APPENDIX B17 - 2013 WATER MANAGEMENT REPORT AND PLAN, VERSION 1 (MARCH 2014)

AGNICO EAGLE

MEADOWBANK GOLD MINE

2013 WATER MANAGEMENT REPORT AND PLAN

MARCH 2014

EXECUTIVE SUMMARY

Agnico Eagle Mines Ltd. Meadowbank Division (AEM) is operating the Meadowbank Gold Mine (the Mine), located on Inuit-owned surface lands in the Kivalliq region approximately 70 km north of the Hamlet of Baker Lake, Nunavut. The mine 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 Type A Licence No. 2AM-MEA0815 issued on June 9, 2008. This report has been written to meet Part E, Item 7 of the NWB Type A License, which in summary states, the water balance and water quality model shall be re-calibrated as necessary, and at a minimum of once every two years following the commencement of operations. Further, it presents a comparison of the predicted and recently remodeled pit water quality forecast as required in Part E Item 6.

This report presents an updated version of the SNC Lavalin Water Management Plan 2012 to provide the site-wide water balance in order to determine the demand and storage requirements over the life of the mine. The report discusses water usage for 2013 and the operational storage strategies and required transfers going forward through 2014. The necessitiy of this particular water management update has come following changes in the observed natural pit water inflows, mine and milling life schedules and production rate, tailings management and pit backfilling strategies. The plan considers results of the water quality modelling predictions prepared by SNC, 2014 (presented in Appendix B); which will assist in informing reflooding, treatment and water management during closure. Certain concepts within the water balance, including pit flooding, remain at the conceptual stage for now and will be further detailed as the mine progresses, and will be updated in future annual reports.

DOCUMENT CONTROL

Revision				Pages Revised	Remarks
#	Prep.	Rev.	Date		
	SNC	AEM	March 2013	All	Meadowbank Gold Project – Water Management Plan 2012
01	AEM	Internal	March 2014	All	Revision of SNC Meadowbank Gold Project – Water Management Plan 2012

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Engineering and Environmental Department

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1 INTRODUCTION

Agnico Eagle Mines Ltd. (AEM) has been operating the Meadowbank Gold Mine since 2008, officially beginning production in 2010. The mine is located approximately 70km north of the Hamlet of Baker Lake, Nunavut. The mine 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 Type A Licence No. 2AM_MEA0815 issued on June 9, 2008. This report has been written to meet Part E, Item 7 of the NWB Type A License; the water balance and water quality model shall be re-calibrated as necessary in accordance with the action plan outlined in section 3.2.5.2 of the Water Quality and Flow Monitoring Plan (August 2007), and at a minimum of once every two years following the commencement of operations. The results and implications of the re-calibrated model shall be reported to the Board. Further, it meets Part E Item 6 which states that the Licensee shall submit a Water Balance and Water Quality Monitoring Reports to the Board for review, biannually (twice a year) for two years following the commencement of operations and annually thereafter. The Report shall include a comparison of predicted and measured parameters. it presents a comparison of the predicted and measured parameters as required in Part E Item 6.

In response to questions during the January 22nd, 2014 Meadowbank freshwater use amendment, on November 28th, AEM hosted a workshop to review questions made by participants of the pre hearing technical meetings. As discussed during the workshop, this report presents an updated version of the SNC Lavalin Water Management Plan 2012, by reporting the 2013 water usage and providing the 2014 site-wide water balance in order to determine the demand and storage requirements over the life of the mine. The 2014 storage strategies and required transfers will are discussed in this report Certain concepts within the water balance, including pit flooding, remain at the conceptual stage for now and will be further detailed as the mine progresses.

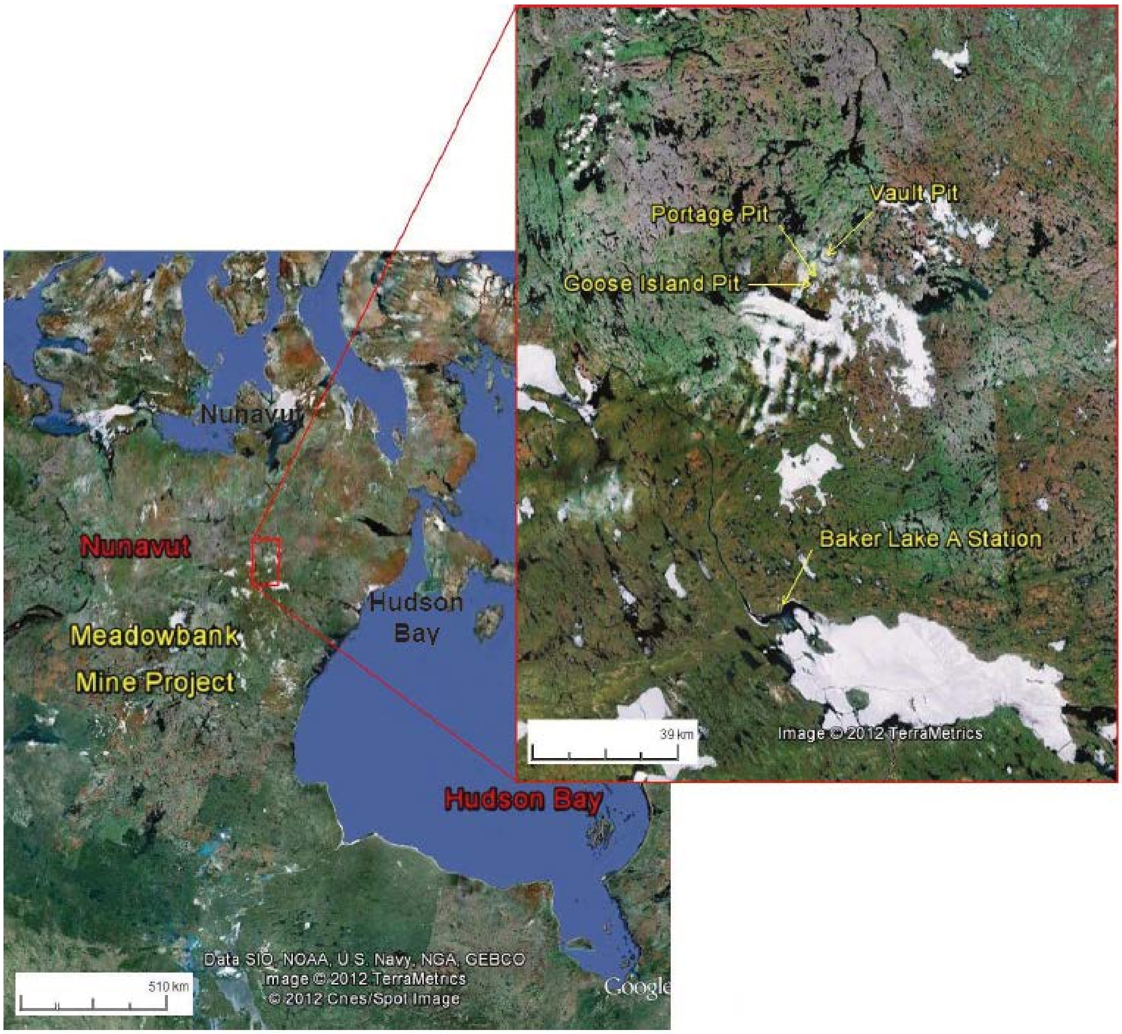
The necessitiy of this water management update has come following changes in the observed natural pit water inflows, mine and milling life schedule and production rate, tailings management and pit backfilling strategies.

The Vault Pit data presented in this report comes from the actual dewatering process that was undertaken in 2013 as well as the forecasted 2014 dewatering process. Runoff values and pit inflows for the Vault area have been taken from from the SNC Lavalin Water Management Plan 2012 until runoff values can be validated and revised with field observations.

2 BACKGROUND INFORMATION

2.1 SITE CONDITIONS

The location of the Meadowbank mine site is shown below in Figure 2.1. A close-up is also provided to show the location of the Baker Lake A Station used to obtain meteorological data.



Source: Google Earth Pro, 2012

Figure 2.1: Meadowbank Mine Site Location

2.1.1 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	6.9	6.9	0	67.1	75.9	16.3	-25.5
February	-27.8	-35.2	0	6.0	6.1	0	66.6	76.5	16.0	-28.1
March	-22.3	-30.5	0.0	9.2	9.2	0	68.4	81.4	16.9	-24.9
April	-13.3	-22.5	0.4	13.6	14.0	0	71.3	90.1	17.3	-18.1
May	-3.1	-9.9	5.2	7.7	12.8	0	75.7	97.2	18.9	-8.0
June	7.6	0.0	18.6	3.1	21.7	8.8	62.6	97.2	16.4	2.0
July	16.8	7.2	38.6	0.0	38.6	99.2	47.5	94.3	15.1	10.5
August	13.3	6.4	42.8	0.6	43.4	100.4	59.2	97.7	18.4	9.3
September	5.7	0.9	35.2	6.7	41.9	39.5	70.8	98.6	19.3	3.6
October	-5.0	-10.6	6.5	22.6	29.1	0.1	83.1	97.4	21.4	-2.8
November	-14.8	-22.0	0.2	16.2	16.4	0	80.6	91.1	17.9	-11.7
December	-23.3	-29.9	0	9.4	9.5	0	73.3	82.7	17.7	-19.9

Note: Data from Baker Lake A station is available from 1946 to 2011. During this period, the data quality is good, with the exception of years 1946 to 1949, and 1993 which were removed from the compilation.

The long-term mean annual air temperature for Meadowbank is estimated to be approximately 11.1°C. Air temperatures in 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 93 km/h was recorded on September 1, 2009. 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.

The Table 2.1 presents monthly rainfall, snowfall and total precipitation values for the mine site. August is the wettest month, with a total precipitation of 43.4 mm, and February is the driest month, with a total precipitation of 6.1 mm. During an average year the total precipitation is 249.6 mm, split between 147.5 mm of rainfall and 102.1 mm of snowfall precipitation.

2.1.2 Faults

As shown in Figure 2.2, two main faults are inferred in the Portage deposit area. The Second Portage fault trends to the northwest and is expected underneath the Central Dike and TSF, roughly parallel to the orientation of the Second Portage Lake. Analysis conducted during the design of the Central Dike showed little seepage potential. To date Central Dike has been partially completed to El. 112m and no seepage has been evident into Portage pit.

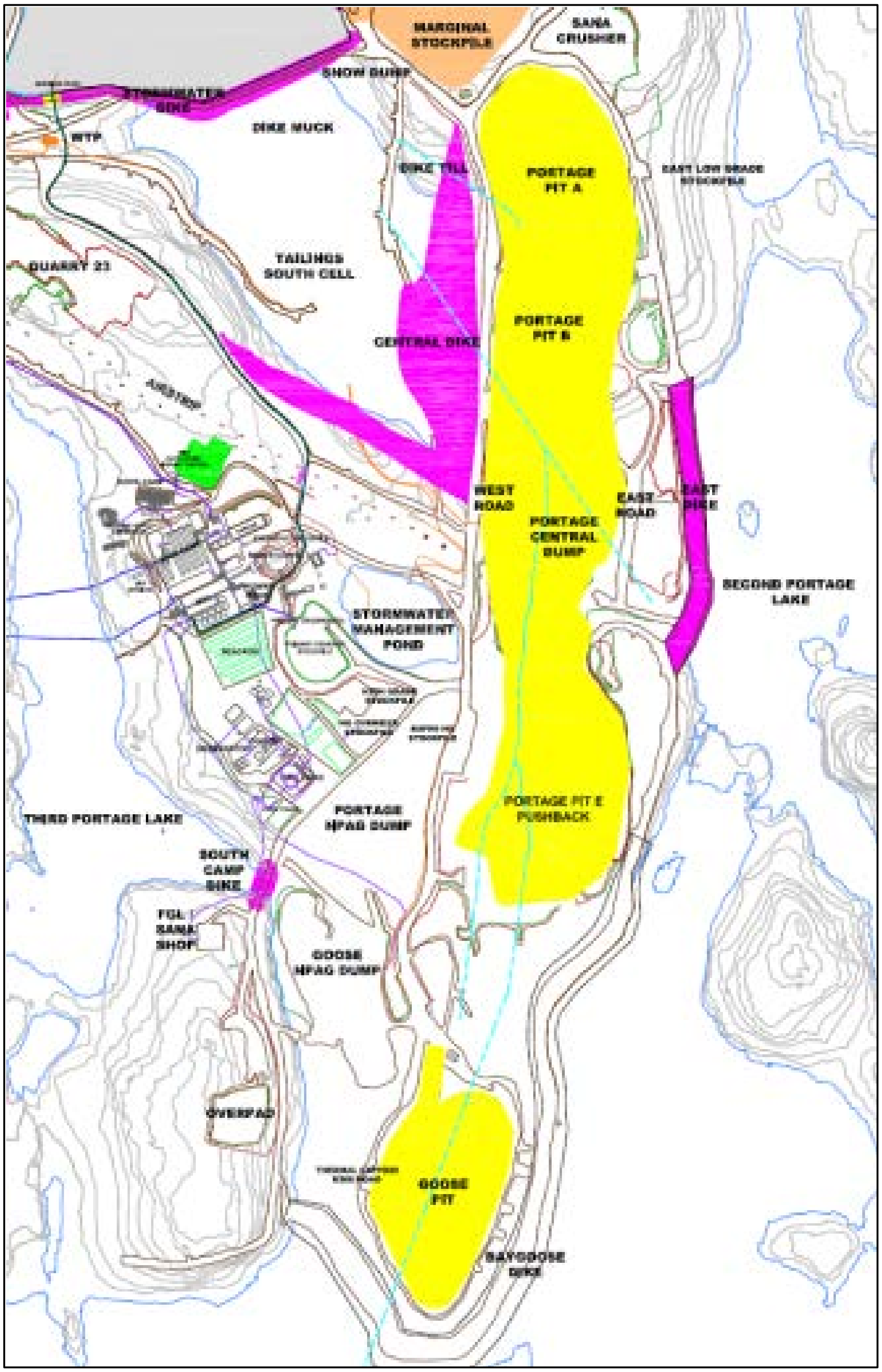


Figure 2.2: Portage Pit area map

2.1.3 Permafrost

The Meadowbank Gold Mine is located in the area of continuous permafrost. Lake ice thicknesses of between 1.5 m and 2.5 m have been encountered during geotechnical investigations in mid to late spring. Taliks (areas of permanently unfrozen ground) are expected where water depth is greater than about 2 to 2.5 m. Based on thermal studies and measurements of ground temperatures (Golder, 2003), 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 based on depth of overburden, vegetation and organics, proximity to lakes, and aspect is about 1 to 1.5 m.

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.

A thermal monitoring plan, which meets the requirement of the Water Licence, is presented in Section 8 of this document.

2.1.4 Hydrology

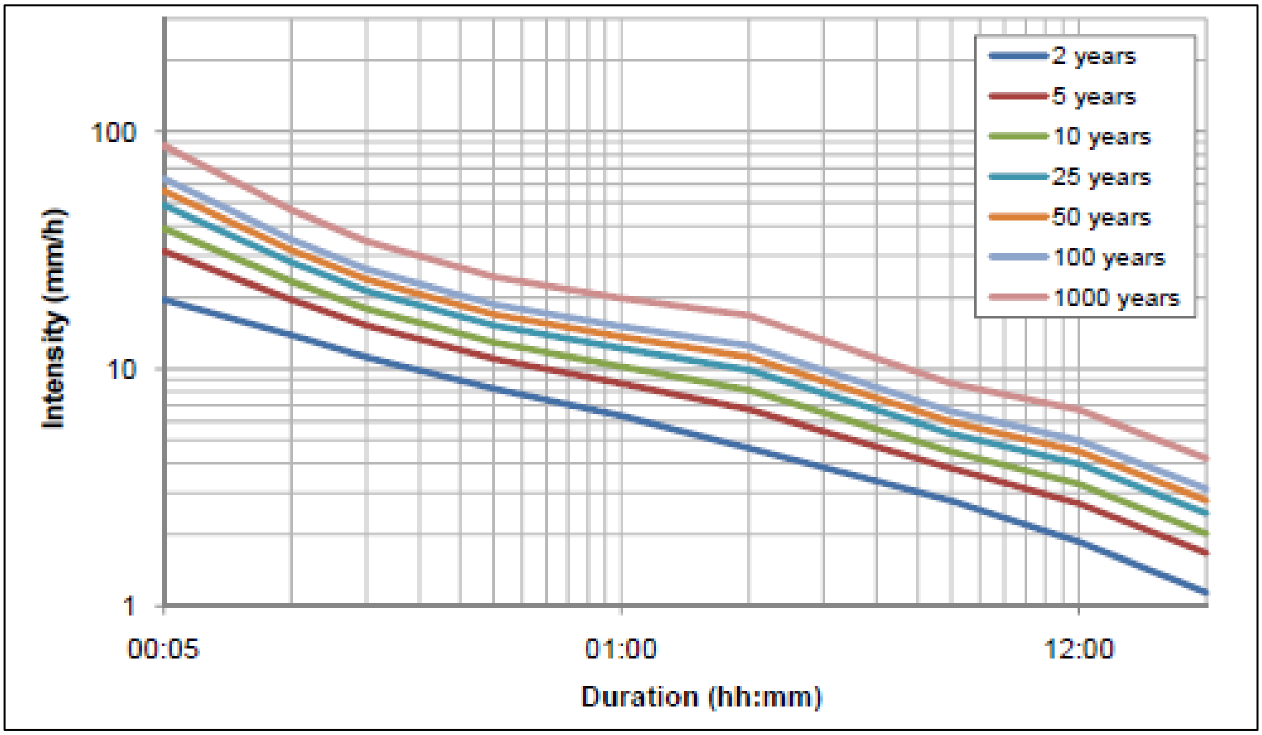
As shown above in Table 2.1, the Baker Lake A meteorological station was used to tabulate the monthly precipitation data. Using this data SNC-Lavalin completed a Log-Pearson 3 probility dristribution to determine the annual precipitation for different return periods. The results of this statistical analysis can be seen in Table 2.2.

Table 2.2: Total annual precipitation for varying return periods

Return Period (years)	Precipitation (mm)
2	246
5	295
10	322
20	345
100	391

Source: SNC-Lavalin Water Management Plan 2012

Intensity duration frequency curves (IDF), previously presented by SNC in the Water Management Plan 2012, are seen below in Figure 2.3. These curves prepared by Environement Canada from the Barker Lake A meteorological station, show the IDF curves for precipitations of short duration (5min-24hrs) based on data between 1987 and 2006.



Source: SNC-Lavalin Water Management Plan 2012

Figure 2.3: Baker Lake A meteorological IDF curves

Freshet (spring period) will vary from year to year however it has been shown that towards the snow accumulation during the winter period (October to May) will begin to melt in the beginning June and throughout the month.

2.2 MINING OPERATION DESCRIPTION

The Meadowbank Gold Mine consists of several gold-bearing deposits within reasonably close proximity to one another. The three main deposits are: Vault (including Phaser), Portage (South, Center and North Portage deposits), and Goose.

The South Portage deposit is located on a peninsula, and extends northward under the former 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 are mined as a single pit, termed the Portage Pit, which extends approximately 2 km in a north-south direction. The Goose deposit lies approximately 1 km to the south of the Portage deposit, and beneath the dewatered portion of 3PL. The Vault deposit is located adjacent to Vault Lake, approximately 6 km North of the Portage deposits.

A series of dewatering dikes (East, West Channel, Bay-Goose, South Camp and Vault) were required to isolate the mining activities from the lakes (2PL. 3PL, Vault). Additional dikes (the Central Dike, Stormwater Dike and Saddle Dams) are required to manage tailings within the dewatered North West arm of 2PL. East Dike, West Channel, Bay-Goose, South Camp and Stormwater Dikes, Saddle Dam 1 and Saddle Dam 2 were all constructed within the past 5 years. The dikes were and will be constructed primarily using materials produced on site.

Mining of Portage pit began in early 2010 and is operated using truck-and-shovel open pit operation under the terms established by the Water License. Any modifications to the dewatering process, Life of Mine (LOM), TSF and any other aspects associated to the water management have been updated through dewatering or water management plans, reported annually and updated as necessary in the Meadowbank Water Management Report and Plan.

2.2.1 Portage Pit Area

The Portage area located between the 3PL and 2PL contains most of the infrastructure of the Meadowbank mine site including but not limited to the Rock Storage Facility (RSF), North and South Tailings Storage Facilites (NC & SC TSF), mill and Stormwater Management Pond. Note that the SC is currently used as the Portage Attenuation Pond (ATP). The ATP receives excess pit water from the Portage and Goose pits as well as runoff from the South Eastern portions of the Waste Rock Storage Facility (WRSF). The East Dike was constructed to isolate the North portion of the Portage Pit from 2PL. Subsequent renaming of the pits led to the new nomenclature for each pit (A, B, C, D and E). Mining in Pits B, C, D are now completed and are and will be the site of pit infilling operations. As seen below in Figure 2.4, the current nomenclature for the Portage Pits and surrounding infrastructure is portrayed.

As of now, the marjority of the water coming in to Portage Pit has been observed coming from the East wall, due to seepage from the East Dike. This is now controlled via two seppage collection points that currently pump the water back to 2PL. On July 3, 2013, NWB approved AEM's request for a modification of the license to include East Dike non-contact seepage water discharge to 2PL. This discharge is subject to MMER and the Type A Water License sampling requirements and the associated discharge criteria. If there any exceedences of discharge criteria (none to date) or any other problems, the contingency is to redirect this water back to the Portage Central Pit area, where the water flows in the backfill towards Pit C. This contingency strategy is to fill the rockfill voids with this redirected water (if necessary). The other major source of water in the Portage Pits was observed in the bottom benches of Pit C and D. These two pits are located in a talik area and also cross a regional fault. These geological parameters explain the presence of groundwater flow into these pits. On the other hand, Pits A, B and E are located in the permafrost and little, if any, groundwater has historically been observed. All water pumped from the Portage Pits, with the exception of the East Dike seepage, is directed to the Portage ATP (future South Cell). As will be discussed later, it is important to note that, once tailing deposition begins in the South Cell, the Portage ATP will be switched to Goose Pit as the mining will have been completed (Q1 2015). Thus, at this point any pit water observed in the Portage pits will be pumped/transferred to the mined out Goose pit and will become part of the Goose re-flooding program.

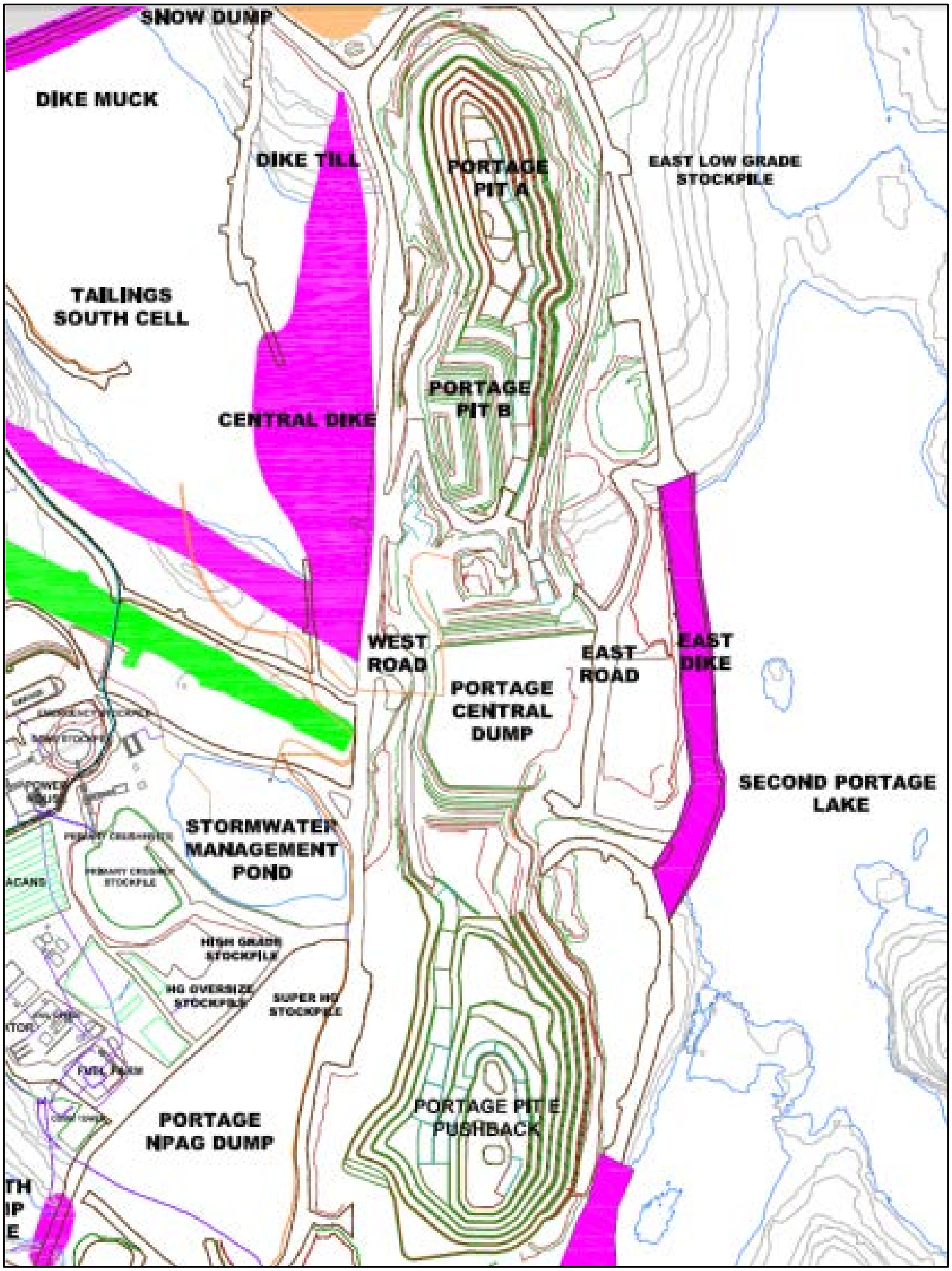


Figure 2.4: Portage Pit area map

2.2.2 Goose Pit Area

The Goose Pit area is located under the dewatered portion of 3PL which required the construction of the Bay-Goose Dike to isolate this area of the lake from the mining area. Active mining commenced in Goose pit in May, 2012 and is expected to be completed by the end of the first quarter of 2015. At that point the Goose pit will become an ATP. Any groundwater inflows after mining stops will be allowed to re-flood this pit. As seen below in Figure 2.5, the Goose Pit area and surrounding infrastructure are illustrated.

The majority of the water in to Goose Pit has been observed to be coming from the South and West pitwalls adjacent to the Bay-Goose dike due to natural groundwater inflow from the fractrured quartzite rock formation. No major water inflow is observed on the Eastern wall associated with iron formation with small volcanic lenses. Between the quartzite and iron formation a large band of ultramafic rock (soapstone) is found. Most of this pit is located in the talik zone which explains why the groundwater inflow is associated with the geological formations. The water is managed with a system of sumps and trenches along the access ramp, on the #5109 catch bench and on the working elevation. All water pumped from the Goose Pit is directed to the Portage ATP. Once the Goose Pit becomes the ATP at the beginning of 2015, the water will be allowed to flow into and accumulate in the pit as part of the reflooding process. As noted in the site water balance (Appendix A), some of this water will intermittently be pumped in 2016 to the South Cell TSF to aid in the reclaim pond water management.

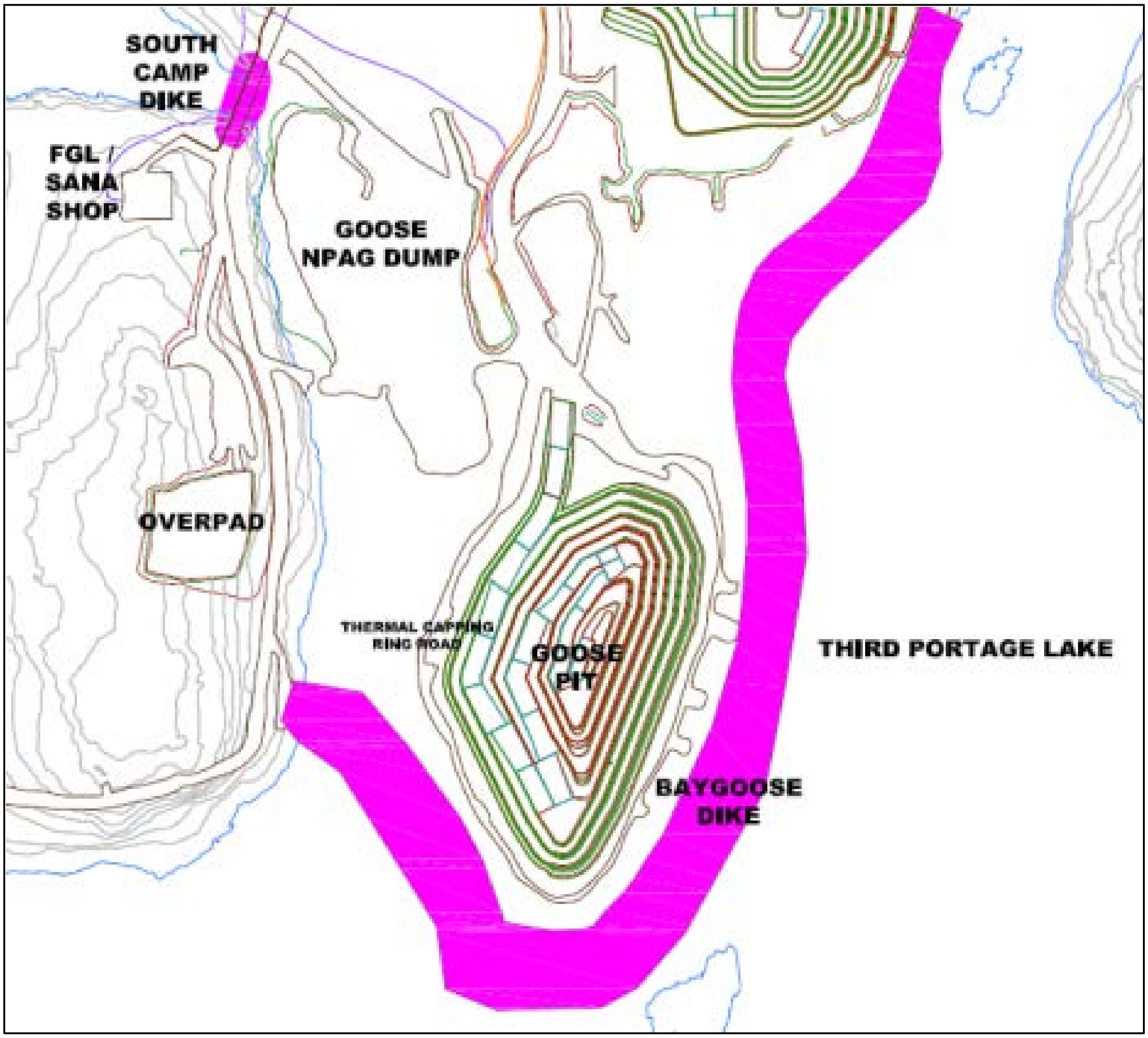


Figure 2.5: Goose Pit area map

2.2.3 Vault Pit Area

The Vault Pit area infrastructure includes the Vault RSF, ore and marginal storage pads, Vault Dike, Vault Pit, a service building and emergency shelter. The Vault Pit, located under the former Vault Lake, required the construction of Vault Dike in order to isolate the mining area and create the Vault ATP. Vault pit began pre-mining operations (stripping) in 2013. Active mining will commence in January 2014 and is expected to be completed by the end of 2017. As seen below in Figure 2.6, the Vault Pit area and surrounding infrastructure are illustrated. As of December 31, 2013, Vault Lake has been partially dewatered in order to isolate four separate deeper basins (A, B, C and D) which will act as the future Vault Attenuation Pond starting in 2014. Some dewaterwing will continue in 2014 (May 2014) from Basins B and C. This water is still considered lake water until Vault pit water is discharged into the ATP. It is important to note that the waste dump seen in Figure 2.6, represents the ultimate toe limit and that the actual toe sits well within the footprint outlined. In addition, the Phaser Pit depicted in Figure 2.6 is conceptual and is not currently in the water management plan. As discussed with NIRB during a conference call on

March 11th, 2014, should AEM decide to mine this area approval from NIRB and ammendments to the NWB will be required.

To date, the majority of the anticipated inflow to the Vault Pit during mining activity will be the freshet flows from the surrounding watershed. No major groundwater inflow has been observed originating from the pit walls and there is no talik anticipated in the former Vault Lake due to the shallow depth and area which has continuous permafrost. The water will be managed with a system of sumps and trenches along the pit crest, the main access ramp and on the working benches. All water pumped from the Vault Pit will be directed to the Vault ATP. If needed, the water will be treated for TSS removal with an ACTIFLO solids removal system (Vault WTP) during summer months and discharged into Wally Lake. The discharge is subject to both the Type A Water License and MMER discharge criteria.

In 2013, the primary water management activities were dewatering Vault Lake in preparation for the mining. All dewatering was in accordance with the Water License. A total of 2,329,343m³ was discharged to Wally Lake during the dewatering in 2013.

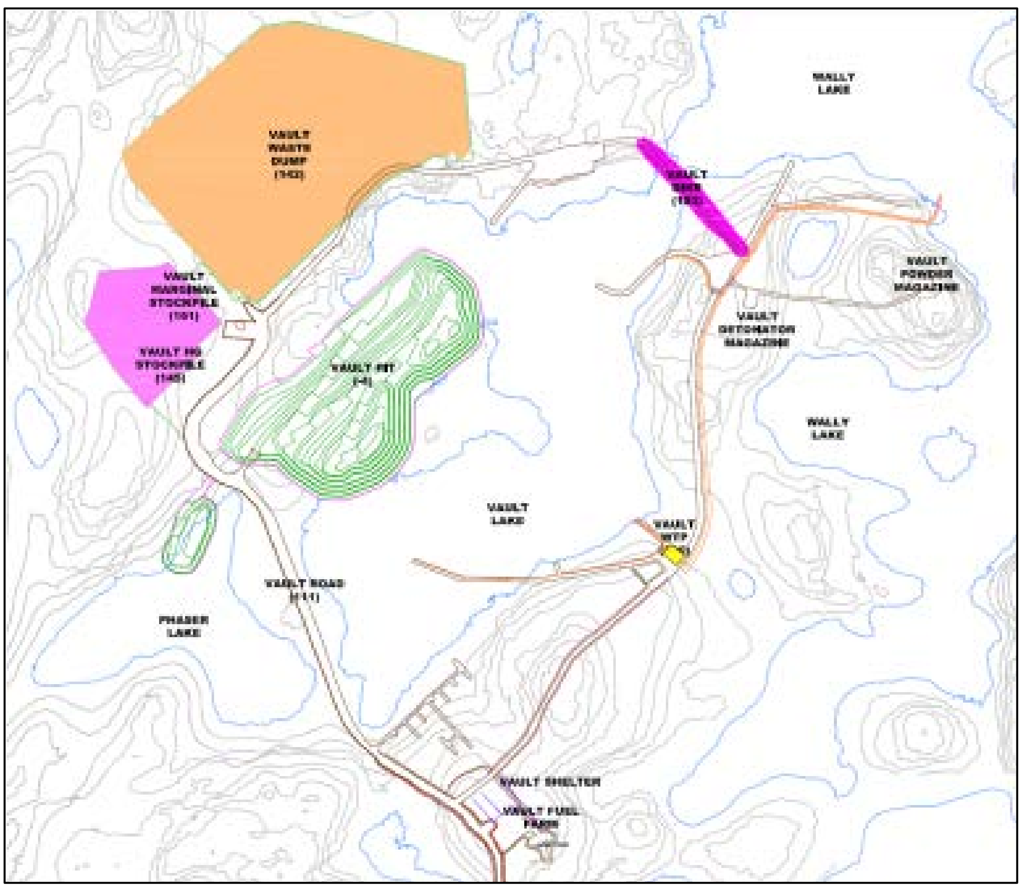


Figure 2.6: Vault Pit area map

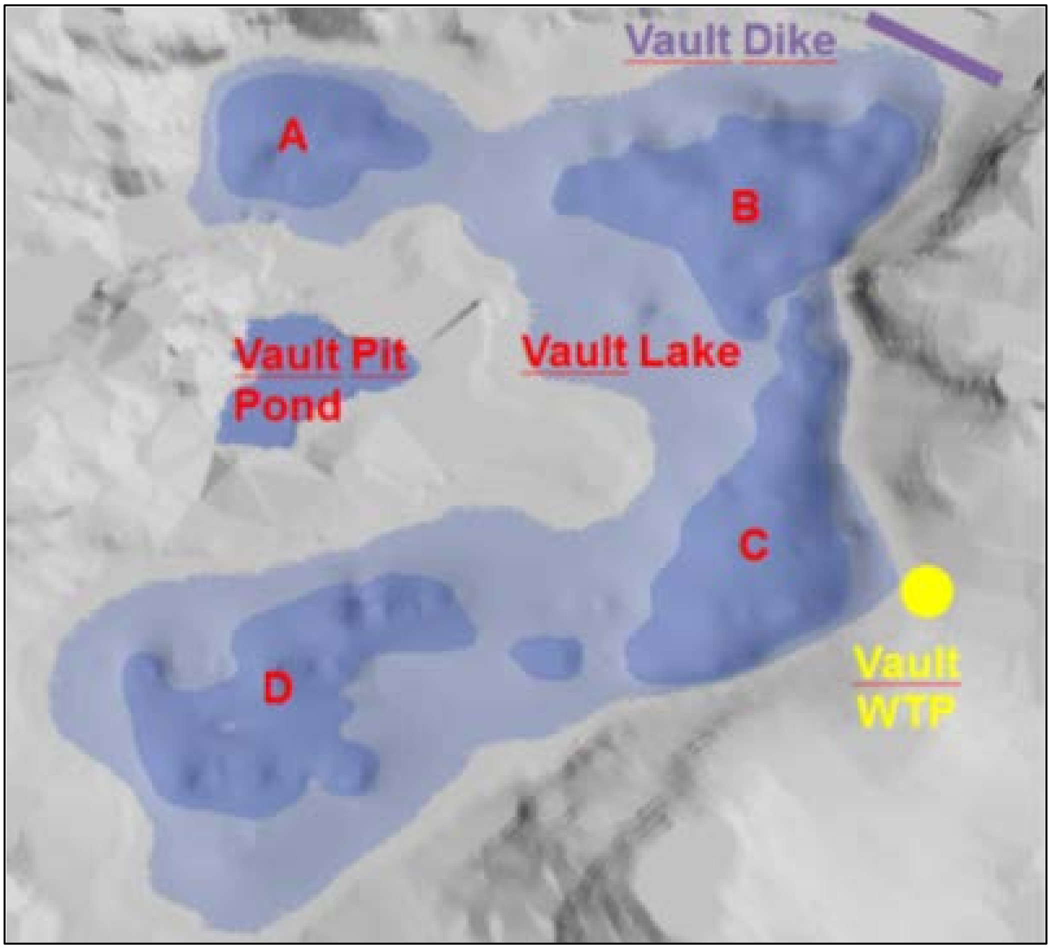


Figure 2.7: Vault Lake Basin Nomenclature

2.3 LIFE OF MINE DESCRIPTION

The current life-of-mine (LOM) has been updated with the current mining surfaces, operational fleet, stockpile situation and milling forecasts. An update to the pit design has caused an expansion to Phase 3 of Portage Pit E. The specifics of the predicted monthly milling tonnage is summarized in Table 2.3 below.

