00	8.25E-03	1.8E+00
	94	August	7.9E-03	1.5E-02	5.81E-03	1.3E-01	2.0E-01	1.7E+02	1.45E-03	1.3E+01	3.2E-02	1.6E+01	4.0E-01	2.1E-03	1.4E+01	2.11E-02	2.2E+00
	95	September	1.2E-02	2.3E-02	9.12E-03	2.3E-01	3.4E-01	2.9E+02	2.28E-03	2.3E+01	5.6E-02	2.8E+01	6.2E-01	3.3E-03	2.4E+01	3.32E-02	2.0E+00
Placement of UM Rock Cover																	
Post Closure Water Quality																	
20	272 - 275	Summer Average	1.1E-01	2.1E-01	8.31E-02	1.8E+00	2.7E+00	2.3E+03	2.08E-02	1.8E+02	4.4E-01	2.2E+02	5.7E+00	3.0E-02	1.8E+02	3.02E-01	4.1E-05

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria[2]			16	20	1	0.1	1									0.4		
8 METER ACTIVE ZONE																		
1	44	June	1.49E+02	1.38E+02	9.27E-01	2.01E-02	8.39E-01	3.1E-01	2.5E-02	6.4E+00	8.1E+01	9.4E-01	2.5E-03	3.6E-03	9.7E-02	3.09E-01	7.3E+02	13,420
	45	July	1.48E+02	1.37E+02	1.00E+00	6.51E-02	7.68E-01	3.0E-01	2.9E-02	1.1E+01	1.5E+02	1.2E+00	2.9E-03	1.6E-02	9.8E-02	8.79E-01	8.2E+02	131
	46	August	1.64E+02	1.52E+02	1.52E+00	1.31E-01	9.36E-01	3.6E-01	3.9E-02	2.4E+01	3.3E+02	1.9E+00	3.9E-03	3.4E-02	1.2E-01	1.73E+00	1.2E+03	1,722
	47	September	1.68E+02	1.55E+02	1.98E+00	1.82E-01	1.07E+00	3.9E-01	4.6E-02	3.6E+01	4.9E+02	2.3E+00	4.6E-03	4.8E-02	1.3E-01	2.38E+00	1.6E+03	3,034
2	56	June	2.61E+02	2.41E+02	1.52E+00	1.68E-01	7.62E-01	2.9E-01	3.8E-02	3.0E+01	4.0E+02	2.0E+00	3.8E-03	4.5E-02	1.0E-01	2.18E+00	1.5E+03	18,376
	57	July	2.34E+02	2.17E+02	1.47E+00	1.60E-01	7.77E-01	3.2E-01	3.9E-02	2.8E+01	3.7E+02	2.0E+00	3.9E-03	4.9E-02	1.1E-01	2.08E+00	1.4E+03	176
	58	August	2.50E+02	2.31E+02	1.99E+00	1.91E-01	1.14E+00	4.5E-01	5.1E-02	3.6E+01	4.8E+02	2.6E+00	5.1E-03	6.8E-02	1.5E-01	2.51E+00	1.7E+03	2,194
	59	September	2.51E+02	2.33E+02	2.46E+00	2.11E-01	1.47E+00	5.4E-01	5.9E-02	4.2E+01	5.7E+02	3.0E+00	5.9E-03	8.2E-02	1.8E-01	2.77E+00	2.0E+03	3,665
3	68	June	3.56E+02	3.29E+02	2.13E+00	1.84E-01	1.30E+00	5.1E-01	5.4E-02	3.6E+01	4.8E+02	2.8E+00	5.4E-03	7.7E-02	1.7E-01	2.43E+00	2.0E+03	18,376
	69	July	3.13E+02	2.89E+02	1.93E+00	1.72E-01	1.19E+00	4.9E-01	5.1E-02	3.2E+01	4.4E+02	2.7E+00	5.1E-03	7.9E-02	1.6E-01	2.26E+00	1.8E+03	176
	70	August	3.28E+02	3.03E+02	2.37E+00	2.01E-01	1.48E+00	5.9E-01	6.1E-02	4.0E+01	5.4E+02	3.2E+00	6.1E-03	1.0E-01	1.9E-01	2.65E+00	2.1E+03	2,194
	71	September	3.24E+02	3.00E+02	2.73E+00	2.18E-01	1.72E+00	6.5E-01	6.7E-02	4.6E+01	6.2E+02	3.6E+00	6.7E-03	1.2E-01	2.1E-01	2.88E+00	2.3E+03	3,665
4	80	June	3.47E+02	3.21E+02	2.27E+00	1.87E-01	1.44E+00	5.7E-01	5.8E-02	3.8E+01	5.2E+02	3.1E+00	5.8E-03	1.1E-01	1.9E-01	2.48E+00	2.1E+03	18,376
	81	July	2.86E+02	2.65E+02	2.08E+00	1.91E-01	1.28E+00	5.3E-01	5.6E-02	3.6E+01	4.9E+02	3.0E+00	5.6E-03	9.9E-02	1.7E-01	2.52E+00	1.9E+03	176
	82	August	2.83E+02	2.62E+02	2.63E+00	2.46E-01	1.54E+00	6.1E-01	6.7E-02	4.7E+01	6.4E+02	3.6E+00	6.7E-03	1.1E-01	2.0E-01	3.23E+00	2.2E+03	2,194
	83	September	2.65E+02	2.46E+02	3.09E+00	2.84E-01	1.75E+00	6.6E-01	7.5E-02	5.7E+01	7.8E+02	4.0E+00	7.5E-03	1.2E-01	2.2E-01	3.72E+00	2.5E+03	3,665
5	92	June	3.88E+00	3.57E+00	1.09E-10	-9.14E-14	1.09E-10	1.2E-11	8.8E-13	4.3E-10	5.2E-09	3.0E-11	8.8E-14	3.1E-14	3.8E-12	2.60E-12	8.0E+00	18,376
	93	July	2.17E+00	2.19E+00	2.47E-01	5.67E-04	2.47E-01	1.6E-01	1.2E-02	1.1E+00	1.2E+01	4.2E-01	1.2E-03	1.2E-03	5.0E-02	3.46E-02	1.1E+02	882
	94	August	2.65E+00	3.08E+00	8.13E-01	1.45E-03	8.13E-01	4.1E-01	3.0E-02	3.5E+00	4.1E+01	1.1E+00	3.0E-03	3.2E-03	1.3E-01	8.84E-02	3.5E+02	10,970
	95	September	2.40E+00	3.32E+00	1.42E+00	2.28E-03	1.42E+00	6.4E-01	4.8E-02	6.1E+00	7.1E+01	1.7E+00	4.8E-03	5.0E-03	2.0E-01	1.39E-01	6.0E+02	18,325
Placement of UM Rock Cover																		
Post Closure Water Quality																		
20	272 - 275	Summer Average	4.96E-05	8.78E+00	1.12E+01	2.08E-02	1.12E+01	5.9E+00	4.3E-01	4.8E+01	5.6E+02	1.5E+01	4.3E-02	4.5E-02	1.8E+00	1.26E+00	4.8E+03	20,670