Table 2.3: Predicted LOM monthly milling tonnage

	2014	2015	2016	2017
January	360,989	351,540	352,439	354,361
February	288,994	317,520	329,701	320,068
March	367,009	351,540	352,439	354,361
Q1	*1,016,992*	*1,020,600*	*1,034,579*	*1,028,790*
April	348,990	340,200	341,070	342,930
May	325,004	351,540	352,439	354,361
June	354,990	340,200	341,070	342,930
Q2	*1,028,984*	*1,031,940*	*1,034,579*	*1,040,221*
July	360,995	351,540	352,439	354,361
August	325,004	351,540	352,439	354,361
September	348,990	340,200	341,070	342,930
Q3	*1,034,989*	*1,043,280*	*1,045,948*	*1,051,652*
October	360,995	351,540	352,439	354,361
November	313,980	340,200	341,070	17,249
December	360,995	351,540	352,439	-
Q4	*1,035,970*	*1,043,280*	*1,045,948*	*371,610*
Total	***4,116,935***	***4,139,100***	***4,161,054***	***3,492,273***

2.3.1 Changes from the SNC Water Management Plan 2012 (issued March 2013)

As previously stated, recent updates to the LOM have required revision of AEM's water management plan. The major changes observed in the life-of-mine plan affecting the water management includes but is not limited to:

- Expansion of Portage Pit E
- Goose and Vault Pit modifications
- Updated truck mining fleet
- Updated stockpile status
- Modification to the Central Portage Pit Wasterock Disposal Area design and overall volume

The above mentioned modifications to the LOM have added two months to the life-of-mine and tailings storage requirements as well as slightly affecting the pit flooding curves. In addition to the changes to the LOM, other modifications were made to the water balance that form the basis of this update. The major points ares:

- Fresh water consumption revision
- Total daily mill water requirement
- Updated tailings deposition plan affecting the North Cell and South Cell deposition calendar
- Pit water inflow revision based on observed flowmeter data
- Water transfer requirements
- Updated East Dike seepage water management

These changes will be discussed further in the Section 3, Water Management Plan and Water Balance, detailing the nature of the revisions and their effects on the overall water management strategy.

3 WATER MANAGEMENT PLAN AND WATER BALANCE

3.1 GENERAL WATER MANAGEMENT STRATEGY

At Meadowbank, there are three major sources of water entering into the water management system: freshwater pumped from Third Portage Lake, natural pit groundwater inflow and freshet flows. The water is removed from the system through the following mechanisms: water treatment plants at the attenuations ponds (Portage ATP and Vault ATP), trapped in the capillary voids of the tailings fraction and ice entrapment at the TSF, East Dike seepage discharge into Second Portage Lake and water trapped within the in-pit central wasterock disposal area voids.

The AEM water balance is subdivided into the following sections: Fresh Water from Third Portage, Reclaim Tailings Water, Mill, North Cell TSF, South Cell TSF, ATPs (Portage and Vault), Portage Pit, Goose Pit, Water Transfers and East Dike Seepage pumped to Portage. The following sections will discuss each item and their inherent parameters.

3.1.1 Fresh Water from Third Portage Lake

Fresh water from Third Portage Lake is pumped utilizing the fresh water barge in order to service the camp, mill, shop and all other fresh water users at Meadowbank. The amount pumped from the barge is tracked and reported in the water balance. The two main consumers of fresh water are the mill with an average of 132,284m^3/month in 2013 (expected average of 54,780m^3/month in 2014) and the camp, that averaged 2,890m^3/month in 2013.

The freshwater going to the mill is used in the milling process. After the milling and gold extraction process, the tailings (water and solid waste) is discharged to the North Cell Tailings Storage Facility (TSF). The available water portion after solids settling in the TSF is recycled back in the mill process as reclaim water. However, it is important to note that 40% of the discharged water content is entrapped in the void space of the tailings (20%) and through ice entrapment (20%)(SNC, 2013). Thus only 60% of the tailings water is available for reclaim purposes.

The water going to the camp has multiple uses ranging from washing facilities to consumption. The majority of the camp fresh water is returned to the Stormwater Management Pond after treatment in the onsite sewage treatment plant (STP). This water is transferred to the active TSF twice per year on average and is not discharged to the environment.

The total expected fresh water use planned for 2014 to mine closure varies from 70-90m^3/hr during mill operation, and drops to 4m^3/hr (exclusively for camp use) once the mill has ceased operation at the end of 2017. The variation seen in the fresh water consumption during the mill operation is required to prevent a reclaim water deficit in the TSF. During summer months, 70m^3/hr freshwater is required as there is a surplus of reclaim water as a result of the ice cover melting (approximately 1.3m in February 2014) and freshet inflow. During the winter months AEM will require 90m^3/hr of freshwater in order to maintain an adequate reclaim water volume in the TSF as seen in Table 3.1. The ice cover during the winter months on the reclaim pond will vary between 0-1.8m in thickness which may represent up to 80% of the total reclaim water volume. For this reason, the water balance is completed in conjunction with the tailings deposition plan.

In 2013, problems associated with the booster pump and the reclaim barge at the North Cell TSF, led to an increase in fresh water consumption that exceeded the 700,000m^3/yr licence limit. Adjustments at the mill and in the water management strategies led to adjusted fresh water consumptions. A summary of the fresh water consumption per year can be seen in Table 3.2.

As a result of the increased fresh water use in 2013, AEM applied to amend the Type A Water License in April, 2013 to reflect the increase to 1,587,409 m^3 in 2013 and for subsequent years to mine closure. AEM anticipates that the amendment will be granted as the hearing has been completed (January 2014) and no objections were noted. Specifically, AEM applied for an increase to 1,870,000m^3/yr (1,587,409 m^3 actual) for 2013 (due to the problems at the reclaim barge) and 1,120,000m^3/yr for 2014 – 2018. These totals do not include the water required to re flood the pits from 2PL and 3PL and this volume will be discussed through the water license renewal process (application for renewal scheduled for June, 2014).

Table 3.1: Targetted water hourly consumption per month

Month	Fresh Water Flow (m^3/h)	Reclaim Water Flow (m^3/h)	Total Water Flow (m^3/h)
January	90 m^3/hr	330 m^3/hr	420 m^3/hr
February	90 m^3/hr	330 m^3/hr	420 m^3/hr
March	90 m^3/hr	330 m^3/hr	420 m^3/hr
April	90 m^3/hr	330 m^3/hr	420 m^3/hr
May	70 m^3/hr	350 m^3/hr	420 m^3/hr
June	70 m^3/hr	350 m^3/hr	420 m^3/hr
July	70 m^3/hr	350 m^3/hr	420 m^3/hr
August	70 m^3/hr	350 m^3/hr	420 m^3/hr
September	70 m^3/hr	350 m^3/hr	420 m^3/hr
October	70 m^3/hr	350 m^3/hr	420 m^3/hr
November	90 m^3/hr	330 m^3/hr	420 m^3/hr
December	90 m^3/hr	330 m^3/hr	420 m^3/hr
Average	80 m^3/hr	340 m^3/hr	420 m^3/hr

Table 3.2: Yearly water consumption summary

Year	Average Fresh Water Flow (m^3/h)	Total Fresh Water (m^3)	Average Reclaim Water Flow (m^3/h)	Total Reclaim Water (m^3)
2013	181 m^3/hr	1,587,409 m^3	261 m^3/hr	2,286,400 m^3
2014	79 m^3/hr	693,120 m^3	341 m^3/hr	2,986,080 m^3
2015	80 m^3/hr	700,080 m^3	340 m^3/hr	2,979,120 m^3
2016	80 m^3/hr	702,240 m^3	340 m^3/hr	2,987,040 m^3
2017	66 m^3/hr	574,145 m^3	282 m^3/hr	2,465,280 m^3
2018-2025	4 m^3/hr*	34,675 m^3 *	0 m^3/hr	0 m^3

** Non-leap year value excluding pit reflooding volumes*

3.1.2 Reclaim Tailings Water

Reclaim water represents the water reclaimed from the TSF (North and future South Cell) reclaim ponds. Currently, the pumping system utilizes a barge similar to the one used for fresh water intake. As seen in the water balance (Appendix A), the reclaim water originates from the active TSF except at the closure of the North Cell during its last two months of operation (September and October 2015). This is due to the operational limitations that the pumping will be subject to during this period, i.e. high TSS and lack of depth to support the reclaim barge pumps. Specifically, the low reclaim water quality (high TSS) and quantity due the low volume of water in the tailings pond could lead to operation problems at the mill. Due to the geometry of the South Cell, a different reclaim pumping system will be established once deposition starts in this TSF (Ocotber 2014); this system will consist of an HL250 pump that will be repositioned continually during operation to reflect the rise in the reclaim pond as a result of tailings deposition. The pumping rate of the reclaim water will range from 330-350m^3/hr to balance the variation seen in the fresh water use (Table 3.1). Historically, it has been shown that the total water usage (fresh and reclaim) for the site will average 420m^3/hr, therefore the reclaim represents the difference between total and freshwater volumes – see Table 3.1. A summary of the reclaim water sent to the mill in 2013 and on a projected annual basis to 2017 can be seen in Table 3.2.

3.1.3 Mill

The mill water use stated in the water balance includes the latest LOM figures as per Table 2.3 for the monthly mill throughput as well as the historical averages of ore material moisture content seen in Table 3.3.

Table 3.3: Monthly average ore material moisture content observed at the mill

Month	Observed Average Moisture Content (%)
January	1.21%
February	1.22%
March	1.19%
April	1.33%
May	0.98%
June	0.89%
July	0.99%
August	0.72%
September	0.93%
October	0.99%
November	0.98%
December	1.53%
Average	1.08%

3.1.4 North Cell

The North Cell TSF has been in operation since January 2010 and will be receiving tailings from the mill until November 2015. Closure and capping of this TSF will occur progressively starting in 2015. As per the design specifications, the reclaim pond of this cell is limited by a two meter water freeboard required within the surrounding structures (Stromwater Dike, Saddle Dams 1 & 2), thus the reclaim water will stop at the El. 148.0m for the North Cell. The South Cell reclaim pond will be subject to the same 2.0m freeboard.

As seen in the water balance, no tailings will be deposited in the North Cell during the winter 2015 (October 2014 - June 2015) due to the difficulty of operating the TSF during the winter months nearing closure. The thick ice cover will dramatically reduce the amount of free water which may render the pumping of the reclaim water impossible.

For a detailed look at the Integrated Tailings Deposition Plan, please refer to Appendix E.

3.1.5 South Cell

The future South Cell TSF currently acts as the Portage Attenuation Pond which collects site contact water and pit contact water originating from both Portage and Goose pits. In the summer 2014, it is approximated that 1,041,000m^3 of water from this attenuation pond will be treated via the WTP (water treatment plant) and discharged to Third Portage Lake compared to 485,015m^3 in 2013. Following this operation, the South Cell TSF will commence receiving tailings in October 2014 until October 2017 (LOM mine closure). Once tailings deposition begins in the South Cell TSF, the Portage Attenuation water will no longer be discharged into 3PL. Closure and capping of the South Cell TSF will occur at the end of the mine life. Mining is scheduled to stop in the Goose pit at the beginning of 2015. Once the South Cell becomes operational as a TSF the Goose Pit will serve as the site Attenuation Pond and all pit water originating from Portage Pits will be pumped to this location. This will form part of the pit reflooding process. No water will be pumped to the environment from the Goose Pit.

As noted in the water balance and the deposition plan (Appendix E), no tailings will be deposited in the South Cell during the summer 2015 (June 2015 - November 2015) in order to finalize deposition in the North Cell (for closure and capping purposes). Any remaining water in the North Cell will be transferred to the South Cell to form part of the reclaim water system for the mill. The water transfers, discussed in Section 3.1.8, and water management strategies inbedded within the water balance reflect the latest deposition plan developed by AEM.

3.1.6 Portage Pit

Portage pit incorporates all sub-pits (A, B, C, D & E) and their associated pushback areas if applicable. Currently, Portage pit contains a Central waste rock disposal area which extends from Pit C to D with a second section located in Pit B. The Portage pit natural inflow has been revised from the SNC estimates with measured data from 2013. The majority of the groundwater inflow originated from the bottom benches of Pit C and D. Since these areas are now backfilled, it has been observed that a reduction in water inflow has occurred. It is estimated that, towards the bottom benches of both Pit A and E, additional water may be encountered due to the greater hydraulic pressure associated with 2PL. All water pumped from the Portage pits will be pumped to the current Portage Attenuation Pond (which becomes the South Cell TSF in October 2014) until pit flooding operations begin in Portage pit, at which point the Portage Pit pumping system will be decommissioned to be replaced by the infrastructure required for the pit flooding.

3.1.7 Goose Pit

Mining is scheduled to be completed in the Goose pit near the end of 2014 or at the beginning of 2015. The inflow values have been revised from SNC, 2013. Specifically AEM has observed that the current pit groundwater inflow decreases during the winter due to the freezing of the pit walls; however a large amount of ice has been building on the walls and is subsequently partially removed (only accessible areas) on a recurring basis which accounts for a significant amount of water (approximately 1,500 m^3 per month). The values for the 2014 Goose pit inflow have been adjusted based on the actual 2013 pumping values. When referring back to the initial estimates originating from the 2012 SNC document, an important increase is observed in the water inflow during the mining of the bottom benches of Goose. Current information suggests that the 2012 SNC estimates are accurate therefore the 2014 water balance has assumed the same flow values. The only change is the timeframe reflecting pit mining, and flooding operations. The water pumped out from Goose is currently discharged to the Portage Attenuation Pond during the mining process. Once mining of this pit has been completed in early 2015, the inflow will be allowed to collect in the pit as part of the reflooding process. In mid to late 2016, specifically in June, July, September, October and December, a total of approximately 410,500m^3 of water will be transferred to the South Cell for optimal tailing deposition and reclaim pond operation.

3.2 WATER TRANSFERS

Water transfers from various locations around the site are required to reduce freshwater consumption, optimize the water balance and maintain the good working order of the different facilities around the mine site.

3.2.1 TSF Water Transfers

In order to optimize the tailings deposition sequence, maintaining an adequate reclaim pond (operating volume and water quality) and the closure of each cell, water transfers within the tailing storage facilities and pits are required throughout their operating life. As seen in Table 3.4, water transfers from the South Cell (Portage ATP) to the North Cell was required in 2013 to maintain an adequate pond. In 2014 and 2015, water transfers from the North Cell towards the South Cell are required for the closure of the North Cell. In 2015, 2017 and 2018, water transfers from the South Cell to the Goose and Portage pits are undertaken to optimize the reclaim pond and to close the South Cell TSF.

Table 3.4: TSF water transfers

Year	TSF Water Transfers			
	South Cell (ATP) to North Cell (m^3)	North Cell to South Cell (m^3)	South Cell to Goose Pit (m^3)	South Cell to Portage Pit (m^3)
2013	507,144	0	0	0
2014	0	72,281	0	0
2015	0	929,923	495,000	0
2016	0	85,148	0	0
2017	0	0	0	300,000
2018	0	0	0	67,926
Total	**507,144**	**1,087,352**	**495,000**	**367,926**

3.2.1.1 Portage Water Treatment Plant

In 2013, the Portage water treatment plant (WTP) was used to treat water from the Portage Attenuation Pond (future South Cell TSF) to be discharged to Third Portage Lake. Treatment volumes are determined and guided by the future deposition of tailings in the South Cell. The volume of water remaining in the current attenuation pond needs to be optimized prior to deposition to ensure proper settling of solids and to ensure there is an adequate reclaim water pond. Treatment requirements were minimized in 2013 as a total of 485,018 m^3 of water was treated; significantly less than in 2012 (1,648,348m^3). To prepare for the deposition of tailings in the South Cell in October 2014 a total of 1,041,000m^3 of water will need to be treated and discharged to 3PL in 2014. Once this final volume is removed, the Portage WTP will no longer be required as there will be no further discharge to 3PL for the rest of the mine life.

3.2.1.2 Vault Water Treatment Plant

In 2013, the dewatering of Vault Lake commenced. A total of 2,315,483m^3 was pumped to Wally Lake (all in accordance with Water License and MMER requirements). In 2014, the remaining balance (approximately 750,000m^3), assumed to require treatment to remove excessive suspended solids, will be dischaged to Wally Lake (all in accordance with Water License and MMER requirements). After that, this area will become the Vault Attenuation Pond which will operate until the end of mine life in 2017. All discharge will be through the Vault WTP which is designed to remove TSS only. Additional discharge in 2014 will be completed to remove the Vault Pit contact water estimated to be around 422,549m^3, totaling the 2014 annual discharge to 1,172,549m^3. All other parameters are predicted to be within Water License and MMER criteria. The Vault Attenuation pond will collect all pit and contact runoff water prior to any discharge to Wally Lake. Summarized in Table 3.5, are the volumes of water that will be discharged to Wally Lake over the life of mine.

Table 3.5: Wally Lake annual discharge

Year	Wally Lake Annual Discharge (m^3)	
	Lake Dewatering	WTP Volumes
2013	2,315,483	0
2014	750,000	422,549
2015	0	472,549
2016	0	472,774
2017	0	480,264
Total	**2,3151483**	**2,598,136**

3.2.1.3 Stormwater Management Pond

The Stormwater Management Pond is a small shallow and fishless, water body that can be seen in Figure 2.2 adjacent to Portage Pit. Treated sewage is discharged into this pond before being transferred to the active TSF. The quantity of water transferred each year, occurring only during the summer months, totals 34,675m^3 which represents less than 1% of the total inflow in the TSF.

3.2.2 East Dike Seepage Collection

As previously stated, the East Dike Seepage Collection system, collects the seepage originating from the East Dike. The water originates from Second Portage Lake (2PL) and flows through the East Dike in two discrete locations termed the North and South sumps. There is no contact with current operational mining activity. The collection system pumps the seepage back into 2PL as a combined flow through a common header to the prescribed discharge diffuser. This discharge was approved by the Nunavut Water Board in 2013 and is subject to Water License and MMER requirements. In 2013, the seepage discharge was located within Portage Pit and pumped to the Portage Attenuation Pond (future South Cell TSF). This seepage water was included as part of the overall Portage water management system. Starting in January 2014 the East Dike seepage is discharged directly to Second Portage Lake via a diffuser as mentioned previously. In October 2016, after mining in South Portage (pit E) is completed, the East Dike seepage will remain in the Portage pit to be included in the pit reflooding operations. The total monthly flow observed from this seepage is 30,000m^3.

3.3 PIT REFLOODING OPERATION

The current reflooding technique proposed to fill Goose and Portage pits (closure) is to use Canadian dewatering pumps to achieve the pumping rates prescribed by the water balance. Passive techniques, such as siphons, will be investigated to determine their viability for this operation. A total of 34Mm^3 will need to be transferred from 2PL to accomplish the required pit reflooding. The current mining plan shows that the Goose pit mining will be completed in the first quarter of 2015 at which point Goose pit reflooding may commence. Reflooding of Portage Pit will commence in 2018 once mining operations have ceased. AEM has determined that the Portage and Goose basins will join and combine as one at El 131.0m. The entire flooding sequence is estimated to be completed by the beginning of 2025. It is important to note that there may be opportunity to begin flooding parts of Portage pit, primarily pit E, once mining in that area has been completed (Q2 2016). This will be explored further to investigate the impacts this may have on pit backfilling and other mining operations.

The operation of the TSF facilities will lead to the need to store approximately 900,000m^3 of reclaim water by the end of the mine life. The initial water management plan proposed by SNC stated that the water quantity should be split evenly between Portage and Goose at the time of reflooding. Due to operational constraints and date of availability for water storage, the current water management plan shows that approximately 500,000m^3 (55%) would go to Goose in 2015, and the balance (approximately 400,000m^3 – or 45%) going to Portage in 2017 (300,000m^3 to Pit E specifically) and 2018 (100,000m^3) during the closure of the South Cell. As the flooding occurs, it is important to note that the Portage and Goose area will connect at El 131m creating only one water body. The reclaim water treatment requirements will be determined as per the water quality modelling analysis completed by SNC (Appendix D). The water quantities split between Portage and Goose will be reviewed regularly as AEM updates the water balance. AEM will also make determinations based on the mining sequence flexibility to optimize water transfers from the TSF to the pits in order to minimize treatment requirements. For example, discharge of reclaim water to the pits can be designed to increase aeration (cascading over pit walls) to reduce the ammonia content. More options on possible treatment requirements are discussed in the SNC Water Quality Modeling Report – Appendix D. The details surrounding treatment will be refined as the water quality models and balance are updated.

The current pit backfilling strategy with mine waste rock incorporates two wasterock disposal areas, one for Pit B and another for Pit C and D. Combined, these areas provide 8.5Mm^3 of waste rock storage, primarily consisting of potentially acid-generating (PAG) material. These waste rock disposal sites form part of AEM's fish habitat compensation in accordance with DFO requirements. These wasterock disposal areas will be completely submerged once the reflooding process has been completed. This will provide a final minimum water cover of 4m thickness providing the oxygen barrier to prevent acid generation. It is assumed that a 30% void volume will be available for water to occupy at the time of re-flooding. The disposal of potentially acid generating (PAG) material in a sub aqueous setting as seen in the above mentioned pit backfilling operation, is a standard practice to prevent the acid generating process by effectively reducing the oxidation process. The deposition will lessen the requirement of reflooding volume such that the entire pit flooding operation to obtain a water elevation of El 134m will require a total of 45Mm^3 of water. As previously stated, 34Mm^3 originates from 2nd Portage Lake, 900,000m^3 as reclaim water from the TSF and the balance being the natural pit water inflow including groundwater, East Dike seepage, runoff and precipitation from 2015 - 2025.

Reflooding of the pits will occur gradually, with the summer period being the major reflooding operation period. Goose pit will begin to be flooded in May 2015, after mining has been completed, by first removing all dewatering infrastructures and letting the natural pit inflow to begin collecting in the excavation. Sample monitoring will be conducted throughout the reflooding process at both pits at regular intervals for water chemistry and metals content. In 2016, additional reflooding efforts will be added for the summer period to accelerate the flooding operation via the utilization of pumps or siphons from 2PL. This additional flow will increase the pit water inflow by 90,000m^3/month, from June to October of each year until 2022. By the third quarter of 2022, the Goose area will have reached the El 131m and will remain stable until the third quarter of 2024 when Portage Pit water elevation reaches the El 131m. Portage pit will begin to be reflooded in August 2017, by first transferring water from the South cell to Pit A. Once mining is completed in October 2017, all dewatering infrastructure will be removed. Natural pit inflow and the East Dike seepage will then begin the reflooding process. In 2018, additional reflooding volume will be added for the summer period to accelerate the flooding operation via the utilization of pumps or siphons from 2PL. The increased volume will augment the pit water inflow by 1,130,000m^3/month, from June to October of each year until 2025 when the reflooding is anticipated to be completed. By 2025, elevation will reach El 134.0m, the same level as 3PL. Once the water quality in the reflooded area meets CCME Criteria for the Protection of Aquatic Life the intent is to breach the containment dikes to reconnect the Portage an Goose areas to 3PL. It should be understood that the dikes will not be breached unless the water quality meets the CCME criteria.

The Vault area will follow a similar reflooding process, with an incoming flow rate from Wally Lake, equivalent to that of the spring freshet (4,182,604m^3) through pump stations or syphons. The total flooding volume required is 28Mm^3 to return Vault Lake to its initial state (El 139.5m) and will be accomplished by the end of the third quarter of 2024. The water required for the flooding will originate from Wally lake, as well as the natural groundwater and runoff (including freshet volumes). Reflooding of the Vault pit will occur gradually, with the summer period being the major flooding operation period. Vault pit will begin to be flooded in October 2017, after mining has been completed, by first removing all dewatering infrastructures and letting the natural pit inflow to begin collecting in the excavation and attenuation pond area. In 2018, additional reflooding efforts will be added for the summer period to accelerate the flooding operation via the utilization of pumps or siphons from Wally Lake. This additional flow will increase the water inflow by an average of 1,045,651m^3/month, from June to October of each year until 2025. By the end of the third quarter of 2024, the Vault Lake will have reached the El 139.5m.

4 WATER QUALITY MODELLING REPORT

A Water Quality Modeling Report prepared by SNC Lavalin has been used to model the quality of the water in the pits at closure (as per condition Part E Item 6 of the NWB Type A water license). As stated in the water management strategies, TSF water will be transferred to both Portage and Goose pits once their respective mining has been completed. The water pumped from 2PL in the the reflooding process as well as freshet and pit inflows (including East Dike seepage) will mix with South Cell reclaim water from 2015 – 2018. SNC has modeled the predicted water quality based on current levels of contaminants in the North Cell TSF and water flows to determine the overall quality and need for treatment once the former mining pits have been reflooded. This report is presented in Appendix D. Based on water quality results in 2013, SNC provides an update on the previous model that forms part of the 2012 SNC Water Management Report.

Condition Part E Item 6 requires that AEM make a comparison of the predicted (originally modelled during the NWB Type A License) against the measured parameters. As per follow-up discussions with regulators after the prehearing conference for the Meadowbnak freshwater use amendment application. Table 4.1 summarizes the SNC water quality concentrations (based on measured parameters) predicted in the pit and compares them to originally predicted concentrations. SNC evaluated parameters of concern that included Cyanide (total), Copper, Iron, Nitrate, Chloride and Ammonia; no other parameters are expected to exceed CCME guidelines and were therefore not modelled.

As illustrated in Table 4.1, originally predicted poor end scenario periodically exceeded CCME limits for copper, nitrate and chloride. Recent updates in SNC, 2014 suggest copper and ammonia are expected to exceed CCME limits.

Table 4.1: Comparison of originally predicted pit water quality versus SNC(2014) modelled water quality

	CCME	Portage Pit (mg/L)				Goose Pit (mg/L)			
Parameter	(mg/L)	Original Prediction		SNC, 2014		Original Prediction		SNC, 2014	
		Probable	Possible Poor end Scenario	Aug 2017	Dec 2025	Probable	Possible Poor end Scenario	July 2015	Dec 2025
Total Cyanide (CN)	0.005 as free CN	-	-	0.00	0.00	-	-	0.00	0.00
Copper (Cu)	0.004	0.0014	0.013	0.0042	0.06	0.001	0.001	0.0048	0.28
Iron (Fe)	0.3	-	-	0.00	0.006	-	-	0.00	0.029
Ammonia (NH3)	0.86 (mg N/L)	0.00057	0.0006	0.212	0.97	0.0006	0.0006	0.2956	3.38
Nitrate (NO3)	2.9 (mg N/L)	2.60	4.40	0.00	0.26	4.00	4.00	0.00	1.13
Chloride (Cl)	120	630	630	0.00	12.97	440	440	0.00	51.61

Grey shading indicates exceedances of CCME guidelines

Based on current water quality and the 2013 water balance, the report identifies that ammonia and copper may require removal treatment in order for the pit water quality to meet CCME criteria in 2025.

The report identifies several recommendations. These are:

1. In addition to the current set of chemical analyses, regular (at least monthly) monitoring of all inflows and outflows of the North and South Cells TSF Reclaim Pond for cyanide, copper, iron, ammonia, nitrate, and chloride should be undertaken. In the future, the addition of total copper and iron, free CN in addition to other contaminants regulated by the CCME guidelines should be evaluated (such as Total Suspended Solids).
2. Regular analysis are also required of the mill effluent water discharged to the TSF in order to better monitor the changes in cyanide, copper, iron, ammonia, nitrate and chloride concentrations. Samples should be taken at least once a quarter.
3. Once transfer begins to the Portage and Goose Pits (2017 and 2015, respectively), regular (at least monthly) monitoring of all inflows of the TSF Reclaim Pond for cyanide, copper, iron, ammonia, nitrate, and chloride should be undertaken.
4. Sample and analyze the North and South Cell TSF Reclaim Pond at different depths and locations to determine if there is a concentration gradient in the Reclaim Pond.
5. Continued monitoring of the water in the South Cell TSF Reclaim Pond in 2015 on a regular basis to monitor the evolution of the parameters of concern.
6. In order to validate the assumption of a well mixed system in Portage and Goose pits, it is recommended to sample and analyze the water at different depths before, during and after the pit is filled with water from South Cell TSF and/or Third Portage Lake.
7. Once Portage and Goose pits are hydraulically connected, it is recommended to sample the water at different points in the pit area in order to evaluate the mixing efficiency over the entire area. The samples should be taken at different depths over the entire area of the flooded pits before and after the filling season.
8. For the Water Management Plan 2014, consider evaluating the volume of water in Portage and Goose pits once they are hydraulically connected.
9. Consider reviewing the volumes of water sent from South Cell TSF pond to Goose and Portage pit in order to achieve lower concentrations of copper and ammonia in Goose Pit.

The SNC 2012 Water Management Plan referenced discharging all of the South Cell reclaim water into the pits in 2018. This updated plan calls for the discharge to commence in 2015 and cease in 2018. This should assist in minimizing stratification of contaminants as the mixing and attenuation will be over a number of years instead of one discharge over a 3 month period with a larger volume and higher concentration of contaminants. It will also allow for smaller volumes for treatment, if required, which will assist in treatment effectiveness.

5 2013 INTEGRATED DEPOSITION PLAN

The processed material by-product as a result of the gold recovery process, called tailings, is pumped as a slurry to the active TSF. The slurry is composed of more than 50% solids by volume. The solid fraction will naturally deposit itself as "tailings beaches" in the TSF. The water fraction separates as the solids settle forming a reclaim pond. Approximately 40% (SNC, 2013) of the water within the tailings will remain with the tailings as void porewater (20%) and/or ice entrapment (20%). This leads to approximately 60% of the water fraction within the slurry being released back to the reclaim pond and available to be pumped back to the mill.

A tailings deposition plan integrated with the water balance model, was developed by AEM in September 2013 and is presented in Appendix E. Due to the integrated nature of the tailing deposition with the water balance, the two are developed concurrently in order to maximize storage capacity of the TSF as well as minimize fresh water consumption and required water transfers.

The tailings deposition plan presented in Appendix E, may contain small discrepencies when compared to the water balance presented in this report. The discrepancies stem from the fact that the water balance presented in this report contains updated figures for the end of 2013 as well as conceptual modifications to the deposition plan which had been produced in September 2013. Particularly, the final phase of the North Cell (closure) was offset one month earlier in the updated water balance to take advantage of the warmer season, and the pond volumes will be slightly different from the water balance presented due to the updated monthly pumping figures of the last four months of 2013. In November 2013, AEM presented the Integrated Meadowbank Tailings Deposition Plan 2013, seen in Appendix E, to the Meadowbank Dike Review Board (MDRB). This plan was the first deposition plan that AEM completed in-house. This report presents a deposition plan until the closure of the North Cell Tailings Storage Facilities and only includes the start-up of the South Cell Tailings Storage Facility. The South Cell closure has subsequently been modeled with an updated water balance which will not be presented in this report. Tailings deposition plans are completed using the software Muck3D developed by Minebridge Software. The parameters used for this model are similar to the ones used by Golder in the past. The modifications of the parameters include updated tailings beach slopes and tailings dry density based on new bathymetric information, and an ice model to reflect the winter deposition. The model reveals that more than 75% of the reclaim water in the North Cell TSF will be frozen from March to May 2014. AEM has since completed a risk assessment to identify the risks and the potential mitigations required. Two mitigations being considered by AEM are:

- Increase freshwater consumption higher than the forecasted 90m^3/hr for the winter months and subsequently decrease freshwater use during the summer to less than the forecasted 70 m^3/hr.
- Use of a Canadian Dewatering Pump (HL250) to replace the reclaim barge, which offers more flexibility as far as its suction elevation in the water, thus able to operate in tougher conditions where the water depth and quality are low.

6 RSF SEEPAGE WATER MANAGEMENT

In July 2013, it was noted that seepage from the Wate Rock Storage Facity (RSF) had migrated through a rockfill road at a seepage sump located north-east side of the RSF, as seen in Figure 6.1 depicted by the red arrow. The seepage, which contained elevated copper, nickel, ammonia and cyanide entered NP-2 Lake. It was determined through investigation that the likely source of the contaminants was reclaim water from the North Cell TSF. This water migrated underneath the RSF through a former watercourse into the seepage sump area (known as ST-16 Sample Station). AEM took immediate measures to stop the seepage and implement corrective measures to prevent a recurrence. This included keeping the sump area pumped to a low level, installing an impermeable barrier in the rockfill road, implementing a comprehensive monitoring program and ensuring tailings deposition was enhanced in the North Cell to create beaches that would stop any water egress (this activity is still ongoing and is part of AEM's Tailings Deposition Plan). The Nunavut Water Board has been kept informed of AEM's actions and in October 2013 AEM commissioned Golder and Associates to complete a report on Rock Storage Facility Seepage – attached in Appendix C. It is important to note that AEM will collect additional water samples in NP2, in downstream ponds and at Second Portage Lake and that there have been no fish mortalities observed to date (incl. two toxicity samples that have been deemed non-lethal for trout). AEM plans to develop a comprehensive plan to manage the seepage based on a combination of Golder' recommendations and AEM's internal Freshet Action Plan. Golder recommendations include:

1) AEM should continue to develop and maintain tailings beaches adjacent to RF1 and RF2 and to operate the Reclaim Pond towards the centre of the TSF. These are the key recommendations.
2) AEM should consider the installation of additional water management infrastructure which could take the form of a permanent collection and pumping system at the sampling station ST-16 current sump. Also, consideration should be given for contact water ditches and sumps in the surrounding areas of the RSF if additional seepages of contaminated water are observed in the future.
3) The seepage at station ST-16 should continue to be collected and redirected to the TSF and monitored (location, quantity, quality). Continued monitoring is strongly recommended during the winter for seepage water quantity monitoring and possible development of an ice plug in the RSF. The area at ST-16 should be kept clean of snow to allow visual observation and to ensure that water at ST-16 does not overflow over the till plug into Lake NP-2.
4) Regular inspections all around the RSF should be performed, particularly during freshet, to ensure that runoff or any observed seepage is controlled and monitored prior to being released into the environment if the analyses results meet the requirement.
5) AEM should continue to monitor the tailings and waste rock freeze back following the Thermistor Monitoring Plan in accordance with Part 1, Item 11 of the Type-A water license.
6) AEM should provide the results of the 2014 monitoring to Golder for review and comment.

It is AEM' intent to implement the Golder recommendations and include them in an overall Freshet Action Plan to be prepared prior to the 2014 freshet (anticipated May 15th 2014). In addition to the Golder recommendations listed above AEM will also include, as a minimum, in the Action Plan:

1) Continue monthly monitoring of the ST-16 location and bi weekly in NP-2 South, East, West and NP-1 West locations after ice out (see Golder report Fig 3) for total and dissolved metals, general chemistry, Total CN and CN WAD. AEM also proposes to add

sample locations, in 2014, in Dogleg and Second Portage Lake (see Figure 6.1 below for approximate location for Dogleg-North and SPL-RSF Seep).

2) Monitor NP-2 Lake monthly in one location through the ice during winter for the same parameters listed above.
3) Ensure the snow is removed from the East Diversion ditch prior to freshet to ensure water can flow out of NP-2 easily and not impact the access road separating NP-2 and the ST-16 seepage location.
4) Install an additional 4 thermistors on top and around the RSF to increase thermal monitoring capability to assist with Golder recommendation # 5 above.

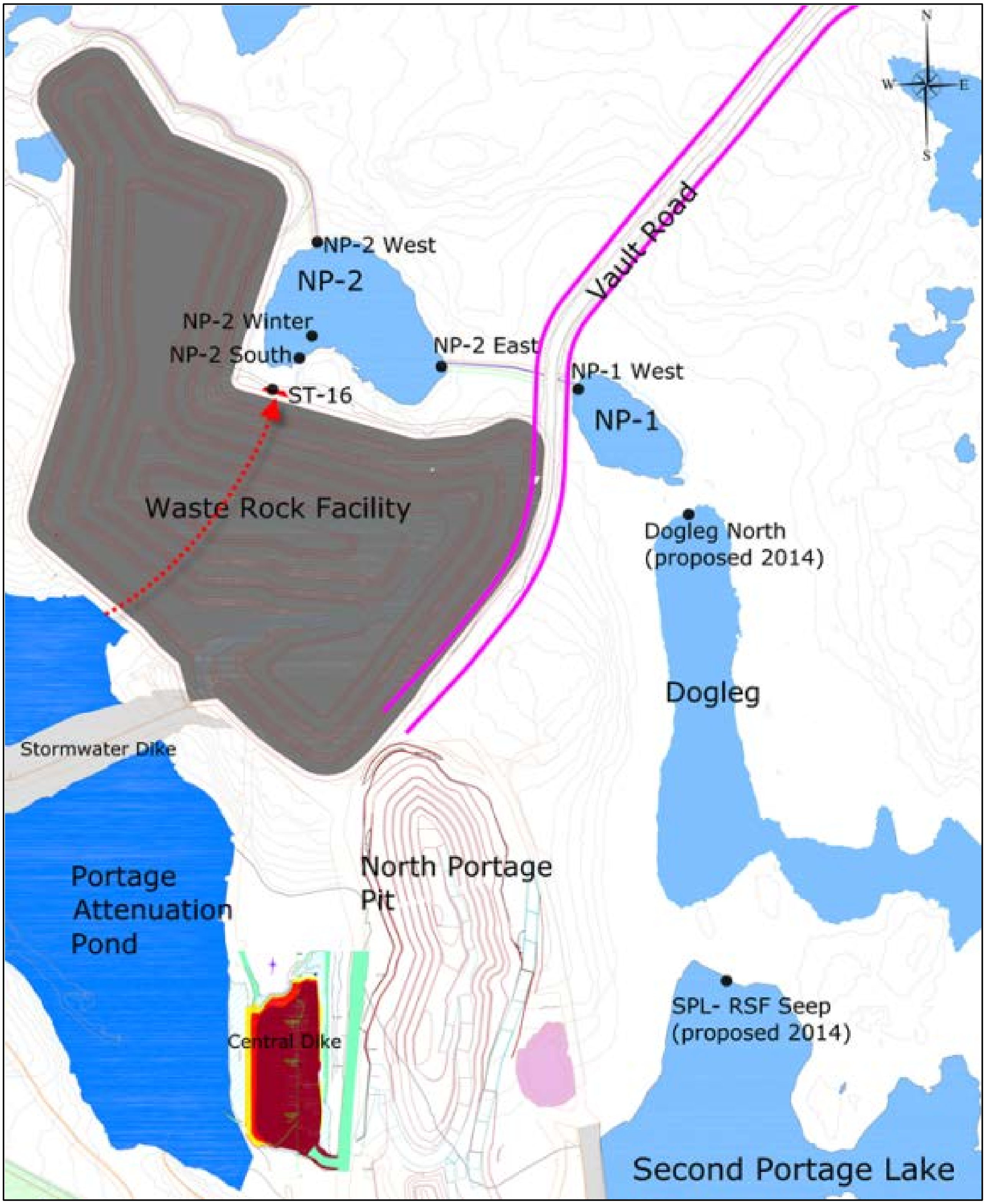


Figure 6.1: Freshet Water Monitoring Location and RSF Seepage Flow

7 CONCLUSION

This report presents an updated/revised water management plan for the Meadowbank mine based on the SNC 2012 Water Management Plan submitted to the NWB as part of the AEM 2013 Annual Report. Validation and updates of the site parameters (i.e. runoff and pit inflows) was conducted in 2013 as well as modifications to the global water management strategies and operating schedule. The updated life of mine schedule has led to the revisions in water management strategies while the updated tailings deposition plan has allowed further detailing within the water balance presented in this report.

The water balance presented has been optimized to reduce freshwater consumption to a minimum and minimize water treatment requirements through our water treatment plants. The water deficit encountered in the Tailings Storage Facilities during the winter months due to the ice cover, which can represent up to 75% of the pond volume at its peak thickness (maximum thickness of 1.8m in March and April), is mitigated by an increase in freshwater consumption during these cold months. The East Dike seepage has been redirected to Second Portage Lake in order to reduce the water entry into the system, thus reducing the in-pit pumping requirements and subsequently the water treatment required in 2014. Once Portage Pit enters its reflooding stage, the East Dike seepage controls will be removed allowing the water to passively flow into Portage Pit with the reflooding operation.

Pit reflooding volumes and sequence (including Portage, Goose and Vault Pits) is presented in this report. Reflooding will commence in 2015 with Goose Pit once mining has been completed, and subsequently in 2017 for both Portage and Vault Pits, and the entire reflooding process will be completed by the beginning of 2025. Contingent that the water quality meets CCME Guidelines for the Protection of Aquatic Life, dike breaching of the surrounding structures will occur to reconnect the Portage and Goose areas to Second Portage Lake and Vault area to Wally Lake (2025). It should be understood that the dikes will not be breached unless the water quality meets the CCME criteria.
Water quality modelling was completed by SNC Lavallin for the life of mine and included in this report. The mandate of this report is to analyse the water quality as we proceed through the operating life of the mine and the reflooding operation and to determine the need for potential treatment of identified parameters of concern. The impact of transferring the TSF water to the pits during the reflooding process was explored using the latest available water quality results from the North Cell TSF, actual mill tailings and the Portage Attenuation pond obtained in 2013. Based on current water quality and the 2013 water balance, the report identifies that ammonia and copper may require removal treatment in order for the pit water quality to meet CCME criteria in 2025.

The rock fill storage seepage was discussed and a mitigation strategy is presented based on recommendations from Golder (2014) and AEM. AEM took immediate measures to stop the seepage and implement corrective measures to prevent a recurrence. AEM plans on further developing a comprehensive approach to manage the seepage as part of an overall Freshet Action Plan to be completed prior to the 2014 freshet period – app May 15, 2014.

8 RECOMMENDATIONS

This section presents a series of recommendations in order to improve on the current water management strategies and water balance.

- Continue to monitor and include any new flow monitoring locations/devices wherever possible to determine trends in pit water inflows, freshet volumes and seepage rates by using flowmeters. Specifically, flowmeters could be added to monitor the volume of water pumped at the toe of Saddle Dam 1 to the North Cell and also water pumped from the RSF seepage collection area (ST-16).
- Ensure all flowmeters are calibrated to ensure flows used in the water balance are accurate.
- Continue to update the deposition plans of the North and South Cell as needed to maximize water use and availability as well as increasing the accuracy of the models including but not limited to bathymetric readings.
- Conduct the water quality modelling analysis on a yearly basis based on updated water quality results and water balance through the life of mine. It will be beneficial to look at the opportunities to begin reflooding Portage Pit earlier if the mining schedule allows for such an operation to occur. As per the water quality modelling report, the water split between Portage and Goose must be considered in subsequent versions of the water balance to attempt to minimize potential future treatment requirements. Please refer to additional recommendations in the Water Quality Report in Appendix D.
- Develop or prepare a comprehensive Freshet Action Plan in 2013 to address the diversion ditches and their associated TSS control, including the possible implementation of a settling facility, RSF seepage including collection systems and long term control through the mine closure, required monitoring program of seepage around various infrastructures, Vault culvert TSS control. This includes implementation of the Golder recommendations regarding the RSF seep.
- Include the Phaser deposit in the application to renew the Type A Water License which is due to be submitted in June 2014, one year in advance of expiration of the current License. Also include this updated Plan in the application.

9 REFERENCES

1. SNC (2013) – Water Management Plan 2012. SNC Lavalin. March 2013.

2. Environnement Canada (2011a) - National Climate Data and Information Archive, http://climat.meteo.gc.ca/advanceSearch/searchHistoricData_f.html.

3. 14. Nunnavut Water Board, Water Licence NO: 2AM-MEA0815, June 9 2008 to May 31 2015.

APPENDIX A – WATER BALANCE

	Year 2013												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	320,729	329,710	368,323	309,458	363,625	355,498	368,058	321,294	357,595	377,118	300,779	370,655	**4,142,842**
Cummulative Tailings (tonnes):	8,811,301	9,141,011	9,509,334	9,818,792	10,182,417	10,537,915	10,905,973	11,227,267	11,584,862	11,961,980	12,262,759	12,633,414	-
Cummulative Tailings (tonnes) - North Cell	8,811,301	9,141,011	9,509,334	9,818,792	10,182,417	10,537,915	10,905,973	11,227,267	11,584,862	11,961,980	12,262,759	12,633,414	-
Cummulative Tailings (tonnes) - South Cell	0	0	0	0	0	0	0	0	0	0	0	0	-
North Cell (TSF)													
Water from tailings slurry (m^3)	202,903	194,123	213,032	195,934	204,739	204,752	199,909	188,770	183,256	184,275	169,968	188,340	**2,330,001**
Runoff (m^3)	0	0	0	0	0	86,343	11,995	17,489	44,005	0	0	0	**159,832**
Transfer from South Cell (m^3)	0	0	0	0	0	146,753	220,391	0	0	140,000	0	0	**507,144**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	0	0	0	0	**23,085**
Total Inflow (m^3)	202,903	194,123	213,032	195,934	227,824	437,848	432,295	206,259	227,261	324,275	169,968	188,340	**3,020,062**
Reclaim water to the mill (m^3)	268,611	201,270	0	114,731	149,134	109,504	245,860	216,534	252,576	240,089	223,826	264,265	**2,286,400**
Total Outflow (m^3)	268,611	201,270	0	114,731	149,134	109,504	245,860	216,534	252,576	240,089	223,826	264,265	**2,286,400**
Net Inflow (m^3)	-65,708	-7,147	213,032	81,203	78,690	328,344	186,435	-10,275	-25,315	84,187	-53,859	-75,925	**733,662**
End-of-Month Volume (m^3)	808,995	801,848	1,014,880	1,096,083	1,174,773	1,269,454	1,455,036	1,444,761	1,419,446	1,503,633	1,449,774	1,337,312	-
South Cell (ATP)													
Pumped From Goose Pit (m^3)	29,033	29,033	29,033	29,033	29,033	29,033	53,674	34,150	28,957	25,870	11,439	16,706	**344,994**
Pumped From Portage Pit (m^3)	80,533	80,533	80,533	80,533	80,533	80,533	31,172	23,420	59,088	39,037	14,399	26,392	**676,706**
Runoff (m^3)	0	0	0	0	0	246,491	23,545	0	22,443	0	0	0	**292,479**
Total Inflow (m^3)	109,566	109,566	109,566	109,566	109,566	356,057	108,391	57,570	110,488	64,907	25,838	43,098	**1,314,179**
Decant - TSS to Third Portage (m^3)	0	0	0	0	0	0	0	94,440	307,618	82,960	0	0	**485,018**
Transfer to North Cell (m^3)	0	0	0	0	0	146,753	220,391	0	0	140,000	0	0	**507,144**
Total Outflow (m^3)	0	0	0	0	0	146,753	220,391	94,440	307,618	222,960	0	0	**992,162**
Net Inflow (m^3)	109,566	109,566	109,566	109,566	109,566	209,304	-112,000	-36,870	-197,130	-158,053	25,838	43,098	**322,017**
End-of-Month Volume (m^3)	225,302	334,868	444,434	554,000	744,000	816,000	704,000	667,130	470,000	361,947	477,785	520,883	-
Mill/Camp													
Ore water (m^3)	3,948	4,459	5,377	3,546	3,417	3,511	2,720	2,073	3,717	3,394	2,406	5,633	**44,201**
Reclaim water (m^3)	268,611	201,270	0	114,731	149,134	109,504	245,860	216,534	252,576	240,089	223,826	264,265	**2,286,400**
Freshwater from Third Portage Lake (m^3)	68,558	120,469	352,622	211,130	191,626	231,088	87,546	98,955	51,984	66,588	59,897	46,947	**1,587,409**
Total Inflow (m^3)	341,117	326,198	357,999	329,407	344,176	344,103	336,126	317,561	308,277	310,071	286,129	316,845	**3,918,010**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Slurry water (m^3)	338,172	323,538	355,054	326,557	341,231	341,253	333,181	314,616	305,427	307,126	283,279	313,900	**3,883,335**
Total Outflow (m^3)	341,117	326,198	357,999	329,407	344,176	344,103	336,126	317,561	308,277	310,071	286,129	316,845	**3,918,010**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Reclaim water pumping rate (m^3/hr)	361	300	0	159	200	152	330	291	351	323	311	355	-
Freshwater pumping rate (m^3/hr)	92	179	474	293	258	321	118	133	72	90	83	63	-
TSF Water Balance													
Slurry water (m^3)	338,172	323,538	355,054	326,557	341,231	341,253	333,181	314,616	305,427	307,126	283,279	313,900	**3,883,335**
Void and ice entrapment losses (m^3)	135,269	129,415	142,022	130,623	136,492	136,501	133,272	125,846	122,171	122,850	113,312	125,560	**1,553,334**
Slurry water returned to the pond (m^3)	202,903	194,123	213,032	195,934	204,739	204,752	199,909	188,770	183,256	184,275	169,968	188,340	**2,330,001**

	Year 2013												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Goose Pit													
Runoff (m^3)	29,033	29,033	29,033	29,033	29,033	29,033	53,674	34,150	28,957	25,870	11,439	16,706	**344,994**
Total Inflow (m^3)	29,033	29,033	29,033	29,033	29,033	29,033	53,674	34,150	28,957	25,870	11,439	16,706	**344,994**
Pumped to Attenuation Pond (m^3)	29,033	29,033	29,033	29,033	29,033	29,033	53,674	34,150	28,957	25,870	11,439	16,706	**344,994**
Total Outflow (m^3)	29,033	29,033	29,033	29,033	29,033	29,033	53,674	34,150	28,957	25,870	11,439	16,706	**344,994**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-
Portage Pit													
Runoff (m^3)	50,533	50,533	50,533	50,533	50,533	50,533	1,172	0	22,508	9,037	0	0	**335,915**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	36,537	**366,537**
Total Inflow (m^3)	80,533	80,533	80,533	80,533	80,533	80,533	31,172	30,000	52,508	39,037	30,000	36,537	**702,452**
Pumped to Attenuation Pond (m^3)	80,533	80,533	80,533	80,533	80,533	80,533	31,172	23,420	59,088	39,037	14,399	26,392	**676,706**
Total Outflow (m^3)	80,533	80,533	80,533	80,533	80,533	80,533	31,172	23,420	59,088	39,037	14,399	26,392	**676,706**
Net Inflow (m^3)	0	0	0	0	0	0	0	6,580	-6,580	0	15,601	10,145	**25,746**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	6,580	0	0	15,601	25,746	-
Vault Attenuation Pond													
Pumped From Vault Pit (m^3)	0	0	0	0	0	0	0	0	0	0	45,000	0	**45,000**
Runoff (m^3)	0	0	0	0	0	549,362	0	0	0	0	0	0	**549,362**
Total Inflow (m^3)	0	0	0	0	0	549,362	0	0	0	0	45,000	0	**594,362**
Decant - TSS to Wally Lake (m^3)	0	0	0	0	0	44,614	449,146	727,426	784,648	309,649	0	0	**2,315,483**
Total Outflow (m^3)	0	0	0	0	0	44,614	449,146	727,426	784,648	309,649	0	0	**2,315,483**
Net Inflow (m^3)	0	0	0	0	0	504,748	-449,146	-727,426	-784,648	-309,649	45,000	0	**-1,721,121**
End-of-Month Volume (m^3)	2,203,504	2,203,504	2,203,504	2,203,504	2,203,504	2,708,252	2,259,106	1,531,680	747,032	437,383	482,383	482,383	-
Vault Open Pit													
Runoff (m^3)	0	0	0	0	0	30,000	20,000	0	0	0	0	0	**50,000**
Total Inflow (m^3)	0	0	0	0	0	30,000	20,000	0	0	0	0	0	**50,000**
Pumped to Vault Attenuation Pond (m^3)	0	0	0	0	0	0	0	0	0	0	45,000	0	**45,000**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	45,000	0	**45,000**
Net Inflow (m^3)	0	0	0	0	0	30,000	20,000	0	0	0	-45,000	0	**5,000**
End-of-Month Volume (m^3)	0	0	0	0	0	30,000	50,000	50,000	50,000	50,000	5,000	5,000	-

	Year 2014												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	360,989	288,994	367,009	348,990	325,004	354,990	360,995	325,004	348,990	360,995	313,980	360,995	**4,116,935**
Cummulative Tailings (tonnes):	12,994,403	13,283,397	13,650,406	13,999,396	14,324,400	14,679,390	15,040,385	15,365,389	15,714,379	16,075,374	16,389,354	16,750,349	-
Cummulative Tailings (tonnes) - North Cell	12,994,403	13,283,397	13,650,406	13,999,396	14,324,400	14,679,390	15,040,385	15,365,389	15,714,379	15,714,379	15,714,379	15,714,379	-
Cummulative Tailings (tonnes) - South Cell	0	0	0	0	0	0	0	0	0	360,995	674,975	1,035,970	-
North Cell (TSF)													
Water from tailings slurry (m^3)	188,333	169,861	188,337	182,510	187,627	181,618	187,855	187,127	181,676	0	0	0	**1,654,945**
Runoff (m^3)	0	0	0	0	0	86,002	12,101	17,684	44,122	0	0	0	**159,909**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Total Inflow (m^3)	188,333	169,861	188,337	182,510	210,712	267,620	199,956	204,811	237,388	0	0	0	**1,849,529**
Transfer to South Cell (m^3)	0	0	0	0	0	0	0	0	36,521	0	0	0	**36,521**
Reclaim water to the mill (m^3)	260,400	235,200	260,400	252,000	260,400	252,000	260,400	260,400	252,000	0	0	0	**2,293,200**
Total Outflow (m^3)	260,400	235,200	260,400	252,000	260,400	252,000	260,400	260,400	288,521	0	0	0	**2,329,721**
Net Inflow (m^3)	-72,067	-65,339	-72,063	-69,490	-49,688	15,620	-60,444	-55,589	-51,133	0	0	0	**-480,192**
End-of-Month Volume (m^3)	1,265,245	1,199,907	1,127,844	1,058,354	1,008,666	1,024,286	963,841	908,253	857,120	857,120	857,120	857,120	-
South Cell (ATP & TSF)													
Pumped From Goose Pit (m^3)	25,000	25,000	25,000	25,000	50,000	50,000	38,000	38,000	38,000	38,000	38,000	38,000	**428,000**
Pumped From Portage Pit (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Runoff (m^3)	0	0	0	0	0	246,773	34,972	50,705	126,439	0	0	0	**458,889**
Transfer from North Cell (m^3)	0	0	0	0	0	0	0	0	36,521	0	0	0	**36,521**
Water from tailings slurry (m^3)	0	0	0	0	0	0	0	0	0	187,871	181,579	189,029	
Total Inflow (m^3)	25,000	25,000	25,000	25,000	60,000	311,773	82,972	98,705	210,960	225,871	219,579	227,029	**1,536,889**
Decant - TSS to Third Portage (m^3)	0	0	0	0	0	350,000	341,000	350,000	0	0	0	0	**1,041,000**
Reclaim water to the mill (m^3)	0	0	0	0	0	0	0	0	0	245,520	237,600	245,520	**728,640**
Total Outflow (m^3)	0	0	0	0	0	350,000	341,000	350,000	0	245,520	237,600	245,520	**1,769,640**
Net Inflow (m^3)	25,000	25,000	25,000	25,000	60,000	-38,227	-258,028	-251,295	210,960	-19,649	-18,021	-18,491	**-232,751**
End-of-Month Volume (m^3)	545,883	570,883	595,883	620,883	680,883	642,656	384,628	133,333	344,293	324,644	306,622	288,132	-
Mill/Camp													
Ore water (m^3)	4,354	3,522	4,360	4,634	3,177	3,146	3,556	2,344	3,244	3,583	3,081	5,514	**44,515**
Reclaim water (m^3)	260,400	235,200	260,400	252,000	260,400	252,000	260,400	260,400	252,000	245,520	237,600	245,520	**3,021,840**
Freshwater from Third Portage Lake (m^3)	52,080	47,040	52,080	50,400	52,080	50,400	52,080	52,080	50,400	66,960	64,800	66,960	**657,360**
Total Inflow (m^3)	316,834	285,762	316,840	307,034	315,657	305,546	316,036	314,824	305,644	316,063	305,481	317,994	**3,723,715**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Slurry water (m^3)	313,889	283,102	313,895	304,184	312,712	302,696	313,091	311,879	302,794	313,118	302,631	315,049	**3,689,040**
Total Outflow (m^3)	316,834	285,762	316,840	307,034	315,657	305,546	316,036	314,824	305,644	316,063	305,481	317,994	**3,723,715**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Reclaim water pumping rate (m^3/hr)	350	350	350	350	350	350	350	350	350	330	330	330	-
Freshwater pumping rate (m^3/hr)	70	70	70	70	70	70	70	70	70	90	90	90	-
TSF Water Balance													
Slurry water (m^3)	313,889	283,102	313,895	304,184	312,712	302,696	313,091	311,879	302,794	313,118	302,631	315,049	**3,689,040**
Void and ice entrapment losses (m^3)	125,556	113,241	125,558	121,674	125,085	121,078	125,236	124,752	121,118	125,247	121,052	126,020	**1,475,616**
Slurry water returned to the pond (m^3)	188,333	169,861	188,337	182,510	187,627	181,618	187,855	187,127	181,676	187,871	181,579	189,029	**2,213,424**

	Year 2014												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Goose Pit (ATP)													
Runoff (m^3)	25,000	25,000	25,000	25,000	50,000	50,000	38,000	38,000	38,000	38,000	38,000	38,000	**428,000**
Total Inflow (m^3)	25,000	25,000	25,000	25,000	50,000	50,000	38,000	38,000	38,000	38,000	38,000	38,000	**428,000**
Pumped to Attenuation Pond (m^3)	25,000	25,000	25,000	25,000	50,000	50,000	38,000	38,000	38,000	38,000	38,000	38,000	**428,000**
Total Outflow (m^3)	25,000	25,000	25,000	25,000	50,000	50,000	38,000	38,000	38,000	38,000	38,000	38,000	**428,000**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Inflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Pumped to Attenuation Pond (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Total Outflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	-
Vault Attenuation Pond													
Pumped From Vault Pit (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Inflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Decant - TSS to Wally Lake (m^3)	0	0	0	0	0	0	0	700,000	254,932	0	0	0	**954,932**
Total Outflow (m^3)	0	0	0	0	0	0	0	700,000	254,932	0	0	0	**954,932**
Net Inflow (m^3)	0	0	0	0	0	251,982	37,226	-646,652	-124,939	0	0	0	**-482,383**
End-of-Month Volume (m^3)	482,383	482,383	482,383	482,383	482,383	734,365	771,591	124,939	0	0	0	0	-
Vault Open Pit													
Runoff (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Total Inflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Pumped to Vault Attenuation Pond (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Total Outflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-

	Year 2015												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	351,540	317,520	351,540	340,200	351,540	340,200	351,540	351,540	340,200	351,540	340,200	351,540	**4,139,100**
Cummulative Tailings (tonnes):	17,101,889	17,419,409	17,770,949	18,111,149	18,462,689	18,802,889	19,154,429	19,505,969	19,846,169	20,197,709	20,537,909	20,889,449	-
Cummulative Tailings (tonnes) - North Cell	15,714,379	15,714,379	15,714,379	15,714,379	15,714,379	16,054,579	16,406,119	16,757,659	17,097,859	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	1,387,510	1,705,030	2,056,570	2,396,770	2,748,310	2,748,310	2,748,310	2,748,310	2,748,310	2,748,310	3,088,510	3,440,050	-
North Cell (TSF)													
Water from tailings slurry (m^3)	0	0	0	0	0	181,538	187,799	187,243	181,627	187,814	0	0	**926,021**
Runoff (m^3)	0	0	0	0	0	2,767	1,962	0	0	0	0	0	**4,729**
Total Inflow (m^3)	0	0	0	0	0	184,305	189,761	187,243	181,627	187,814	0	0	**930,750**
Transfer to South Cell (m^3)	0	0	0	0	0	80,512	66,260	78,000	332,487	372,664	0	0	**929,923**
Reclaim water to the mill (m^3)	0	0	0	0	0	252,000	260,400	260,400	0	0	0	0	**772,800**
Total Outflow (m^3)	0	0	0	0	0	332,512	326,660	338,400	332,487	372,664	0	0	**1,702,723**
Net Inflow (m^3)	0	0	0	0	0	-148,207	-136,899	-151,157	-150,860	-184,850	0	0	**-771,973**
End-of-Month Volume (m^3)	857,120	857,120	857,120	857,120	857,120	708,914	572,014	420,857	269,997	85,148	85,148	85,148	-
South Cell (TSF)													
Pumped From Goose Pit (m^3)	82,100	82,100	82,100	82,100	0	0	0	0	0	0	0	0	**328,400**
Pumped From Portage Pit (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Runoff (m^3)	0	0	0	0	0	246,107	10,726	13,954	25,856	0	0	0	**296,643**
Transfer from North Cell (m^3)	0	0	0	0	0	80,512	66,260	78,000	332,487	372,664	0	0	**929,923**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Water from tailings slurry (m^3)	188,265	170,070	188,227	182,441	187,783	0	0	0	0	0	181,733	188,942	**1,287,461**
Total Inflow (m^3)	270,365	252,170	270,327	264,541	220,868	341,619	86,986	101,954	379,933	372,664	181,733	188,942	**2,932,102**
Reclaim water to the mill (m^3)	245,520	221,760	245,520	237,600	260,400	0	0	0	252,000	260,400	237,600	245,520	**2,206,320**
Transfer to Goose Pit (m^3)	0	0	0	0	0	0	65,000	80,000	150,000	200,000	0	0	**495,000**
Total Outflow (m^3)	245,520	221,760	245,520	237,600	260,400	0	65,000	80,000	402,000	460,400	237,600	245,520	**2,701,320**
Net Inflow (m^3)	24,845	30,410	24,807	26,941	-39,532	341,619	21,986	21,954	-22,067	-87,736	-55,867	-56,578	**230,782**
End-of-Month Volume (m^3)	312,977	343,387	368,193	395,134	355,602	697,221	719,207	741,161	719,094	631,358	575,491	518,914	-
Mill/Camp													
Ore water (m^3)	4,240	3,870	4,176	4,518	3,436	3,014	3,463	2,536	3,162	3,489	3,339	5,369	**44,612**
Reclaim water (m^3)	245,520	221,760	245,520	237,600	260,400	252,000	260,400	260,400	252,000	260,400	237,600	245,520	**2,979,120**
Freshwater from Third Portage Lake (m^3)	66,960	60,480	66,960	64,800	52,080	50,400	52,080	52,080	50,400	52,080	64,800	66,960	**700,080**
Total Inflow (m^3)	316,720	286,110	316,656	306,918	315,916	305,414	315,943	315,016	305,562	315,969	305,739	317,849	**3,723,812**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Slurry water (m^3)	313,775	283,450	313,711	304,068	312,971	302,564	312,998	312,071	302,712	313,024	302,889	314,904	**3,689,137**
Total Outflow (m^3)	316,720	286,110	316,656	306,918	315,916	305,414	315,943	315,016	305,562	315,969	305,739	317,849	**3,723,812**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Reclaim water pumping rate (m^3/hr)	330	330	330	330	350	350	350	350	350	350	330	330	-
Freshwater pumping rate (m^3/hr)	90	90	90	90	70	70	70	70	70	70	90	90	-
TSF Water Balance													
Slurry water (m^3)	313,775	283,450	313,711	304,068	312,971	302,564	312,998	312,071	302,712	313,024	302,889	314,904	**3,689,137**
Void and ice entrapment losses (m^3)	125,510	113,380	125,484	121,627	125,188	121,026	125,199	124,828	121,085	125,210	121,156	125,962	**1,475,655**
Slurry water returned to the pond (m^3)	188,265	170,070	188,227	182,441	187,783	181,538	187,799	187,243	181,627	187,814	181,733	188,942	**2,213,482**

	Year 2015												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Goose Pit (ATP)													
Runoff (m^3)	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	**985,200**
Transfer from South Cell (m^3)	0	0	0	0	0	0	65,000	80,000	150,000	200,000	0	0	**495,000**
Total Inflow (m^3)	82,100	82,100	82,100	82,100	82,100	82,100	147,100	162,100	232,100	282,100	82,100	82,100	**1,480,200**
Pumped to Attenuation Pond (m^3)	82,100	82,100	82,100	82,100	0	0	0	0	0	0	0	0	**328,400**
Total Outflow (m^3)	82,100	82,100	82,100	82,100	0	0	0	0	0	0	0	0	**328,400**
Net Inflow (m^3)	0	0	0	0	82,100	82,100	147,100	162,100	232,100	282,100	82,100	82,100	**1,151,800**
End-of-Month Volume (m^3)	0	0	0	0	82,100	164,200	311,300	473,400	705,500	987,600	1,069,700	1,151,800	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Inflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Pumped to Attenuation Pond (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Total Outflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	-
Vault Attenuation Pond													
Pumped From Vault Pit (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Total Inflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Decant - TSS to Wally Lake (m^3)	0	0	0	0	0	0	0	220,567	251,982	0	0	0	**472,549**
Total Outflow (m^3)	0	0	0	0	0	0	0	220,567	251,982	0	0	0	**472,549**
Net Inflow (m^3)	0	0	0	0	0	251,982	37,226	-167,219	-121,989	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	251,982	289,208	121,989	0	0	0	0	-
Vault Open Pit													
Runoff (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Total Inflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Pumped to Vault Attenuation Pond (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Total Outflow (m^3)	0	0	0	0	0	251,982	37,226	53,348	129,993	0	0	0	**472,549**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-

	Year 2016												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**366**
Tailings (tonnes):	352,439	329,701	352,439	341,070	352,439	341,070	352,439	352,439	341,070	352,439	341,070	352,439	**4,161,054**
Cummulative Tailings (tonnes):	21,241,888	21,571,589	21,924,028	22,265,098	22,617,537	22,958,607	23,311,046	23,663,485	24,004,555	24,356,994	24,698,064	25,050,503	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	3,792,489	4,122,190	4,474,629	4,815,699	5,168,138	5,509,208	5,861,647	6,214,086	6,555,156	6,907,595	7,248,665	7,601,104	-
North Cell (TSF)													
Total Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Transfer to South Cell (m^3)	0	0	0	85,148	0	0	0	0	0	0	0	0	**85,148**
Total Outflow (m^3)	0	0	0	85,148	0	0	0	0	0	0	0	0	**85,148**
Net Inflow (m^3)	0	0	0	-85,148	0	0	0	0	0	0	0	0	**-85,148**
End-of-Month Volume (m^3)	85,148	85,148	85,148	0	0	0	0	0	0	0	0	0	-
South Cell (TSF)													
Pumped From Goose Pit (m^3)	0	0	0	0	0	82,100	82,100	0	82,100	82,100	0	82,100	**410,500**
Pumped From Portage Pit (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	30,000	30,000	30,000	**145,000**
Runoff (m^3)	0	0	0	0	0	48,766	9,120	12,021	25,135	0	0	0	**95,042**
Transfer from North Cell (m^3)	0	0	0	85,148	0	0	0	0	0	0	0	0	**85,148**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,180	0	0	0	11,590	0	0	0	**34,770**
Water from tailings slurry (m^3)	188,272	176,150	188,233	182,447	187,788	181,543	187,804	187,246	181,632	187,820	181,738	188,951	**2,219,624**
Total Inflow (m^3)	188,272	176,150	188,233	267,595	220,968	327,409	289,024	209,267	310,457	299,920	211,738	301,051	**2,990,084**
Reclaim water to the mill (m^3)	245,520	229,680	245,520	237,600	260,400	252,000	260,400	260,400	252,000	260,400	237,600	245,520	**2,987,040**
Total Outflow (m^3)	245,520	229,680	245,520	237,600	260,400	252,000	260,400	260,400	252,000	260,400	237,600	245,520	**2,987,040**
Net Inflow (m^3)	-57,248	-53,530	-57,287	29,995	-39,432	75,409	28,624	-51,133	58,457	39,520	-25,862	55,531	**3,044**
End-of-Month Volume (m^3)	461,665	408,135	350,848	380,844	341,412	416,821	445,445	394,312	452,769	492,289	466,427	521,958	-
Mill/Camp													
Ore water (m^3)	4,251	4,018	4,187	4,529	3,445	3,022	3,472	2,542	3,170	3,498	3,347	5,383	**44,864**
Reclaim water (m^3)	245,520	229,680	245,520	237,600	260,400	252,000	260,400	260,400	252,000	260,400	237,600	245,520	**2,987,040**
Freshwater from Third Portage Lake (m^3)	66,960	62,640	66,960	64,800	52,080	50,400	52,080	52,080	50,400	52,080	64,800	66,960	**702,240**
Total Inflow (m^3)	316,731	296,338	316,667	306,929	315,925	305,422	315,952	315,022	305,570	315,978	305,747	317,863	**3,734,144**
Freshwater for camp purposes (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Slurry water (m^3)	313,786	293,583	313,722	304,079	312,980	302,572	313,007	312,077	302,720	313,033	302,897	314,918	**3,699,374**
Total Outflow (m^3)	316,731	296,338	316,667	306,929	315,925	305,422	315,952	315,022	305,570	315,978	305,747	317,863	**3,734,144**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Reclaim water pumping rate (m^3/hr)	330	330	330	330	350	350	350	350	350	350	330	330	-
Freshwater pumping rate (m^3/hr)	90	90	90	90	70	70	70	70	70	70	90	90	-
TSF Water Balance													
Slurry water (m^3)	313,786	293,583	313,722	304,079	312,980	302,572	313,007	312,077	302,720	313,033	302,897	314,918	**3,699,374**
Void and ice entrapment losses (m^3)	125,514	117,433	125,489	121,632	125,192	121,029	125,203	124,831	121,088	125,213	121,159	125,967	**1,479,750**
Slurry water returned to the pond (m^3)	188,272	176,150	188,233	182,447	187,788	181,543	187,804	187,246	181,632	187,820	181,738	188,951	**2,219,624**

	Year 2016												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Goose Pit (ATP)													
Runoff (m^3)	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	82,100	**985,200**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	82,100	82,100	82,100	82,100	82,100	172,100	172,100	172,100	172,100	82,100	82,100	82,100	**1,345,200**
Pumped to Attenuation Pond (m^3)	0	0	0	0	0	82,100	82,100	0	82,100	82,100	0	82,100	**410,500**
Total Outflow (m^3)	0	0	0	0	0	82,100	82,100	0	82,100	82,100	0	82,100	**410,500**
Net Inflow (m^3)	82,100	82,100	82,100	82,100	82,100	90,000	90,000	172,100	90,000	0	82,100	0	**934,700**
End-of-Month Volume (m^3)	1,233,900	1,316,000	1,398,100	1,480,200	1,562,300	1,652,300	1,742,300	1,914,400	2,004,400	2,004,400	2,086,500	2,086,500	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	0	0	0	0	0	0	0	0	0	30,000	30,000	30,000	**90,000**
Total Inflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	30,000	30,000	30,000	**145,000**
Pumped to South Cell (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	30,000	30,000	30,000	**145,000**
Total Outflow (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	30,000	30,000	30,000	**145,000**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	25,746	-
Vault Attenuation Pond													
Pumped From Vault Pit (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Total Inflow (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Decant - TSS to Wally Lake (m^3)	0	0	0	0	0	0	0	220,799	251,975	0	0	0	**472,774**
Total Outflow (m^3)	0	0	0	0	0	0	0	220,799	251,975	0	0	0	**472,774**
Net Inflow (m^3)	0	0	0	0	0	251,975	37,322	-167,354	-121,943	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	251,975	289,297	121,943	0	0	0	0	-
Vault Open Pit													
Runoff (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Total Inflow (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Pumped to Vault Attenuation Pond (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Total Outflow (m^3)	0	0	0	0	0	251,975	37,322	53,445	130,032	0	0	0	**472,774**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-

	Year 2017												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	354,361	320,068	354,361	342,930	354,361	342,930	354,361	354,361	342,930	354,361	17,249	0	**3,492,273**
Cummulative Tailings (tonnes):	25,404,864	25,724,932	26,079,293	26,422,223	26,776,584	27,119,514	27,473,875	27,828,236	28,171,166	28,525,527	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	7,955,465	8,275,533	8,629,894	8,972,824	9,327,185	9,670,115	10,024,476	10,378,837	10,721,767	11,076,128	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
Pumped From Portage Pit (m^3)	30,000	30,000	30,000	30,000	40,000	45,000	40,000	40,000	40,000	0	0	0	**325,000**
Runoff (m^3)	0	0	0	0	0	48,589	7,474	10,494	24,588	0	0	0	**91,145**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Water from tailings slurry (m^3)	197,213	178,153	197,175	191,102	178,871	172,913	178,887	178,327	173,003	187,831	101	0	**1,833,577**
Total Inflow (m^3)	227,213	208,153	227,175	221,102	241,956	266,502	226,361	228,821	249,181	187,831	101	0	**2,284,397**
Pumped to Portage Pit (m^3)	0	0	0	0	0	0	0	100,000	200,000	0	0	0	**300,000**
Reclaim water to the mill (m^3)	260,400	235,200	260,400	252,000	245,520	237,600	245,520	245,520	237,600	189,720	0	0	**2,409,480**
Total Outflow (m^3)	260,400	235,200	260,400	252,000	245,520	237,600	245,520	345,520	437,600	189,720	0	0	**2,709,480**
Net Inflow (m^3)	-33,187	-27,047	-33,225	-30,898	-3,564	28,902	-19,159	-116,699	-188,419	-1,889	101	0	**-425,083**
End-of-Month Volume (m^3)	488,771	461,724	428,499	397,601	394,038	422,940	403,781	287,082	98,663	96,774	96,875	96,875	-
Mill/Camp													
Ore water (m^3)	4,274	3,901	4,210	4,554	3,464	3,039	3,490	2,556	3,188	3,517	169	0	**36,362**
Reclaim water (m^3)	260,400	235,200	260,400	252,000	245,520	237,600	245,520	245,520	237,600	189,720	0	0	**2,409,480**
Freshwater from Third Portage Lake (m^3)	66,960	60,480	66,960	64,800	52,080	50,400	52,080	52,080	50,400	122,760	2,880	2,976	**644,856**
Total Inflow (m^3)	331,634	299,581	331,570	321,354	301,064	291,039	301,090	300,156	291,188	315,997	3,049	2,976	**3,090,698**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,880	2,976	**34,736**
Slurry water (m^3)	328,689	296,921	328,625	318,504	298,119	288,189	298,145	297,211	288,338	313,052	169	0	**3,055,962**
Total Outflow (m^3)	331,634	299,581	331,570	321,354	301,064	291,039	301,090	300,156	291,188	315,997	3,049	2,976	**3,090,698**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Reclaim water pumping rate (m^3/hr)	350	350	350	350	330	330	330	330	330	255	0	0	-
Freshwater pumping rate (m^3/hr)	90	90	90	90	70	70	70	70	70	165	4	4	-
TSF Water Balance													
Slurry water (m^3)	328,689	296,921	328,625	318,504	298,119	288,189	298,145	297,211	288,338	313,052	169	0	**3,055,962**
Void and ice entrapment losses (m^3)	131,476	118,768	131,450	127,402	119,248	115,276	119,258	118,884	115,335	125,221	68	0	**1,222,385**
Slurry water returned to the pond (m^3)	197,213	178,153	197,175	191,102	178,871	172,913	178,887	178,327	173,003	187,831	101	0	**1,833,577**

	Year 2017												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Goose Pit (ATP)													
Runoff (m^3)	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	**1,009,296**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	84,108	84,108	84,108	84,108	84,108	174,108	174,108	174,108	174,108	84,108	84,108	84,108	**1,369,296**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	84,108	84,108	84,108	84,108	84,108	174,108	174,108	174,108	174,108	84,108	84,108	84,108	**1,369,296**
End-of-Month Volume (m^3)	2,170,608	2,254,716	2,338,824	2,422,932	2,507,040	2,681,148	2,855,256	3,029,364	3,203,472	3,287,580	3,371,688	3,455,796	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Pumped from South Cell (m^3)	0	0	0	0	0	0	0	100,000	200,000	0	0	0	**300,000**
Total Inflow (m^3)	30,000	30,000	30,000	30,000	40,000	45,000	40,000	140,000	240,000	30,000	30,000	30,000	**715,000**
Pumped to South Cell (m^3)	30,000	30,000	30,000	30,000	40,000	45,000	40,000	40,000	40,000	0	0	0	**325,000**
Total Outflow (m^3)	30,000	30,000	30,000	30,000	40,000	45,000	40,000	40,000	40,000	0	0	0	**325,000**
Net Inflow (m^3)	0	0	0	0	0	0	0	100,000	200,000	30,000	30,000	30,000	**390,000**
End-of-Month Volume (m^3)	25,746	25,746	25,746	25,746	25,746	25,746	25,746	125,746	325,746	355,746	385,746	415,746	-
Vault Attenuation Pond													
Pumped From Vault Pit (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Total Inflow (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Decant - TSS to Wally Lake (m^3)	0	0	0	0	0	0	0	228,469	251,975	0	0	0	**480,444**
Total Outflow (m^3)	0	0	0	0	0	0	0	228,469	251,975	0	0	0	**480,444**
Net Inflow (m^3)	0	0	0	0	0	251,753	40,522	-171,605	-120,670	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	251,753	292,275	120,670	0	0	0	0	-
Vault Open Pit													
Runoff (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Total Inflow (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Pumped to Vault Attenuation Pond (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Total Outflow (m^3)	0	0	0	0	0	251,753	40,522	56,864	131,305	0	0	0	**480,444**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	-

	Year 2018												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
Total Inflow (m³)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pumped to Portage Pit (m³)	0	0	0	0	0	0	96,875	0	0	0	0	0	**96,875**
Total Outflow (m³)	0	0	0	0	0	0	96,875	0	0	0	0	0	**96,875**
Net Inflow (m³)	0	0	0	0	0	0	-96,875	0	0	0	0	0	**-96,875**
End-of-Month Volume (m³)	96,875	96,875	96,875	96,875	96,875	96,875	0	0	0	0	0	0	-
Mill/Camp													
Freshwater from Third Portage Lake (m³)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Inflow (m³)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Freshwater for camp purposes (m³)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Outflow (m³)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Net Inflow (m³)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m³/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit													
Runoff (m³)	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	84,108	**1,009,296**
Pumped from Third Portage Lake (m³)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m³)	84,108	84,108	84,108	84,108	84,108	174,108	174,108	174,108	174,108	84,108	84,108	84,108	**1,369,296**
Total Outflow (m³)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m³)	84,108	84,108	84,108	84,108	84,108	174,108	174,108	174,108	174,108	84,108	84,108	84,108	**1,369,296**
End-of-Month Volume (m³)	3,539,904	3,624,012	3,708,120	3,792,228	3,876,336	4,050,444	4,224,552	4,398,660	4,572,768	4,656,876	4,740,984	4,825,092	-
Portage Pit													
Runoff (m³)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m³)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m³)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Pumped from South Cell (m³)	0	0	0	0	0	0	96,875	0	0	0	0	0	**34,770**
Pumped from Third Portage Lake (m³)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m³)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,266,875	1,170,000	1,181,590	30,000	30,000	30,000	**5,066,550**
Total Outflow (m³)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m³)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,266,875	1,170,000	1,181,590	30,000	30,000	30,000	**5,066,550**
End-of-Month Volume (m³)	445,746	475,746	505,746	535,746	598,831	1,773,831	3,040,706	4,210,706	5,392,296	5,422,296	5,452,296	5,482,296	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m³)	0	0	0	0	0	605,831	1,006,306	1,360,338	1,212,177	0	0	0	**4,184,652**
Total Inflow (m³)	0	0	0	0	0	605,831	1,006,306	1,360,338	1,212,177	0	0	0	**4,184,652**
Total Outflow (m³)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m³)	0	0	0	0	0	605,831	1,006,306	1,360,338	1,212,177	0	0	0	**4,184,652**
End-of-Month Volume (m³)	0	0	0	0	0	605,831	1,612,137	2,972,475	4,184,652	4,184,652	4,184,652	4,184,652	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2019												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Inflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Outflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit													
Runoff (m^3)	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	**751,296**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	62,608	62,608	62,608	62,608	62,608	152,608	152,608	152,608	152,608	62,608	62,608	62,608	**1,111,296**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	62,608	62,608	62,608	62,608	62,608	152,608	152,608	152,608	152,608	62,608	62,608	62,608	**1,111,296**
End-of-Month Volume (m^3)	4,887,700	4,950,308	5,012,916	5,075,524	5,138,132	5,290,740	5,443,348	5,595,956	5,748,564	5,811,172	5,873,780	5,936,388	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
End-of-Month Volume (m^3)	5,512,296	5,542,296	5,572,296	5,602,296	5,665,381	6,840,381	8,010,381	9,180,381	10,361,971	10,391,971	10,421,971	10,451,971	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
End-of-Month Volume (m^3)	4,184,652	4,184,652	4,184,652	4,184,652	4,184,652	4,788,435	5,794,741	7,155,079	8,367,256	8,367,256	8,367,256	8,367,256	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2020												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**366**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Total Inflow (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Freshwater for camp purposes (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Total Outflow (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit													
Runoff (m^3)	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	62,608	**751,296**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	62,608	62,608	62,608	62,608	62,608	152,608	152,608	152,608	152,608	62,608	62,608	62,608	**1,111,296**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	62,608	62,608	62,608	62,608	62,608	152,608	152,608	152,608	152,608	62,608	62,608	62,608	**1,111,296**
End-of-Month Volume (m^3)	5,998,996	6,061,604	6,124,212	6,186,820	6,249,428	6,402,036	6,554,644	6,707,252	6,859,860	6,922,468	6,985,076	7,047,684	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
End-of-Month Volume (m^3)	10,481,971	10,511,971	10,541,971	10,571,971	10,635,056	11,810,056	12,980,056	14,150,056	15,331,646	15,361,646	15,391,646	15,421,646	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
End-of-Month Volume (m^3)	8,367,256	8,367,256	8,367,256	8,367,256	8,367,256	8,971,039	9,977,345	11,337,683	12,549,860	12,549,860	12,549,860	12,549,860	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2021												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Inflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Outflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit													
Runoff (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	131,325	131,325	131,325	131,325	41,325	41,325	41,325	**855,900**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	131,325	131,325	131,325	131,325	41,325	41,325	41,325	**855,900**
End-of-Month Volume (m^3)	7,089,009	7,130,334	7,171,659	7,212,984	7,254,309	7,385,634	7,516,959	7,648,284	7,779,609	7,820,934	7,862,259	7,903,584	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
End-of-Month Volume (m^3)	15,451,646	15,481,646	15,511,646	15,541,646	15,604,731	16,779,731	17,949,731	19,119,731	20,301,321	20,331,321	20,361,321	20,391,321	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
End-of-Month Volume (m^3)	12,549,860	12,549,860	12,549,860	12,549,860	12,549,860	13,153,643	14,159,949	15,520,287	16,732,464	16,732,464	16,732,464	16,732,464	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2022												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Inflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Outflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit													
Runoff (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	90,000	90,000	90,000	90,000	0	0	0	**360,000**
Total Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	131,325	131,325	131,325	131,325	41,325	41,325	41,325	**855,900**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	131,325	131,325	131,325	131,325	41,325	41,325	41,325	**855,900**
End-of-Month Volume (m^3)	7,944,909	7,986,234	8,027,559	8,068,884	8,110,209	8,241,534	8,372,859	8,504,184	8,635,509	8,676,834	8,718,159	8,759,484	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	30,000	30,000	30,000	30,000	63,085	1,175,000	1,170,000	1,170,000	1,181,590	30,000	30,000	30,000	**4,969,675**
End-of-Month Volume (m^3)	20,421,321	20,451,321	20,481,321	20,511,321	20,574,406	21,749,406	22,919,406	24,089,406	25,270,996	25,300,996	25,330,996	25,360,996	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
End-of-Month Volume (m^3)	16,732,464	16,732,464	16,732,464	16,732,464	16,732,464	17,336,247	18,342,553	19,702,891	20,915,068	20,915,068	20,915,068	20,915,068	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