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

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Table H-2
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5		
8 METER ACTIVE ZONE																	
1	44	June	6.2	4.2E-05	1.3E-01	6.8E+00	1.45E-01	1.3E-01	3.8E-02	2.1E-02	8.6E-04	1.2E+01	3.03E-04	6.72E+01	0.00E+00	0.0E+00	0.0E+00
	45	July	6.2	1.7E-04	1.3E-01	6.8E+00	5.62E-01	2.9E+00	1.3E-01	1.9E-02	1.8E-03	1.3E+02	2.93E-03	7.92E+02	0.00E+00	0.0E+00	0.0E+00
	46	August	6.2	1.9E-04	1.3E-01	6.8E+00	6.39E-01	1.8E+00	1.9E-01	6.7E-02	3.6E-03	8.2E+01	2.17E-03	4.22E+02	0.00E+00	0.0E+00	0.0E+00
	47	September	6.2	1.8E-04	1.3E-01	6.8E+00	5.78E-01	1.4E+00	1.7E-01	6.6E-02	3.4E-03	6.6E+01	1.95E-03	3.22E+02	0.00E+00	0.0E+00	0.0E+00
2	56	June	6.2	9.6E-05	1.3E-01	6.8E+00	2.95E-01	2.8E-01	8.7E-02	4.5E-02	1.9E-03	2.4E+01	7.11E-04	1.37E+02	0.00E+00	0.0E+00	0.0E+00
	57	July	6.2	1.3E-04	1.3E-01	6.8E+00	3.37E-01	1.8E+00	9.2E-02	1.2E-02	1.3E-03	9.9E+01	1.96E-03	6.62E+02	0.00E+00	0.0E+00	0.0E+00
	58	August	6.2	1.7E-04	1.3E-01	6.8E+00	5.34E-01	1.3E+00	1.7E-01	6.1E-02	3.1E-03	7.4E+01	1.75E-03	4.20E+02	0.00E+00	0.0E+00	0.0E+00
	59	September	6.2	1.9E-04	1.3E-01	6.8E+00	5.81E-01	1.1E+00	1.8E-01	7.4E-02	3.6E-03	6.5E+01	1.84E-03	3.27E+02	0.00E+00	0.0E+00	0.0E+00
3	68	June	6.2	1.1E-04	1.3E-01	6.8E+00	3.36E-01	3.8E-01	1.0E-01	4.9E-02	2.1E-03	4.6E+01	7.31E-04	3.16E+02	0.00E+00	0.0E+00	0.0E+00
	69	July	6.2	1.0E-04	1.3E-01	6.8E+00	2.49E-01	1.4E+00	8.0E-02	1.0E-02	1.0E-03	9.4E+01	1.42E-03	6.63E+02	0.00E+00	0.0E+00	0.0E+00
	70	August	6.2	1.6E-04	1.3E-01	6.8E+00	5.11E-01	1.2E+00	1.6E-01	6.1E-02	3.1E-03	7.6E+01	1.59E-03	4.51E+02	0.00E+00	0.0E+00	0.0E+00
	71	September	6.2	2.1E-04	1.3E-01	6.8E+00	6.13E-01	1.1E+00	2.0E-01	8.1E-02	3.9E-03	7.1E+01	1.88E-03	3.71E+02	0.00E+00	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
Water License Discharge Criteria[2]					0.1				0.0004							0.2	
8 METER ACTIVE ZONE																	
1	44	June	1.5E-02	8.6E-04	2.13E-02	9.6E-02	4.0E-02	4.9E+01	8.33E-05	2.5E+00	3.6E-03	4.6E+00	7.0E-01	2.3E-03	2.4E+01	1.30E-01	1.9E+01
	45	July	1.4E-01	2.9E-03	8.12E-02	1.6E+00	4.0E-02	5.4E+02	4.98E-04	1.7E+01	2.2E-02	5.2E+01	3.9E+00	1.8E-02	1.9E+02	1.11E+00	1.0E+00
	46	August	1.1E-01	3.6E-03	1.24E-01	4.7E-01	4.0E-02	3.6E+02	3.44E-04	1.9E+01	2.0E-02	3.8E+01	4.7E+00	1.3E-02	1.0E+02	1.10E+00	6.1E+00
	47	September	9.7E-02	3.5E-03	1.12E-01	5.7E-01	4.0E-02	2.9E+02	3.53E-04	1.7E+01	1.9E-02	3.0E+01	4.1E+00	1.0E-02	8.1E+01	9.35E-01	5.4E+00
2	56	June	3.6E-02	1.9E-03	5.11E-02	2.0E-01	4.0E-02	9.9E+01	1.86E-04	5.3E+00	7.2E-03	9.2E+00	1.6E+00	4.7E-03	3.8E+01	3.13E-01	1.4E+01
	57	July	9.3E-02	2.1E-03	5.31E-02	1.3E+00	4.0E-02	4.1E+02	3.72E-04	1.2E+01	1.6E-02	4.0E+01	2.4E+00	1.4E-02	1.6E+02	6.76E-01	6.1E-01
	58	August	8.6E-02	3.2E-03	1.04E-01	4.2E-01	4.0E-02	3.2E+02	3.03E-04	1.6E+01	1.7E-02	3.2E+01	3.8E+00	1.2E-02	1.0E+02	8.60E-01	4.9E+00
	59	September	9.2E-02	3.7E-03	1.13E-01	5.8E-01	4.0E-02	2.8E+02	3.72E-04	1.6E+01	1.9E-02	2.8E+01	4.0E+00	1.1E-02	8.2E+01	8.60E-01	5.4E+00
3	68	June	3.5E-02	2.1E-03	5.07E-02	2.6E-01	4.0E-02	1.9E+02	1.96E-04	7.4E+00	1.0E-02	1.7E+01	1.7E+00	8.8E-03	7.9E+01	3.08E-01	1.2E+01
	69	July	6.6E-02	1.6E-03	3.84E-02	9.6E-01	4.0E-02	3.9E+02	2.67E-04	1.1E+01	1.4E-02	3.7E+01	1.8E+00	1.4E-02	1.5E+02	4.85E-01	5.7E-01
	70	August	7.8E-02	3.1E-03	9.62E-02	4.2E-01	4.0E-02	3.2E+02	2.93E-04	1.5E+01	1.7E-02	3.2E+01	3.5E+00	1.3E-02	1.1E+02	7.70E-01	4.9E+00
	71	September	9.4E-02	4.0E-03	1.18E-01	6.1E-01	4.0E-02	3.0E+02	3.96E-04	1.7E+01	2.0E-02	3.0E+01	4.1E+00	1.3E-02	9.3E+01	8.68E-01	5.8E+00

Year	GoldSim Month	Actual Month	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			16	20	1	0.1	1									0.4	
8 METER ACTIVE ZONE																	
1	44	June	2.31E+01	2.13E+01	7.33E-02	8.84E-03	4.7E-02	1.1E-02	1.7E-03	1.8E+00	2.5E+01	1.3E-01	1.7E-04	3.4E-03	4.2E-03	1.13E-01	1.9E+02
	45	July	1.27E+00	1.32E+00	2.47E-01	5.67E-02	2.2E-01	1.1E-02	2.9E-03	1.4E+01	2.6E+02	1.0E+00	3.6E-04	9.9E-03	3.9E-03	2.01E+00	1.5E+03
	46	August	7.46E+00	6.97E+00	3.80E-01	6.51E-02	1.8E-01	3.5E-02	6.8E-03	1.2E+01	2.5E+02	8.7E-01	7.2E-04	1.7E-02	1.3E-02	1.48E+00	9.6E+02
	47	September	6.59E+00	6.19E+00	3.74E-01	5.62E-02	1.6E-01	3.5E-02	6.5E-03	1.2E+01	2.1E+02	7.3E-01	6.7E-04	1.6E-02	1.3E-02	1.20E+00	7.7E+02
2	56	June	1.64E+01	1.52E+01	1.50E-01	2.12E-02	8.8E-02	2.4E-02	3.7E-03	3.8E+00	5.2E+01	2.8E-01	3.7E-04	8.1E-03	8.8E-03	2.70E-01	3.1E+02
	57	July	7.45E-01	8.05E-01	1.73E-01	3.48E-02	1.7E-01	7.4E-03	2.0E-03	1.0E+01	1.8E+02	6.9E-01	2.4E-04	7.5E-03	2.7E-03	1.20E+00	1.2E+03
	58	August	5.92E+00	5.54E+00	3.19E-01	5.23E-02	1.7E-01	3.3E-02	6.1E-03	1.0E+01	1.9E+02	7.3E-01	6.3E-04	1.6E-02	1.2E-02	1.10E+00	8.7E+02
	59	September	6.60E+00	6.21E+00	3.75E-01	5.33E-02	1.8E-01	3.9E-02	6.9E-03	1.1E+01	1.9E+02	7.0E-01	7.1E-04	1.7E-02	1.5E-02	1.01E+00	7.5E+02
3	68	June	1.40E+01	1.30E+01	1.75E-01	2.13E-02	1.4E-01	2.7E-02	4.0E-03	4.8E+00	6.3E+01	3.8E-01	4.0E-04	1.0E-02	9.8E-03	2.68E-01	5.7E+02
	69	July	6.88E-01	7.18E-01	1.43E-01	2.55E-02	1.8E-01	6.1E-03	1.6E-03	8.3E+00	1.4E+02	5.9E-01	1.9E-04	6.4E-03	2.3E-03	8.60E-01	1.1E+03
	70	August	5.95E+00	5.57E+00	3.04E-01	4.75E-02	1.9E-01	3.3E-02	5.9E-03	9.6E+00	1.7E+02	7.0E-01	6.1E-04	1.6E-02	1.2E-02	9.52E-01	8.9E+02
	71	September	7.05E+00	6.64E+00	3.94E-01	5.47E-02	2.0E-01	4.4E-02	7.5E-03	1.2E+01	1.9E+02	7.4E-01	7.6E-04	2.0E-02	1.6E-02	9.78E-01	8.1E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table H-3
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Portage Reclaim Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5
1	39-50	Annual Average	8	2.8E-04	7.0E-02	3.7E+01	2.49E-02	4.2E-01	1.1E-01	6.9E-03	2.9E-03	4.5E+01	4.88E-04	1.56E+02	2.80E+00
2	51-62	Annual Average	8	7.6E-04	2.0E-01	1.3E+02	9.60E-02	7.6E-01	2.1E-01	1.7E-02	9.4E-03	1.2E+02	1.33E-03	3.79E+02	1.07E+01
3	63-74	Annual Average	8	9.2E-04	2.5E-01	1.9E+02	1.24E-01	8.4E-01	2.6E-01	2.1E-02	1.2E-02	1.7E+02	1.63E-03	5.05E+02	1.04E+01
4	75-86	Annual Average	8	7.8E-04	1.1E+00	2.5E+02	1.79E-01	9.1E-01	2.5E-01	2.6E-02	1.1E-02	2.4E+02	1.64E-03	5.51E+02	9.66E+00
Merging of Tailings Reclaim Pond with Attenuation Pond (during Mid-year 4)															
5	87-98	Annual Average	8	2.6E-04	1.3E+00	1.7E+02	2.06E-01	6.1E-01	1.4E-01	2.8E-02	4.6E-03	1.7E+02	9.42E-04	4.07E+02	1.78E+00
6	99-110	Annual Average	8	3.0E-04	1.0E+00	1.8E+02	3.72E-01	7.5E-01	1.8E-01	4.8E-02	6.1E-03	2.6E+02	1.16E-03	3.60E+02	1.30E+00
7	111-122	Annual Average	8	3.4E-04	1.0E+00	2.4E+02	6.62E-01	1.0E+00	2.3E-01	8.2E-02	8.6E-03	4.4E+02	1.42E-03	3.16E+02	5.43E-01
8	123-134	Annual Average	8	3.7E-04	1.0E+00	3.1E+02	1.06E+00	1.4E+00	2.9E-01	1.3E-01	1.1E-02	6.4E+02	1.68E-03	2.77E+02	8.15E-02
9	135-146	Annual Average	8	1.2E-03	2.9E+00	1.1E+03	5.39E+00	5.4E+00	1.1E+00	6.5E-01	4.3E-02	2.4E+03	5.86E-03	6.99E+02	8.06E-02

Year	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)
Water License Discharge Criteria[2]					0.1				0.0004							0.2
1	1.4E+02	2.8E+02	1.9E-01	5.3E-03	1.12E-01	5.6E-01	6.2E+00	1.9E+02	1.57E-04	8.9E+01	4.2E-02	1.8E+01	1.9E-01	3.9E-02	5.8E+02	3.39E-02
2	4.3E+02	8.7E+02	5.9E-01	1.1E-02	3.51E-01	9.9E-01	1.9E+01	4.8E+02	2.27E-04	2.7E+02	1.0E-01	4.5E+01	7.7E-01	1.1E-01	1.8E+03	1.56E-01
3	5.3E+02	1.1E+03	7.3E-01	1.3E-02	4.39E-01	1.1E+00	2.4E+01	6.9E+02	2.58E-04	3.4E+02	1.2E-01	6.3E+01	1.1E+00	1.4E-01	2.2E+03	1.97E-01
4	4.3E+02	8.8E+02	6.3E-01	1.2E-02	4.22E-01	9.7E-01	3.9E+01	8.7E+02	2.98E-04	2.8E+02	1.0E-01	6.7E+01	1.6E+00	1.2E-01	1.9E+03	2.69E-01
5	1.1E+02	2.4E+02	2.0E-01	4.7E-03	1.78E-01	4.9E-01	3.3E+01	5.8E+02	2.16E-04	8.5E+01	3.8E-02	3.9E+01	1.5E+00	4.8E-02	5.9E+02	2.62E-01
6	1.4E+02	2.6E+02	2.4E-01	6.2E-03	2.22E-01	5.5E-01	2.7E+01	8.3E+02	3.02E-04	9.7E+01	4.6E-02	4.5E+01	1.8E+00	7.9E-02	6.6E+02	3.13E-01
7	2.1E+02	2.9E+02	2.7E-01	8.7E-03	2.52E-01	6.3E-01	2.5E+01	1.3E+03	4.29E-04	1.2E+02	6.2E-02	5.8E+01	2.0E+00	1.6E-01	8.2E+02	3.37E-01
8	2.9E+02	2.9E+02	2.8E-01	1.1E-02	2.47E-01	6.9E-01	2.2E+01	1.9E+03	5.88E-04	1.3E+02	7.6E-02	7.2E+01	2.2E+00	2.6E-01	9.2E+02	3.63E-01
9	1.0E+03	8.3E+02	8.1E-01	4.3E-02	7.01E-01	2.2E+00	5.7E+01	7.0E+03	2.46E-03	4.1E+02	2.6E-01	2.5E+02	7.0E+00	9.9E-01	2.9E+03	1.09E+00

Year	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]		16	20	1	0.1	1									0.4	
1	2.5E-01	3.01E-01	6.17E-01	1.96E-01	3.23E-03	1.5E-01	4.6E-03	8.1E-03	3.2E+00	1.5E+03	5.3E-01	1.0E-03	5.0E-03	7.7E-02	5.73E-02	2.8E+03
2	6.5E-01	7.87E-01	1.77E+00	6.41E-01	9.72E-03	4.0E-01	1.3E-02	2.0E-02	9.7E+00	4.6E+03	1.8E+00	2.2E-03	1.4E-02	6.9E-02	2.45E-01	8.7E+03
3	8.4E-01	1.02E+00	2.22E+00	8.82E-01	1.18E-02	5.0E-01	1.8E-02	2.5E-02	1.3E+01	5.8E+03	2.7E+00	2.5E-03	1.9E-02	4.3E-02	3.08E-01	1.1E+04
4	1.2E+00	1.42E+00	2.43E+00	9.00E-01	1.63E-02	5.1E-01	2.2E-02	2.2E-02	1.3E+01	5.0E+03	2.9E+00	2.3E-03	2.0E-02	3.0E-02	4.05E-01	9.7E+03
5	1.3E+00	1.60E+00	1.85E+00	4.39E-01	1.66E-02	2.7E-01	2.0E-02	9.1E-03	7.4E+00	1.6E+03	1.4E+00	9.1E-04	1.3E-02	1.3E-02	3.38E-01	3.5E+03
6	1.3E+00	1.63E+00	2.01E+00	5.74E-01	1.94E-02	3.1E-01	3.9E-02	1.2E-02	8.6E+00	2.2E+03	1.9E+00	1.2E-03	1.7E-02	1.9E-02	4.03E-01	5.1E+03
7	1.2E+00	1.41E+00	1.99E+00	7.85E-01	1.94E-02	3.7E-01	7.7E-02	1.7E-02	9.9E+00	3.3E+03	2.8E+00	1.7E-03	2.5E-02	3.0E-02	4.73E-01	7.2E+03
8	9.8E-01	1.20E+00	1.96E+00	9.90E-01	1.93E-02	4.0E-01	1.3E-01	2.3E-02	1.1E+01	4.4E+03	3.7E+00	2.3E-03	3.4E-02	4.3E-02	5.40E-01	9.3E+03
9	2.4E+00	2.87E+00	5.72E+00	3.61E+00	5.46E-02	1.5E+00	6.0E-01	8.6E-02	3.5E+01	1.6E+04	1.4E+01	8.7E-03	1.2E-01	1.8E-01	1.71E+00	3.2E+04

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table H-4
Predicted Water Quality (Dissolved Constituents) - Hypothetical Senario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.3**						**0.002**	**1000**	**0.5**
8 METER ACTIVE ZONE															
Filling of Pit Lake															
6	99 - 110	Annual Average	6.7	2.8E-05	1.5E-01	3.0E+01	1.0E-01	2.3E-01	3.5E-02	6.3E-03	4.9E-04	4.4E+01	1.7E-04	3.3E+02	0.0E+00
7	111 - 122	Annual Average	6.7	2.9E-05	1.7E-01	2.3E+01	9.8E-02	1.8E-01	3.2E-02	1.1E-02	4.8E-04	3.2E+01	1.6E-04	2.4E+02	0.0E+00
8	123 - 134	Annual Average	6.7	3.0E-05	1.8E-01	2.2E+01	1.0E-01	1.8E-01	3.2E-02	1.2E-02	4.9E-04	3.0E+01	1.7E-04	2.2E+02	0.0E+00
9	135 - 146	Annual Average	6.7	2.7E-05	1.6E-01	2.0E+01	9.6E-02	1.6E-01	2.9E-02	1.1E-02	4.5E-04	2.6E+01	1.6E-04	1.9E+02	0.0E+00
10	147 - 158	Annual Average	6.7	2.2E-05	1.4E-01	1.6E+01	7.9E-02	1.3E-01	2.3E-02	9.1E-03	3.7E-04	2.0E+01	1.3E-04	1.4E+02	0.0E+00
11	159 - 170	Annual Average	6.7	2.2E-05	1.4E-01	1.5E+01	7.8E-02	1.2E-01	2.3E-02	9.1E-03	3.6E-04	1.9E+01	1.3E-04	1.3E+02	0.0E+00
12	171 - 182	Annual Average	6.7	2.2E-05	1.4E-01	1.4E+01	7.7E-02	1.2E-01	2.2E-02	9.0E-03	3.5E-04	1.8E+01	1.3E-04	1.2E+02	0.0E+00
Long-term Goose Pit Lake Water Quality															
20	267 - 278	Annual Average	6.7	1.9E-05	1.3E-01	1.2E+01	6.5E-02	9.9E-02	1.9E-02	7.7E-03	3.0E-04	1.4E+01	1.2E-04	9.8E+01	0.0E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]							**0.1**				**0.0004**						
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
6	99 - 110	Annual Average	0.0E+00	0.0E+00	7.0E-03	7.3E-04	1.0E-02	1.4E-01	1.2E+00	1.8E+02	4.4E-05	6.2E+00	6.0E-03	1.6E+01	3.3E-01	8.5E-03	7.7E+01
7	111 - 122	Annual Average	0.0E+00	0.0E+00	6.4E-03	7.1E-04	8.2E-03	1.4E-01	1.7E+00	1.3E+02	5.4E-05	4.2E+00	5.3E-03	1.2E+01	2.8E-01	6.1E-03	5.6E+01
8	123 - 134	Annual Average	0.0E+00	0.0E+00	6.7E-03	7.4E-04	8.4E-03	1.4E-01	1.9E+00	1.2E+02	5.8E-05	4.0E+00	5.2E-03	1.1E+01	2.8E-01	5.7E-03	5.2E+01
9	135 - 146	Annual Average	0.0E+00	0.0E+00	6.2E-03	6.8E-04	7.7E-03	1.3E-01	1.7E+00	1.0E+02	5.5E-05	3.5E+00	4.7E-03	9.4E+00	2.6E-01	5.0E-03	4.5E+01
10	147 - 158	Annual Average	0.0E+00	0.0E+00	5.1E-03	5.7E-04	6.3E-03	1.1E-01	1.5E+00	8.1E+01	4.6E-05	2.8E+00	3.8E-03	7.3E+00	2.1E-01	3.9E-03	3.4E+01
11	159 - 170	Annual Average	0.0E+00	0.0E+00	5.1E-03	5.7E-04	6.3E-03	1.1E-01	1.5E+00	7.6E+01	4.7E-05	2.7E+00	3.7E-03	6.8E+00	2.0E-01	3.6E-03	3.2E+01
12	171 - 182	Annual Average	0.0E+00	0.0E+00	5.1E-03	5.8E-04	6.2E-03	1.1E-01	1.4E+00	7.1E+01	4.7E-05	2.6E+00	3.6E-03	6.4E+00	2.0E-01	3.4E-03	2.9E+01
Long-term Goose Pit Lake Water Quality																	
20	267 - 278	Annual Average	0.0E+00	0.0E+00	4.7E-03	5.2E-04	5.3E-03	1.0E-01	1.2E+00	5.7E+01	4.4E-05	2.2E+00	3.2E-03	5.2E+00	1.7E-01	2.8E-03	2.3E+01