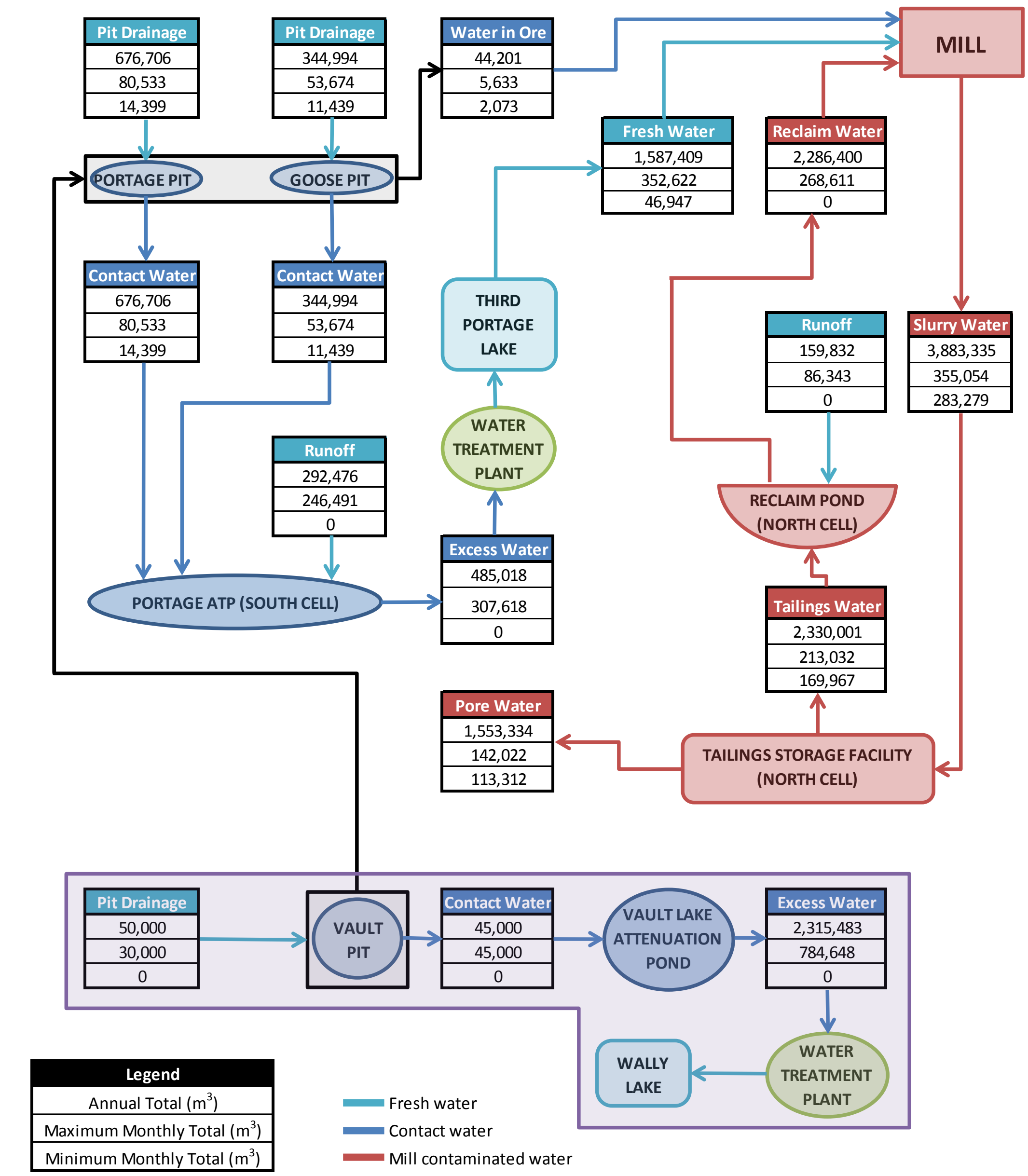
	Year 2023												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Inflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Freshwater for camp purposes (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Total Outflow (m^3)	2,945	2,660	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,675**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit - NOW JOINED WITH THE PORTAGE PIT REFLOODING													
Runoff (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Total Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Flow to Portage Pit (m^3)	0	20,431	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**433,681**
Total Outflow (m^3)	0	20,431	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**433,681**
Net Inflow (m^3)	41,325	20,894	0	0	0	0	0	0	0	0	0	0	**62,219**
End-of-Month Volume (m^3)	8,800,809	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Inflow from Goose Pit (m^3)	0	20,431	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**433,681**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	30,000	50,431	71,325	71,325	104,410	1,216,325	1,211,325	1,211,325	1,222,915	71,325	71,325	71,325	**5,403,356**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	30,000	50,431	71,325	71,325	104,410	1,216,325	1,211,325	1,211,325	1,222,915	71,325	71,325	71,325	**5,403,356**
End-of-Month Volume (m^3)	25,390,996	25,441,427	25,512,752	25,584,077	25,688,487	26,904,812	28,116,137	29,327,462	30,550,377	30,621,702	30,693,027	30,764,352	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,360,338	1,212,177	0	0	0	**4,182,604**
End-of-Month Volume (m^3)	20,915,068	20,915,068	20,915,068	20,915,068	20,915,068	21,518,851	22,525,157	23,885,495	25,097,672	25,097,672	25,097,672	25,097,672	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2024												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**366**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Total Inflow (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Freshwater for camp purposes (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Total Outflow (m^3)	2,945	2,755	2,945	2,850	2,945	2,850	2,945	2,945	2,850	2,945	2,850	2,945	**34,770**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	4	4	4	4	4	4	4	4	4	4	4	-
Goose Pit - NOW JOINED WITH THE PORTAGE PIT REFLOODING													
Runoff (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Total Inflow (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Flow to Portage Pit (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Total Outflow (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	-
Portage Pit													
Runoff (m^3)	0	0	0	0	10,000	15,000	10,000	10,000	10,000	0	0	0	**55,000**
East Dike Seepage (m^3)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**360,000**
Sewage water from Tear Drop Lake (m^3)	0	0	0	0	23,085	0	0	0	11,590	0	0	0	**34,675**
Inflow from Goose Pit (m^3)	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	41,325	**495,900**
Pumped from Third Portage Lake (m^3)	0	0	0	0	0	1,130,000	1,130,000	1,130,000	1,130,000	0	0	0	**4,520,000**
Total Inflow (m^3)	71,325	71,325	71,325	71,325	104,410	1,216,325	1,211,325	1,211,325	1,222,915	71,325	71,325	71,325	**5,465,575**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	71,325	71,325	71,325	71,325	104,410	1,216,325	1,211,325	1,211,325	1,222,915	71,325	71,325	71,325	**5,465,575**
End-of-Month Volume (m^3)	30,835,677	30,907,002	30,978,327	31,049,652	31,154,062	32,370,387	33,581,712	34,793,037	36,015,952	36,087,277	36,158,602	36,229,927	-
Vault Attenuation Pond/Vault Lake													
Pumped From Wally Lake (m^3)	0	0	0	0	0	603,783	1,006,306	1,279,043	1,164,730	0	0	0	**4,053,862**
Total Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,279,043	1,164,730	0	0	0	**4,053,862**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	0	0	0	0	0	603,783	1,006,306	1,279,043	1,164,730	0	0	0	**4,053,862**
End-of-Month Volume (m^3)	25,097,672	25,097,672	25,097,672	25,097,672	25,097,672	25,701,455	26,707,761	27,986,804	29,151,534	29,151,534	29,151,534	29,151,534	-
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

	Year 2025												ANNUAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
No. of days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**	**365**
Tailings (tonnes):	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cummulative Tailings (tonnes):	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	28,542,776	-
Cummulative Tailings (tonnes) - North Cell	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	17,449,399	-
Cummulative Tailings (tonnes) - South Cell	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	11,093,377	-
North Cell (TSF)													
NORTH CELL CLOSED													
South Cell (TSF)													
SOUTH CELL CLOSED													
Mill/Camp													
Freshwater from Third Portage Lake (m^3)	2,945	0	0	0	0	0	0	0	0	0	0	0	**2,945**
Total Inflow (m^3)	2,945	0	0	0	0	0	0	0	0	0	0	0	**2,945**
Freshwater for camp purposes (m^3)	2,945	0	0	0	0	0	0	0	0	0	0	0	**2,945**
Total Outflow (m^3)	2,945	0	0	0	0	0	0	0	0	0	0	0	**2,945**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Freshwater pumping rate (m^3/hr)	4	0	0	0	0	0	0	0	0	0	0	0	-
Goose Pit - NOW JOINED WITH THE PORTAGE PIT REFLOODING													
Runoff (m^3)	22,726	0	0	0	0	0	0	0	0	0	0	0	**22,726**
Total Inflow (m^3)	22,726	0	0	0	0	0	0	0	0	0	0	0	**22,726**
Flow to Portage Pit (m^3)	22,726	0	0	0	0	0	0	0	0	0	0	0	**22,726**
Total Outflow (m^3)	22,726	0	0	0	0	0	0	0	0	0	0	0	**22,726**
Net Inflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
End-of-Month Volume (m^3)	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	8,821,703	-
Portage Pit													
East Dike Seepage (m^3)	16,498	0	0	0	0	0	0	0	0	0	0	0	**16,498**
Inflow from Goose Pit (m^3)	22,726	0	0	0	0	0	0	0	0	0	0	0	**22,726**
Total Inflow (m^3)	39,224	0	0	0	0	0	0	0	0	0	0	0	**39,224**
Total Outflow (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Net Inflow (m^3)	39,224	0	0	0	0	0	0	0	0	0	0	0	**39,224**
End-of-Month Volume (m^3)	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	36,269,151	-
Vault Attenuation Pond/Vault Lake													
VAULT LAKE REFLOODING COMPLETED													
Vault Open Pit													
VAULT PIT CLOSED: REFLOODING OF VAULT LAKE INCLUDES PIT VOLUME													

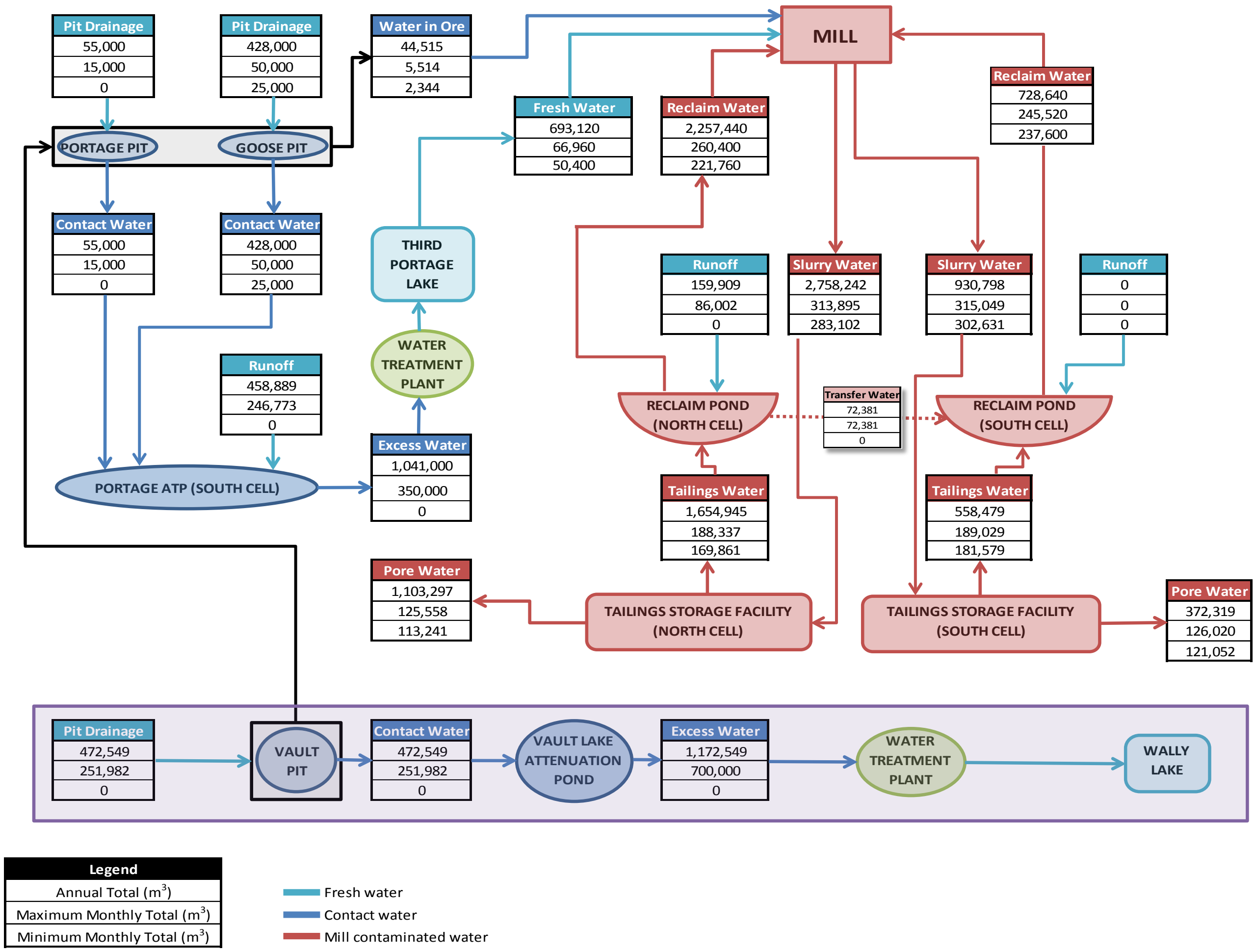
APPENDIX B – GENERAL WATER MOVEMENT

9.1.1.1.1.1.1.1 GENERAL WATER MOVEMENT – 2013



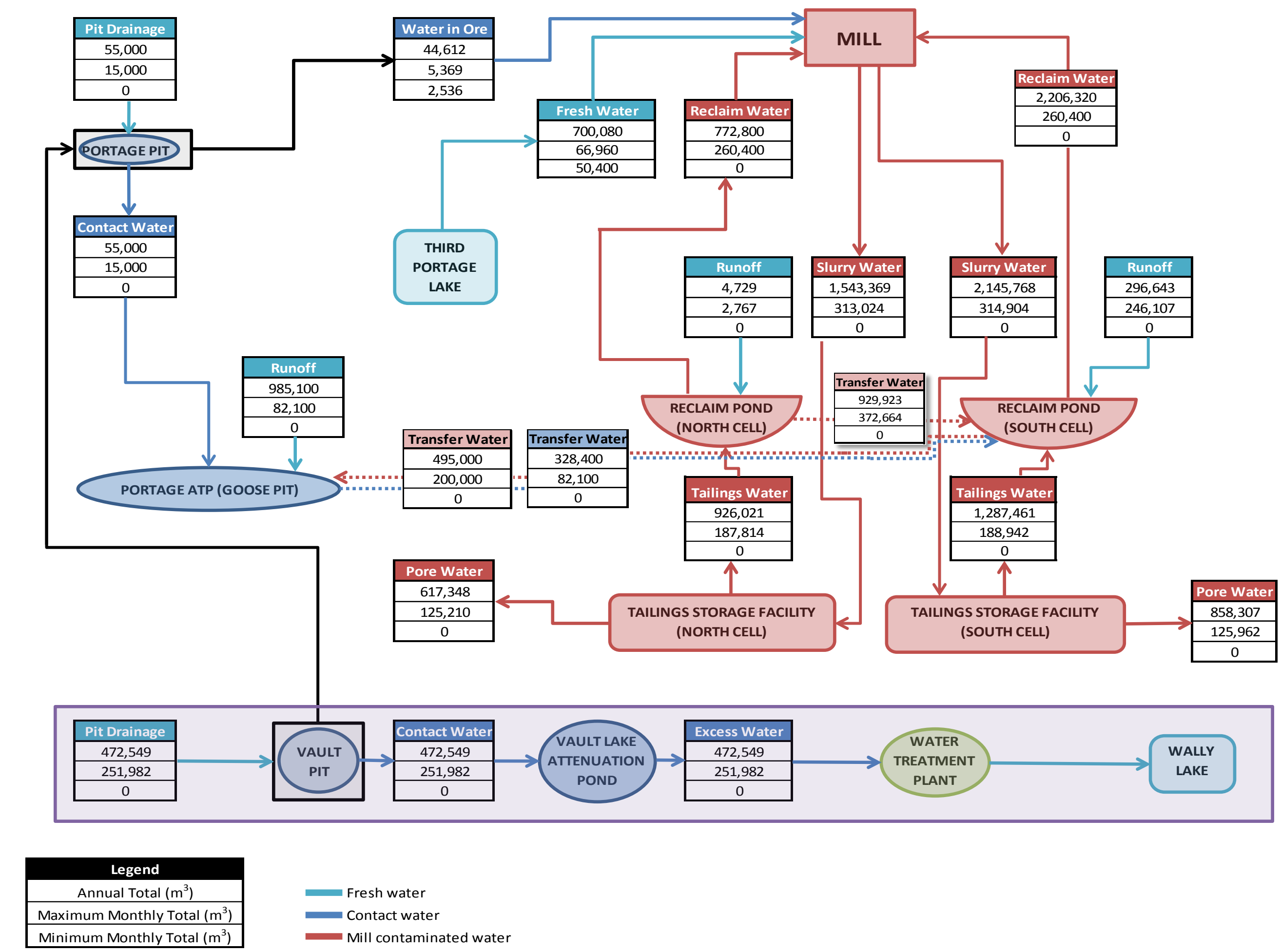
*Small water transfers are not shown on this drawing, refer to water balance tables for detailed water movement.

9.1.1.1.1.1.1.2 GENERAL WATER MOVEMENT – 2014



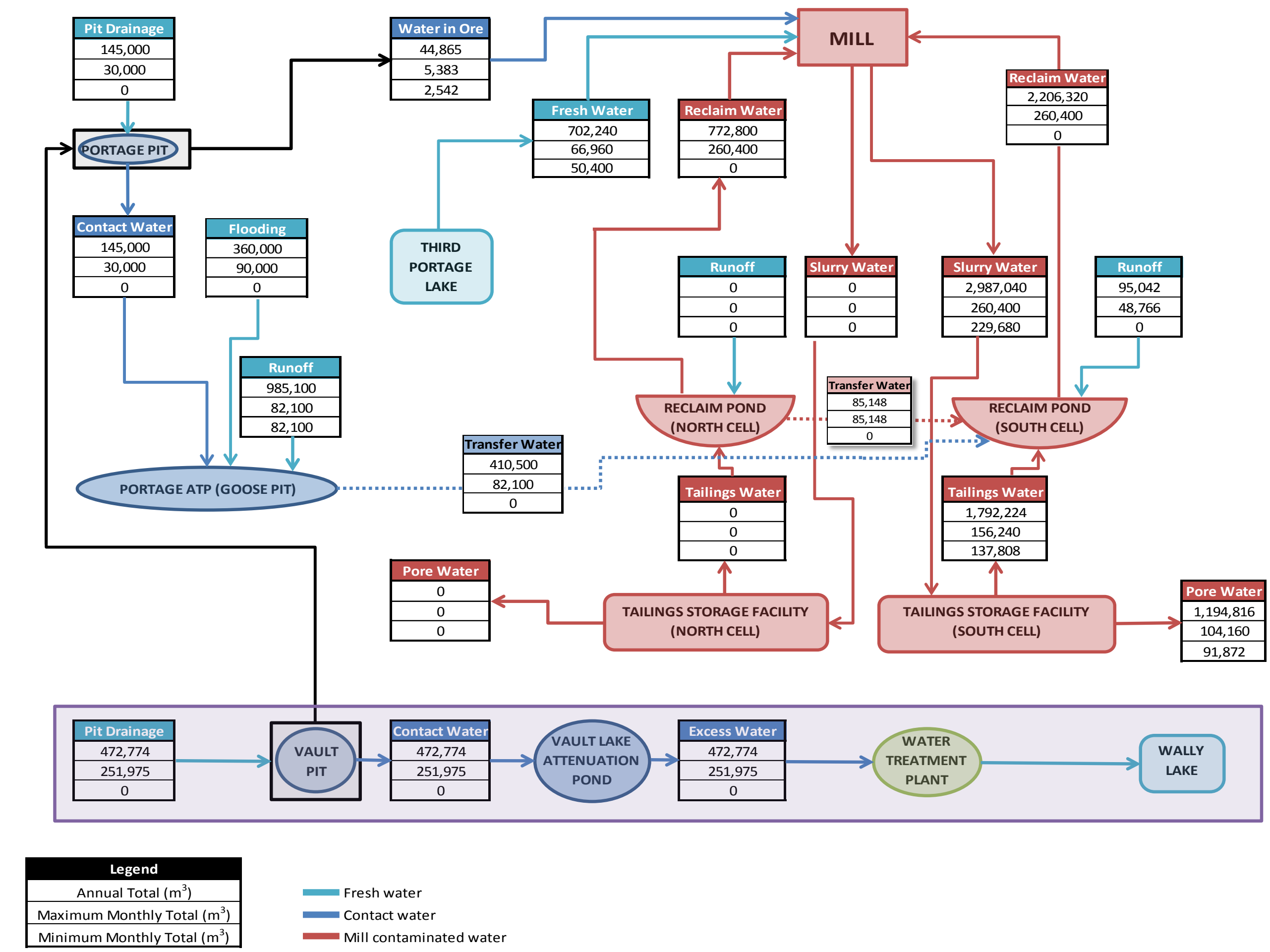
*Small water transfers are not shown on this drawing, refer to water balance tables for detailed water movement.

9.1.1.1.1.1.1.3 GENERAL WATER MOVEMENT – 2015



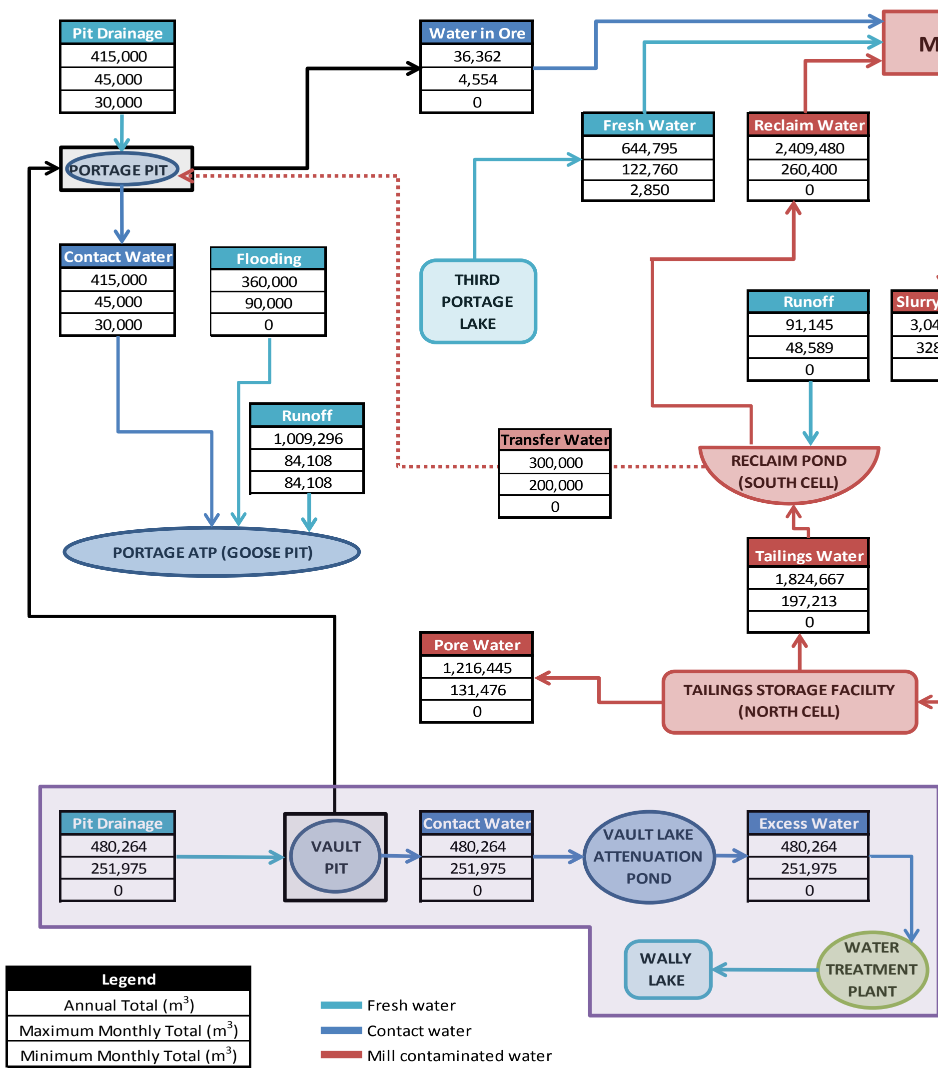
*Small water transfers are not shown on this drawing, refer to water balance tables for detailed water movement.

9.1.1.1.1.1.1.4 GENERAL WATER MOVEMENT – 2016



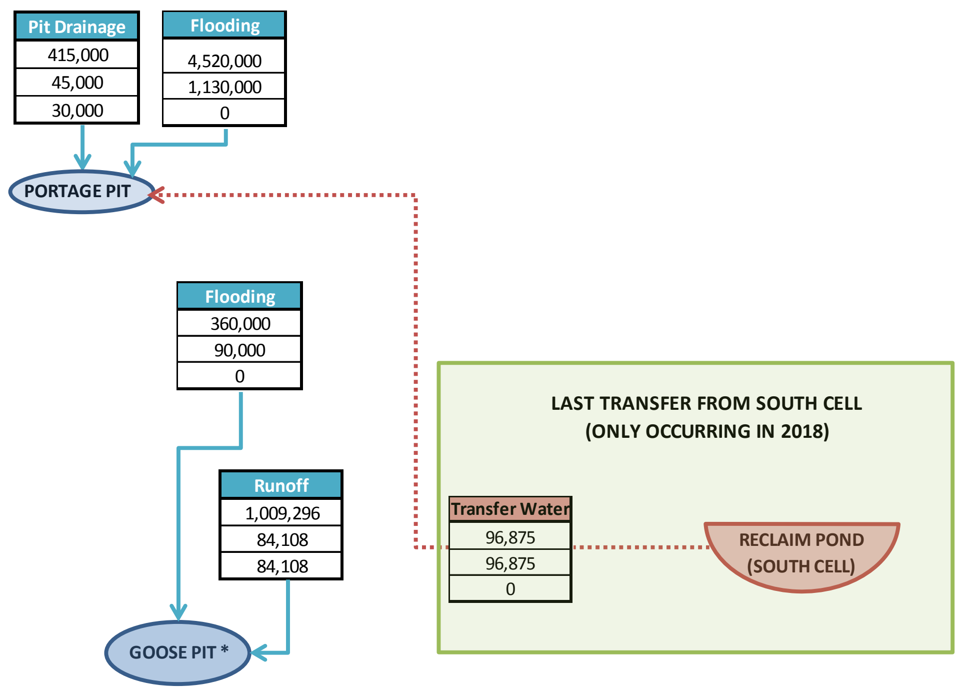
*Small water transfers are not shown on this drawing, refer to water balance tables for detailed water movement.

9.1.1.1.1.1.1.5 GENERAL WATER MOVEMENT – 2017

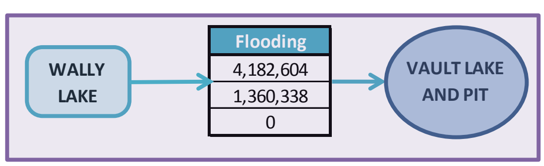


*Small water transfers are not shown on this drawing, refer to water balance tables for detailed water movement.

9.1.1.1.1.1.1.6 GENERAL WATER MOVEMENT: PIT FLOODING – 2018-2025



*Goose pit will finish flooding in 2022



Legend
Annual Total (m^3)
Maximum Monthly Total (m^3)
Minimum Monthly Total (m^3)

- Fresh water
- Contact water
- Mill contaminated water

APPENDIX C – ROCK STORAGE FACILITY SEEPAGE REPORT

January 2014

REPORT ON

Rock Storage Facility Seepage - Meadowbank Gold Mine, Nunavut

Submitted to:
Mr. Kevin Buck
Environmental Superintendent
Agnico-Eagle Mines Limited
Meadowbank Division
PO Box 540
Baker Lake, Nunavut X0C 0A0

REPORT

Report Number: Doc 1447 1312210115_0103_14 - MB
Rev 0 Ver 1
Distribution:

1 e-copy and 2 copies : Agnico-Eagle Mines Limited, Baker Lake NU
2 copies: Golder Associés Ltée, Montréal QC

Golder Associates

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1.0 INTRODUCTION

On November 8, 2013, Agnico-Eagle Mines Limited (AEM) received an inspector's direction from the Aboriginal Affairs and Northern Development of Canada (AANDC) related to the seepage of water from the Portage Rock Storage Facility (RSF) into Lake NP-2. According to the received direction, the RSF seepage contravenes AEM's type A water license #2AM-MEA0815 (water license). The inspector requested that AEM:

- Conduct an investigation about the release of waste from ST-16 sump location to Lake NP-2, which includes determining the source of the contaminated water in ST-16 sump;
- Conduct an investigation, in consultation with an independent firm, about possible failure of the Till plug designed to prevent waste from migrating out of ST-16 sump into Lake NP-2;
- Develop a plan in consultations with an independent engineering firm about:
  - Corrective measures that will be taken to immediately stop the release of waste;
  - Long term corrective measures that will be taken to secure waste in the future;
  - Counteraction and/or remediation of the adverse impacts of the prior releases.

On November 15, 2013, AEM requested that Golder Associates Ltd. (Golder) prepare an assessment report regarding the RSF based on the above. The assessment report includes findings and immediate actions, as well as presenting recommendations about the immediate- and long-term corrective actions.

2.0 BACKGROUND

This section presents the basic background information for the seepage through the RSF. The first subsection describes the general configuration of the concerned area and the second describes the basis of the assessment.

2.1 TSF and RSF Overview

Figure 1 presents the general configuration of the Tailings Storage Facility (TSF) and the RSF. The RSF is adjacent to the North Cell of the TSF and is used to store potentially acid generating (PAG) and non-acid generating (non-AG) waste rock. The North Cell of the TSF is used to store tailings and reclaim water for milling processes.

Rockfill roads RF1 and RF2 are located along the north-east side of the TSF and are perimeter structures that separate the RSF from the North Cell. The East and West diversion ditches are located around the northern area of the North Cell of the TSF to keep surface water from reaching the RSF and the TSF. Lake NP-2 and NP-1 are located north and east, respectively, of the RSF.

According to AEM, the access road between the RSF and Lake NP-2 was initially constructed to provide a separation between the RSF and Lake NP-2. It was also used to construct and service the diversion ditches (East and West) in 2012; this road is constructed with non-AG rockfill. The East Ditch flows through Lake NP-2 and connects to Lake NP-1. This ditch controls the water levels in these lakes such that the water level does not rise and overflow into the active mine area (i.e., the RSF).

2.2 Basis of the Assessment

During the AANDC Water License Inspection on July 29 and 30, 2013, AEM and the AANDC inspector observed red coloured seepage (suggesting the presence of iron precipitate) flowing from the northwest side of the RSF through the road perimeter into Lake NP-2, near monitoring station ST-16. Sample location ST-16 is a known area of seepage and is in a natural low depression area that serves as a sump.

AEM and the inspector took split water samples from Lake NP-2 and station ST-16. The chemical analyses from this sampling showed that these samples had elevated levels of metals (copper and nickel) when compared to samples collected at ST-16 from 2010 to July 2013, including a sample collected on July 11, 2013. Additional samples collected in August and September 2013 from ST-16 showed elevated concentration of copper, nickel and presence of cyanide. Additional sampling in Lake NP-2 showed that the same parameters were present in this lake at lower concentrations than ST-16.

When the red-coloured seepage was observed, AEM's immediate action plan (starting on July 27) consisted of dewatering the water from the sump area at the ST-16 water monitoring station. The sump area at sampling station ST-16 was completely dewatered by August 4, 2013. This action stopped the seepage to Lake NP-2 and confirmed that seepage from the RSF was visible at base of the RSF near the ST-16 location. Seepage water from the RSF was then redirected to the TSF North Cell by pumper trucks. AEM also designed and constructed a till plug on the upstream slope of the RSF perimeter road which, combined with the pumping program keeping a low water level within the sump, prevent the seepage from reaching Lake NP-2. Construction of till plug was performed between August 26 and September 1, 2013. Pumping of the sump continued on a regular basis from July 29 until approximately mid-October when the seepage water froze.

2.3 TSF and RSF Design Bases

The designs of the TSF and RSF were reviewed. The design of the TSF requires that a tailings beach is required against all perimeter structures of the TSF to reduce seepage from the TSF. In addition, the reclaim pond is to be operated towards the centre of the TSF North Cell to reduce seepage flow from the TSF (AEM 2009; Golder 2008b).

The rockfill roads of the TSF, RF1 and RF2, are designed as unlined rockfill roads for use as pipe berms for tailings deposition. The rockfill roads are designed for tailings containment and not to limit seepage. The design is based on the expectation that the seepage from the TSF to the RSF will be limited by the deposition of tailings adjacent to the rockfill faces, the operation of the Reclaim Pond toward the centre of the facility, and the freezing of tailings in the post-closure period (Golder 2011). The design recognizes the possibility of water moving from the TSF to the RSF once the pond reaches a certain elevation. It also notes, if necessary, the need to establish a system of contact water ditches and sumps to surround the RSF to capture and allow the monitoring of surface runoff and seepage from the RSF and direct it to suitable storage/treatment facilities (Golder 2011).

The RSF is expected to freeze within two years of placement, thereby reducing the risk of acid drainage and assisting in containing the seepage of water (Golder 2011). The RSF is to be capped with an insulating layer of non-AG rock.

3.0 REVIEW OF FACTUAL INFORMATION

Golder reviewed the available information to assess the current conditions and the potential sources of the seepage.

3.1 TSF and RSF Configuration

Prior to mine development, a watercourse ran from Lake NP-2 to the northwest arm of the Second Portage Lake where the TSF is now located as shown in Figure 1.

The water surface in Lake NP-2 is at El. 141.2 m, the base of the RSF on its north side (near ST-16) is at approximately El. 142 m, and the tailings pond water level was approximately between El. 145.6 m and 146.1 m from mid-July to mid-October 2013. This information confirms that the hydraulic gradient flows from the TSF to the sump at ST-16 upstream from Lake NP-2; this gradient is the reverse to that which existed before mine development started. This suggests the presence of saturated rockfill in a thawed condition at the bottom of the RSF having its water surface at El. 142 m; this corresponds to the seepage level at the exit of the RSF on its north side.

The review of the TSF operating configuration in September 2013 shows that tailings water was pounding directly against RF1 and RF2. Further, there was no tailings beach against RF2 and less than half of RF1 had a tailings beach. By mid-October, AEM confirms that the tailings beach along RF1 was covering 90% of the structure and that no beach along RF2 was yet in place.

It is also noted that the water management system consisting of diversion ditches surrounding the RSF is not completed.Since the water catchment basin of the TSF and RSF area directes the water towards the North and South Cells of the TSF and the only seepage observed out of the area is near the natural sump at sampling station ST-16, AEM considered that the provision of a collection system was not necessary. Rather, AEM used an observational approach at the natural sump and sampling station ST-16 to ensure that the water analyses results are appropriate.

3.2 Review of Monitoring and Sample Analyses

All the laboratory testing results provided by AEM to Golder, summarized below, are presented in Appendix A.

From July 30 to August 27, 2013, various water samples were taken by AEM and the AANDC inspector at sampling station ST-16 and at various sampling station on Lake NP-2 and NP-1. The locations of these samples are shown in Figure 3.

Starting August 28, 2013, AEM implemented a short-term monitoring program that included daily monitoring of weak acid dissociable cyanide (CN WAD) at the seepage area ST-16 and at NP-2 South. This short-term cyanide program used the non-accredited onsite assay lab. The program also includes once every-two-weeks monitoring for total and dissolved metals, general chemistry as well as total and free cyanide at sampling station ST-16, NP-2 South, NP-2 East and NP-2 West. These analyses were performed by Multi-Lab, an accredited laboratory. The once every-two-weeks monitoring was temporarily stopped in October due to the frozen conditions. A monthly monitoring station has been set for the winter on Lake NP-2; refer to Figure 3. The locations of the sampling areas as part of the short-term monitoring program are shown in Figure 4.

AEM provided Golder with the results of the sample analyses described above. Historical results at station ST-16 and the results from sampling station ST-21 (located inside the TSF) were also made available for comparison purposes. Multi Lab provided comments to AEM that it is difficult to compare the results from Multi Lab and those from AEM's onsite laboratory because the onsite free cyanide analysis is based on a qualitative method rather than a distillation standardized method used for the total and WAD cyanide.

The results show that the concentrations of copper, nickel, ammonia, and cyanide exceed the CCME criteria for Protection of Aquatic Life. The result of the trout toxicity test, sampled on August 28, show that the concentration was not lethal. An additional toxicity sample was taken on Dec 9, 2013 and the result was also not lethal for trout. A sample was analysed for copper in Lake NP-1 on August 21, 2013 and showed a low concentration. The concentration of metals observed from July 30 to August 27, 2013 at sampling station ST-16 are higher than the historical results from 100 to 1,000 times. These results are similar to the results from the samples taken at ST-21 inside the TSF, except for the concentration of iron which is much higher at ST-16 than at ST-21. These results, coupled with the presence of cyanide at ST-16, indicate that the origin of the seepage water is from the TSF.

The results from the short-term monitoring program show that the concentrations of metals and cyanide at sampling station ST-16 and in Lake NP-2 decreased from August to October 2013. This is an indication that the immediate actions taken by AEM to pump and control the RSF seepage were effective in decreasing the concentrations of metals and cyanide.