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**0.2**		**16**	**20**	**1**	**0.1**	**1**									**0.4**	
8 METER ACTIVE ZONE																			
Filling of Pit Lake																			
6	99 - 110	Annual Average	6.5E-02	1.5E-03	1.8E-03	1.2E-02	7.9E-02	2.7E-03	9.5E-02	1.3E-02	9.1E-04	2.3E+00	2.9E+01	2.2E-01	1.1E-04	3.1E-03	5.5E-03	1.3E-01	5.4E+02
7	111 - 122	Annual Average	4.8E-02	1.5E-03	1.8E-03	2.0E-02	5.6E-02	3.1E-03	7.8E-02	9.5E-03	1.0E-03	1.8E+00	2.3E+01	1.7E-01	1.2E-04	3.6E-03	7.4E-03	6.2E-02	4.0E+02
8	123 - 134	Annual Average	4.8E-02	9.7E-01	1.2E+00	1.1E+00	5.5E-02	3.3E-03	7.5E-02	9.7E-03	1.1E-03	1.7E+00	2.3E+01	1.6E-01	1.3E-04	3.7E-03	8.0E-03	5.9E-02	3.7E+02
9	135 - 146	Annual Average	4.4E-02	1.7E+00	2.0E+00	1.9E+00	4.9E-02	3.0E-03	6.5E-02	8.8E-03	1.0E-03	1.5E+00	2.0E+01	1.4E-01	1.2E-04	3.4E-03	7.7E-03	5.2E-02	3.2E+02
10	147 - 158	Annual Average	3.6E-02	1.1E+00	1.4E+00	1.3E+00	3.9E-02	2.5E-03	5.2E-02	7.1E-03	8.3E-04	1.2E+00	1.6E+01	1.1E-01	9.9E-05	2.8E-03	6.7E-03	4.1E-02	2.5E+02
11	159 - 170	Annual Average	3.6E-02	9.9E-01	1.2E+00	1.1E+00	3.8E-02	2.5E-03	4.9E-02	7.0E-03	8.4E-04	1.2E+00	1.6E+01	1.0E-01	1.0E-04	2.8E-03	7.0E-03	4.0E-02	2.3E+02
12	171 - 182	Annual Average	3.5E-02	9.0E-01	1.1E+00	1.0E+00	3.6E-02	2.4E-03	4.6E-02	6.9E-03	8.4E-04	1.1E+00	1.5E+01	9.7E-02	1.0E-04	2.7E-03	7.3E-03	3.8E-02	2.1E+02
Long-term Goose Pit Lake Water Quality																			
20	267 - 278	Annual Average	3.0E-02	7.2E-01	8.7E-01	8.2E-01	3.0E-02	2.1E-03	3.7E-02	5.8E-03	7.4E-04	9.7E-01	1.3E+01	8.0E-02	9.1E-05	2.3E-03	7.0E-03	3.2E-02	1.7E+02

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table H-5
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.3						0.002	1000	0.5	
8 METER ACTIVE ZONE																
Filling of Pit Lake																
6	99 - 110	Annual Average	6.7	6.6E-05	3.4E-01	4.9E+01	2.56E-01	5.8E-01	8.9E-02	1.2E-02	1.5E-03	5.7E+01	5.75E-04	3.35E+02	0.00E+00	0.0E+00
7	111 - 122	Annual Average	6.7	5.5E-05	3.4E-01	1.6E+01	1.04E-01	1.9E-01	5.4E-02	1.5E-02	8.7E-04	1.8E+01	3.90E-04	9.27E+01	0.00E+00	0.0E+00
8	123 - 134	Annual Average	6.7	5.4E-05	3.3E-01	1.5E+01	1.01E-01	1.8E-01	5.3E-02	1.5E-02	8.4E-04	1.6E+01	3.79E-04	7.96E+01	0.00E+00	0.0E+00
9	135 - 146	Annual Average	6.7	5.1E-05	3.1E-01	1.4E+01	9.56E-02	1.7E-01	4.9E-02	1.4E-02	7.9E-04	1.4E+01	3.56E-04	6.88E+01	0.00E+00	0.0E+00
10	147 - 158	Annual Average	6.7	4.6E-05	2.8E-01	1.3E+01	8.60E-02	1.5E-01	4.5E-02	1.3E-02	7.1E-04	1.2E+01	3.20E-04	5.73E+01	0.00E+00	0.0E+00
11	159 - 170	Annual Average	6.7	4.4E-05	2.7E-01	1.2E+01	8.12E-02	1.4E-01	4.2E-02	1.2E-02	6.7E-04	1.1E+01	3.04E-04	5.05E+01	0.00E+00	0.0E+00
12	171 - 182	Annual Average	6.7	4.2E-05	2.5E-01	1.1E+01	7.66E-02	1.4E-01	4.0E-02	1.2E-02	6.3E-04	1.0E+01	2.87E-04	4.40E+01	0.00E+00	0.0E+00
Long-term Portage Pit Lake Water Quality																
20	267 - 278	Annual Average	6.7	3.6E-05	2.1E-01	9.7E+00	6.23E-02	1.1E-01	3.4E-02	9.7E-03	5.1E-04	8.4E+00	2.40E-04	3.37E+01	0.00E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]						0.1				0.0004						
8 METER ACTIVE ZONE																
Filling of Pit Lake																
6	99 - 110	Annual Average	0.0E+00	2.7E-02	2.2E-03	4.98E-02	1.8E-01	6.2E+00	2.4E+02	1.45E-04	1.6E+01	1.0E-02	2.4E+01	1.5E+00	1.3E-02	8.8E+01
7	111 - 122	Annual Average	0.0E+00	1.9E-02	1.3E-03	2.86E-02	1.7E-01	7.1E+00	7.4E+01	1.06E-04	4.8E+00	6.0E-03	7.1E+00	9.0E-01	3.8E-03	2.4E+01
8	123 - 134	Annual Average	0.0E+00	1.9E-02	1.3E-03	2.76E-02	1.7E-01	7.0E+00	6.7E+01	1.04E-04	4.5E+00	5.8E-03	6.4E+00	8.7E-01	3.5E-03	2.1E+01
9	135 - 146	Annual Average	0.0E+00	1.7E-02	1.3E-03	2.58E-02	1.6E-01	6.5E+00	6.0E+01	9.92E-05	4.2E+00	5.5E-03	5.8E+00	8.1E-01	3.2E-03	1.8E+01
10	147 - 158	Annual Average	0.0E+00	1.6E-02	1.1E-03	2.30E-02	1.4E-01	5.9E+00	5.2E+01	9.04E-05	3.7E+00	5.0E-03	5.0E+00	7.2E-01	2.8E-03	1.5E+01
11	159 - 170	Annual Average	0.0E+00	1.5E-02	1.1E-03	2.17E-02	1.4E-01	5.6E+00	4.8E+01	8.72E-05	3.5E+00	4.8E-03	4.6E+00	6.8E-01	2.5E-03	1.3E+01
12	171 - 182	Annual Average	0.0E+00	1.4E-02	1.1E-03	2.04E-02	1.3E-01	5.2E+00	4.3E+01	8.39E-05	3.3E+00	4.7E-03	4.2E+00	6.4E-01	2.3E-03	1.2E+01
Long-term Portage Pit Lake Water Quality																
20	267 - 278	Annual Average	0.0E+00	1.1E-02	9.3E-04	1.67E-02	1.2E-01	4.3E+00	3.5E+01	7.25E-05	2.7E+00	4.1E-03	3.4E+00	5.2E-01	1.9E-03	9.3E+00

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			0.2		16	20	1	0.1	1									0.4	
8 METER ACTIVE ZONE																			
Filling of Pit Lake																			
6	99 - 110	Annual Average	2.79E-01	1.7E+01	2.05E+01	1.89E+01	2.60E-01	1.09E-02	9.72E-02	4.9E-02	3.0E-03	5.7E+00	7.4E+01	5.0E-01	3.8E-04	4.9E-03	1.7E-02	8.09E-01	7.0E+02
7	111 - 122	Annual Average	1.70E-01	1.9E+00	2.36E+00	2.20E+00	8.99E-02	1.08E-02	4.08E-02	1.2E-02	2.1E-03	2.5E+00	3.5E+01	1.7E-01	2.5E-04	4.4E-03	1.5E-02	2.10E-01	2.1E+02
8	123 - 134	Annual Average	1.65E-01	1.6E+00	1.95E+00	1.82E+00	8.47E-02	1.05E-02	3.76E-02	1.1E-02	2.0E-03	2.4E+00	3.3E+01	1.6E-01	2.5E-04	4.3E-03	1.6E-02	1.94E-01	1.9E+02
9	135 - 146	Annual Average	1.54E-01	1.4E+00	1.75E+00	1.63E+00	7.87E-02	9.87E-03	3.41E-02	1.1E-02	1.9E-03	2.2E+00	3.1E+01	1.4E-01	2.4E-04	4.0E-03	1.6E-02	1.80E-01	1.7E+02
10	147 - 158	Annual Average	1.37E-01	1.2E+00	1.46E+00	1.36E+00	6.96E-02	8.86E-03	2.98E-02	9.4E-03	1.7E-03	1.9E+00	2.7E+01	1.3E-01	2.2E-04	3.6E-03	1.5E-02	1.58E-01	1.5E+02
11	159 - 170	Annual Average	1.29E-01	1.0E+00	1.21E+00	1.14E+00	6.46E-02	8.41E-03	2.77E-02	8.7E-03	1.7E-03	1.8E+00	2.6E+01	1.2E-01	2.1E-04	3.4E-03	1.5E-02	1.45E-01	1.3E+02
12	171 - 182	Annual Average	1.21E-01	8.6E-01	1.04E+00	9.82E-01	5.99E-02	7.94E-03	2.54E-02	8.1E-03	1.6E-03	1.7E+00	2.4E+01	1.1E-01	2.1E-04	3.2E-03	1.5E-02	1.34E-01	1.2E+02
Long-term Portage Pit Lake Water Quality																			
20	267 - 278	Annual Average	9.90E-02	6.6E-01	7.97E-01	7.51E-01	4.85E-02	6.51E-03	2.05E-02	6.5E-03	1.4E-03	1.4E+00	2.0E+01	8.6E-02	1.8E-04	2.6E-03	1.4E-02	1.08E-01	9.6E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table H-6
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.1						0.002	500						0.1			
8 METER ACTIVE ZONE																							
5	92	June	8	1.4E-15	1.7E-11	2.1E-08	3.3E-11	3.4E-12	7.4E-12	7.1E-14	7.1E-14	1.0E-08	7.1E-15	7.1E-11	0.0E+00	0.0E+00	0.0E+00	9.1E-14	7.1E-14	4.7E-13	2.8E-11	4.3E-12	4.0E-08
	93	July	8	6.0E-06	7.3E-02	1.9E+01	1.4E-01	1.4E-02	3.1E-02	3.0E-04	3.0E-04	9.5E+00	3.0E-05	6.6E-02	0.0E+00	0.0E+00	0.0E+00	3.8E-04	3.0E-04	2.0E-03	2.6E-02	4.0E-03	3.7E+01
	94	August	8	1.4E-05	1.7E-01	6.1E+01	3.2E-01	3.3E-02	7.1E-02	6.8E-04	6.8E-04	3.0E+01	6.8E-05	2.1E-01	0.0E+00	0.0E+00	0.0E+00	8.8E-04	6.8E-04	4.6E-03	8.2E-02	1.3E-02	1.2E+02
	95	September	8	2.0E-05	2.4E-01	9.8E+01	4.6E-01	4.7E-02	1.0E-01	9.8E-04	9.8E-04	4.9E+01	9.8E-05	3.4E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-03	9.8E-04	6.6E-03	1.3E-01	2.1E-02	1.9E+02
6	104	June	8	2.6E-06	3.2E-02	1.1E+01	5.9E-02	6.1E-03	1.3E-02	1.3E-04	1.3E-04	5.6E+00	1.3E-05	3.8E-02	0.0E+00	0.0E+00	0.0E+00	1.7E-04	1.3E-04	8.5E-04	1.5E-02	2.3E-03	2.2E+01
	105	July	8	8.0E-06	9.7E-02	2.7E+01	1.8E-01	1.9E-02	4.1E-02	3.9E-04	3.9E-04	1.4E+01	3.9E-05	9.4E-02	0.0E+00	0.0E+00	0.0E+00	5.1E-04	3.9E-04	2.6E-03	3.7E-02	5.7E-03	5.3E+01
	106	August	8	1.6E-05	1.9E-01	6.9E+01	3.6E-01	3.7E-02	8.1E-02	7.8E-04	7.8E-04	3.4E+01	7.8E-05	2.4E-01	0.0E+00	0.0E+00	0.0E+00	1.0E-03	7.8E-04	5.2E-03	9.3E-02	1.4E-02	1.4E+02
	107	September	8	2.2E-05	2.7E-01	1.1E+02	5.0E-01	5.2E-02	1.1E-01	1.1E-03	1.1E-03	5.3E+01	1.1E-04	3.7E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.1E-03	7.2E-03	1.4E-01	2.2E-02	2.1E+02
7	116	June	8	1.7E-05	2.1E-01	7.5E+01	4.0E-01	4.1E-02	8.9E-02	8.5E-04	8.5E-04	3.7E+01	8.5E-05	2.6E-01	0.0E+00	0.0E+00	0.0E+00	1.1E-03	8.5E-04	5.7E-03	1.0E-01	1.6E-02	1.5E+02
	117	July	8	2.1E-05	2.5E-01	8.2E+01	4.8E-01	4.9E-02	1.1E-01	1.0E-03	1.0E-03	4.1E+01	1.0E-04	2.8E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-03	1.0E-03	6.9E-03	1.1E-01	1.7E-02	1.6E+02
	118	August	8	3.1E-05	3.8E-01	1.3E+02	7.1E-01	7.3E-02	1.6E-01	1.5E-03	1.5E-03	6.6E+01	1.5E-04	4.5E-01	0.0E+00	0.0E+00	0.0E+00	2.0E-03	1.5E-03	1.0E-02	1.8E-01	2.8E-02	2.6E+02
	119	September	8	3.9E-05	4.7E-01	1.8E+02	8.8E-01	9.1E-02	2.0E-01	1.9E-03	1.9E-03	8.9E+01	1.9E-04	6.2E-01	0.0E+00	0.0E+00	0.0E+00	2.4E-03	1.9E-03	1.3E-02	2.4E-01	3.7E-02	3.5E+02
8	128	June	8	3.7E-05	4.5E-01	1.6E+02	8.4E-01	8.7E-02	1.9E-01	1.8E-03	1.8E-03	7.9E+01	1.8E-04	5.5E-01	0.0E+00	0.0E+00	0.0E+00	2.3E-03	1.8E-03	1.2E-02	2.1E-01	3.3E-02	3.1E+02
	129	July	8	3.7E-05	4.4E-01	1.5E+02	8.4E-01	8.6E-02	1.9E-01	1.8E-03	1.8E-03	7.5E+01	1.8E-04	5.2E-01	0.0E+00	0.0E+00	0.0E+00	2.3E-03	1.8E-03	1.2E-02	2.0E-01	3.1E-02	2.9E+02
	130	August	8	4.6E-05	5.6E-01	2.0E+02	1.1E+00	1.1E-01	2.4E-01	2.3E-03	2.3E-03	9.9E+01	2.3E-04	6.8E-01	0.0E+00	0.0E+00	0.0E+00	2.9E-03	2.3E-03	1.5E-02	2.7E-01	4.2E-02	3.9E+02
	131	September	8	5.3E-05	6.4E-01	2.4E+02	1.2E+00	1.2E-01	2.7E-01	2.6E-03	2.6E-03	1.2E+02	2.6E-04	8.3E-01	0.0E+00	0.0E+00	0.0E+00	3.3E-03	2.6E-03	1.7E-02	3.2E-01	5.0E-02	4.7E+02
9	140	June	8	4.7E-05	5.8E-01	2.1E+02	1.1E+00	1.1E-01	2.4E-01	2.3E-03	2.3E-03	1.0E+02	2.3E-04	7.1E-01	0.0E+00	0.0E+00	0.0E+00	3.0E-03	2.3E-03	1.6E-02	2.8E-01	4.3E-02	4.0E+02
	141	July	8	1.1E-04	1.3E+00	3.3E+02	2.5E+00	2.6E-01	5.6E-01	5.3E-03	5.3E-03	1.6E+02	5.3E-04	1.1E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-03	5.3E-03	3.6E-02	4.4E-01	6.9E-02	6.4E+02
	142	August	8	1.2E-04	1.4E+00	3.6E+02	2.7E+00	2.8E-01	6.1E-01	5.8E-03	5.8E-03	1.8E+02	5.8E-04	1.2E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-03	5.8E-03	3.9E-02	4.9E-01	7.6E-02	7.1E+02
	143	September	8	1.3E-04	1.5E+00	4.0E+02	2.9E+00	3.0E-01	6.5E-01	6.2E-03	6.2E-03	2.0E+02	6.2E-04	1.4E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03	6.2E-03	4.1E-02	5.3E-01	8.3E-02	7.8E+02
10	152	June	8	1.2E-04	1.4E+00	3.7E+02	2.6E+00	2.7E-01	6.0E-01	5.7E-03	5.7E-03	1.8E+02	5.7E-04	1.3E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-03	5.7E-03	3.8E-02	5.0E-01	7.7E-02	7.2E+02
	153	July	8	1.3E-04	1.6E+00	4.0E+02	3.0E+00	3.1E-01	6.8E-01	6.5E-03	6.5E-03	2.0E+02	6.5E-04	1.4E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-03	6.5E-03	4.4E-02	5.4E-01	8.4E-02	7.8E+02
	154	August	8	1.4E-04	1.7E+00	4.4E+02	3.2E+00	3.3E-01	7.3E-01	7.0E-03	7.0E-03	2.2E+02	7.0E-04	1.5E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-03	7.0E-03	4.7E-02	5.9E-01	9.1E-02	8.5E+02
	155	September	8	1.5E-04	1.8E+00	4.7E+02	3.4E+00	3.5E-01	7.7E-01	7.3E-03	7.3E-03	2.3E+02	7.3E-04	1.6E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-03	7.3E-03	4.9E-02	6.3E-01	9.8E-02	9.1E+02
Long-Term Drainage Water Quality																							
21	272-275	Summer Average	8	2.6E-04	3.1E+00	7.9E+02	5.9E+00	6.1E-01	1.3E+00	1.3E-02	1.3E-02	3.9E+02	1.3E-03	2.7E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-02	1.3E-02	8.5E-02	1.1E+00	1.6E-01	1.5E+03