3.3 Thermistor Data

Golder reviewed the thermistor data in the area of the RSF. The location of these thermistors and their temperature versus depth profiles during 2012 and 2013 are shown in Figure 5. Figure 5 was developed using the TSF - Instrumentation Review document provided by AEM and is presented in Appendix C. The following points were developed during the review of the thermistor data:

- The thermistor inside the North Cell of the TSF (T-90-2) shows that the tailings are below 0^{o}C near Saddle Dam 1. This thermal condition, coupled with the expectation that the tailings are saturated, indicates that the tailings are frozen in this area.
- The thermistor inside the RSF (RSF-1) indicates that the waste rock pile is below 0^{o}C at this location. This thermistor is located in an area where the natural ground surface is above El. 142 m.
- RF2 (T122-1) indicates that rockfill road RF2 is below 0^{o}C in this area.
- The RF1-3 thermistor is installed along the upstream slope in a PVC casing partially covered with tailings. RF1-3 indicates that the tailings are thawed from their surface at approximately El. 145 m down to approximately El. 144.2 m. Below El. 144.2 m, the temperature is below 0^{o}C; as the tailings are expected to be saturated in this location, it is inferred that the tailings are frozen below El. 144.2 m.
- RF1-1 (T121-1) indicates that the rockfill was below 0^{o}C throughout 2013 at this location. Note that the natural ground surface is relatively shallow in this area.
- RF1-2 is located close to the former watercourse (like RF1-1) but its natural ground surface is at a lower level and indicates that the rockfill is thawed at the tailings water level (El. 145.7 m) and below 0^{o}C below El. 143 m. As the tailings are expected to be saturated, the tailings are expected to be frozen below El. 143 m.

These observations indicate that some parts of the rockfill road RF1 are not frozen due to thermal conditions (i.e., temperatures above 0°C) and the lack of saturated rockfill.

From November 8 to 11, 2013, AEM installed four additional thermistors in the RSF (RSF3 to RSF6) to monitor the temperatures in the structure and in the vicinity of the former lake and water course between Lake NP-2 and the second Portage arm (North Cell). The locations of these instruments are shown in Figure 5. The available results are limited for interpretation as the instruments are still showing a cooling trend but these data will be helpful to follow the freezing of the RSF along the former water course.

The following are noted based on a review of the data to December 6, 2013 for thermistors RSF3 to RSF6, inclusive:

- Thermistor RSF3 shows that the rockfill is at temperatures ranging from 0 to -5°C.
- Thermistor RSF4 shows temperatures in the rockfill from 2 to – 10°C.
- Thermistor RSF5 shows temperatures in the rockfill from 0 to -5°C.
- Thermistor RSF6 shows that the temperature of the rockfill ranges from -2 to -9°C.

Thermistors RSF3 to RSF6, inclusive, show that the thermistors continue to adjust to the ground temperature conditions; this is expected due to their recent installation dates. Continued monitoring of these thermistors is required for future interpretation.

4.0 SUMMARY OF AEM'S MITIGATION STRATEGY

Golder reviewed AEM's preliminary report on the seepage of water from the waste rock storage facility (included in Appendix B). This report contains AEM's findings and actions for the RSF. From the review of this document and from additional information provided by AEM, the following items are noted:

- AEM established a short-term monitoring program, as presented in Section 3.2, and will keep sampling one location during the winter;
- AEM established a pumping program (by pumper truck) to keep the water level low in the sump at sampling station ST-16 and to pump the seepage back into the TSF;
- AEM constructed a till plug to limit the seepage from the RSF to Lake NP-2. AEM will increase the pumping of the seepage water into the sump. The construction summary report of this structure was provided to Golder and is presented in Appendix D. ;
- AEM modified the tailings deposition plan to promote the development of tailings beaches against RF1 and RF2 and to ensure that the reclaim pond is operated away from the rockfill roads. AEM changed the tailings discharge point on September 2, 2013 to promote the development of a tailings beach against RF1 where tailings water was pounding directly against the structure. A new deposition plan was completed by AEM on November 17, 2013 and is presented in Appendix E.
- AEM installed four additional thermistors in the RSF to monitor ground temperatures in this area.
- AEM estimated the 2014 freshet water quantities for the freshet season emergency plan preparedness.

5.0 ASSESSMENT ON RSF SEEPAGE FINDINGS AND AEM'S MITIGATION PLAN

Golder considers that the long-term design intent of the TSF and the RSF can still be met provided that the design is executed in the field. The requirements include providing tailings beaches along any of the TSF perimeter structures, including the rockfill roads, and operating the reclaim pond toward the centre of the facility, namely, away from dikes and rockfill roads. It is to be noted that the concept envisaged the possibility of seepage. This is the reason why a contact water collection system was planned as a contingency measure.

TSF and RSF Configuration

The review of the TSF operating configuration indicates that tailings water was ponding directly against RF1 and RF2; these are perimeter structures of the TSF. The formation and maintenance of tailings beaches are required at all perimeter structures of the TSF to limit seepage from the facility and to maintain the reclaim pond in a centralized location. The updated deposition plan prepared, and currently being used, by AEM focusses on beach development at RF1 and RF2.

The water management system, consisting of diversion ditches surrounding the RSF has not been required to date. AEM stated that this system has not yet been constructed due to the ability of AEM to manage the seepage appropriately historically. The pumping activities and the construction of the till plug are considered to be effective seepage control measures.

Monitoring and Sample Analysis

Golder agrees with AEM that the cause of the high metals and cyanide concentration of the RSF seepage near ST-16 is due to the ingress of process water from the TSF. This suggests the presence of saturated and thawed rockfill linking the TSF to the RSF seepage near sampling station ST-16.

From the review of the data at the sampling station ST-16 and within Lake NP-2, where the metals and cyanide concentration decreased from August 4 to mid-October, it appears that the till plug, combined with the pumping program to maintain a low water level within the sump at sampling station ST-16, were appropriate measures to prevent further seepage from reaching Lake NP-2.

Till Plug

The till plug is constructed of low permeability till material placed on a granular filter layer against the rockfill road. This structure is considered to be physically stable. In terms of seepage control, the performance of the till plug and the associated pumping keeping a low water level in the sump at the sampling station ST-16 appears to be effective in managing seepage to Lake NP-2.

Thermistor Data

From the thermistor data, it is noted that the tailings near SD1 are frozen. Freeze-back of the tailings reduces the seepage of water from the TSF. It is expected that the tailings adjacent to RF1 and RF2, following the formation of the tailing beaches in these locations, would also freeze, thereby limiting seepage through the rockfill roads to the RSF.

The flow of tailings water through the RSF is complex and cannot be readily tracked with thermistors or others instruments. The recently-installed thermistors in the RSF will allow monitoring of the ground temperatures. This information will further enable overall monitoring of thermal and seepage conditions in and around the RSF.

2014 Freshet Water Quantity

AEM has estimated the 2014 freshet water quantity in preparing the freshet season emergency plan. Golder did not review this work. This evaluation should provide suitable information to help plan for the 2014 freshet season. This may include determining if a pumper truck, the sump, and the till plug at ST-16 will be adequate during the 2014 freshet.

6.0 RECOMMENDATIONS

Based on review summarized above, Golder recommends the following:

1) AEM should continue to develop and maintain tailings beaches adjacent to RF1 and RF2 and to operate the Reclaim Pond towards the centre of the TSF. These are the key recommendations.

2) AEM should consider the installation of additional water management infrastructure which could take the form of a permanent collection and pumping system at the sampling station ST-16 current sump. Also, consideration should be given for contact water ditches and sumps in the surrounding areas of the RSF if additional seepages of contaminated water are observed in the future.

3) The seepage at station ST-16 should continue to be collected and redirected to the TSF and monitored (location, quantity, quality). Continued monitoring is strongly recommended during the winter for seepage water quantity monitoring and possible development of an ice plug in the RSF. The area at ST-16 should be kept clean of snow to allow visual observation and to ensure that water at ST-16 does not overflow over the till plug into Lake NP-2.

4) Regular inspections all around the RSF should be performed, particularly during freshet, to ensure that runoff or any observed seepage is controlled and monitored prior to being released into the environment if the analyses results meet the requirement.

5) AEM should continue to monitor the tailings and waste rock freeze back following the Thermistor Monitoring Plan in accordance with Part 1, Item 11 of the Type-A water license.

6) AEM should provide the results of the 2014 monitoring to Golder for review and comment.

7.0 REPORT CLOSURE

We trust that this report satisfies your current requirements. Please contact the undersigned should you have any questions.

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Reviewed by:

FOR

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FLB/YB/AB/PMB/

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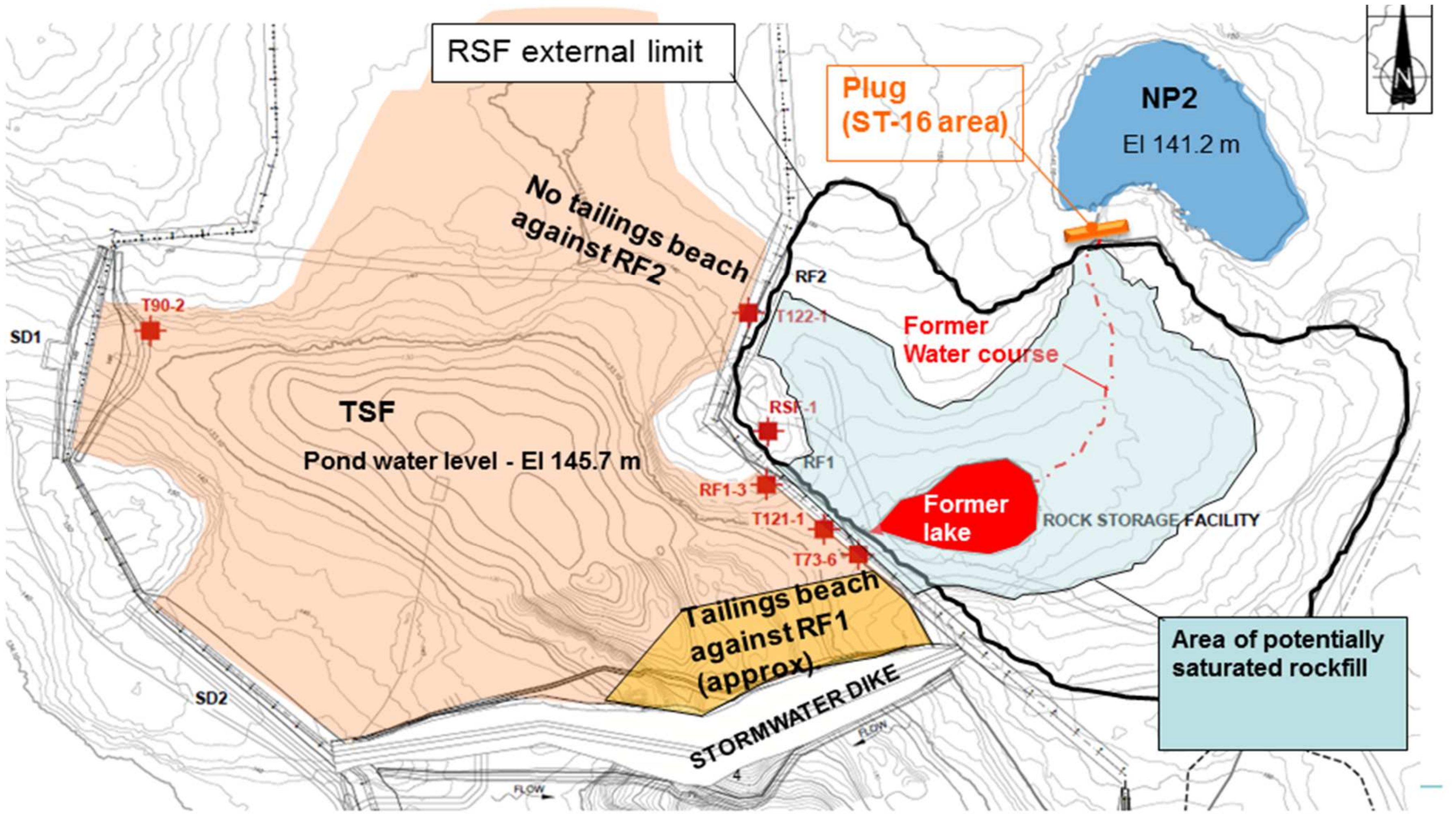
GENERAL CONFIGURATION OF THE TSF AND RSF FACILITIES



Golder Associés	Date : December 2013 Project : 13-1221-0115	AGNICO-EAGLE MINES MEADOWBANK DIVISION	**FIGURE 1**

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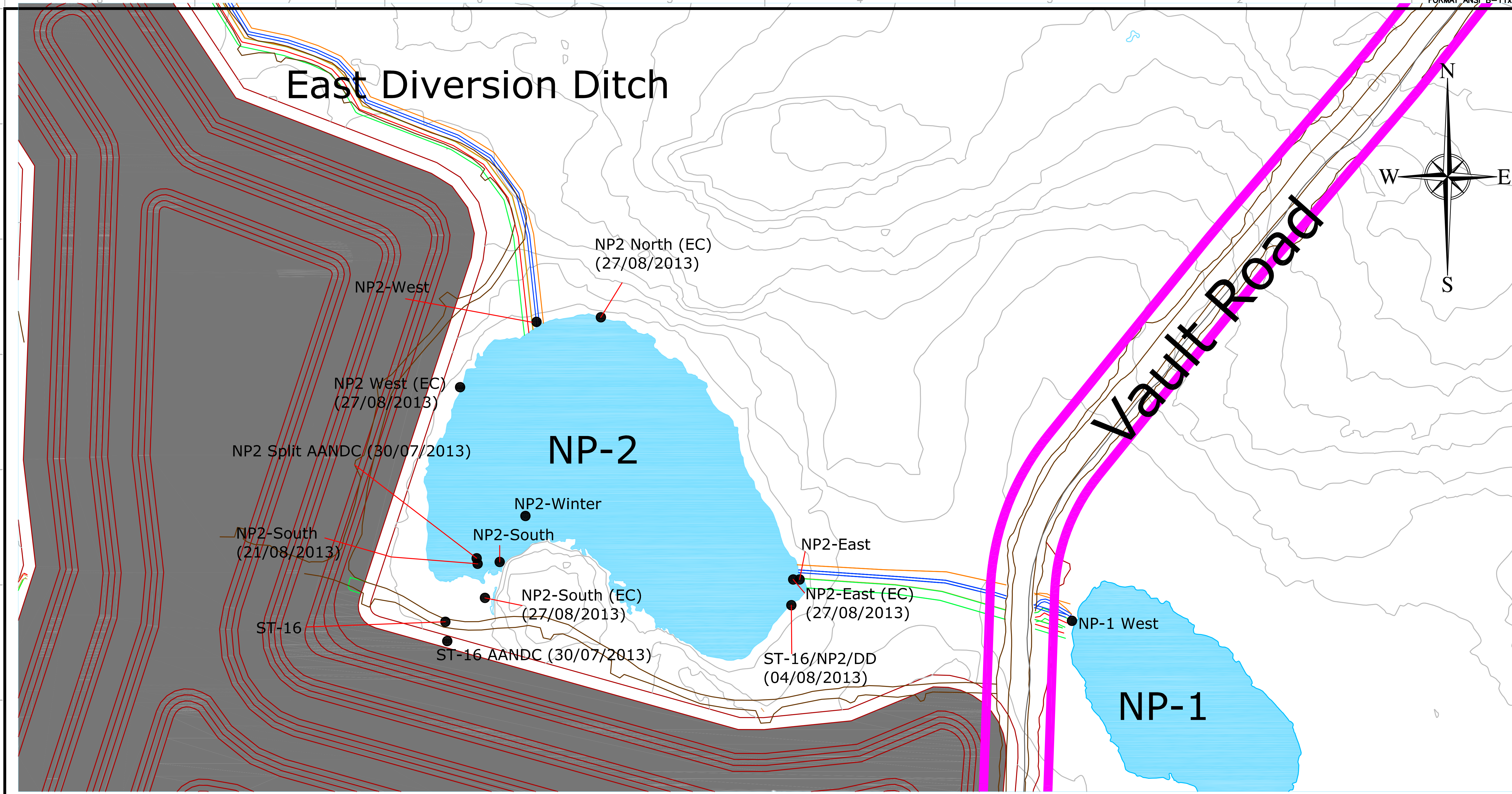

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

DESSINÉ PAR / DRAWN BY	Marie–Pier Marcil	DATE	30–08–2013
VÉRIFIÉ PAR / CHECKED BY			
APPROUVÉ PAR / APPROVED BY			
No. PROJET / PROJECT NO.			
DATE			

TITRE / TITLE
AGNICO EAGLE – Meadowbank Division

2013 Monitoring Station Seep + NP2 Lake
Sampling Location from July 30 to August 27, 2013

ÉCHELLE/ SCALE: NA
FICHIER FILE: .DWG
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FEUILLE/SHT: 1 / 1

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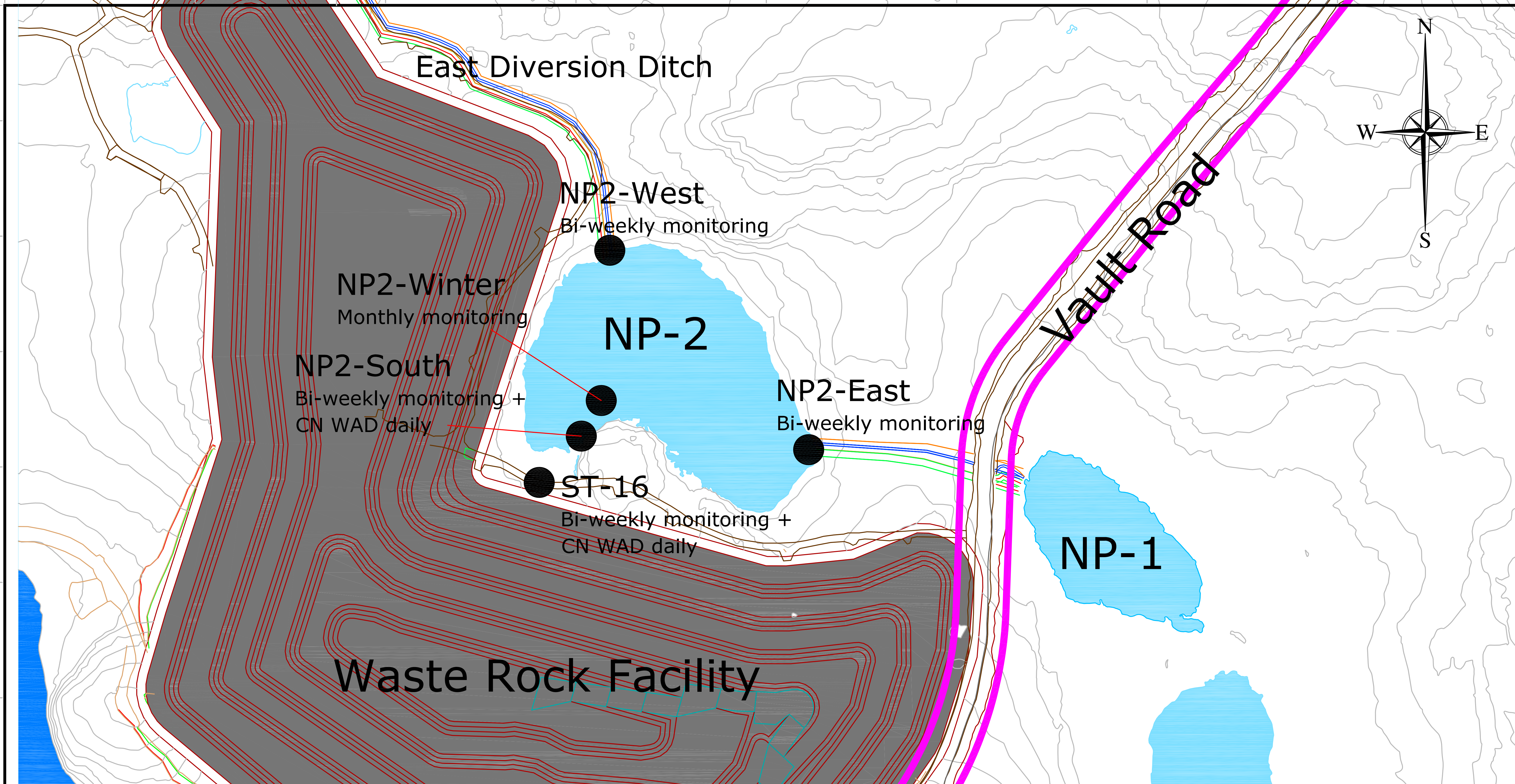

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY
1	Updated map	21/11/2013	MPM

REVISIONS

AGNICO EAGLE

DESSINÉ PAR DRAWN BY	Marie–Pier Marcil	DATE 30–08–2013
VÉRIFIÉ PAR CHECKED BY		
APPROUVÉ PAR APPROVED BY		
No. PROJET PROJECT NO.		
DATE		

TITRE / TITLE
AGNICO EAGLE – Meadowbank Division

2013 Bi–weekly/Monthly Monitoring Station RSF Seepage
Short-Term Monitoring Program

ÉCHELLE/ SCALE	NA	FICHIER FILE	.DWG

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FIGURE 3	1	1 / 1

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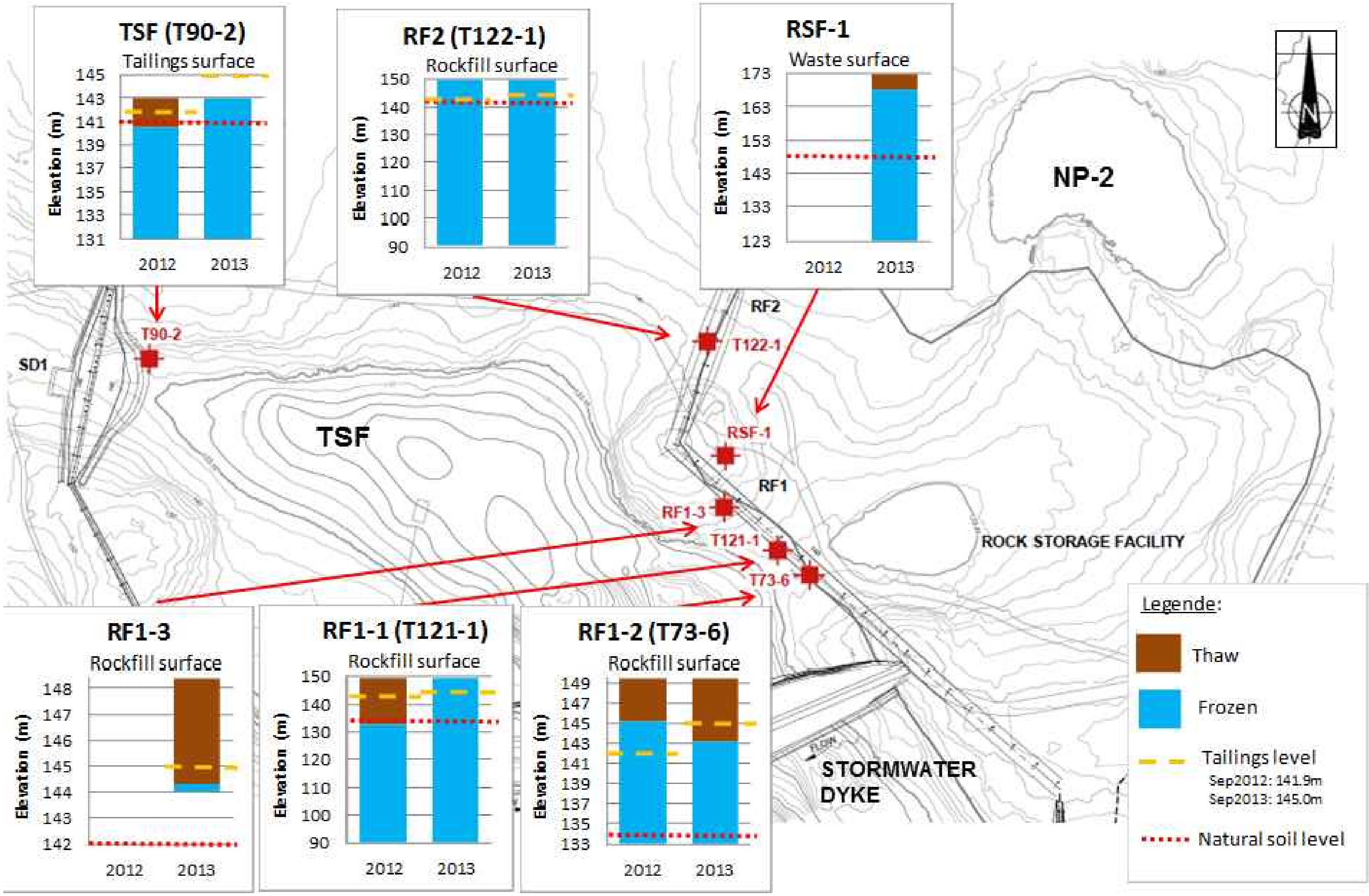

PROJECT

AGNICO-EAGLE MINES - MEADOWBANK DIVISION

TITLE

THERMISTORS LOCATION AND READINGS

Golder Associates

PROJECT No.	13-1221-0115		FILE No.	1312210115-01
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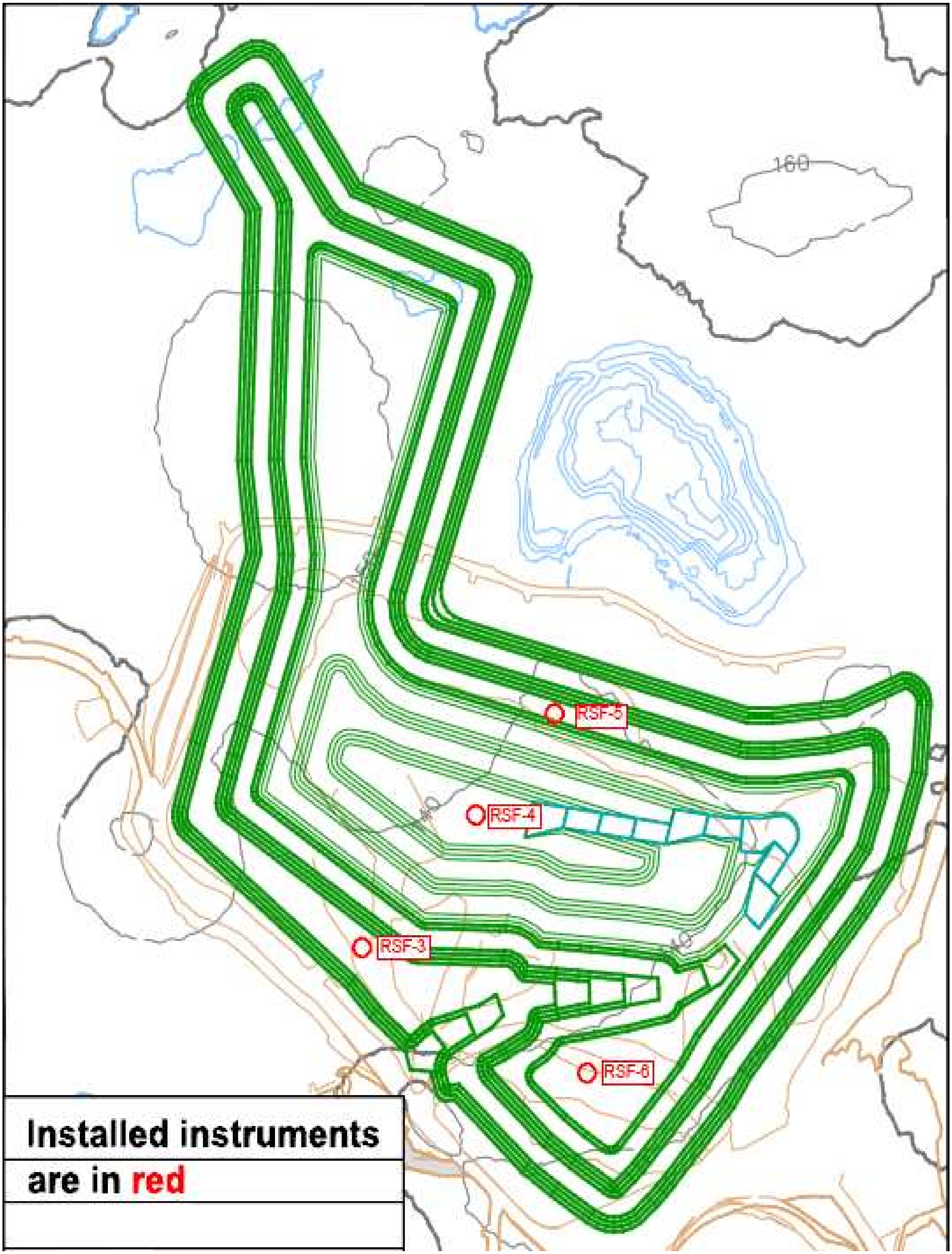
REVIEW	-	-		

LOCATION OF THERMISTOR INSTALLED IN THE RSF IN NOVEMBER 2013



Golder Associés	Date : Dec, 2013 Project : 13-1221-0115	Figure provided by AEM	**FIGURE 5**

APPENDIX A

Chemical Analysis Results provided by AEM

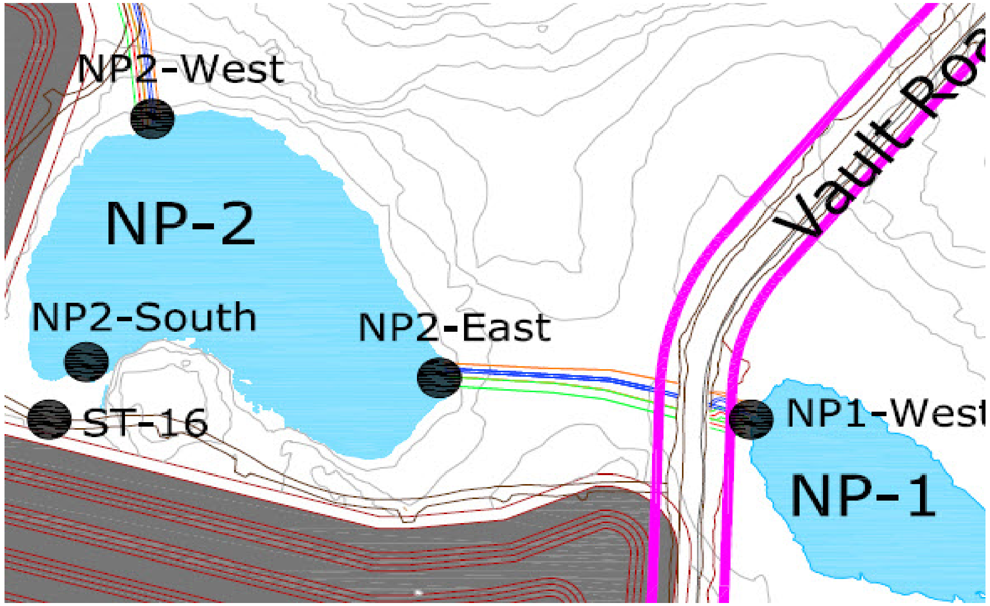
Table 1 – Historical ST-16 Results

Parameters	Date / Units	ST-16 Average 2011	ST-16 Average 2012	ST-16 11/06/2013	ST-16 04/07/2013	ST-16 Split 30/07/2013	ST-16 Split AANDC Result 30/07/2013
*pH		6.49	7.30	6.45	7.21		7.20
*Turbidity	NTU	17	34		17		123
*Conductivity	us/cm		154	420	1485		4510
Alkalinity	mg CaCo3/L	34	67	46	89	272	162
Aluminum	mg/L	0.159	0.513		0.464	0.042	0.045
Dissolved Aluminium	mg/L				0.027	< 0.006	
Ammonia	mgN/L	0.07	0.03	< 0.05	0.20	1.20	
Ammonia-nitrogen	mgN/L		0.22	0.45	7.80	34.00	
Total Dissolved Solids	mg/L	55	175	37	969	3792	
Total Suspended Solids	mg/L						50
Arsenic	mg/L	0.0020	0.0045	0.0029	0.0091	0.0139	0.0083
Dissolved As	mg/L				0.0031	0.0058	
Barium	mg/L	0.0095	0.0196		0.0741	0.1414	0.1480
Dissolved Barium	mg/L				0.0558	0.1433	
Cadmium	mg/L	0.00060	0.00004		0.00014	0.00065	0.00020
Dissolved Cadmium	mg/L				0.0001	0.0007	
Chloride	mg/L	2	3		15	450	192
Chromium	mg/L		0.0048		0.0034	0.0011	0.0010
Copper	mg/L	0.0017	0.0046	0.0028	2.3110	2.0380	3.3500
Dissolved Copper	mg/L				1.909	1.712	
Fluoride	mg/L	0.106	0.098		0.110	0.290	
Hardness	mg CaCO3/L	62	59		361	1417	1020
Iron	mg/L	1.21	1.94		1.60	4.40	21.90
Dissolved Iron	mg/L				0.17	0.06	
Lead	mg/L	0.0010	0.0056	< 0.0003	0.0015	0.0013	< 0.0001
Dissolved Lead	mg/L				< 0.0003	< 0.0003	
Manganese	mg/L	0.588	0.961		2.447	6.370	5.850
Dissolved Manganese	mg/L				2.110	6.055	
Mercury	mg/L	0.00062	0.00007		< 0.00010	0.00005	0.00015
Dissolved Mercury	mg/L				< 0.0001	< 0.0001	
Molybdenum	mg/L	0.001	0.001		0.026	0.170	0.083
Dissolved Molybdenum	mg/L				0.0204	0.1773	
Nickel	mg/L	0.0339	0.0395	0.0069	0.5149	2.0150	1.3300
Dissolved Nickel	mg/L				0.415	1.810	
Nitrate	mg/L	0.17	0.34		8.10	37.80	23.70
Selenium	mg/L	0.002	0.001		0.007	0.020	0.013
Dissolved Selenium	mg/L				0.005	0.023	

Silver	mg/L	0.0006	0.0049				0.0056
Dissolved Silver	mg/L				< 0.0002	0.0019	
Sulphate	mg/L	24	9		406	2400	1450
Thallium	mg/L	0.0025	0.0025		< 0.0050	< 0.0050	< 0.0001
Dissolved Thallium	mg/L				< 0.005	<	
Zinc	mg/L	0.005	0.008	< 0.001	0.010	0.009	< 0.005
Dissolved Zinc	mg/L				0.003	0.008	
Calcium (Ca)	mg/L						312
Magnesium (Mg)	mg/L						60
Potassium (K)	mg/L						88
Sodium (Na)	mg/L						590
Cesium	mg/L						0.0009
Rubidium	mg/L						0.0687
Ortho-Phosphate as Phosphorus	mg/L						
Antimony (Sb)	mg/L				0.0004	0.0012	0.0007
Boron (B)	mg/L				0.04	0.15	
Beryllium (Be)	mg/L				< 0.0005	< 0.0005	< 0.0001
Cobalt (Co)	mg/L				0.0729	0.3114	0.2290
Lithium (Li)	mg/L				< 0.005	0.006	0.004
Tin (Sn)	mg/L				< 0.001	< 0.001	
Strontium (Sr)	mg/L				0.44	2.14	1.40
Tianium (Ti)	mg/L				0.1300	0.5500	0.0007
Uranium (U)	mg/L				0.034	0.170	0.115
Vanadium (V)	mg/L				< 0.0005	< 0.0005	0.0011
Nitrite	mg/L				0.07	0.41	

Cyanide WAD (provided by AEM)

Date	location		
	ST-16		
	east	west	south
2013-08-21			
2013-08-27			
2013-08-28	7,280	3,38	
2013-08-29	3,960		0,2930
2013-08-30	1,520		0,0810
2013-08-31	1,290		0,0694
2013-09-01	0,970		0,0247
2013-09-02	2,830		0,0671
2013-09-03	2,500		0,0120
2013-09-04	2,490		0,5440
2013-09-05	1,600		0,0204
2013-09-07	1,650		0,0289
2013-09-10	0,671		0,3320
2013-09-13	2,150		0,0247
2013-09-15	0,459		0,0289
2013-09-17	0,443		0,0723
2013-09-19	0,493		<0.01
2013-09-21	0,070		0,0600
2013-09-23	0,050		<0.01
2013-09-25	0,063		0,0162
2013-09-27	0,148		<0.01
2013-09-29	0,556		0,0332
2013-10-01	0,091		0,0341
2013-10-02	0,204		0,0772
2013-10-08	0,154		0,0482
2013-10-11	0,069		0,0553



Data provided by AEM

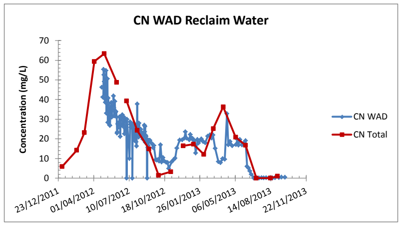
Parameters	Date / Unit	ST-16						NP-2 South						NP2- winter
		30-juil-13	21-août-13	27-08-2013	10-09-2013	23-09-2013	02-10-2013	30-juil-13	21-08-2013	27-08-2013	10-09-2013	23-09-2013	02-10-2013	17-11-2013
Alaklinity	mg CaCo3/L	272			174	92	106	177			55	54	55	
Ammonia nitrogen (NH3-NH4)	mg N/L	34			11,4	7,2	8,2	27,4			3,4	3,6	3,9	
TDS	mg/L	3792			934	640	617	2854			266	277	262	
CN total	mg/L		6,47	0,036	0,18	0,068	1,2		0,069	0,007	0,013	0,014	0,03	
CN Free	mg/L				3	2,5	6				1	1	1	
pH (Env. Dept.)					7,1	7,05	7,01				7	6,73	7,47	7,36
Conductivity (Env. Dept.)					1879	1083	1095				395	442	424	501
Turbidity (Env. Dept.)	NTU				20,4	7,57	8,18				2,83	3,87	3,43	2,36
Chloride	mg/L	450			175	94,1	86	587			21,7	18,7	17,6	
Fluoride	mg/L	0,29			0,26	0,26	0,22	0,02			0,13	0,03	0,12	
Hardness	mg CaCo3/L	1417			458	216	268	1031			134	101	106	
Nitrate	mg/L	37,8			5	3,9	2,9	23,5			1,3	1,3	1,2	
Nitrite	mg/L	0,41			1	0,68	1	0,4			0,16	0,14	0,14	
Sulphate	mg/L	2400			643	338	329	1546			110	118	111	
Dissolved Aluminium (Al)	mg/L	<0.006			<0.006	<0.006	<0.006	<0.006			<0.006	<0.006	0,117	
Dissolved Arsenic (As)	mg/L	0,0058			<0.0005	<0.0001	<0.0005	0,0022			<0.0005	<0.0005	<0.0005	
Dissolved Barium (Ba)	mg/L	0,1433			0,0439	0,0223	0,032	0,1329			0,0135	0,0117	0,0133	
Dissolved Cadmium (Cd)	mg/L	0,00065			0,00009	0,00003	<0.00002	0,00022			<0.00002	<0.00002	0,00218	
Dissolved Copper (Cu)	mg/L	1,712			0,4663	0,046	0,0017	2,949			0,0081	<0.0005	0,0217	
Dissolved Iron (Fe)	mg/L	4,4			0,16	0,08	0,03	0,15			0,01	0,02	0,39	
Dissolved Lead (Pb)	mg/L	<0.0003			<0.0003	<0.0003	<0.0003	<0.0003			<0.0003	0,0011	<0.0003	
Dissolved Manganese (Mn)	mg/L	6,055			5,441	2,644	0,0337	5,427			0,1781	0,1094	0,1065	
Dissolved Mercury (Hg)	mg/L	<0.0001			<0.0001	<0.0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001	
Dissolved Molybdenum (Mo)	mg/L	0,1773			0,0222	0,0122	0,0027	0,0716			<0.0005	0,0009	0,0033	
Dissolved Nickel (Ni)	mg/L	1,81			0,3017	0,1065	0,0197	1,246			0,0324	0,0269	0,0298	
Dissolved Selenium (Se)	mg/L	0,023			0,004	0,002	0,003	0,014			<0.001	<0.001	0,001	
Dissolved Silver (Ag)	mg/L	0,0019			<0.0001	<0.0003	<0.0001	0,0024			<0.0001	<0.0001	0,0007	
Dissolved Thallium (Tl)	mg/L	<0.005			<0.005	<0.005		<0.005			<0.005	<0.005		
Dissolved Zinc (Zn)	mg/L	0,008			0,019	0,014		0,007			0,008	<0.001		
Aluminium (Al)	mg/L	0,042			0,078	0,048	0,15	0,024			0,008	0,011	0,154	
Antimony (Sb)	mg/L	0,0012			<0.0001	0,0001	<0.0001	0,0004			<0.0001	<0.0001	<0.0001	
Arsenic (As)	mg/L	0,0139		0,0241	0,0044	0,0019	<0.0005	0,0068		0,0015	<0.0005	0,001	<0.0005	
Boron (B)	mg/L	0,15			0,07	0,02	0,04	0,09			<0.01	<0.01	<0.01	
Barium (Ba)	mg/L	0,1414			0,0451	0,0239	0,0331	0,1419			0,0147	0,0133	0,0133	
Beryllium (Be)	mg/L	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	
Cadmium (Cd)	mg/L	0,00065			0,00034	<0.00002	0,00004	0,0003			<0.00002	<0.00002	<0.00002	
Copper (Cu)	mg/L	2,038		3,281	0,4963	0,0583	0,1417	3,261	0,1173	0,0887	0,0081	<0.0005	0,022	
Chromium (Cr)	mg/L	0,0011			<0.0006	<0.0006	<0.0006	<0.0006			<0.0006	<0.0006	<0.0006	
Cobalt (Co)	mg/L	0,3114			0,0808	0,0333	0,0412	0,2515			0,0106	0,0087	0,0079	
Iron (Fe)	mg/L	4,4		21,3	2,9	1,1	1,5	23,6		1,9	0,55	0,42	0,42	
Lithium (Li)	mg/L	0,006			<0.005	0,016	<0.005	0,005			<0.005	0,012	<0.005	
Manganese (Mn)	mg/L	6,37			5,533	2,628	3,287	6,464			0,1975	0,1189	0,0903	
Mercury (Hg)	mg/L	0,00005			<0.00001	<0.00001	<0.00001	0,00002			<0.00001	<0.00001	<0.00001	
Molybdenum (Mo)	mg/L	0,1704			0,0234	0,0128	0,0129	0,0871			0,0015	0,001	0,0008	
Nickel (Ni)	mg/L	2,015		1,227	0,2966	0,1092	0,1501	1,465		0,1319	0,0348	0,0287	0,037	
Lead (Pb)	mg/L	0,0013		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	
Selenium (Se)	mg/L	0,02			0,005	0,002	0,004	0,014			<0.001	<0.001	0,001	
Tin (Sn)	mg/L	<0.001			<0.001	<0.001	<0.001	<0.001			<0.001	<0.001	<0.001	
Strontium (Sr)	mg/L	2,14			0,439	0,27	0,317	1,62			0,118	0,112	0,131	
Titanium (Ti)	mg/L	0,55			0,16	0,06	0,05	0,39			0,03	0,02	0,02	
Thallium (Tl)	mg/L	<0.005			<0.005	<0.005	<0.005	<0.005			<0.005	<0.005	<0.005	
Uranium (U)	mg/L	0,17			0,018	0,006	0,008	0,144			0,002	0,001	0,001	
Vanadium (V)	mg/L	<0.0005			<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005	
Zinc (Zn)	mg/L	0,009		0,009	0,05	0,014	0,005	0,006		0,001	<0.001	<0.001	0,002	
							mt						mt	