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
Water License Discharge Criteria[2]			0.004							0.2		20	50	0.1	1.5									0.2		
8 METER ACTIVE ZONE																										
5	92	June	7.1E-15	1.8E-09	7.1E-13	3.5E-09	1.4E-12	2.0E-11	1.8E+01	7.1E-14	4.6E+01	5.6E+01	5.1E+01	7.1E-15	9.8E-12	5.0E-12	3.5E-13	9.9E-10	2.2E-08	6.2E-11	1.4E-14	1.2E-11	2.6E-13	3.3E-13	1.1E+02	1,104
	93	July	3.0E-05	1.7E+00	6.6E-04	3.2E+00	6.0E-03	8.2E-02	1.6E+01	3.0E-04	4.1E+01	5.0E+01	4.6E+01	3.0E-05	9.2E-03	2.1E-02	1.5E-03	9.2E-01	2.0E+01	2.6E-01	6.0E-05	5.1E-02	1.1E-03	1.4E-03	1.6E+02	13
	94	August	6.8E-05	5.4E+00	2.1E-03	1.0E+01	1.4E-02	1.9E-01	1.8E+01	6.8E-04	4.3E+01	5.3E+01	4.9E+01	6.8E-05	2.9E-02	4.9E-02	3.4E-03	2.9E+00	6.4E+01	5.9E-01	1.4E-04	1.2E-01	2.5E-03	3.2E-03	2.8E+02	185
	95	September	9.8E-05	8.8E+00	3.4E-03	1.7E+01	2.0E-02	2.7E-01	1.8E+01	9.8E-04	4.2E+01	5.2E+01	4.8E+01	9.8E-05	4.7E-02	7.0E-02	4.8E-03	4.7E+00	1.0E+02	8.5E-01	2.0E-04	1.7E-01	3.6E-03	4.6E-03	3.9E+02	352
6	104	June	1.3E-05	1.0E+00	3.8E-04	1.9E+00	2.6E-03	3.5E-02	4.4E+01	1.3E-04	1.1E+02	1.4E+02	1.3E+02	1.3E-05	5.4E-03	9.1E-03	6.3E-04	5.4E-01	1.2E+01	1.1E-01	2.6E-05	2.2E-02	4.6E-04	5.9E-04	3.2E+02	16,741
	105	July	3.9E-05	2.5E+00	9.4E-04	4.6E+00	8.0E-03	1.1E-01	4.0E+01	3.9E-04	1.0E+02	1.3E+02	1.2E+02	3.9E-05	1.3E-02	2.8E-02	1.9E-03	1.3E+00	2.9E+01	3.4E-01	8.0E-05	6.8E-02	1.4E-03	1.8E-03	3.4E+02	188
	106	August	7.8E-05	6.2E+00	2.4E-03	1.2E+01	1.6E-02	2.2E-01	4.3E+01	7.8E-04	1.1E+02	1.3E+02	1.2E+02	7.8E-05	3.3E-02	5.5E-02	3.8E-03	3.3E+00	7.2E+01	6.8E-01	1.6E-04	1.4E-01	2.8E-03	3.6E-03	4.7E+02	2,672
	107	September	1.1E-04	9.6E+00	3.7E-03	1.8E+01	2.2E-02	3.0E-01	4.3E+01	1.1E-03	1.1E+02	1.3E+02	1.2E+02	1.1E-04	5.1E-02	7.7E-02	5.3E-03	5.1E+00	1.1E+02	9.4E-01	2.2E-04	1.9E-01	3.9E-03	5.0E-03	5.8E+02	5,025
7	116	June	8.5E-05	6.7E+00	2.6E-03	1.3E+01	1.7E-02	2.4E-01	5.1E+01	8.5E-04	1.3E+02	1.6E+02	1.5E+02	8.5E-05	3.6E-02	6.1E-02	4.2E-03	3.6E+00	7.8E+01	7.4E-01	1.7E-04	1.5E-01	3.1E-03	4.0E-03	5.4E+02	37,775
	117	July	1.0E-04	7.4E+00	2.8E-03	1.4E+01	2.1E-02	2.8E-01	4.5E+01	1.0E-03	1.1E+02	1.4E+02	1.3E+02	1.0E-04	3.9E-02	7.3E-02	5.1E-03	3.9E+00	8.6E+01	9.0E-01	2.1E-04	1.8E-01	3.7E-03	4.8E-03	5.3E+02	365
	118	August	1.5E-04	1.2E+01	4.5E-03	2.2E+01	3.1E-02	4.2E-01	4.8E+01	1.5E-03	1.2E+02	1.4E+02	1.3E+02	1.5E-04	6.3E-02	1.1E-01	7.5E-03	6.3E+00	1.4E+02	1.3E+00	3.1E-04	2.6E-01	5.5E-03	7.1E-03	6.8E+02	4,573
	119	September	1.9E-04	1.6E+01	6.2E-03	3.0E+01	3.9E-02	5.2E-01	4.8E+01	1.9E-03	1.2E+02	1.4E+02	1.3E+02	1.9E-04	8.6E-02	1.3E-01	9.4E-03	8.6E+00	1.9E+02	1.7E+00	3.9E-04	3.3E-01	6.9E-03	8.8E-03	8.1E+02	7,691
8	128	June	1.8E-04	1.4E+01	5.5E-03	2.7E+01	3.7E-02	5.0E-01	5.1E+01	1.8E-03	1.3E+02	1.6E+02	1.4E+02	1.8E-04	7.6E-02	1.3E-01	8.9E-03	7.6E+00	1.7E+02	1.6E+00	3.7E-04	3.1E-01	6.6E-03	8.4E-03	7.8E+02	39,604
	129	July	1.8E-04	1.3E+01	5.2E-03	2.5E+01	3.7E-02	5.0E-01	4.3E+01	1.8E-03	1.1E+02	1.3E+02	1.2E+02	1.8E-04	7.2E-02	1.3E-01	8.9E-03	7.2E+00	1.6E+02	1.6E+00	3.7E-04	3.1E-01	6.5E-03	8.4E-03	7.0E+02	380
	130	August	2.3E-04	1.8E+01	6.8E-03	3.4E+01	4.6E-02	6.3E-01	4.4E+01	2.3E-03	1.1E+02	1.3E+02	1.2E+02	2.3E-04	9.5E-02	1.6E-01	1.1E-02	9.5E+00	2.1E+02	2.0E+00	4.6E-04	4.0E-01	8.2E-03	1.1E-02	8.4E+02	4,729
	131	September	2.6E-04	2.2E+01	8.3E-03	4.1E+01	5.3E-02	7.1E-01	4.2E+01	2.6E-03	1.0E+02	1.2E+02	1.1E+02	2.6E-04	1.1E-01	1.8E-01	1.3E-02	1.1E+01	2.5E+02	2.3E+00	5.3E-04	4.5E-01	9.4E-03	1.2E-02	9.5E+02	7,899
9	140	June	2.3E-04	1.8E+01	7.1E-03	3.5E+01	4.7E-02	6.4E-01	3.9E+01	2.3E-03	9.3E+01	1.1E+02	1.0E+02	2.3E-04	9.8E-02	1.7E-01	1.2E-02	9.8E+00	2.2E+02	2.0E+00	4.7E-04	4.1E-01	8.5E-03	1.1E-02	8.3E+02	39,604
	141	July	5.3E-04	2.9E+01	1.1E-02	5.5E+01	1.1E-01	1.5E+00	1.0E+01	5.3E-03	1.5E+01	1.9E+01	1.7E+01	5.3E-04	1.6E-01	3.8E-01	2.6E-02	1.6E+01	3.4E+02	4.6E+00	1.1E-03	9.3E-01	1.9E-02	2.5E-02	9.9E+02	1,901
	142	August	5.8E-04	3.3E+01	1.2E-02	6.2E+01	1.2E-01	1.6E+00	1.1E+01	5.8E-03	1.5E+01	1.8E+01	1.7E+01	5.8E-04	1.7E-01	4.1E-01	2.9E-02	1.7E+01	3.8E+02	5.1E+00	1.2E-03	1.0E+00	2.1E-02	2.7E-02	1.1E+03	23,643
	143	September	6.2E-04	3.6E+01	1.4E-02	6.7E+01	1.3E-01	1.7E+00	1.1E+01	6.2E-03	1.3E+01	1.6E+01	1.5E+01	6.2E-04	1.9E-01	4.4E-01	3.1E-02	1.9E+01	4.2E+02	5.4E+00	1.3E-03	1.1E+00	2.2E-02	2.9E-02	1.2E+03	39,495
10	152	June	5.7E-04	3.3E+01	1.3E-02	6.2E+01	1.2E-01	1.6E+00	1.1E+01	5.7E-03	1.6E+01	2.0E+01	1.8E+01	5.7E-04	1.8E-01	4.1E-01	2.8E-02	1.8E+01	3.9E+02	5.0E+00	1.2E-03	9.9E-01	2.1E-02	2.6E-02	1.1E+03	113,160
	153	July	6.5E-04	3.6E+01	1.4E-02	6.8E+01	1.3E-01	1.8E+00	8.4E+00	6.5E-03	7.4E+00	8.9E+00	8.2E+00	6.5E-04	1.9E-01	4.6E-01	3.2E-02	1.9E+01	4.2E+02	5.7E+00	1.3E-03	1.1E+00	2.4E-02	3.0E-02	1.2E+03	1,901
	154	August	7.0E-04	3.9E+01	1.5E-02	7.4E+01	1.4E-01	1.9E+00	8.8E+00	7.0E-03	7.0E+00	8.5E+00	7.9E+00	7.0E-04	2.1E-01	5.0E-01	3.4E-02	2.1E+01	4.6E+02	6.1E+00	1.4E-03	1.2E+00	2.5E-02	3.2E-02	1.3E+03	23,643
	155	September	7.3E-04	4.2E+01	1.6E-02	7.9E+01	1.5E-01	2.0E+00	9.0E+00	7.3E-03	6.4E+00	7.7E+00	7.1E+00	7.3E-04	2.2E-01	5.2E-01	3.6E-02	2.2E+01	4.9E+02	6.4E+00	1.5E-03	1.3E+00	2.7E-02	3.4E-02	1.4E+03	39,495
Long-Term Drainage Water Quality																										
21	272-275	Summer Average	1.3E-03	7.0E+01	2.7E-02	1.3E+02	2.6E-01	3.5E+00	1.1E+01	1.3E-02	5.4E-03	6.6E-03	3.3E-02	1.3E-03	3.8E-01	9.1E-01	6.3E-02	3.8E+01	8.2E+02	1.1E+01	2.6E-03	2.2E+00	4.6E-02	5.9E-02	2.3E+03	4.5E+04

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)