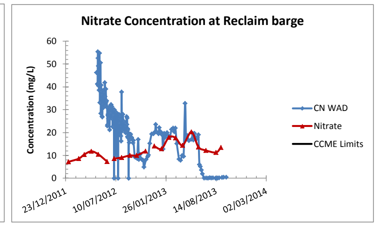
Data provided by AEM

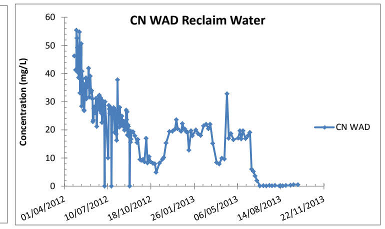
	Date	NP-2 East						JK	NP-2 West					NP-2 North	NP-1 West	Phaser Lake		JK
Parameters	Unit	04-août-12	21-08-2013	27-08-2013	30-08-2013	10-09-2013	23-09-2013	02-10-2013	21-08-2013	30-08-2013	10-09-2013	23-09-2013	02-10-2013	27-08-2013	21-08-2013	10-09-2013	23-09-2013	02-10-2013
Alaklinity	mg CaCo3/L					54	54	55			54,0000	54,0000	55,0000			49	49	45
Ammonia nitrogen (NH3-NH4)	mg N/L					3,2	3,8	3,9			3,1000	3,6000	3,8000			0,08	0,32	<0.01
TDS	mg/L					281	276	264			284,0000	279,0000	263,0000			36	36	36
CN total	mg/L			0,012	0,018	0,011	0,014	0,014		0,0100	0,0170	0,0150	0,0170	0,017		0,007	<0.005	<0.005
CN Free	mg/L					1	<1	1			3	<1	1			<1	<1	<1
pH (Env. Dept.)						7,07	6,98	7,34			7,0400	6,8400	7,5400			6,83	7,12	7,57
Conductivity (Env. Dept.)						403	439	418			400,0000	446,0000	419,0000			37	56,2	60,1
Turbidity (Env. Dept.)	NTU					2,71	4,7	3,05			3,6800	3,7500	3,1400			0,7	0,68	0,56
Chloride	mg/L					21,3	19,2	16,8			20,9000	19,0000	17,1000			1,2	0,8	1,1
Fluoride	mg/L					0,12	0,02	0,12			0,0900	0,0200	0,1500			0,15	0,03	0,12
Hardness	mg CaCo3/L					122	104	108			131,0000	94,0000	102,0000			26	19	23
Nitrate	mg/L					3,1	1,3	1,4			1,2000	1,3000	1,3000			0,03	0,07	0,15
Nitrite	mg/L					0,16	0,14	0,14			0,1600	0,1400	0,1600			<0.01	<0.01	<0.01
Sulphate	mg/L					110	115	113			111,0000	118,0000	113,0000			3,9	8,3	4,2
Dissolved Aluminium (Al)	mg/L					0,012	<0.006	<0.006			0,0270	<0.006	<0.006			<0.006	<0.006	<0.006
Dissolved Arsenic (As)	mg/L					<0.0005	<0.0005	0,0006			<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	0,0006
Dissolved Barium (Ba)	mg/L					0,0133	0,0127	0,0136			0,0129	0,0114	0,0138			0,002	0,0019	0,0026
Dissolved Cadmium (Cd)	mg/L					<0.00002	<0.00002	<0.00002			<0.00002	<0.00002	<0.00002			<0.00002	<0.00002	<0.00002
Dissolved Copper (Cu)	mg/L					0,0143	<0.0005	0,006			0,0142	<0.0005	0,0048			0,0006	<0.0005	<0.0005
Dissolved Iron (Fe)	mg/L					0,02	0,03	0,02			0,0100	0,0100	0,0200			<0.01	<0.01	<0.01
Dissolved Lead (Pb)	mg/L					<0.0003	<0.0003	<0.0003			<0.0003	<0.0003	<0.0003			<0.0003	<0.0003	<0.0003
Dissolved Manganese (Mn)	mg/L					0,1889	0,1226	0,0812			0,1856	0,0995	0,0643			<0.0005	<0.0005	<0.0005
Dissolved Mercury (Hg)	mg/L					<0.0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (Mo)	mg/L					<0.0005	0,0008	0,0011			<0.0005	0,0007	0,0011			<0.0005	<0.0005	<0.0005
Dissolved Nickel (Ni)	mg/L					0,0312	0,0266	0,0243			0,0313	0,0238	0,0243			<0.0005	<0.0005	<0.0005
Dissolved Selenium (Se)	mg/L					<0.001	0,001	0,001			<0.001	<0.001	0,0010			<0.001	<0.001	<0.001
Dissolved Silver (Ag)	mg/L					<0.0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001			<0.001	<0.001	<0.0001
Dissolved Thallium (Tl)	mg/L					<0.005	<0.005				<0.005	<0.005				<0.005	<0.005	
Dissolved Zinc (Zn)	mg/L					0,01	<0.001				0,0200	<0.001				<0.001	<0.001	
Aluminium (Al)	mg/L	0,046				0,122	<0.006	0,067			0,0270	0,0150	0,0790			0,023	<0.006	<0.006
Antimony (Sb)	mg/L	0,0001				0,0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001			<0.0001	<0.0001	<0.0001
Arsenic (As)	mg/L	<0.0005		<0.0005	<0.0005	0,0006	<0.0005	0,0015		0,0006	0,0009	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	0,0022
Boron (B)	mg/L	0,09				<0.01	<0.01	<0.01			<0.01	<0.01	<0.01			<0.01	<0.01	<0.01
Barium (Ba)	mg/L	0,0135				0,013	0,0128	0,0146			0,0143	0,0121	0,0143			0,0024	0,0019	0,0029
Beryllium (Be)	mg/L	<0.0005				<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005
Cadmium (Cd)	mg/L	<0.00002				<0.00002	<0.00002	0,00002			<0.00002	<0.00002	<0.00002			<0.00002	<0.00002	<0.00002
Copper (Cu)	mg/L	0,1713	0,0399	0,0389	0,0388	0,0302	<0.0005	0,0241	0,0406	0,0404	0,0298	<0.0005	0,0182	0,0405	<0.0005	<0.0005	<0.0005	<0.0005
Chromium (Cr)	mg/L	0,0018				<0.0006	<0.0006	<0.0006			<0.0006	<0.0006	<0.0006			<0.0006	<0.0006	<0.0006
Cobalt (Co)	mg/L	0,0132				0,0094	0,0089	0,0082			0,0104	0,0079	0,0076			<0.0005	<0.0005	<0.0005
Iron (Fe)	mg/L	0,41		0,48	0,47	0,43	0,41	0,51		0,49	0,59	0,47	0,48	0,61		<0.01	<0.01	0,04
Lithium (Li)	mg/L	0,01				<0.005	0,006	<0.005			<0.005	0,0120	<0.005			<0.005	<0.005	<0.005
Manganese (Mn)	mg/L	0,4091				0,1862	0,1301	0,0953			0,2023	0,1130	0,0939			<0.0005	<0.0005	0,0006
Mercury (Hg)	mg/L	<0.00001				<0.00001	<0.00001	<0.00001			<0.00001	<0.00001	<0.00001			<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0,0035				0,0006	0,0008	0,0009			0,0012	0,0008	0,0008			<0.0005	<0.0005	<0.0005
Nickel (Ni)	mg/L	0,0568		0,0330	0,0354	0,0291	0,0288	0,0275		0,0363	0,0327	0,0259	0,0263	0,0319		<0.0005	<0.0005	0,0005
Lead (Pb)	mg/L	0,0099		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		0,0014	<0.0003	<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003
Selenium (Se)	mg/L	<0.001				<0.001	<0.001	<0.001			<0.001	<0.001	<0.001			<0.001	<0.001	<0.001
Tin (Sn)	mg/L	0,003				<0.001	<0.001	<0.001			<0.001	<0.001	<0.001			<0.001	<0.001	<0.001
Strontium (Sr)	mg/L	0,118				0,107	0,094	0,123			0,1050	0,1090	0,1330			0,026	0,027	0,032
Titanium (Ti)	mg/L	0,03				0,02	0,02	0,01			0,0300	0,0200	0,0100			<0.01	<0.01	<0.01
Thallium (Tl)	mg/L	<0.005				<0.005	<0.005	<0.005			<0.005	<0.005	<0.005			<0.005	<0.005	<0.005
Uranium (U)	mg/L	0,003				0,001	0,001	0,001			0,0020	0,0010	0,0010			<0.001	<0.001	<0.001
Vanadium (V)	mg/L	<0.0005				<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005			<0.0005	<0.0005	<0.0005
Zinc (Zn)	mg/L	<0.001		<0.001	0,008	<0.001	<0.001	0,002		0,0150	<0.001	0,0010	0,0020	0,004		<0.001	<0.001	0,001
													mt			mt		

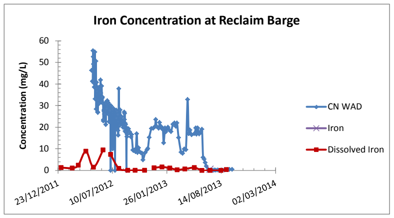
CN in the tailing pond

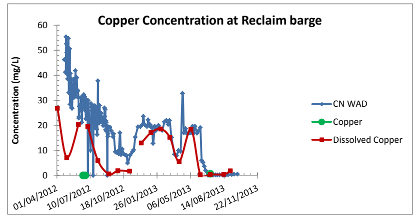
Date	CN wad (Assay lab)	CN wad (multilab)	CN free (multilab)	CN tot (multilab)
	ppm	mg/L	mg/L	mg/L
03/04/2012				59.37
24/04/2012	46.3			
26/04/2012		33.01		79.14
27/04/2012	41.3			
28/04/2012	41.2			
29/04/2012	55.4			
30/04/2012	52.6			
01/05/2012	49.2			63.38
02/05/2012	40.5			
03/05/2012	41.6			
04/05/2012	38.6			
05/05/2012	38.5			
06/05/2012	54.8			
07/05/2012	33.1			
08/05/2012	40.9			
09/05/2012	39.2			
10/05/2012	50.6			
11/05/2012	28.4			
12/05/2012	40.8			
13/05/2012	38			
14/05/2012	35.3			
15/05/2012	36.5			
16/05/2012	27.1			
17/05/2012	26.8			
18/05/2012	32.3			
19/05/2012	31.2			
20/05/2012	35.4			
21/05/2012	38.5	22.93		52.76
22/05/2012	31			
23/05/2012	36.1			
24/05/2012	37.7			
25/05/2012	35.4			
26/05/2012	36.3			
27/05/2012	41.9			
28/05/2012	35.8			
29/05/2012	31.7			
30/05/2012	39.1			
31/05/2012	39.1			
01/06/2012	34			
02/06/2012	33.5			
03/06/2012	34			
05/06/2012	31			
06/06/2012	22.9			
07/06/2012	23.5			
08/06/2012	27.6			
09/06/2012	28.1			
10/06/2012	27.3			
11/06/2012	26.1			
12/06/2012	28.1			
13/06/2012	31.2			
14/06/2012	27.8			
15/06/2012	21.2			
16/06/2012	27.5			
17/06/2012	27.5			
18/06/2012	30.7			
19/06/2012	28.6			
20/06/2012	32			
21/06/2012	32.3			
22/06/2012	27			
23/06/2012	29.8	29.7		
24/06/2012	31.4			
25/06/2012	26			
26/06/2012	27.2			
27/06/2012	22.6			
28/06/2012	30.4			
29/06/2012	27			
30/06/2012	27.7			
01/07/2012	29.7			
02/07/2012	29.7			
03/07/2012	???			
04/07/2012	30			
11/07/2012	10			
13/07/2012	28.7			
14/07/2012	27.4			
15/07/2012	25.9			
16/07/2012	27.4			
18/07/2012	27.8			
19/07/2012	???			
20/07/2012	25.9			
21/07/2012	26.9			
22/07/2012	27.3			
23/07/2012	25.9			
24/07/2012	27.9			
25/07/2012	24.1			
26/07/2012	19.1			
27/07/2012	27.2			
28/07/2012	25.74			
29/07/2012	25.8			
30/07/2012	18.5			
31/07/2012	16.3			
01/08/2012	22.8			
02/08/2012	37.8			
03/08/2012	23.7			
04/08/2012	23.6	24.0714286		
05/08/2012	23.4			
06/08/2012	20.9			
07/08/2012	28			

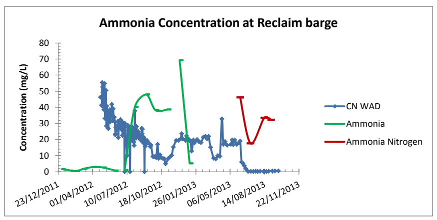


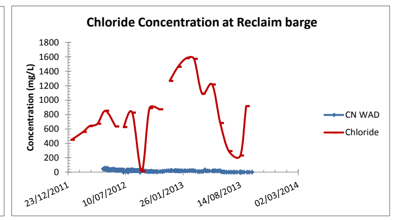


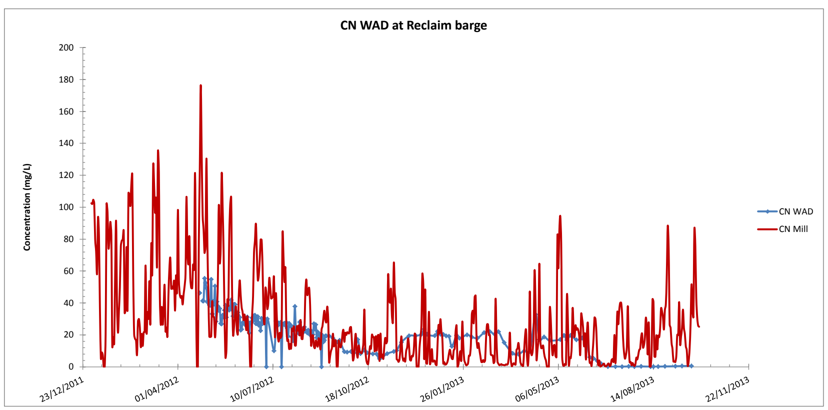












CN in the tailing pond

Date	CN wad (Assay lab)	CN wad (multilab)	CN free (multilab)	CN tot (multilab)
	ppm	mg/L	mg/L	mg/L
08/08/2012	24.4			
09/08/2012	23.3			
10/08/2012	22.8			
11/08/2012	21.7	23.5		
12/08/2012	24.9			
13/08/2012	23			
14/08/2012	22.1			
15/08/2012	21.3			
16/08/2012	23			
17/08/2012	21.3			
18/08/2012	19.9	22.2142857		
19/08/2012	22.6			
20/08/2012	21.6			
21/08/2012	20.2			
22/08/2012	27			
23/08/2012	23.6			
24/08/2012	26.4			
25/08/2012	18.2	22.8		
26/08/2012	21.8			
27/08/2012	21.2			
28/08/2012	17.7			
29/08/2012	19.4			
30/08/2012	None			
31/08/2012	19.6			
01/09/2012	15.6	18		
02/09/2012	16.7			
03/09/2012	19.3			
04/09/2012	19.3			
07/09/2012	19.3	18.65		
11/09/2012	17.9			
16/09/2012	15.5			
18/09/2012	16.6			
23/09/2012	9.45			
26/09/2012	9.19			
30/09/2012	9.53	9.36		
03/10/2012	8.68			
07/10/2012	17			
10/10/2012	8.26			
14/10/2012	10.5			
17/10/2012	8.77			
23/10/2012	8.09	10.2166667		
27/10/2012	7.96			
30/10/2012	4.91			
07/11/2012	8.22			
14/11/2012	9.57			
17/11/2012	10.2			
22/11/2012	15.3			
30/11/2012	19.4			
07/12/2012	19.5			
13/12/2012	20.3			
16/12/2012	23.6			
19/12/2012	20.4			
27/12/2012	19.5	41.7		
30/12/2012	22.2	20.85		
02/01/2013	20.4			
05/01/2013	20.3			
08/01/2013	19.3			
11/01/2013	19.1			
14/01/2013	12.8			
19/01/2013	19.7			
22/01/2013	17.9			
30/01/2013	20.0			
04/02/2013	18.7			
10/02/2013	18.0			
17/02/2013	21.4			
23/02/2013	22.0			
28/02/2013	20.4			
04/03/2013	22.0			
10/03/2013	15.2			
19/03/2013	8.4			
25/03/2013	7.9			
31/03/2013	10.0			
06/04/2013	9.6			
12/04/2013	32.8			
16/04/2013	17.0	1.24	3	19.87
21/04/2013	18.7			
27/04/2013	16.5			
08/05/2013	17.1			
12/05/2013	19.7			
15/05/2013	16.8			
19/05/2013	19.7			
25/05/2013	16.9			
31/05/2013	18			
04/06/2013	19.1			
08/06/2013	6.01			
12/06/2013	5.21			
16/06/2013	3.64			
20/06/2013	2.0			
27/06/2013	0.0967			
05/07/2013	0.156			
12/07/2013	0.0829			
19/07/2013	0.247			
25/07/2013	0.142			
01/08/2013	0.237			
11/08/2013	0.0829			
14/08/2013	0.0765			
19/08/2013	0.133			
26/08/2013	0.242			
06/09/2013	0.355			
13/09/2013	0.501			
23/09/2013	0.499			

Calendar reference	**ST-21 (a)**
Sample ID	**ST-21**
Old calendar reference	**SW2a /SW2b**
Sampling location	**Tailings reclaim pond (reclaim pond)**

Number bold - italic = < LMD

Frequency	**Parameters**	**Date** / **Units**	**03/01/2012**	**13/02/2012**	**06/03/2012**	**03/04/2012**	**01/05/2012**	**05/06/2012**	**19/06/2012**	**26/06/2012**	**03/07/2012**	**02/08/2012**	**04/09/2012**	**01/10/2012**
ST-21 (a)	Alkalinity	(mg CaCO3/L)	126	125	147	157	145	75			98	102	117	114
Monthly (open water)	Ammonia (NH3)	mg/L	1.6	0.44	1.8	2.9	2.6	0.73			1	40.3	48	38.2
	Chloride	mg/L	449	559	639	672	853	634			626	826	13.5	889
	Cyanide (Cn(tot))	mg/L	5.89	14.22	23.18	59.37	63.38	48.76			39.26	24.34	14.87	1.44
	Fluoride	mg/L	0.5	0.49	0.54	0.3	2.5	***0.02***			0.06	0.23	0.52	0.48
	Hardness	(mg CaCO3/L)	914	1087	1057	1369	1008	1001			574	771	1045	1313
	Nitrate (NO3)	mg/L	7.2	8.6	10.4	11.8	10.5	7.3			8.6	9.1	10	10
	Nitrite (NO2)	mg/L	0.23	0.22	0.21	0.2	0.17	0.12			0.1	0.12	0.15	0.12
	pH		8.42	8.03	8.49	9.06	9.39	8.74	7.89		8.94	8.47	8.04	7.89
	Sulphate (SO2-4)	mg SO4/L	1825	2173	2477	2384	2508	1555			1457	1551	1703	1910
	TDS	mg/L	3012	3334	3620	3843	3374	4955			2343	2590	3213	3206
	Turbidity	NTU	0.88	2.53	6.49	2.51	2.21	14.74	12.36		16.8	4.18	3.87	4.16
	Dissolved Ag	mg/L	0.006	0.008	***0.005***	***0.005***	0.005	***0.005***			0.068	***0.005***	0.005	***0.005***
	Dissolved Al	mg/L	0.02	***0.01***	***0.01***	0.02	0.41	***0.01***			***0.01***	***0.01***	0.02	0.05
	Dissolved As	mg/L	0.045	0.018	0.015	0.041	0.071	0.006			0.011	0.012	0.009	0.008
	Dissolved Ba	mg/L	0.048	0.078	0.096	0.066	0.052	0.029			0.034	0.043	0.057	0.077
	Dissolved Cd	mg/L	***0.005***	***0.005***	***0.005***	***0.005***	***0.005***	***0.005***			***0.005***	***0.005***	0.005	***0.005***
	Dissolved Cu	mg/L	7.68	6.83	9.91	26.85	7.13	20.39			19.58	5.94	0.549	1.86
	Dissolved Fe	mg/L	1.3	1.1	2.4	8.9	1.5	9.5			7.4	0.93	0.05	***0.05***
	Dissolved Hg	mg/L	***0.0005***	***0.0005***	***0.0005***	***0.0005***	***0.0005***	***0.0005***			***0.0005***	0.0005	0.0005	***0.0005***
	Dissolved Mn	mg/L	0.023	0.034	0.032	***0.005***	0.032	***0.005***			0.009	0.005	0.017	0.095
	Dissolved Mo	mg/L	0.29	0.308	0.332	0.0005	0.31	0.232			0.262	0.29	0.349	0.361
	Dissolved Ni	mg/L	0.455	0.887	1.52	0.6	1.21	2.01			2.54	2.22	1.28	1.08
	Dissolved Pb	mg/L	***0.005***	***0.005***	***0.005***	0.009	***0.005***	0.005			***0.005***	***0.005***	0.005	***0.005***
	Dissolved Se	mg/L	***0.005***	***0.005***	0.006	0.014	0.021	0.013			0.009	0.02	0.015	0.014
	Dissolved Tl	mg/L	***0.01***	***0.01***	***0.01***	***0.01***	***0.01***	***0.01***			***0.01***	***0.01***	0.01	***0.01***
	Dissolved Zn	mg/L	0.018	0.01	0.006	***0.005***	1.39	***0.005***			0.034	***0.005***	0.005	0.006
	Ammonia-Nitrogen	mg/L												
	Ag	mg/L							0.158	0.263				
	Al	mg/L							0.0049	0.0119				
	As	mg/L							0.0305	0.0321				
	Ba	mg/L							***0.0005***	***0.0005***				
	Be	mg/L							0.00055	0.00019				
	Cd	mg/L							0.0092	0.0213				
	Co	mg/L							1.038	2.744				
	Cu	mg/L							***0.0006***	0.0106				
	Cr	mg/L							0.83	0.7				
	Fe	mg/L												
	Hg	mg/L							***0.005***	***0.005***				
	Li	mg/L							0.0194	0.0314				
	Mn	mg/L							0.2209	0.2576				
	Mo	mg/L							1.354	1.68				
	Ni	mg/L							0.0006	***0.0003***				
	Pb	mg/L							0.0007	***0.0001***				
	Sb	mg/L							0.009	0.008				
	Se	mg/L							***0.001***	***0.001***				
	Sn	mg/L							1.1	0.837				
	Sr	mg/L							0.34	0.43				
	Ti	mg/L							***0.005***	***0.005***				
	Tl	mg/L							0.01	0.009				
	U	mg/L							***0.0005***	***0.0005***				
	V	mg/L							***0.001***	0.015				
	Zn	mg/L												

Calendar reference	**ST-21 (a)**
Sample ID	**ST-21**
Old calendar reference	**SW2a /SW2b**
Sampling location	**Tailings reclaim pond (reclaim pond)**

Frequency	**Parameters**	**Date** / **Units**	**05/11/2012**	**03/12/2012**	**10/12/2012**	**08/01/2013**	**06/02/2013**	**05/03/2013**	**02/04/2013**	**07/05/2013**	**04/06/2013**	**04/07/2013**	**13/08/2013**	**02/09/2013**
ST-21 (a)	Alkalinity	(mg CaCO3/L)	129		134	115	134	142	113	106	77	127	154	143
Monthly (open water)	Ammonia (NH3)	mg/L	38.7		69.3	5.2					46.2			
	Chloride	mg/L	872		1267	1463	1582	1572	1092	1217	683	292	232	917
	Cyanide (Cn(tot))	mg/L	3.26		16.45	17.3	12.11	25.19	36.25	20.85	16.77	0.008	0.054	0.991
	Fluoride	mg/L	0.07		0.22	21.9	0.33	0.23	0.38	0.33	0.07	0.26	1.1	0.16
	Hardness	(mg CaCO3/L)	1177		1497	1607	2116	1795	1525	1583	891	662	751	759
	Nitrate (NO3)	mg/L	11.9		14.1	12.9	17.9	17.7	14.4	20.3	13.7	12.2	11.3	13.5
	Nitrite (NO2)	mg/L	0.07		0.19	0.27	0.29	0.16	0.34	0.33	0.06	0.31	0.9	1.1
	pH		8.09	8.59	8.14	9.04	9.42	9.14	8.9	9	8.85	8.28	7.72	8
	Sulphate (SO2-4)	mg SO4/L	2332		2644	2960	3125	2876	2248	2304	1276	1085	1169	1457
	TDS	mg/L				4943	568	5354	4242	4476	2954	1988		2020
	Turbidity	NTU	4.94	1.9	1.13	1.01	36.7	21.9	43.3	8.8	17.37	9.25	5.65	20.1
	Dissolved Ag	mg/L	***0.005***		0.015	***0.005***	0.011	0.01	***0.005***	0.0138	0.0044	***0.0002***	0.0057	0.0138
	Dissolved Al	mg/L	0.02		0.04	0.05	0.34	0.02	0.08	0.093	0.136	0.152	0.14	0.204
	Dissolved As	mg/L	0.011		0.012	0.019	0.012	0.01	0.011	0.0165	0.0078	0.0137	0.0161	0.0246
	Dissolved Ba	mg/L	0.082		0.084	0.107	0.101	0.144	0.096	0.104	0.0566	0.0465	0.0606	0.0667
	Dissolved Cd	mg/L	***0.005***		***0.005***	***0.005***	***0.005***	***0.005***	***0.005***	0.00085	0.00054	0.00035	0.00068	0.00089
	Dissolved Cu	mg/L	1.71		12.96	17.17	18.55	15.21	5.56	18.43	0.2915	0.3915	0.4183	1.777
	Dissolved Fe	mg/L	***0.05***		1.2	1.6	1.1	0.3	0.67	1.3	***0.01***	***0.01***	0.01	0.38
	Dissolved Hg	mg/L	***0.0005***		0.0003	0.0002	0.0003	***0.0001***	0.0002	0.0002	***0.0001***	***0.0001***	0.0001	0.0001
	Dissolved Mn	mg/L	0.039		0.007	***0.005***	0.071	0.009	***0.005***	***0.0005***	0.0713	0.4254	0.5621	0.4087
	Dissolved Mo	mg/L	0.411		0.437	0.492	0.481	0.469	0.332	0.4128	0.2472	0.171	0.2217	0.3091
	Dissolved Ni	mg/L	0.183		0.152	0.056	0.032	0.041	0.026	0.808	0.0876	0.0962	0.2999	0.6015
	Dissolved Pb	mg/L	***0.005***		***0.005***	***0.005***	***0.005***	***0.005***	***0.005***	***0.0003***	***0.0003***	***0.0003***	0.0012	0.0045
	Dissolved Se	mg/L	0.019		0.021	0.023	0.026	0.037	0.019	0.026	0.008	0.01	0.01	0.009
	Dissolved Tl	mg/L	***0.01***		***0.01***	***0.01***	***0.01***	***0.01***	***0.01***	***0.005***	***0.005***	***0.005***	***0.005***	***0.005***
	Dissolved Zn	mg/L	***0.005***		0.006	0.005	0.569	***0.005***	0.015	0.009	0.001	0.004	0.004	0.015
	Ammonia-Nitrogen	mg/L									46.2	17.6	33.5	32.3
	Ag	mg/L												
	Al	mg/L										0.409		
	As	mg/L										0.0208		
	Ba	mg/L										0.0598		
	Be	mg/L										***0.0005***		
	Cd	mg/L										0.00043		
	Co	mg/L												
	Cu	mg/L										0.6531		
	Cr	mg/L										0.0007		
	Fe	mg/L										0.56		
	Hg	mg/L										***0.00001***		
	Li	mg/L										***0.005***		
	Mn	mg/L										0.5164		
	Mo	mg/L										0.2041		
	Ni	mg/L										0.1204		
	Pb	mg/L										0.0045		
	Sb	mg/L										0.0014		
	Se	mg/L										0.012		
	Sn	mg/L										***0.001***		
	Sr	mg/L										0.798		
	Ti	mg/L										0.29		
	Tl	mg/L										***0.005***		
	U	mg/L										0.009		
	V	mg/L										***0.0005***		
	Zn	mg/L										0.006		

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Certificate of Analysis

Request number: **13-558291**

Date Received: 2013-08-30

Date Certificate Issued: 2013-09-13

Certificate Version: 1

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

MULTI-LAB DIRECT - Val d' Or

900, 5e Avenue
Val-d'Or, Québec, Canada
J9P 1B6
Telephone : (819) 874-0350
Fax : (819) 874-0360

P.O. Number	Your project ID.	Project Manager
NA	29228	M. Roger Turmel

Comments

This version replaces and cancels all earlier version.

NA : Information Not Available

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Certificate of Analysis

Client: **MULTI-LAB DIRECT - Val d' Or**

Request Number: **13-558291**

P.O. Number	Your Project ID.	Project Manager
NA	29228	M. Roger Turmel

Sample(s)

Lab. No.	**2428475**
Your Reference	29228 NP-2-North
Matrix	Wastewater
Sampled by	M. Samuel Tapp / Jamie Kataluk
Site sampled	Meadowbank
Date sampled	2013-08-28
Date received	2013-08-30

Parameter(s)
Method
Reference

Résultats toxicité truite	Preparation	-
QE006-01 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	>100
% mortality at 100% v/v	% mort 96h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX

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Certificate of Analysis

Client: **MULTI-LAB DIRECT - Val d' Or**

Request Number: 13-558291

P.O. Number	Your Project ID.	Project Manager
NA	29228	M. Roger Turmel

Sample(s)

Lab. No.	**2428475**
Your Reference	29228 NP-2-North
Matrix	Wastewater
Sampled by	M. Samuel Tapp / Jamie Kataluk
Site sampled	Meadowbank
Date sampled	2013-08-28
Date received	2013-08-30

Parameter(s)
Method
Reference

Comments:

2428475 29228 NP-2-North Truites - Type d'essai : CL50

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory.

Linda Bouchard, biologist

Terms and conditions: http://www.exova.ca/terms&conditions

Appendix

Client: MULTI-LAB DIRECT **Request number:** 13-558291

BIOASSAY Rainbow trout

Lab. No: 2428475
Your reference: 29228 NP-2-North
Matrix: Wastewater
Sampled by: M. Samuel Tapp / Jamie Kataluk
Site sampled: Meadowbank

Sampling method: Grab
Date sampled (date and hour): 2013-08-28 08:00:00
Date received (date and hour): 2013-08-30 08:00:00
State of sampled received: Conform

Date and hour start analysis (0hrs): 2013-09-01 14:00
Date and hour end analysis (96hrs): 2013-09-05 14:00

Analysed by: JB JG

Organisms: *Oncorhynchus mykiss*; Acclimation: ≥ 2 weeks
% mortality 7 days before test:<1
Lot #: PAV130809
Average weight of control fish (g): 0.45 **Minimum:** 0.33 **Maximum:** 0.54
± std. dev.: 0.07
Average fork length of control fish (mm): 36.4 **Minimum:** 32 **Maximum:** 43
± std. dev.: 3.5
Number of fish/container: 10
Loading density (g/L): 0.45
Volume of test solutions (L): 10
Height of test solutions (cm): 22
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water
Pre-aeration of sample: 30 minutes
Pre-aeration and aeration rate (mL/min/L ±1): 6.5
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/13, 2000, mod. 05/2007
No modification to protocol

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0.00	10	10	0	0	0	0	15.5	14.6	7.8	7.7	9.6	9.6	291
6.25	10	10	0	0	0	0	15.5	14.6	7.8	7.7	9.8	9.1	299
12.50	10	10	0	0	0	0	15.5	14.4	7.8	7.7	9.7	9.3	301
25.00	10	10	0	0	0	0	15.5	14.3	7.8	7.6	9.9	9.2	324
50.00	10	10	0	0	0	0	15.6	14.3	7.7	7.5	9.0	9.1	357
100.0	10	10	0	0	0	0	15.8	14.2	7.5	7.4	9.5	9.1	421
Sample characteristics before analysis			Appearance: Yellow,clear				15.8		7.5		8.9		419

Reference assay (Phenol)
Reference assay date: 2013-08-30
LC50-96h (mg/L of Phenol): 10.82
Lower C.I. at 95%: 9.000
Lower C.I. at 95%: 13.00

Geometric average: 9.110
Lower control limit: 6.580
Upper control limit: 11.63

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Certificate of Analysis

Request number: **13-577001**

Date Received: 2013-12-13

Date Certificate Issued: 2013-12-23

Certificate Version: 3

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

MAXXAM ANALYTIQUE INC.

2690, avenue Dalton
Québec, Québec, Canada
G1P 3S4
Telephone : (418) 658-5784
Fax : (418) 658-6594

P.O. Number	Your project ID.	Project Manager
NA	B381001	Mme Martine Bergeron

Comments

Version 3: English certificate requested by the client.

This version replaces and cancels all earlier version.

NA : Information Not Available

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Certificate of Analysis

Client: MAXXAM ANALYTIQUE INC.

Request Number: 13-577001

P.O. Number	Your Project ID.	Project Manager
NA	B381001	Mme Martine Bergeron

Sample(s)

Lab. No.	**2501751**
Your Reference	X08009-01R\31784
Matrix	Water
Sampled by	M. THÉRIAULT ET T. THOMSON
Site sampled	NA
Date sampled	2013-12-09
Date received	2013-12-13

Parameter(s) Method Reference		
Résultats toxicité truite	Preparation	-
QE006-01 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	NA
% mortality at 100% v/v	% mort 96h	0
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		NA
Toxic units	U.T.	NA
Conclusion		Not lethal
Analysis details		APPENDIX

Comments:

2501751 X08009-01R\31784 Trout - Test type : Single concentration

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory.

Stephan Veilleux, biologist

Exova

Appendix

Client: Maxxam Analytique Inc. **Request number:** 13-577001

BIOASSAY Rainbow trout

Lab. No:	2501751	**Sampling method:**	Grab
Your reference:	X08009-01R\31784	**Date sampled (date and hour):**	2013-12-09 15:30:00
Matrix:	Water	**Date received (date and hour):**	2013-12-13 13:00:00
Sampled by:	M. THÉRIAULT ET T. THOMSON	**State of sampled received:**	Conform
Site sampled:	NA		

Date and hour start analysis (0hrs): 2013-12-14 10:45 **Date and hour end analysis (96hrs):** 2013-12-18 10:45

Analysed by: JB GF

Organisms:	*Oncorhynchus mykiss*; Acclimation: ≥ 2 weeks % mortality 7 days before test:<1				
Lot #:	PAV131112				
Average weight of control fish (g):	0.45	**Minimum:**	0.34	**Maximum:**	0.52
± std. dev.:	0.07				
Average fork length of control fish (mm):	38.5	**Minimum:**	35	**Maximum:**	41
± std. dev.:	2.2				
Number of fish/container:	10				
Loading density (g/L):	0.45				
Volume of test solutions (L):	10				
Height of test solutions (cm):	22				
Photoperiod:	16hrs light / 8hrs darkness				
Dilution water:	Dechlorinated municipal water				
Pre-aeration of sample:	30 minutes				
Pre-aeration and aeration rate (mL/min/L ±1):	6.5				
Pre-treatment of sample:	NA				
Protocol / Reference method:	SPE1/RM/13, 2000, mod. 05/2007 No modification to protocol				

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0	10	10	0	0	0	0	14.2	15.9	7.3	7.3	9.9	9.4	270
100	10	10	0	0	0	0	14.8	15.7	6.9	7.3	9.9	9.7	564
Sample characteristics before analysis			Appearance: Yellow, clear				15.4		6.7		11.0		559

Reference assay (Phenol)		**Geometric average:**	9.16
Reference assay date:	2013-12-13	**Lower control limit:**	6.61
LC50-96h (mg/L of Phenol):	10.00	**Upper control limit:**	11.71
Lower C.I. at 95%:	8.57		
Lower C.I. at 95%:	11.60		

APPENDIX B

Preliminary AEM Report - Seepage Water from Waste Rock Storage Facility at Sample Location ST-16

AGNICO EAGLE

MEADOWBANK MINE

Preliminary AEM Report – Seepage Water From Waste Rock Storage Facility – Sample Location ST-16

SEPTEMBER 2013

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1. Issue

During an AANDC Water License inspection on July 29th and 30th 2013 it was observed that "red" colored seepage from the south - east side of the Waste Rock Storage Facility was seeping through the road perimeter into Lake NP-2. Samples were taken by both the Inspector and AEM staff (split sample). Analysis results from this sampling were received by AEM on August 16th, 2013. See Photos 1 and 2 below and Table 1.

Photo 1 – Shore of NP-2

Photo 2 – ST-16 Waste Rock seepage.

Table 1 – Historical ST-16 Results

Parameters	Date / Units	ST-16 Average 2011	ST-16 Average 2012	ST-16 11/06/2013	ST-16 04/07/2013	ST-16 Split 30/07/2013	ST-16 Split AANDC Result 30/07/2013
*pH		6.49	7.30	6.45	7.21		7.20
*Turbidity	NTU	17	34		17		123
*Conductivity	us/cm		154	420	1485		4510
Alkalinity	mg CaCo3/L	34	67	46	89	272	162
Aluminum	mg/L	0.159	0.513		0.464	0.042	0.045
Dissolved Aluminium	mg/L				0.027	< 0.006	
Ammonia	mgN/L	0.07	0.03	< 0.05	0.20	1.20	
Ammonia-nitrogen	mgN/L		0.22	0.45	7.80	34.00	
Total Dissolved Solids	mg/L	55	175	37	969	3792	
Total Suspended Solids	mg/L						50
Arsenic	mg/L	0.0020	0.0045	0.0029	0.0091	0.0139	0.0083
Dissolved As	mg/L				0.0031	0.0058	
Barium	mg/L	0.0095	0.0196		0.0741	0.1414	0.1480
Dissolved Barium	mg/L				0.0558	0.1433	
Cadmium	mg/L	0.00060	0.00004		0.00014	0.00065	0.00020
Dissolved Cadmium	mg/L				0.0001	0.0007	
Chloride	mg/L	2	3		15	450	192
Chromium	mg/L		0.0048		0.0034	0.0011	0.0010
Copper	mg/L	0.0017	0.0046	0.0028	2.3110	2.0380	3.3500
Dissolved Copper	mg/L				1.909	1.712	
Fluoride	mg/L	0.106	0.098		0.110	0.290	
Hardness	mg CaCO3/L	62	59		361	1417	1020
Iron	mg/L	1.21	1.94		1.60	4.40	21.90
Dissolved Iron	mg/L				0.17	0.06	
Lead	mg/L	0.0010	0.0056	< 0.0003	0.0015	0.0013	< 0.0001
Dissolved Lead	mg/L				< 0.0003	< 0.0003	
Manganese	mg/L	0.588	0.961		2.447	6.370	5.850
Dissolved Manganese	mg/L				2.110	6.055	
Mercury	mg/L	0.00062	0.00007		< 0.00010	0.00005	0.00015
Dissolved Mercury	mg/L				< 0.0001	< 0.0001	
Molybdenum	mg/L	0.001	0.001		0.026	0.170	0.083
Dissolved Molybdenum	mg/L				0.0204	0.1773	
Nickel	mg/L	0.0339	0.0395	0.0069	0.5149	2.0150	1.3300
Dissolved Nickel	mg/L				0.415	1.810	
Nitrate	mg/L	0.17	0.34		8.10	37.80	23.70
Selenium	mg/L	0.002	0.001		0.007	0.020	0.013
Dissolved Selenium	mg/L				0.005	0.023	

Silver	mg/L	0.0006	0.0049				0.0056
Dissolved Silver	mg/L				< 0.0002	0.0019	
Sulphate	mg/L	24	9		406	2400	1450
Thallium	mg/L	0.0025	0.0025		< 0.0050	< 0.0050	< 0.0001
Dissolved Thallium	mg/L				< 0.005	<	
Zinc	mg/L	0.005	0.008	< 0.001	0.010	0.009	< 0.005
Dissolved Zinc	mg/L				0.003	0.008	
Calcium (Ca)	mg/L						312
Magnesium (Mg)	mg/L						60
Potassium (K)	mg/L						88
Sodium (Na)	mg/L						590
Cesium	mg/L						0.0009
Rubidium	mg/L						0.0687
Ortho-Phosphate as Phosphorus	mg/L						
Antimony (Sb)	mg/L				0.0004	0.0012	0.0007
Boron (B)	mg/L				0.04	0.15	
Beryllium (Be)	mg/L				< 0.0005	< 0.0005	< 0.0001
Cobalt (Co)	mg/L				0.0729	0.3114	0.2290
Lithium (Li)	mg/L				< 0.005	0.006	0.004
Tin (Sn)	mg/L				< 0.001	< 0.001	
Strontium (Sr)	mg/L				0.44	2.14	1.40
Tianium (Ti)	mg/L				0.1300	0.5500	0.0007
Uranium (U)	mg/L				0.034	0.170	0.115
Vanadium (V)	mg/L				< 0.0005	< 0.0005	0.0011
Nitrite	mg/L				0.07	0.41	

2. Background Information

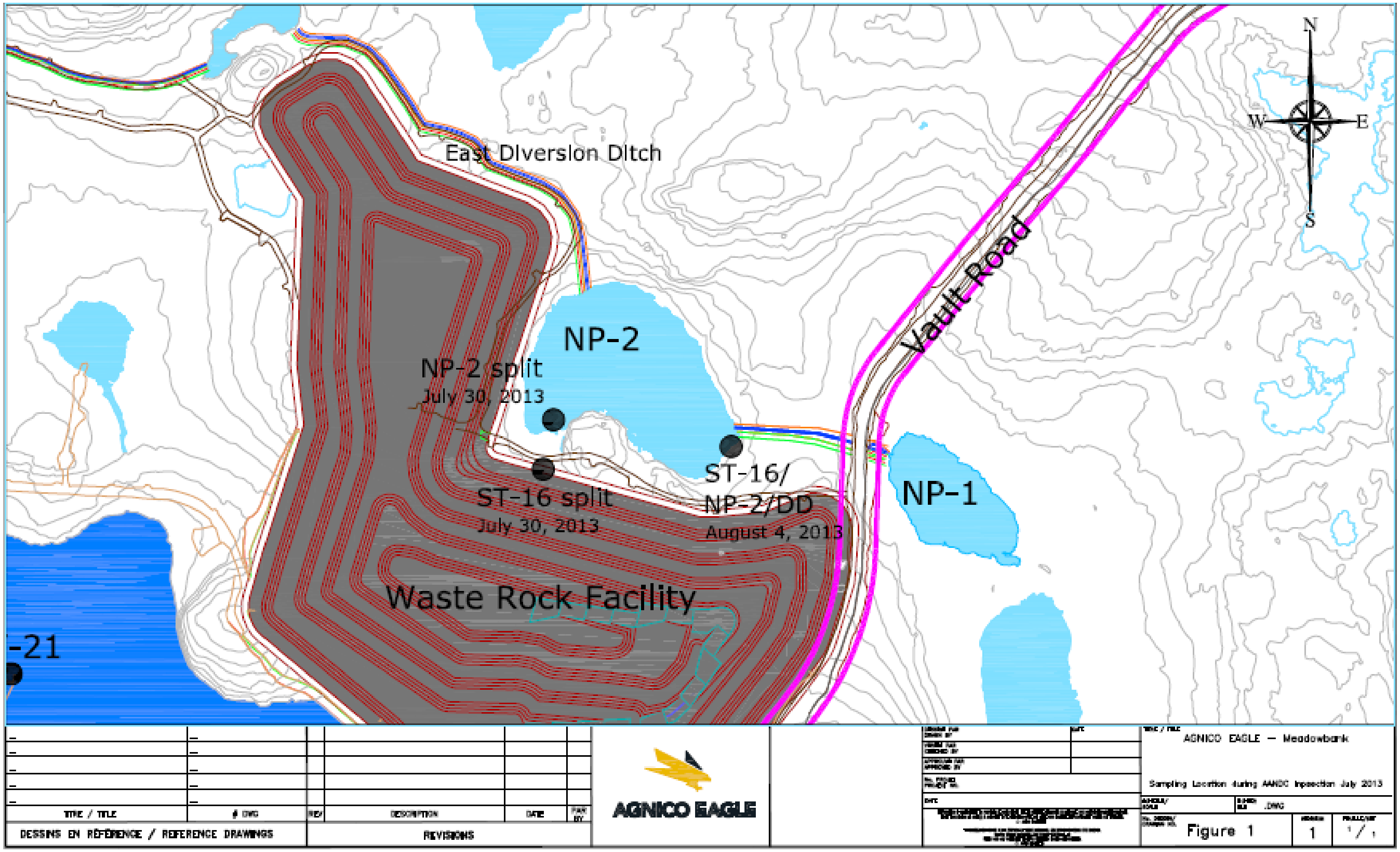
Historically, this “red” coloured water had not been observed previously at this location. The water was typically brown colored, indicative of freshet water which is usually impounded by the road and the waste rock. In the spring of 2012, a crushed NPAG rock road was constructed to isolate the sump from NP-2. Results from 2012 and initially in 2013 indicated that the water quality was good with no elevated copper or nickel and typical of freshet surface water quality (see Table 1 above). Based on the June water quality results and historical results in ST-16, AEM continued to monitor the sump as per the Type A water license.

In 2012 the construction of the East and West Diversion ditches was completed. These ditches are designed to keep freshet surface drainage from contacting the Waste Rock Storage Facility and the Tailings Storage Facility (TSF). The East ditch flows through Lakes NP- 2 and connects to Lake NP-1. After freshet there is little turnover in these lakes and the only inflows and outflows would be rainwater (See Figure 1). The ditches ensure that the water levels in these lakes do not rise and overflow into active mine areas such as the Waste Rock Facility and TSF.

In June 2013 we observed the normal brown color in the seep area initially up until approximately July 26th and 27th when the colour had changed to “red”. This is indicative of iron precipitate. The normal procedure is to have site water trucks pump out the seepage and deposit either in the TSF or use as dust suppressant in the mine pit only. Sample results from July 4th indicated that copper and nickel were elevated. This was an anomaly and our plan was to verify with the next sampling results (August 4th). There was no confirmed indication of actual seepage migrating through the perimeter road to Lake NP-2 until the red coloured seepage appeared around July 26th and 27th. At that point the red could be observed along the shoreline in NP-2. This was confined to the near shore and not in the main part of the lake. It was not observed at the exit of Lake NP-2. Removal of the seep water had previously commenced and was continuing at this point in time. **There was and has been no fish mortalities observed to date.**

As mentioned the AANDC inspector was on site July 29th and 30th, 2013 and split samples were taken. The seepage was evident in the Lake, along the near shore only (see photo 2), and we increased the removal of the seep water from the ST-16 sample location. Please see Figure 1 below for sample locations.

Figure 1 – Sampling Location during AANDC Inspection July 2013



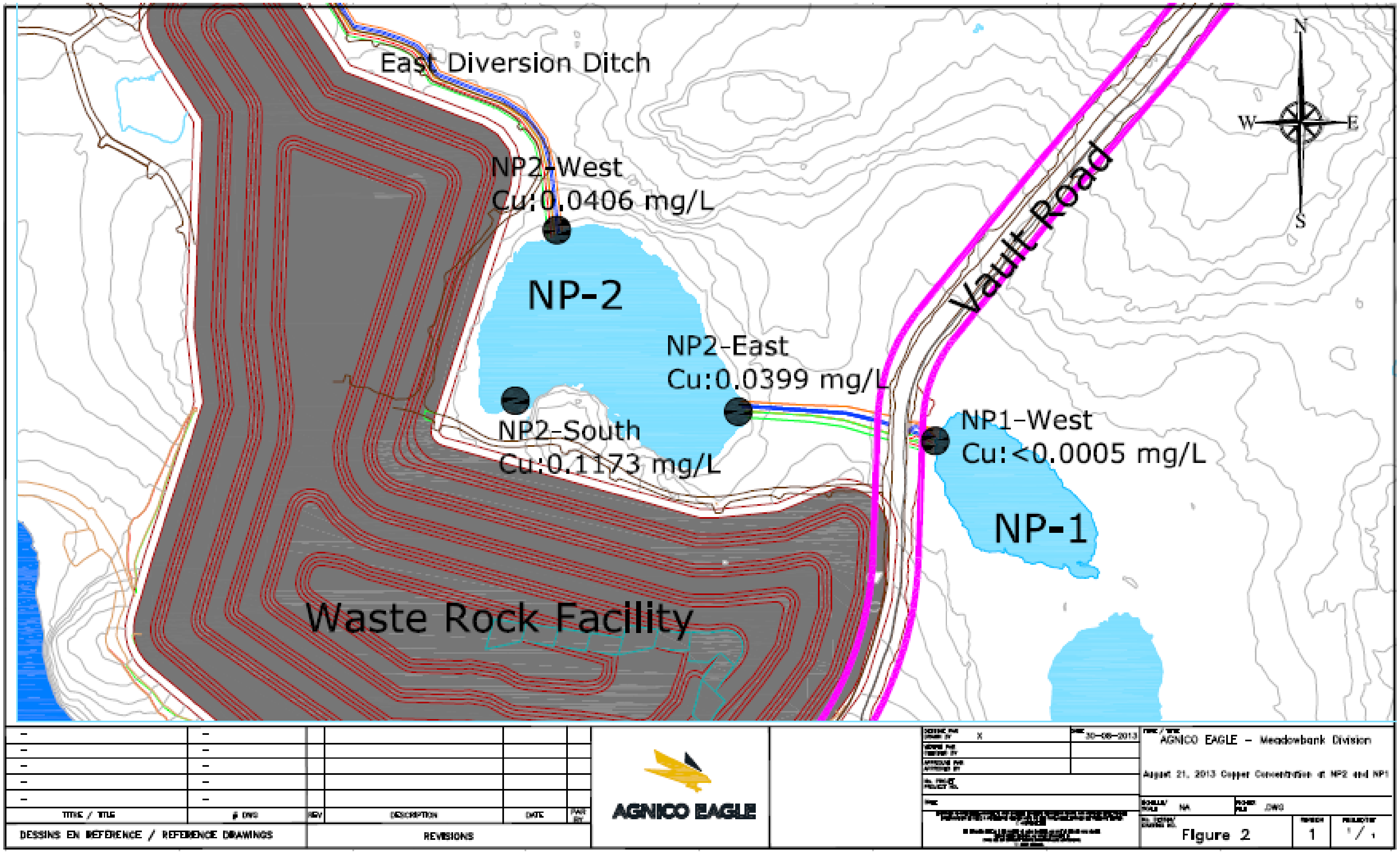
By August 4th AEM had lowered the level in the seepage area to the point where it was felt that the seepage through the road had stopped. Pumping of the sump continued and is still ongoing. Also on August 4th a sample was taken in NP-2 at the East end of the Lake in an area that exhibited clear water – see Figure 1 location.

On August 16th results were received from the sampling conducted with AANDC (see Table 1 above for results) and the certificates are attached as Appendix 1. The copper, nickel, iron, manganese and sulphate were elevated. A preliminary investigation was launched by the Environment and Engineering Departments. Pumping of the seep water continued and all of this water was directed to the TSF. On August 19th the results from AEM's August 4th sample in NP-2 Lake at the East end were received and this too indicated elevated copper at a level of 0.1713 mg/l which exceeded the CCME criteria for Protection of Aquatic Life. All of this information was forwarded to the AANDC Inspector including all analysis results.

The investigation at this time was centered on seepage from the waste rock, specifically from the PAG material. Some waste rock at the site contains copper, iron and sulphides which could explain the elevated values observed in the sample results. This was not observed historically at this site. The main immediate action was to keep the waste rock seepage pumped down to prevent migration through the road into NP-2 Lake.

Further monitoring for copper only was undertaken in NP-2 Lake on August 21st, 2013. Results were received on August 24th and are indicated on Figure 2 below. The level had dropped significantly at NP-South, East and West and was not detected in NP-1 Lake. This was an indication that the seepage to the Lake had stopped due to pumping.

Figure 2 – August 21, 2013 Copper Concentration at NP-2 and NP-1



The investigation continued and a Plug/Dike design request to prevent any seepage from migrating through the road to NP-2 Lake was submitted to AEM's Engineering Department. A design was produced (see Figure 3 below). This was an additional measure taken to augment the pumping of the seep water. Construction of the Waste Rock Plug commenced on August 26th, 2013. Also, it was observed, after the pumping out of the water to a low level, that water was still seeping from the waste rock and this included two distinct areas in close proximity (approximately 15 m apart) to each other. One was "red" colored and the other "brown" - see photos 3 and 4 below.

Figure 3 – Plug Design

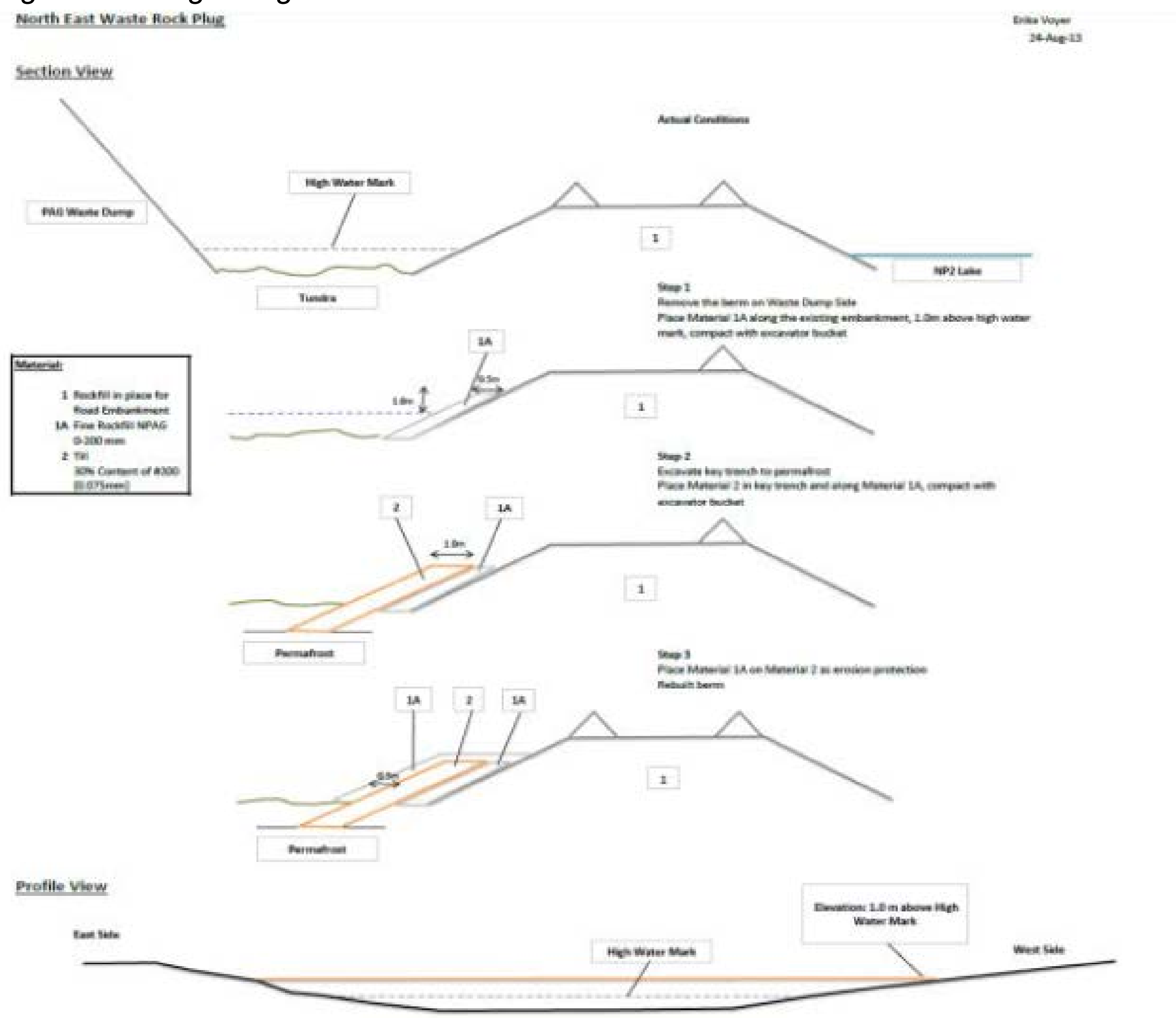


Photo 3 – Brown seepage

Photo 4 – Red seepage

A staff gauge has been placed at the seepage to determine the water level increases more definitively – see photo 5 below.

Photo 5 – Seepage Staff Gauge

On August 27th two Inspectors from AANDC and two Inspectors from Environment Canada attended the Meadowbank site and conducted sampling at the seep – ST-16 and at four locations around NP-2 Lake. AEM took duplicate samples during this visit. The construction project of the Waste Rock Plug had started and was being conducted during the visit. As previously stated AEM was of the opinion that the seepage through the road had stopped by August 21st.

Concurrent to the inspection, the preliminary investigation had determined that there was a hydraulic gradient that existed between the TSF reclaim water level and NP-2 Lake. The TSF water level was at elevation 145.7 m and NP-2 Lake was at elevation 141.2 m. Upon examining a topographical photo prior to mine development there was an indication that the former watercourse connecting the seep area to the North West Arm Second Portage Lake (now the TSF) could act as a conduit under the waste rock to the seep area – see photo 6 below. After conducting a comparison analysis of sample results in the TSF (sample station ST-21) several similarities became evident. Notably this included copper, nickel, chloride, sulphate, hardness – see comparison Table 2 below. AEM determined that is was possible that the TSF reclaim water could be migrating through the former water course to the seep area at a location along RF 1 rockfill road (TSF perimeter structure). This is the suspected migration route.

Table 2 – Comparison between ST-21 and ST-16

Parameters	Date Units	ST-21 Average 2013	ST-21 04/07/2013	ST-16 Split 30/07/2013	30/07/2013 Split AANDC Result
*pH		8.95	8.28		7.20
*Turbidity	NTU	20	9		123
*Conductivity	us/cm				4510
Alkalinity	mg CaCo3/L	116	127	272	162
Aluminum	mg/L	0.409	0.409	0.042	0.045
Dissolved Aluminium	mg/L	0.124	0.152	< 0.006	
Ammonia	mgN/L	25.70		1.20	
Ammonia-nitrogen	mgN/L	31.9	17.6	34.0	
Total Dissolved Solids	mg/L	3504	1988	3792	
Total Suspended Solids	mg/L				50
Arsenic	mg/L	0.0208	0.0208	0.0139	0.0083
Dissolved As	mg/L	0.0129	0.0137	0.0058	
Barium	mg/L	0.0598	0.0598	0.1414	0.1480
Dissolved Barium	mg/L	0.0936	0.0465	0.1433	
Cadmium	mg/L	0.00043	0.00043	0.00065	0.00020
Dissolved Cadmium	mg/L	0.00203	0.00035	0.0007	
Chloride	mg/L	1129	292	450	192
Chromium	mg/L	0.0007	0.0007	0.0011	0.0010
Copper	mg/L	0.6531	0.6531	2.0380	3.3500
Dissolved Copper	mg/L	10.8004	0.3915	1.712	
Fluoride	mg/L	3.36	0.26	0.290	
Hardness	mg CaCO3/L	1454	662	1417	1020
Iron	mg/L	0.56	0.56	4.4	21.9
Dissolved Iron	mg/L	0.71	< 0.01	0.06	
Lead	mg/L	0.0045	0.0045	0.0013	< 0.0001
Dissolved Lead	mg/L	0.0019	< 0.0003	< 0.0003	
Manganese	mg/L	0.5164	0.5164	6.370	5.850
Dissolved Manganese	mg/L	0.0839	0.4254	6.055	
Mercury	mg/L	0.000005	< 0.00001	0.00005	0.00015
Dissolved Mercury	mg/L	0.00015	< 0.0001	< 0.0001	
Molybdenum	mg/L	0.2041	0.2041	0.170	0.083
Dissolved Molybdenum	mg/L	0.372	0.171	0.1773	
Nickel	mg/L	0.1204	0.1204	2.0150	1.3300
Dissolved Nickel	mg/L	0.1638	0.0962	1.810	
Nitrate	mg/L	15.6	12.2	37.8	23.7
Selenium	mg/L	0.012	0.012	0.020	0.013
Dissolved Selenium	mg/L	0.021	0.010	0.023	
Silver	mg/L				0.0056
Dissolved Silver	mg/L	0.0067	< 0.0002	0.0019	
Sulphate	mg/L	2268	1085	2400	1450

Thallium	mg/L	0.0025	<	0.0050	<	0.0050	<	0.0001
Dissolved Thallium	mg/L	0.01	<	0.01				
Zinc	mg/L	0.006		0.006		0.009	<	0.005
Dissolved Zinc	mg/L	0.0865		0.004		0.008		
Calcium	mg/L							312
Magnesium	mg/L							60
Potassium	mg/L							88
Sodium	mg/L							590
Cesium	mg/L							0.0009
Rubidium	mg/L							0.0687
Antimony	mg/L	0.0014		0.0014		0.0012		0.0007
Boron	mg/L					0.15		
Beryllium	mg/L	0.00025	<	0.0005	<	0.0005	<	0.0001
Cobalt	mg/L					0.3114		0.2290
Lithium	mg/L	0.0025	<	0.005		0.006		0.004
Tin	mg/L	0.0005	<	0.001	<	0.001		
Strontium	mg/L	0.798		0.798		2.14		1.40
Titanium	mg/L	0.2900		0.2900		0.5500		0.0007
Uranium	mg/L	0.009		0.009		0.170		0.115
Vanadium	mg/L	0.00025	<	0.0005	<	0.0005		0.0011
Nitrite	mg/L	0.25		0.31		0.41		

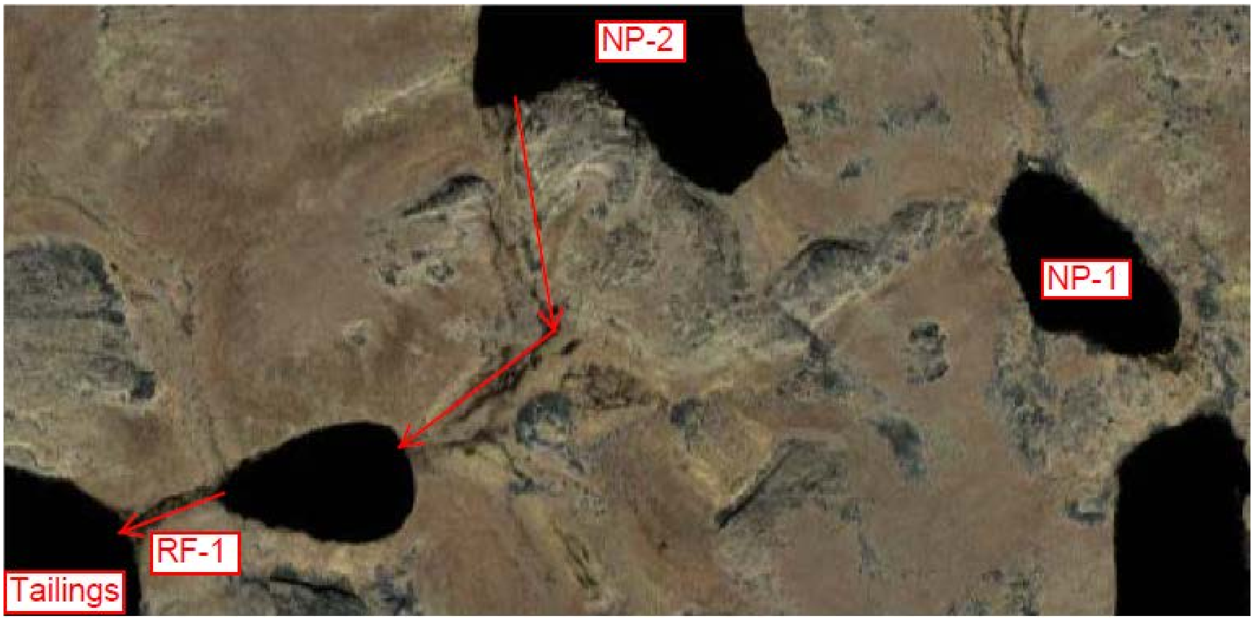


Photo 6 – Topography prior to mine development

Construction of the Waste Rock Plug was completed on September 1st. The seep areas are segregated and have been kept at low levels – see photo 7 below.

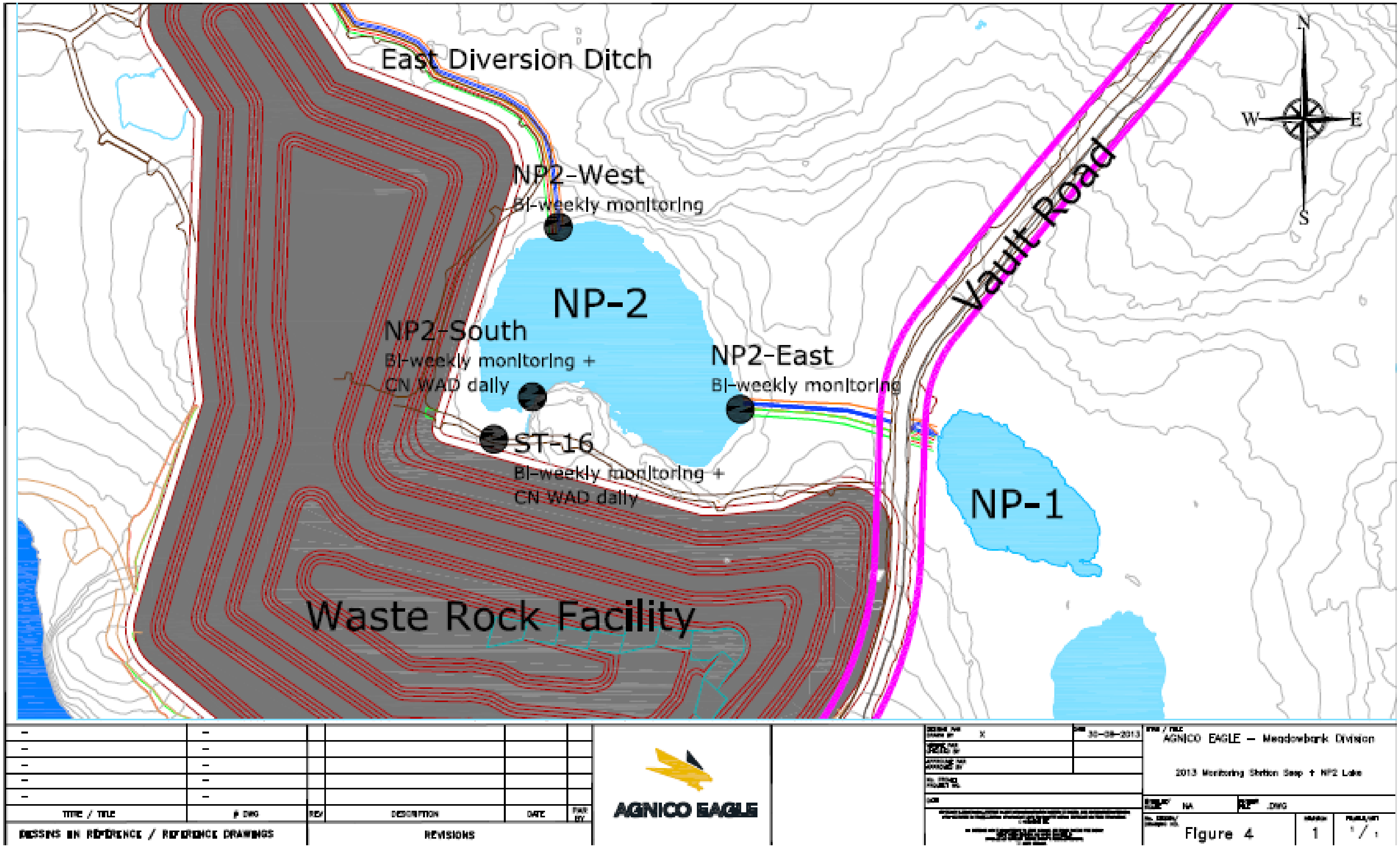
Photo 7 – Construction of Waste Rock Plug

3. Measures Taken/Action Plan

- Upon first noting the "red" seep water in NP-2 Lake (approximately July 26th) and after the initial AANDC inspection of July 30th AEM increased pumping of the seep water to prevent migration through the road. The seeps will be monitored daily and pumped out accordingly – daily if necessary;
- After receiving the sample analysis results from July 30th sampling conducted with the AANDC Inspector indicating elevated copper, nickel, etc. an investigation was started to determine the source of these metals. There was no previous history of this. Initially AEM concentrated on the waste rock properties and possible seepage of PAG rock;
- By August 28th, after noting a hydraulic gradient between the TSF and NP-2 Lake, the fact that a former watercourse connected the two areas (RF-1 and ST-16) under the Waste Rock Facility and the results of a comparative analysis of sample results from the TSF (ST-21) and the ST-16 seep area it was determined that it was possible for TSF reclaim to migrate to the seep area;
- A short term monitoring program was implemented (See Figure 4). The short term monitoring program includes daily monitoring of CN WAD using our on site assay laboratory at the seep areas ST-16 and in NP-2 Lake South location. In addition we will sample ST-16, NP-2 South, East and West bi weekly for total and dissolved metals, general chemistry as well as total and free cyanide (Group 2 and 3 of our NWB Water License parameters). Phaser Lake will be sampled also as an external reference; background samples for most metals were taken in 2003;
- A Waste Rock Plug/Dike was designed and constructed (commencing August 26th), under the supervision of the AEM Engineering Department, along the perimeter road to prevent any further seepage to Lake NP-2. This was completed on September 1st. A complete construction report and as-built drawing will be prepared;
- A staff gauge was placed in the seeps to better determine the seepage inflow;
- An internal SOP was completed (see Appendix 2) to ensure that seeps are pumped in a timely manner at the commencement of freshet and kept at a low level;
- Tailing deposition will be concentrated along the rockfill road in the area where the former watercourse was located to a level higher than the current water level in the TSF. This will direct the water away from the suspected migration route toward the reclaim barge and act as a plug. This commenced on September 2nd; and

- AEM has submitted (on September 2nd) a request for proposal from a third party engineering firm to assess why this seepage has occurred, verify the pathway under the waste rock storage area, if there any additional short term measures that can be implemented, further suggestions for management of freshet, whether an engineered collection and sump system is required for the seepage area, an evaluation of the seepage risk in the TSF and provision of recommendations for a permanent solution.

Figure 4 – Short term monitoring stations



4. Conclusion

AEM has completed a preliminary investigation into the discharge of seepage from the Waste Rock Storage Area in the location of sampling station ST-16 and determined that this material has likely seeped through the perimeter road into NP-2 Lake (fish bearing). Further to this, it appears likely that the seepage source is possibly reclaim water from the TSF migrating under the waste rock pile to ST-16 and subsequently through the perimeter road to NP-2 Lake. The seepage water at the ST-16 location has been kept to a low level and is checked daily.

Measures were implemented to stop the seepage to NP- 2 Lake and prevent it from re-occurring (Waste Rock Plug installation). Tailings deposition was changed on September 2nd to an area where the seepage is thought to be migrating. This action will also assist in pushing the water away from the rockfill perimeter structure and act as an additional “plug”.

A third party engineering firm was requested, on September 2nd, to submit a proposal to provide further assessment and recommendations, including whether additional permanent structures are required to correct this problem.

AEM is of the opinion that appropriate corrective and preventive measures have been undertaken in the short term to isolate the seepage and protect the receiving environment. For the longer term AEM plans to assess the findings of the third party engineering firm and submit any additional actions that are necessary.

APPENDIX 1

Results from the sampling conducted with AANDC

Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-28320

Sampling location:	SW-6(S-RSF) split (ST-6)	Sampling date:	July 30, 2013
Sample name:	SW-6(S-RSF) split (ST-6)	Sampling hour:	N/D
Sampled by:	Jeff Pratt	Date received:	July 31, 2013
Matrix:	Water		
Drinking water distribution:			

Reported on: August 16, 2013

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

125, boul Industriel
Rouyn-Noranda (Québec)
J9X 6P2
Tél: (819) 797-0550
Fax:(819) 797-2155
Courriel:
multilab@cablevision.qc.ca

Analytical Report

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6) Sampling date: July 30, 2013

Sampling location: SW-6(S-RSF) split (ST-6) Sampling hour: N/D

Parameter	Result		Method name	Analysis date
Alkalinity	272	mg CaCO3/L	M-TIT-1.0	August 01, 2013
Aluminium (Al)	0.042	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Aluminium (Al)	<0.006	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Antimony (Sb)	0.0012	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Silver (Ag)	0.0019	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Arsenic (As)	0.0139	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Arsenic (As)	0.0058	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Ammonia nitrogen (NH3-NH4)	34	mg N/L	Sous-traitance\Multilab Direct	August 02, 2013
Barium (Ba)	0.1414	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Barium (Ba)	0.1433	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Beryllium (Be)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Boron (B)	0.15	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Cadmium (Cd)	0.00065	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Cadmium (Cd)	0.00065	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Chloride	450	mg/L	Sous-traitance\Multilab Direct	August 01, 2013
Chrome (Cr)	0.0011	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Cobalt (Co)	0.3114	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Copper (Cu)	2.038	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Copper (Cu)	1.712	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Hardness	1417	mg CaCO3/L	Sous-traitance\Multilab Direct	August 05, 2013
Tin (Sn)	<0.001	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Iron (Fe)	4.4	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Iron (Fe)	0.06	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Fluoride (F)	0.29	mg/L	Sous-traitance\Multilab Direct	August 08, 2013
Lithium (Li)	0.006	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Manganese (Mn)	6.370	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Manganese (Mn)	6.055	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Mercury (Hg)	0.00005	mg/L	Sous-traitance\Multilab Direct	August 02, 2013
Dissolved Mercury (Hg)	<0.0001	mg/L	Sous-traitance\Multilab Direct	August 15, 2013
Molybdenum (Mo)	0.1704	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Molybdenum (Mo)	0.1773	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Ammonia (NH3)	1.2	mg N/L	Sous-traitance\Multilab Direct	August 02, 2013
Nickel (Ni)	2.015	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Nickel (Ni)	1.810	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Nitrate (NO3)	37.8	mg N/L	Sous-traitance\Multilab Direct	August 01, 2013
Nitrite (NO2)	0.41	mg N/L	Sous-traitance\Multilab Direct	August 01, 2013
Lead (Pb)	0.0013	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Lead (Pb)	<0.0003	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Selenium (Se)	0.02	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Selenium (Se)	0.023	mg/L	Sous-traitance\Multilab Direct	August 05, 2013

Sauf indication contraire, tous les échantillons ont été reçus en bon état.