Table H-7
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
Water License Discharge Criteria[2]			6.0 - 9.0		1.5		0.1						0.002	500		
8 METER ACTIVE ZONE																
	92	June	6.5	7.8E-14	1.7E-10	3.4E-08	1.5E-12	3.3E-11	1.3E-11	4.8E-13	3.0E-13	7.5E-09	1.2E-12	2.1E-09	0.0E+00	0.0E+00
	93	July	6.5	5.9E-05	1.4E-01	2.3E+01	1.5E-03	1.2E-02	7.6E-03	2.4E-04	2.4E-04	4.6E+00	1.2E-05	1.4E+00	0.0E+00	0.0E+00
	94	August	6.5	4.3E-06	2.6E-02	8.7E+00	3.8E-02	4.5E-03	9.0E-03	9.3E-05	9.3E-05	4.0E+00	8.8E-06	9.0E-02	0.0E+00	0.0E+00
5	95	September	6.5	1.5E-05	4.6E-02	1.2E+01	2.7E-02	5.6E-03	7.8E-03	1.1E-04	1.1E-04	4.2E+00	8.6E-06	3.6E-01	0.0E+00	0.0E+00
	104	June	6.5	1.1E-05	3.3E-02	6.6E+00	1.6E-02	3.7E-03	4.8E-03	7.6E-05	7.6E-05	2.0E+00	5.5E-06	2.7E-01	0.0E+00	0.0E+00
	105	July	6.5	6.7E-05	1.6E-01	2.9E+01	1.7E-02	1.5E-02	1.2E-02	3.0E-04	3.0E-04	6.3E+00	1.7E-05	1.6E+00	0.0E+00	0.0E+00
	106	August	6.5	7.9E-06	7.0E-02	2.4E+01	1.2E-01	1.3E-02	2.7E-02	2.7E-04	2.7E-04	1.2E+01	2.7E-05	1.4E-01	0.0E+00	0.0E+00
6	107	September	6.5	1.8E-05	8.7E-02	2.9E+01	1.1E-01	1.4E-02	2.6E-02	2.9E-04	2.9E-04	1.3E+01	2.6E-05	4.0E-01	0.0E+00	0.0E+00
	116	June	6.5	1.3E-05	6.8E-02	1.9E+01	8.8E-02	1.1E-02	2.1E-02	2.3E-04	2.3E-04	8.6E+00	2.1E-05	2.8E-01	0.0E+00	0.0E+00
	117	July	6.5	7.9E-05	2.2E-01	4.6E+01	9.4E-02	2.5E-02	3.0E-02	5.0E-04	5.0E-04	1.4E+01	3.5E-05	1.9E+00	0.0E+00	0.0E+00
	118	August	6.5	1.2E-05	1.2E-01	4.0E+01	2.1E-01	2.2E-02	4.7E-02	4.6E-04	4.6E-04	2.0E+01	4.5E-05	2.0E-01	0.0E+00	0.0E+00
7	119	September	6.5	2.2E-05	1.4E-01	5.0E+01	2.1E-01	2.4E-02	5.0E-02	5.1E-04	5.1E-04	2.4E+01	4.8E-05	4.5E-01	0.0E+00	0.0E+00
	128	June	6.6	1.6E-05	1.1E-01	3.6E+01	1.8E-01	2.0E-02	4.2E-02	4.2E-04	4.2E-04	1.7E+01	4.0E-05	3.1E-01	0.0E+00	0.0E+00
	129	July	6.6	8.4E-05	2.8E-01	6.5E+01	2.0E-01	3.5E-02	5.3E-02	7.2E-04	7.2E-04	2.4E+01	5.7E-05	2.0E+00	0.0E+00	0.0E+00
	130	August	6.6	1.5E-05	1.5E-01	5.2E+01	2.7E-01	2.8E-02	6.1E-02	5.9E-04	5.9E-04	2.5E+01	5.9E-05	2.4E-01	0.0E+00	0.0E+00
8	131	September	6.6	2.5E-05	1.8E-01	6.5E+01	2.9E-01	3.2E-02	6.6E-02	6.7E-04	6.7E-04	3.1E+01	6.4E-05	5.0E-01	0.0E+00	0.0E+00
9	140	June	6.6	1.9E-05	1.5E-01	4.9E+01	2.5E-01	2.7E-02	5.6E-02	5.6E-04	5.6E-04	2.3E+01	5.4E-05	3.5E-01	0.0E+00	0.0E+00
Attenuation Pond transfer to Vault Pit																

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
Water License Discharge Criteria[2]						0.1				0.004						
8 METER ACTIVE ZONE																
	92	June	0.0E+00	3.6E-13	7.8E-13	3.8E-12	1.9E-10	3.5E-11	2.8E-08	3.1E-13	1.4E-09	2.1E-12	2.2E-09	4.5E-12	1.0E-12	1.7E+01
	93	July	0.0E+00	2.4E-04	4.8E-04	2.9E-03	1.3E-01	2.4E-02	1.7E+01	2.4E-04	8.1E-01	9.5E-04	1.4E+00	3.4E-03	8.8E-04	1.4E+01
	94	August	0.0E+00	1.2E-04	1.0E-04	6.8E-04	1.6E-02	2.6E-03	1.6E+01	1.9E-05	7.2E-01	3.0E-04	1.4E+00	1.8E-03	2.3E-02	5.1E+00
5	95	September	0.0E+00	1.3E-04	1.7E-04	1.1E-03	3.9E-02	6.9E-03	1.6E+01	6.2E-05	7.5E-01	4.4E-04	1.4E+00	2.0E-03	1.6E-02	3.0E+00
	104	June	0.0E+00	8.6E-05	1.2E-04	7.3E-04	2.7E-02	4.8E-03	7.9E+00	4.6E-05	3.7E-01	2.6E-04	6.6E-01	1.3E-03	9.3E-03	7.7E+00
	105	July	0.0E+00	3.1E-04	5.7E-04	3.4E-03	1.5E-01	2.7E-02	2.4E+01	2.7E-04	1.1E+00	1.2E-03	1.9E+00	4.4E-03	1.0E-02	8.4E+00
	106	August	0.0E+00	3.5E-04	2.8E-04	1.9E-03	3.7E-02	5.9E-03	4.6E+01	3.6E-05	2.1E+00	8.4E-04	4.0E+00	5.4E-03	7.2E-02	5.1E+00
6	107	September	0.0E+00	3.5E-04	3.4E-04	2.2E-03	6.1E-02	1.0E-02	5.1E+01	7.6E-05	2.3E+00	1.0E-03	4.4E+00	5.5E-03	6.4E-02	4.5E+00
	116	June	0.0E+00	2.8E-04	2.7E-04	1.7E-03	4.2E-02	7.0E-03	3.3E+01	5.6E-05	1.5E+00	6.9E-04	2.9E+00	4.4E-03	5.2E-02	8.3E+00
	117	July	0.0E+00	5.6E-04	8.0E-04	4.9E-03	1.9E-01	3.3E-02	5.4E+01	3.2E-04	2.5E+00	1.8E-03	4.5E+00	8.3E-03	5.6E-02	1.0E+01
	118	August	0.0E+00	5.9E-04	4.7E-04	3.1E-03	5.9E-02	9.3E-03	7.7E+01	5.6E-05	3.5E+00	1.4E-03	6.7E+00	9.3E-03	1.2E-01	4.5E+00
7	119	September	0.0E+00	6.4E-04	5.6E-04	3.7E-03	8.8E-02	1.4E-02	9.3E+01	9.5E-05	4.3E+00	1.8E-03	8.0E+00	1.0E-02	1.3E-01	4.5E+00
	128	June	0.0E+00	5.3E-04	4.5E-04	3.0E-03	6.3E-02	1.0E-02	6.7E+01	7.2E-05	3.1E+00	1.3E-03	5.8E+00	8.3E-03	1.1E-01	6.8E+00
	129	July	0.0E+00	8.4E-04	1.0E-03	6.4E-03	2.1E-01	3.8E-02	9.1E+01	3.4E-04	4.2E+00	2.4E-03	7.7E+00	1.3E-02	1.2E-01	9.2E+00
	130	August	0.0E+00	7.6E-04	6.1E-04	4.0E-03	7.4E-02	1.2E-02	1.0E+02	6.9E-05	4.6E+00	1.8E-03	8.6E+00	1.2E-02	1.6E-01	3.9E+00
8	131	September	0.0E+00	8.5E-04	7.2E-04	4.7E-03	1.1E-01	1.7E-02	1.2E+02	1.1E-04	5.6E+00	2.3E-03	1.0E+01	1.3E-02	1.7E-01	4.1E+00
9	140	June	0.0E+00	7.1E-04	5.9E-04	3.9E-03	7.9E-02	1.3E-02	9.1E+01	8.5E-05	4.2E+00	1.7E-03	7.9E+00	1.1E-02	1.5E-01	5.2E+00
Attenuation Pond transfer to Vault Pit																

Year	GoldSim Month	Actual Month	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
Water License Discharge Criteria[2]			0.2		20	50	1.5	0.1	1.5									0.2		
8 METER ACTIVE ZONE																				
	92	June	2.4E-12	4.5E+01	5.5E+01	5.1E+01	1.2E-10	8.0E-13	1.8E-12	5.8E-13	4.9E-13	6.1E-09	1.0E-08	3.1E-11	6.6E-14	1.1E-12	5.7E-12	6.9E-12	1.1E+02	228280
	93	July	1.8E-03	3.5E+01	4.2E+01	3.9E+01	9.5E-02	2.4E-04	8.5E-05	4.3E-04	2.5E-04	4.8E+00	6.7E+00	2.5E-02	2.4E-05	9.5E-04	2.5E-04	4.7E-03	1.3E+02	152520
	94	August	1.6E-04	1.3E+01	1.6E+01	1.4E+01	4.2E-03	1.9E-05	3.7E-03	5.9E-03	4.2E-04	5.8E-01	8.3E+00	7.3E-02	1.8E-05	1.4E-02	3.1E-04	5.9E-04	5.6E+01	78347
5	95	September	4.8E-04	6.8E+00	8.3E+00	7.7E+00	2.2E-02	6.2E-05	3.0E-03	4.2E-03	3.4E-04	1.4E+00	8.1E+00	5.6E-02	1.7E-05	1.0E-02	2.7E-04	1.4E-03	4.6E+01	131680
	104	June	3.5E-04	1.9E+01	2.4E+01	2.2E+01	1.7E-02	4.6E-05	1.2E-03	2.4E-03	2.1E-04	9.9E-01	3.8E+00	3.4E-02	1.1E-05	6.0E-03	1.7E-04	1.0E-03	6.4E+01	228280
	105	July	2.0E-03	1.8E+01	2.2E+01	2.1E+01	1.1E-01	2.7E-04	1.2E-03	2.8E-03	4.4E-04	5.6E+00	1.0E+01	5.6E-02	3.4E-05	6.7E-03	4.0E-04	5.5E-03	1.0E+02	123310
	106	August	3.4E-04	1.2E+01	1.5E+01	1.4E+01	4.2E-03	3.6E-05	1.1E-02	1.8E-02	1.3E-03	1.3E+00	2.4E+01	2.3E-01	5.4E-05	4.5E-02	9.5E-04	1.4E-03	1.0E+02	68398
6	107	September	6.3E-04	1.0E+01	1.2E+01	1.1E+01	2.1E-02	7.6E-05	1.1E-02	1.7E-02	1.2E-03	2.2E+00	2.7E+01	2.1E-01	5.2E-05	4.1E-02	9.0E-04	2.1E-03	1.0E+02	112990
	116	June	4.7E-04	2.1E+01	2.5E+01	2.3E+01	1.5E-02	5.6E-05	7.5E-03	1.4E-02	9.7E-04	1.5E+00	1.7E+01	1.7E-01	4.2E-05	3.3E-02	7.3E-04	1.6E-03	1.0E+02	228280
	117	July	2.4E-03	2.3E+01	2.7E+01	2.5E+01	1.2E-01	3.2E-04	7.9E-03	1.5E-02	1.3E-03	6.9E+00	2.6E+01	2.0E-01	7.1E-05	3.6E-02	1.0E-03	6.9E-03	1.6E+02	84269
	118	August	5.3E-04	1.0E+01	1.2E+01	1.1E+01	4.4E-03	5.6E-05	1.9E-02	3.2E-02	2.2E-03	2.1E+00	4.1E+01	3.9E-01	9.2E-05	7.8E-02	1.6E-03	2.3E-03	1.4E+02	60794
7	119	September	8.3E-04	9.5E+00	1.2E+01	1.1E+01	2.0E-02	9.5E-05	2.2E-02	3.3E-02	2.3E-03	3.2E+00	4.9E+01	4.0E-01	9.8E-05	8.0E-02	1.7E-03	3.1E-03	1.6E+02	102330
	128	June	6.3E-04	1.6E+01	1.9E+01	1.8E+01	1.3E-02	7.2E-05	1.6E-02	2.8E-02	1.9E-03	2.3E+00	3.6E+01	3.4E-01	8.2E-05	6.8E-02	1.4E-03	2.5E-03	1.4E+02	228280
	129	July	2.7E-03	1.9E+01	2.3E+01	2.1E+01	1.2E-01	3.4E-04	1.7E-02	3.0E-02	2.4E-03	7.9E+00	4.6E+01	3.9E-01	1.2E-04	7.4E-02	1.8E-03	8.0E-03	2.1E+02	80887
	130	August	6.7E-04	8.3E+00	1.0E+01	9.3E+00	4.4E-03	6.9E-05	2.4E-02	4.1E-02	2.9E-03	2.7E+00	5.3E+01	5.1E-01	1.2E-04	1.0E-01	2.1E-03	2.9E-03	1.7E+02	60170
8	131	September	9.8E-04	7.9E+00	9.6E+00	8.9E+00	1.9E-02	1.1E-04	2.9E-02	4.4E-02	3.1E-03	3.9E+00	6.4E+01	5.4E-01	1.3E-04	1.1E-01	2.3E-03	3.8E-03	2.0E+02	101490
9	140	June	7.7E-04	1.1E+01	1.4E+01	1.3E+01	1.3E-02	8.5E-05	2.2E-02	3.8E-02	2.6E-03	2.8E+00	4.9E+01	4.6E-01	1.1E-04	9.2E-02	1.9E-03	3.1E-03	1.7E+02	228280
Attenuation Pond transfer to Vault Pit																				

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions

Table H-8
Predicted Water Quality (Dissolved Constituents) - Hypothetical Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)
Water License Discharge Criteria[2]			**6.0 - 9.0**		**1.5**		**0.1**						**0.002**	**500**						**0.1**
8 METER ACTIVE ZONE																				
9	140 - 143	Summer Average	6.7	6.4E-06	1.2E-02	5.1E+00	6.7E-03	1.5E-02	4.6E-03	1.6E-04	2.8E-05	1.8E+00	8.7E-06	2.5E-01	0.0E+00	0.0E+00	0.0E+00	7.2E-05	1.7E-04	4.0E-04
10	152 - 155	Summer Average	6.7	1.0E-05	1.4E-02	9.5E+00	1.2E-02	3.6E-02	9.5E-03	3.8E-04	3.3E-05	3.5E+00	2.2E-05	4.9E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-04	3.9E-04	6.4E-04
11	164 - 167	Summer Average	6.7	1.1E-05	1.5E-02	1.0E+01	1.4E-02	4.0E-02	1.0E-02	4.1E-04	3.7E-05	3.9E+00	2.5E-05	5.3E-01	0.0E+00	0.0E+00	0.0E+00	1.6E-04	4.3E-04	7.1E-04
12	176 - 179	Summer Average	6.7	1.1E-05	1.6E-02	1.1E+01	1.5E-02	4.1E-02	1.1E-02	4.3E-04	3.9E-05	4.1E+00	2.6E-05	5.5E-01	0.0E+00	0.0E+00	0.0E+00	1.6E-04	4.4E-04	7.4E-04
13	188 - 191	Summer Average	6.7	1.2E-05	1.6E-02	1.1E+01	1.6E-02	4.2E-02	1.1E-02	4.4E-04	4.1E-05	4.1E+00	2.7E-05	5.6E-01	0.0E+00	0.0E+00	0.0E+00	1.7E-04	4.5E-04	7.6E-04
14	200 - 203	Summer Average	6.7	1.2E-05	1.6E-02	1.1E+01	1.7E-02	4.3E-02	1.1E-02	4.5E-04	4.2E-05	4.2E+00	2.7E-05	5.6E-01	0.0E+00	0.0E+00	0.0E+00	1.7E-04	4.6E-04	7.7E-04
Long-term Vault Pit Lake Water Quality																				
20	267 - 266	Annual Average	6.7	1.4E-05	2.8E-02	1.3E+01	3.1E-02	4.2E-02	1.4E-02	4.6E-04	8.1E-05	5.1E+00	2.9E-05	5.9E-01	0.0E+00	0.0E+00	0.0E+00	2.1E-04	4.8E-04	1.0E-03

Year	GoldSim Month	Actual Month	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	total NH3	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)
Water License Discharge Criteria[2]						**0.004**							**0.2**		**20**	**50**	**1.5**	**0.1**
8 METER ACTIVE ZONE																		
9	140 - 143	Summer Average	2.0E-02	5.6E-03	6.9E+00	2.2E-05	4.1E-01	7.5E-04	5.6E-01	5.9E-04	4.1E-03	9.3E-01	2.5E-04	1.6E+00	1.9E+00	1.8E+00	5.6E-03	8.1E-05
10	152 - 155	Summer Average	3.6E-02	1.2E-02	1.3E+01	3.1E-05	8.7E-01	1.8E-03	1.1E+00	1.0E-03	6.7E-03	8.2E-01	4.6E-04	1.8E-01	2.1E-01	1.7E-01	4.8E-03	1.9E-04
11	164 - 167	Summer Average	3.9E-02	1.3E-02	1.5E+01	3.3E-05	9.7E-01	2.0E-03	1.2E+00	1.2E-03	7.8E-03	8.7E-01	5.1E-04	1.2E-01	1.4E-01	1.0E-01	5.0E-03	2.0E-04
12	176 - 179	Summer Average	4.0E-02	1.3E-02	1.5E+01	3.4E-05	1.0E+00	2.1E-03	1.2E+00	1.2E-03	8.4E-03	8.9E-01	5.2E-04	9.0E-02	1.1E-01	7.3E-02	5.1E-03	2.1E-04
13	188 - 191	Summer Average	4.1E-02	1.4E-02	1.6E+01	3.5E-05	1.0E+00	2.1E-03	1.2E+00	1.3E-03	8.9E-03	9.0E-01	5.3E-04	7.6E-02	9.3E-02	5.7E-02	5.1E-03	2.1E-04
14	200 - 203	Summer Average	4.1E-02	1.4E-02	1.6E+01	3.5E-05	1.0E+00	2.1E-03	1.3E+00	1.3E-03	9.3E-03	9.1E-01	5.4E-04	6.8E-02	8.2E-02	4.7E-02	5.1E-03	2.2E-04
Long-term Vault Pit Lake Water Quality																		
20	267 - 266	Annual Average	4.6E-02	1.4E-02	1.9E+01	4.5E-05	1.2E+00	2.1E-03	1.6E+00	2.0E-03	1.8E-02	9.2E-01	6.0E-04	5.8E-02	7.0E-02	3.8E-02	8.2E-03	2.1E-04

Year	GoldSim Month	Actual Month	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
Water License Discharge Criteria[2]			**1.5**									**0.2**	
8 METER ACTIVE ZONE													
9	140 - 143	Summer Average	1.3E-03	1.1E-03	2.2E-04	3.4E-01	2.9E+00	1.4E-02	3.1E-05	2.5E-03	4.0E-03	1.0E-03	1.6E+01
10	152 - 155	Summer Average	2.7E-03	1.8E-03	4.6E-04	3.1E-01	5.2E+00	2.0E-02	7.5E-05	3.8E-03	1.0E-02	2.3E-03	2.2E+01
11	164 - 167	Summer Average	3.0E-03	2.1E-03	5.1E-04	3.2E-01	5.8E+00	2.2E-02	8.2E-05	4.4E-03	1.1E-02	2.6E-03	2.4E+01
12	176 - 179	Summer Average	3.1E-03	2.3E-03	5.4E-04	3.3E-01	6.0E+00	2.4E-02	8.6E-05	4.8E-03	1.2E-02	2.7E-03	2.5E+01
13	188 - 191	Summer Average	3.2E-03	2.4E-03	5.5E-04	3.3E-01	6.2E+00	2.5E-02	8.7E-05	5.0E-03	1.2E-02	2.8E-03	2.6E+01
14	200 - 203	Summer Average	3.3E-03	2.5E-03	5.6E-04	3.4E-01	6.3E+00	2.6E-02	8.9E-05	5.3E-03	1.2E-02	2.8E-03	2.6E+01
Long-term Vault Pit Lake Water Quality													
20	267 - 266	Annual Average	4.0E-03	4.7E-03	7.0E-04	5.8E-01	8.2E+00	5.4E-02	9.1E-05	1.1E-02	1.2E-02	2.9E-03	3.2E+01

NOTES:
1. All concentrations for dissolved constituents
2. Effluent Criteria for Maximum Average Concentration (total constituent)
3. Assumes fully mixed conditions