125, boul Industriel
Rouyn-Noranda (Québec)
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Tél: (819) 797-0550
Fax:(819) 797-2155
Courriel:
multilab@cablevision.qc.ca

Analytical Report

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6)
Sampling location: SW-6(S-RSF) split (ST-6)
Sampling date: July 30, 2013
Sampling hour: N/D

Parameter	Result		Method name	Analysis date
Dissolved Solids	3792	mg/L	M-TIT-1.0	August 01, 2013
Strontium (Sr)	2.14	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Sulfate (SO4)	2400	mg SO4/L	Sous-traitance\Multilab Direct	August 05, 2013
Thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Dissolved thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Titanium (Ti)	0.55	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Uranium (U)	0.17	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Vanadium (V)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Zinc (Zn)	0.009	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Zinc	0.008	mg/L	Sous-traitance\Multilab Direct	August 05, 2013

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Multilab DIRECT

Detection limit

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6) Sampling date: July 30, 2013

Sampling location: SW-6(S-RSF) split (ST-6) Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Alkalinity	2	mg CaCO3/L	M-TIT-1.0	
Aluminium (Al)	0.006	mg/L	Sous-traitance	
Dissolved Aluminium (Al)	0.006	mg/L	Sous-traitance	
Antimony (Sb)	0.0001	mg/L	Sous-traitance	Yes
Dissolved Silver (Ag)	0.0002	mg/L	Sous-traitance	
Arsenic (As)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Arsenic (As)	0.0005	mg/L	Sous-traitance	
Ammonia nitrogen (NH3-NH4)	0.01	mg N/L	Sous-traitance	Yes
Barium (Ba)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Barium (Ba)	0.0005	mg/L	Sous-traitance	
Beryllium (Be)	0.0005	mg/L	Sous-traitance	
Boron (B)	0.01	mg/L	Sous-traitance	Yes
Cadmium (Cd)	0.00002	mg/L	Sous-traitance	Yes
Dissolved Cadmium (Cd)	0.00002	mg/L	Sous-traitance	
Chloride	0.5	mg/L	Sous-traitance	Yes
Chrome (Cr)	0.0006	mg/L	Sous-traitance	Yes
Cobalt (Co)	0.0005	mg/L	Sous-traitance	
Copper (Cu)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Copper (Cu)	0.0005	mg/L	Sous-traitance	
Hardness	1	mg CaCO3/L	Sous-traitance	
Tin (Sn)	0.001	mg/L	Sous-traitance	Yes
Iron (Fe)	0.01	mg/L	Sous-traitance	Yes
Dissolved Iron (Fe)	0.01	mg/L	Sous-traitance	
Fluoride (F)	0.02	mg/L	Sous-traitance	Yes
Lithium (Li)	0.005	mg/L	Sous-traitance	
Manganese (Mn)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Manganese (Mn)	0.0005	mg/L	Sous-traitance	
Mercury (Hg)	0.00001	mg/L	Sous-traitance	Yes
Dissolved Mercury (Hg)	0.0001	mg/L	Sous-traitance	
Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	
Ammonia (NH3)	0.05	mg N/L	Sous-traitance	
Nickel (Ni)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Nickel (Ni)	0.0005	mg/L	Sous-traitance	
Nitrate (NO3)	0.01	mg N/L	Sous-traitance	Yes
Nitrite (NO2)	0.01	mg N/L	Sous-traitance	Yes
Lead (Pb)	0.0003	mg/L	Sous-traitance	Yes
Dissolved Lead (Pb)	0.0003	mg/L	Sous-traitance	
Selenium (Se)	0.001	mg/L	Sous-traitance	Yes
Dissolved Selenium (Se)	0.001	mg/L	Sous-traitance	

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Detection limit

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6)
Sampling location: SW-6(S-RSF) split (ST-6)

Sampling date: July 30, 2013
Sampling hour: N/D

Parameter	Value	Unit	Method	Accreditation
Dissolved Solids	1	mg/L	M-TIT-1.0	
Strontium (Sr)	0.005	mg/L	Sous-traitance	
Sulfate (SO4)	1	mg SO4/L	Sous-traitance	Yes
Thallium (Tl)	0.005	mg/L	Sous-traitance	
Dissolved thallium (Tl)	0.005	mg/L	Sous-traitance	
Titanium (Ti)	0.01	mg/L	Sous-traitance	
Uranium (U)	0.001	mg/L	Sous-traitance	
Vanadium (V)	0.0005	mg/L	Sous-traitance	Yes
Zinc (Zn)	0.001	mg/L	Sous-traitance	Yes
Dissolved Zinc	0.001	mg/L	Sous-traitance	

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F-02-06
Version 3ième: 26/10/2005

Quality control Report

Lab number: V-28320

Sample name:	SW-6(S-RSF) split (ST-6)	Sampling date:	July 30, 2013
Sampling location:	SW-6(S-RSF) split (ST-6)	Sampling hour:	N/D

Parameter		
Alkalinity mg CaCO3/L	Standard name	STD alcalinité
	Result	158
	Accuracy	91%
	Limit	123 - 167
Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0311-2013-23m
	Result	5.77
	Accuracy	93.2%
	Limit	5.26 - 7.12
Dissolved Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0311-2013-23
	Result	6.22
	Accuracy	99.5%
	Limit	5.26 - 7.12
Antimony (Sb) mg/L	Blank	<0.0001
	Standard name	DMR-0311-2013-23m
	Result	0.1885
	Accuracy	85.3%
	Limit	0.188 - 0.254
Dissolved Silver (Ag) mg/L	Blank	<0.0002
Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	0.3401
	Accuracy	79.8%
	Limit	0.198 - 0.368
Dissolved Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	0.3176
	Accuracy	95.5%
	Limit	0.236 - 0.372
Ammonia nitrogen (NH3-NH4) m	Blank	<0.01
	Standard name	DMR-0446-2013-NH3
	Result	5.3
	Accuracy	98.5%
	Limit	4.44 - 6.00
Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	2.146
	Accuracy	89.4%
	Limit	2.0 - 2.8

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Multilab DIRECT

Quality control Report

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6) — Sampling date: July 30, 2013

Sampling location: SW-6(S-RSF) split (ST-6) — Sampling hour: N/D

Parameter		
Dissolved Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	2.254
	Accuracy	93.9%
	Limit	2.04 - 2.76
Beryllium (Be) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.591
	Accuracy	93.6%
	Limit	1.4 - 2.0
Boron (B) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23m
	Result	2.5
	Accuracy	86.8%
	Limit	2.45 - 3.31
Cadmium (Cd) mg/L	Blank	<0.00002
	Standard name	DMR-0311-2013-23m
	Result	0.91111
	Accuracy	98.8%
	Limit	0.8 - 1.0
Dissolved Cadmium (Cd) mg/L	Blank	<0.00002
	Standard name	DMR-0311-2013-23
	Result	0.87322
	Accuracy	97%
	Limit	0.8 - 1.0
Chloride mg/L	Blank	<0.5
	Standard name	DMR-0446-2013-CL
	Result	100
	Accuracy	99%
	Limit	87 - 111
Chrome (Cr) mg/L	Blank	<0.0006
	Standard name	DMR-0311-2013-23m
	Result	4.064
	Accuracy	99.7%
	Limit	3.44 - 4.66
Cobalt (Co) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.643
	Accuracy	94.7%
	Limit	1.33 - 1.79

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Quality control Report

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6)   Sampling date: July 30, 2013
Sampling location: SW-6(S-RSF) split (ST-6)   Sampling hour: N/D

Parameter		
Copper (Cu) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.404
	Accuracy	86.8%
	Limit	1.05 - 1.43
Dissolved Copper (Cu) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	1.301
	Accuracy	95.1%
	Limit	1.05 - 1.43
Tin (Sn) mg/L	Blank	<0.001
Iron (Fe) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23m
	Result	11.6
	Accuracy	89.5%
	Limit	8.9 - 12.1
Dissolved Iron (Fe) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23
	Result	10.4
	Accuracy	99%
	Limit	8.9 - 12.1
Fluoride (F) mg/L	Blank	<0.02
	Standard name	DMR-0446-2013-12-F
	Result	2.9
	Accuracy	94.8%
	Limit	2.83 - 3.29
Lithium (Li) mg/L	Blank	<0.005
	Standard name	DMR-0773-2011-18a
	Result	0.863
	Accuracy	97.3%
	Limit	0.714 - 0.966
Manganese (Mn) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	3.956
	Accuracy	97.5%
	Limit	3.28 - 4.44
Dissolved Manganese (Mn) mg/l	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	3.675
	Accuracy	95.2%

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F-02-06
Version 3ième: 26/10/2005

Quality control Report

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6) Sampling date: July 30, 2013

Sampling location: SW-6(S-RSF) split (ST-6) Sampling hour: N/D

Parameter		
	Limit	3.28 - 4.44
Mercury (Hg) mg/L	Blank	<0.00001
	Standard name	DMR-0311-2013-14-Hg
	Result	0.00418
	Accuracy	95.5%
	Limit	0.003 - 0.005
Dissolved Mercury (Hg) mg/L	Blank	<0.0001
	Standard name	DMR-0311-2013-14-Hg
	Result	0.0032
	Accuracy	80%
	Limit	0.003 - 0.005
Molybdenum (Mo) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	0.6781
	Accuracy	96.2%
	Limit	0.599 - 0.811
Dissolved Molybdenum (Mo) mg	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	0.6419
	Accuracy	91%
	Limit	0.599 - 0.811
Ammonia (NH3) mg N/L	Blank	<0.05
	Standard name	DMR-0446-2013-NH3
	Result	5.3
	Accuracy	98.5%
	Limit	4.44 - 6.00
Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.232
	Accuracy	91%
	Limit	0.96 - 1.30
Dissolved Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	1.147
	Accuracy	92.5%
	Limit	1.05 - 1.43
Nitrate (NO3) mg N/L	Blank	<0.01
	Sample duplicate	37.8-35.3
Nitrite (NO2) mg N/L	Blank	<0.01
	Standard name	DMR-0446-2013-NO2

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Quality control Report

Lab number: V-28320

Sample name:	SW-6(S-RSF) split (ST-6)	Sampling date:	July 30, 2013
Sampling location:	SW-6(S-RSF) split (ST-6)	Sampling hour:	N/D

Parameter		
	Result	2.5
	Accuracy	99.2%
	Limit	2.14 - 2.90
	Sample duplicate	0.41-0.40
Lead (Pb) mg/L	Blank	<0.0003
	Standard name	DMR-0311-2013-23m
	Result	0.9249
	Accuracy	97.2%
	Limit	0.8 - 1.0
Dissolved Lead (Pb) mg/L	Blank	<0.0003
	Standard name	DMR-0311-2013-23
	Result	0.9053
	Accuracy	99.4%
	Limit	0.8 - 1.0
Selenium (Se) mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23m
	Result	1.46
	Accuracy	91.9%
	Limit	1.15 - 1.55
Dissolved Selenium (Se) mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23
	Result	1.39
	Accuracy	97%
	Limit	1.15 - 1.55
Strontium (Sr) mg/L	Blank	<0.005
	Standard name	DMR-0773-2011-18a
	Result	1.25
	Accuracy	99.2%
	Limit	1.05 - 1.43
Sulfate (SO4) mg SO4/L	Blank	<0.6
	Standard name	DMR-0446-2013-SO4
	Result	117
	Accuracy	93.6%
	Limit	99 - 121
Thallium (Tl) mg/L	Blank	<0.005
	Standard name	STD Tl SC0187114 1000ppm
	Result	1001
	Accuracy	99.9%
	Limit	850 - 1150
Dissolved thallium (Tl) mg/L	Blank	<0.005

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Quality control Report

Lab number: V-28320

Sample name:	SW-6(S-RSF) split (ST-6)	Sampling date:	July 30, 2013
Sampling location:	SW-6(S-RSF) split (ST-6)	Sampling hour:	N/D

Parameter		
	Standard name	STD Tl SC0187114 1000ppm
	Result	1001
	Accuracy	99.9%
	Limit	850 - 1150
Titanium (Ti) mg/L	Blank	<0.01
Uranium (U) mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23m
	Result	2.01
	Accuracy	85.1%
	Limit	1.49 - 2.01
Vanadium (V) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.950
	Accuracy	98%
	Limit	1.69 - 2.29
Zinc (Zn) mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23m
	Result	5.07
	Accuracy	87.6%
	Limit	3.83 - 5.19
Dissolved Zinc mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23
	Result	4.78
	Accuracy	94%
	Limit	3.83 - 5.19

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Additional information

Lab number: V-28320

Sample name: SW-6(S-RSF) split (ST-6) Sampling date: July 30, 2013

Sampling location: SW-6(S-RSF) split (ST-6) Sampling hour: N/D

Lab method	Method reference
M-TIT-1.0	MA.303-Titr Auto 2.0
M-MET-3.0	MA.200-Mét. 1.2
M-NH3-2.0	MA.300-N 2.0
M-CL-2.0	MA.300-Ions 1.3
M-CI-1.0	MA.300-Anions 1.0
M-NITR-2.0	MA.300-NO3 2.0
M-Lix-1.0	MA.100-Lix.com. 1.1
M-SULF-2.0	MA.300-Ions 1.3

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Analytical Report

Company: **Agnico Eagle Division Meadowbank**

Client: M. Stéphane Robert
Address: General Delivery
Baker Lake Nunavut X0C 0A0
Phone: (604) 677-0689 (--)
Fax: (604) 677-0687

Lab number: V-28321

Sampling location:	NP2 split	Sampling date:	July 30, 2013
Sample name:	NP2 split	Sampling hour:	15:00
Sampled by:	Jeff Pratt	Date received:	July 31, 2013
Matrix:	Waste Water		
Drinking water distribution:			

Reported on: August 16, 2013

Unless otherwise stated, all samples were received in acceptable condition.

Results relate only to the sample tested.

All samples will be disposed of after 30 days following analysis.

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F-02-06
Version 3ième: 26/10/2005

Analytical Report

Lab number: V-28321

Sample name: NP2 split — Sampling date: July 30, 2013
Sampling location: NP2 split — Sampling hour: 15:00

Parameter	Result		Method name	Analysis date
Alkalinity	177	mg CaCO3/L	M-TIT-1.0	August 01, 2013
Aluminium (Al)	0.024	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Aluminium (Al)	<0.006	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Antimony (Sb)	0.0004	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Silver (Ag)	0.0024	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Arsenic (As)	0.0068	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Arsenic (As)	0.0022	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Ammonia nitrogen (NH3-NH4)	27.4	mg N/L	Sous-traitance\Multilab Direct	August 02, 2013
Barium (Ba)	0.1419	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Barium (Ba)	0.1329	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Beryllium (Be)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Boron (B)	0.09	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Cadmium (Cd)	0.0003	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Cadmium (Cd)	0.00022	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Chloride	587	mg/L	Sous-traitance\Multilab Direct	August 01, 2013
Chrome (Cr)	<0.0006	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Cobalt (Co)	0.2515	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Copper (Cu)	3.261	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Copper (Cu)	2.949	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Hardness	1031	mg CaCO3/L	Sous-traitance\Multilab Direct	August 05, 2013
Tin (Sn)	<0.001	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Iron (Fe)	23.6	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Iron (Fe)	0.15	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Fluoride (F)	0.02	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Lithium (Li)	0.005	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Manganese (Mn)	6.464	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Manganese (Mn)	5.427	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Mercury (Hg)	0.00002	mg/L	Sous-traitance\Multilab Direct	August 02, 2013
Dissolved Mercury (Hg)	<0.0001	mg/L	Sous-traitance\Multilab Direct	August 15, 2013
Molybdenum (Mo)	0.0871	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Molybdenum (Mo)	0.0716	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Ammonia (NH3)	0.14	mg N/L	Sous-traitance\Multilab Direct	August 02, 2013
Nickel (Ni)	1.465	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Nickel (Ni)	1.246	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Nitrate (NO3)	23.5	mg N/L	Sous-traitance\Multilab Direct	August 01, 2013
Nitrite (NO2)	0.4	mg N/L	Sous-traitance\Multilab Direct	August 01, 2013
Lead (Pb)	<0.0003	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Lead (Pb)	<0.0003	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Selenium (Se)	0.014	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Selenium (Se)	0.014	mg/L	Sous-traitance\Multilab Direct	August 05, 2013

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Analytical Report

Lab number: V-28321

Sample name: NP2 split

Sampling location: NP2 split

Sampling date: July 30, 2013

Sampling hour: 15:00

Parameter	Result		Method name	Analysis date
Dissolved Solids	2854	mg/L	M-TIT-1.0	August 01, 2013
Strontium (Sr)	1.62	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Sulfate (SO4)	1546	mg SO4/L	Sous-traitance\Multilab Direct	August 05, 2013
Thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Dissolved thallium (Tl)	<0.005	mg/L	Sous-traitance\Multilab Direct	August 07, 2013
Titanium (Ti)	0.39	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Uranium (U)	0.144	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Vanadium (V)	<0.0005	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Zinc (Zn)	0.006	mg/L	Sous-traitance\Multilab Direct	August 05, 2013
Dissolved Zinc	0.007	mg/L	Sous-traitance\Multilab Direct	August 05, 2013

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Multilab DIRECT

Detection limit

Lab number: V-28321

Sample name: NP2 split
Sampling location: NP2 split
Sampling date: July 30, 2013
Sampling hour: 15:00

Parameter	Value	Unit	Method	Accreditation
Alkalinity	2	mg CaCO3/L	M-TIT-1.0	
Aluminium (Al)	0.006	mg/L	Sous-traitance	
Dissolved Aluminium (Al)	0.006	mg/L	Sous-traitance	
Antimony (Sb)	0.0001	mg/L	Sous-traitance	Yes
Dissolved Silver (Ag)	0.0002	mg/L	Sous-traitance	
Arsenic (As)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Arsenic (As)	0.0005	mg/L	Sous-traitance	
Ammonia nitrogen (NH3-NH4)	0.01	mg N/L	Sous-traitance	Yes
Barium (Ba)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Barium (Ba)	0.0005	mg/L	Sous-traitance	
Beryllium (Be)	0.0005	mg/L	Sous-traitance	
Boron (B)	0.01	mg/L	Sous-traitance	Yes
Cadmium (Cd)	0.00002	mg/L	Sous-traitance	Yes
Dissolved Cadmium (Cd)	0.00002	mg/L	Sous-traitance	
Chloride	0.5	mg/L	Sous-traitance	Yes
Chrome (Cr)	0.0006	mg/L	Sous-traitance	Yes
Cobalt (Co)	0.0005	mg/L	Sous-traitance	
Copper (Cu)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Copper (Cu)	0.0005	mg/L	Sous-traitance	
Hardness	1	mg CaCO3/L	Sous-traitance	
Tin (Sn)	0.001	mg/L	Sous-traitance	Yes
Iron (Fe)	0.01	mg/L	Sous-traitance	Yes
Dissolved Iron (Fe)	0.01	mg/L	Sous-traitance	
Fluoride (F)	0.02	mg/L	Sous-traitance	Yes
Lithium (Li)	0.005	mg/L	Sous-traitance	
Manganese (Mn)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Manganese (Mn)	0.0005	mg/L	Sous-traitance	
Mercury (Hg)	0.00001	mg/L	Sous-traitance	Yes
Dissolved Mercury (Hg)	0.0001	mg/L	Sous-traitance	
Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Molybdenum (Mo)	0.0005	mg/L	Sous-traitance	
Ammonia (NH3)	0.05	mg N/L	Sous-traitance	
Nickel (Ni)	0.0005	mg/L	Sous-traitance	Yes
Dissolved Nickel (Ni)	0.0005	mg/L	Sous-traitance	
Nitrate (NO3)	0.01	mg N/L	Sous-traitance	Yes
Nitrite (NO2)	0.01	mg N/L	Sous-traitance	Yes
Lead (Pb)	0.0003	mg/L	Sous-traitance	Yes
Dissolved Lead (Pb)	0.0003	mg/L	Sous-traitance	
Selenium (Se)	0.001	mg/L	Sous-traitance	Yes
Dissolved Selenium (Se)	0.001	mg/L	Sous-traitance	

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Detection limit

Lab number: V-28321

Sample name: NP2 split
Sampling location: NP2 split
Sampling date: July 30, 2013
Sampling hour: 15:00

Parameter	Value	Unit	Method	Accreditation
Dissolved Solids	1	mg/L	M-TIT-1.0	
Strontium (Sr)	0.005	mg/L	Sous-traitance	
Sulfate (SO4)	1	mg SO4/L	Sous-traitance	Yes
Thallium (Tl)	0.005	mg/L	Sous-traitance	
Dissolved thallium (Tl)	0.005	mg/L	Sous-traitance	
Titanium (Ti)	0.01	mg/L	Sous-traitance	
Uranium (U)	0.001	mg/L	Sous-traitance	
Vanadium (V)	0.0005	mg/L	Sous-traitance	Yes
Zinc (Zn)	0.001	mg/L	Sous-traitance	Yes
Dissolved Zinc	0.001	mg/L	Sous-traitance	

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F-02-06
Version 3ième: 26/10/2005

Multilab DIRECT

Quality control Report

Lab number: V-28321

Sample name:	NP2 split	Sampling date:	July 30, 2013
Sampling location:	NP2 split	Sampling hour:	15:00

Parameter		
Alkalinity mg CaCO3/L	Standard name	STD alcalinité
	Result	158
	Accuracy	91%
	Limit	123 - 167
Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0311-2013-23m
	Result	5.77
	Accuracy	93.2%
	Limit	5.26 - 7.12
Dissolved Aluminium (Al) mg/L	Blank	<0.006
	Standard name	DMR-0311-2013-23
	Result	6.22
	Accuracy	99.5%
	Limit	5.26 - 7.12
Antimony (Sb) mg/L	Blank	<0.0001
	Standard name	DMR-0311-2013-23m
	Result	0.1885
	Accuracy	85.3%
	Limit	0.188 - 0.254
Dissolved Silver (Ag) mg/L	Blank	<0.0002
Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	0.3401
	Accuracy	79.8%
	Limit	0.198 - 0.368
Dissolved Arsenic (As) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	0.3176
	Accuracy	95.5%
	Limit	0.236 - 0.372
Ammonia nitrogen (NH3-NH4) m	Blank	<0.01
	Standard name	DMR-0446-2013-NH3
	Result	5.3
	Accuracy	98.5%
	Limit	4.44 - 6.00
Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	2.146
	Accuracy	89.4%
	Limit	2.0 - 2.8

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Quality control Report

Lab number: V-28321

Sample name: NP2 split
Sampling location: NP2 split
Sampling date: July 30, 2013
Sampling hour: 15:00

Parameter		
Dissolved Barium (Ba) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	2.254
	Accuracy	93.9%
	Limit	2.04 - 2.76
Beryllium (Be) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.591
	Accuracy	93.6%
	Limit	1.4 - 2.0
Boron (B) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23m
	Result	2.5
	Accuracy	86.8%
	Limit	2.45 - 3.31
Cadmium (Cd) mg/L	Blank	<0.00002
	Standard name	DMR-0311-2013-23m
	Result	0.91111
	Accuracy	98.8%
	Limit	0.8 - 1.0
Dissolved Cadmium (Cd) mg/L	Blank	<0.00002
	Standard name	DMR-0311-2013-23
	Result	0.87322
	Accuracy	97%
	Limit	0.8 - 1.0
Chloride mg/L	Blank	<0.5
	Standard name	DMR-0446-2013-CL
	Result	100
	Accuracy	99%
	Limit	87 - 111
Chrome (Cr) mg/L	Blank	<0.0006
	Standard name	DMR-0311-2013-23m
	Result	4.064
	Accuracy	99.7%
	Limit	3.44 - 4.66
Cobalt (Co) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.643
	Accuracy	94.7%
	Limit	1.33 - 1.79

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Multilab DIRECT

Quality control Report

Lab number: V-28321

Sample name: NP2 split | Sampling date: July 30, 2013

Sampling location: NP2 split | Sampling hour: 15:00

Parameter		
Copper (Cu) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.404
	Accuracy	86.8%
	Limit	1.05 - 1.43
Dissolved Copper (Cu) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	1.301
	Accuracy	95.1%
	Limit	1.05 - 1.43
Tin (Sn) mg/L	Blank	<0.001
Iron (Fe) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23m
	Result	11.6
	Accuracy	89.5%
	Limit	8.9 - 12.1
Dissolved Iron (Fe) mg/L	Blank	<0.01
	Standard name	DMR-0311-2013-23
	Result	10.4
	Accuracy	99%
	Limit	8.9 - 12.1
Lithium (Li) mg/L	Blank	<0.005
	Standard name	DMR-0773-2011-18a
	Result	0.863
	Accuracy	97.3%
	Limit	0.714 - 0.966
Manganese (Mn) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	3.956
	Accuracy	97.5%
	Limit	3.28 - 4.44
Dissolved Manganese (Mn) mg/l	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	3.675
	Accuracy	95.2%
	Limit	3.28 - 4.44
Mercury (Hg) mg/L	Blank	<0.00001
	Standard name	DMR-0311-2013-14-Hg
	Result	0.00418
	Accuracy	95.5%

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F-02-06
Version 3ième: 26/10/2005

Multilab DIRECT

Quality control Report

Lab number: V-28321

Sample name:	NP2 split	Sampling date:	July 30, 2013
Sampling location:	NP2 split	Sampling hour:	15:00

Parameter		
	Limit	0.003 - 0.005
Dissolved Mercury (Hg) mg/L	Blank	<0.0001
	Standard name	DMR-0311-2013-14-Hg
	Result	0.0032
	Accuracy	80%
	Limit	0.003 - 0.005
Molybdenum (Mo) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	0.6781
	Accuracy	96.2%
	Limit	0.599 - 0.811
Dissolved Molybdenum (Mo) mg	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	0.6419
	Accuracy	91%
	Limit	0.599 - 0.811
Ammonia (NH3) mg N/L	Blank	<0.05
	Standard name	DMR-0446-2013-NH3
	Result	5.3
	Accuracy	98.5%
	Limit	4.44 - 6.00
Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
	Result	1.232
	Accuracy	91%
	Limit	0.96 - 1.30
Dissolved Nickel (Ni) mg/L	Blank	<0.0005
	Standard name	DMR-0311-2013-23
	Result	1.147
	Accuracy	92.5%
	Limit	1.05 - 1.43
Nitrate (NO3) mg N/L	Blank	<0.01
Nitrite (NO2) mg N/L	Blank	<0.01
	Standard name	DMR-0446-2013-NO2
	Result	2.5
	Accuracy	99.2%
	Limit	2.14 - 2.90
Lead (Pb) mg/L	Blank	<0.0003
	Standard name	DMR-0311-2013-23m
	Result	0.9249

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Multilab DIRECT

Quality control Report

Lab number: V-28321

Sample name: NP2 split — Sampling date: July 30, 2013

Sampling location: NP2 split — Sampling hour: 15:00

Parameter		
Dissolved Lead (Pb) mg/L	Accuracy	97.2%
	Limit	0.8 - 1.0
	Blank	<0.0003
	Standard name	DMR-0311-2013-23
	Result	0.9053
Selenium (Se) mg/L	Accuracy	99.4%
	Limit	0.8 - 1.0
	Blank	<0.001
	Standard name	DMR-0311-2013-23m
	Result	1.46
Dissolved Selenium (Se) mg/L	Accuracy	91.9%
	Limit	1.15 - 1.55
	Blank	<0.001
	Standard name	DMR-0311-2013-23
	Result	1.39
Strontium (Sr) mg/L	Accuracy	97%
	Limit	1.15 - 1.55
	Blank	<0.005
	Standard name	DMR-0773-2011-18a
	Result	1.25
Sulfate (SO4) mg SO4/L	Accuracy	99.2%
	Limit	1.05 - 1.43
	Blank	<0.6
	Standard name	DMR-0446-2013-SO4
	Result	117
Thallium (Tl) mg/L	Accuracy	93.6%
	Limit	99 - 121
	Blank	<0.005
	Standard name	STD Tl SC0187114 1000ppm
	Result	1001
Dissolved thallium (Tl) mg/L	Accuracy	99.9%
	Limit	850 - 1150
	Blank	<0.005
	Standard name	STD Tl SC0187114 1000ppm
	Result	1001
Titanium (Ti) mg/L	Accuracy	99.9%
	Limit	850 - 1150
	Blank	<0.01
Uranium (U) mg/L	Blank	<0.001
	Standard name	DMR-0311-2013-23m

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Quality control Report

Lab number: V-28321

Sample name: NP2 split — Sampling date: July 30, 2013

Sampling location: NP2 split — Sampling hour: 15:00

Parameter		
Vanadium (V) mg/L	Result	2.01
	Accuracy	85.1%
	Limit	1.49 - 2.01
	Blank	<0.0005
	Standard name	DMR-0311-2013-23m
Zinc (Zn) mg/L	Result	1.950
	Accuracy	98%
	Limit	1.69 - 2.29
	Blank	<0.001
	Standard name	DMR-0311-2013-23m
Dissolved Zinc mg/L	Result	5.07
	Accuracy	87.6%
	Limit	3.83 - 5.19
	Blank	<0.001
	Standard name	DMR-0311-2013-23
	Result	4.78
	Accuracy	94%
	Limit	3.83 - 5.19

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Additional information

Lab number: V-28321

Sample name: NP2 split — Sampling date: July 30, 2013

Sampling location: NP2 split — Sampling hour: 15:00

Lab method	Method reference
M-TIT-1.0	MA.303-Titr Auto 2.0
M-MET-3.0	MA.200-Mét. 1.2
M-NH3-2.0	MA.300-N 2.0
M-CL-2.0	MA.300-Ions 1.3
M-CI-1.0	MA.300-Anions 1.0
M-NITR-2.0	MA.300-NO3 2.0
M-Lix-1.0	MA.100-Lix.com. 1.1
M-SULF-2.0	MA.300-Ions 1.3

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F-02-06
Version 3ième: 26/10/2005

APPENDIX 2

SOP: Management of Water in Diversion Ditches, Seeps, and Collection Locations during Freshet

Water Management in Diversion Ditches, Seeps, and Collection Locations during Freshet

		PROCEDURE NUMBER:	**MBK-ENV-0006**
People concerned	Mine, Dikes, Engineering and Environment	**Prepared by**	**Jeffrey Pratt** **Environmental Coordinator**
		Authorized by	**Kevin Buck** **Environmental Superintendent**
Effective :	**September 4, 2013**	***"Safety First, Safety Last … Safety Always!"*** ***"No Repeats" – Our Stepping Stone to ZERO HARM***	
This procedure corresponds to the required minimum standard. Each and everyone also have to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.			

Objective:

This procedure is put in place to give specific dates in which actions must be taken to avoid excess non-contact water impacting on site mining activity, and also to prevent excessive pooling of contact water that could lead to a release of contact water off the mine site. This procedure will keep the project in conformance with NWB license, Part D, Item 33; Part E, Item 9.

Concerned departments:

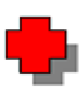

Environment


Mine


Engineering


Dyke and Dewatering

Risks/ Impacts Legend


Health & Safety


Process/quality


Costs


Environment

Management of Water in Diversion Ditches, Seeps, and Collection Locations during Freshet

Procedure	*Risks / Impacts*
Diversion Ditches	
1. No later than May 1, all diversion ditches must be cleaned free of ice and snow to allow freshet melt water to flow freely and prevent any obstructions within the diversion ditches.	Avoid Environmental Impact Avoid Excess water on Mine Site
2. Culverts under Vault road are to be steamed, if necessary, to free ice obstructions.	Avoid Environmental Impact Avoid Excess water on Mine Site and road wash out
3. Starting May 1 commence monitoring water moving through the diversion ditch system. Sampling for TSS must be completed by Environment Department, and shall initiate as soon as water flowing.	Avoid Environmental Impact
4. If TSS levels are elevated Sediment control measures must be put in place. This may include installation of silt fence, or turbidity barrier. To be conducted by Environment staff	Avoid Environmental Impact

Seep and Collection Locations

1. May 1st begin weekly inspections of seep areas and melt water collection locations. As per NWB license, Part E, Item 9.	Avoid Environmental Impact Avoid Excess water on Mine Site
2. At first sign of melt water collection, contact Environment Department. It will need to be determined if the water requires analysis prior to movement.	Avoid Environmental Impact Avoid Excess water on Mine Site
3. At first sign of melt water arrange with Mine or Dyke and Dewatering to begin removing water from seep and collection locations. Be sure to get an approved disposal location from the Environment Department.	Avoid Environmental Impact
4. Any movement of water must be recorded. Quantity of water moved and location water is drawn and dispensed must be recorded.	Required for Reporting to Government Agencies
5. All actions listed in this SOP are required corrective measures to mitigate any impacts related to surface drainage resulting from the Project's activities on off site receiving waters. As per NWB license, Part D, Item 33.	Avoid Environmental Impact

APPENDIX C

Tailings Storage Facilities – 2013 Instrumentation Review

Tailings Storage Facilities

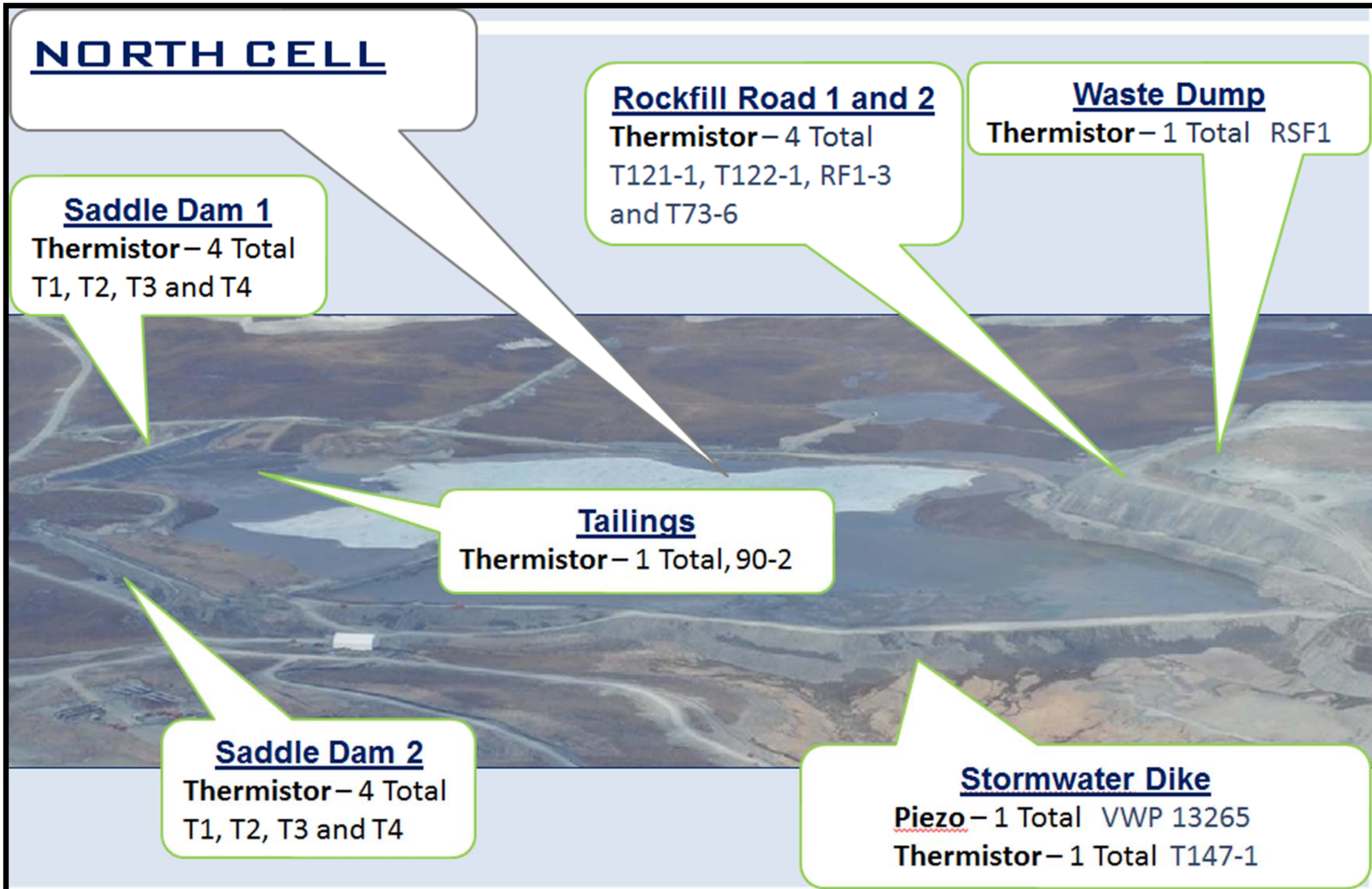
Instrumentation Review

Agnico Eagle Mines-Meadowbank Division

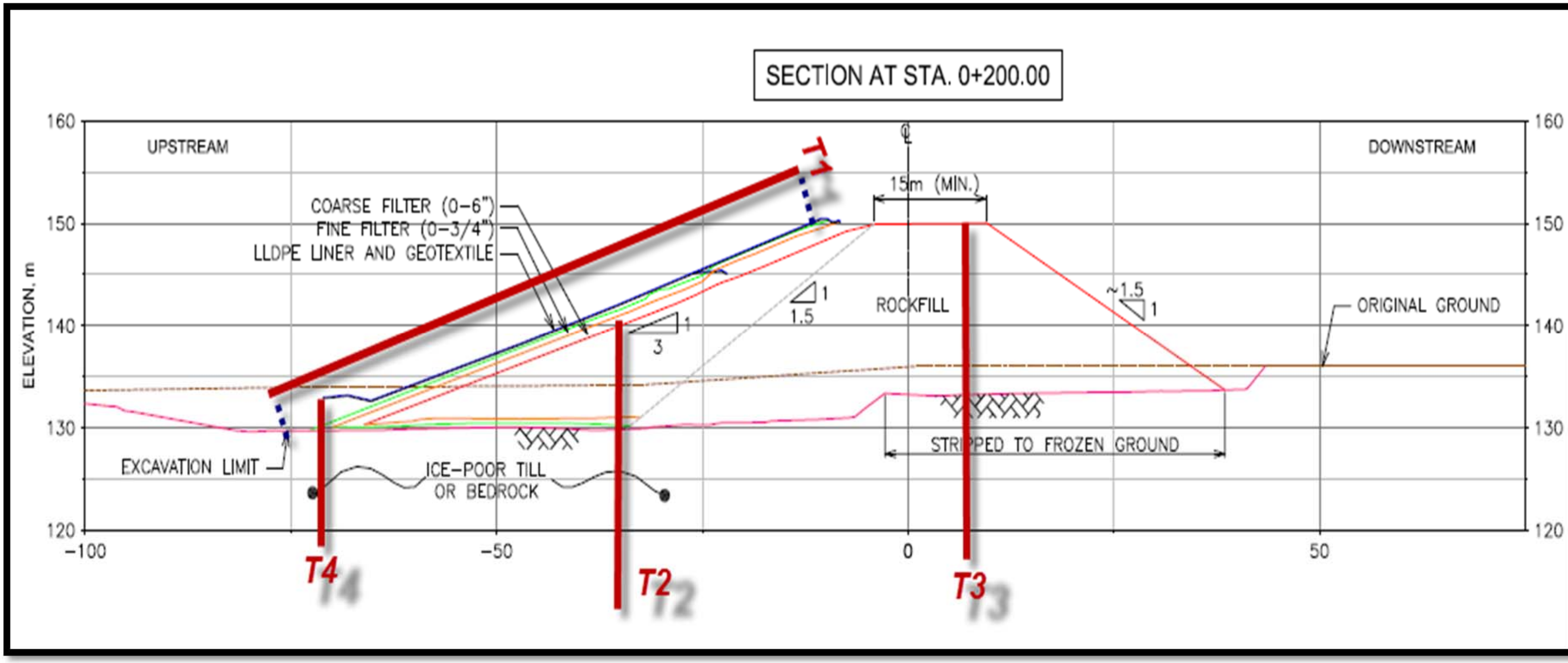
Meadowbank Dike Review Board

Meeting # 14 – September 9 to 11th, 2013

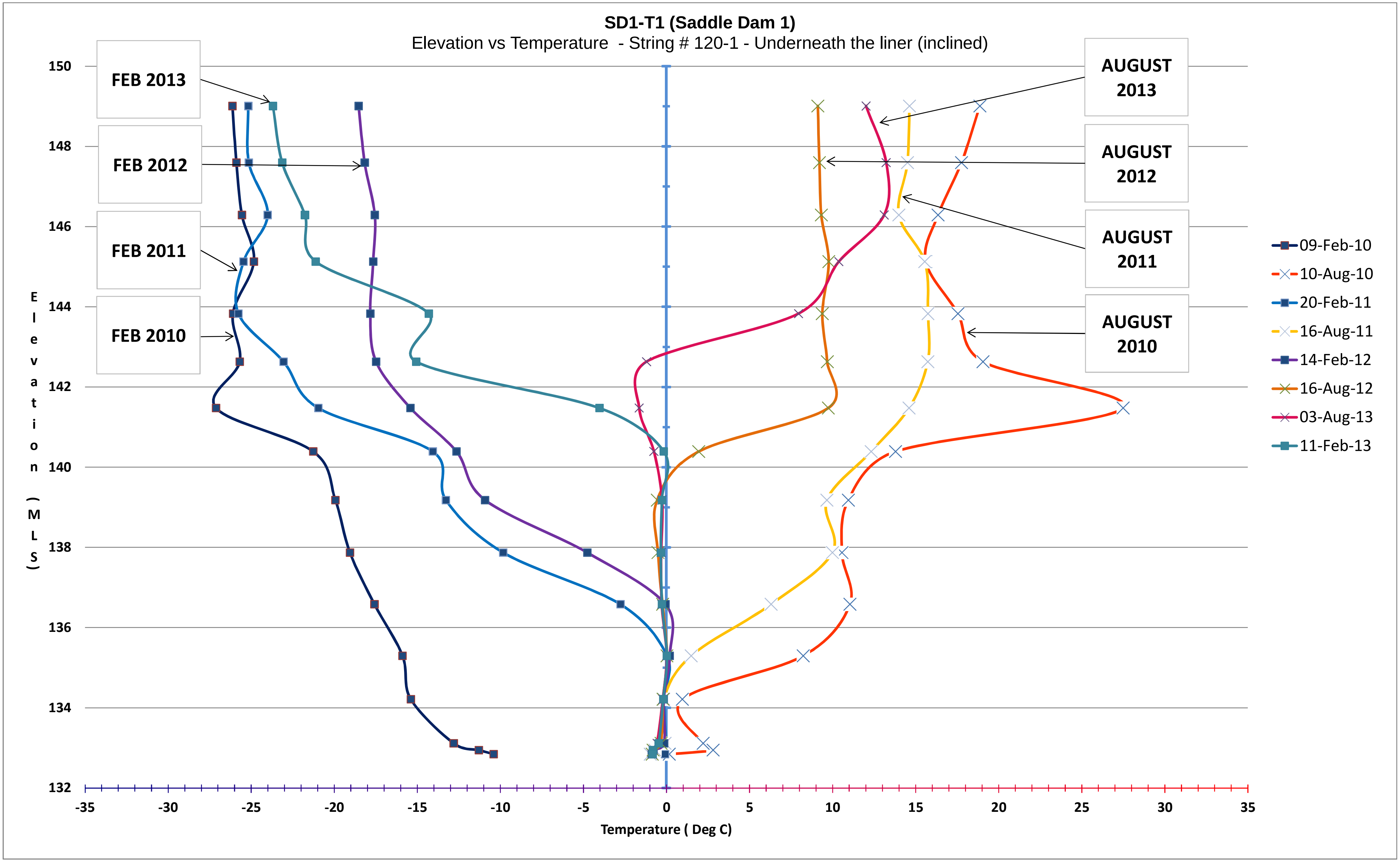
Meadowbank Mine Site, Nunavut

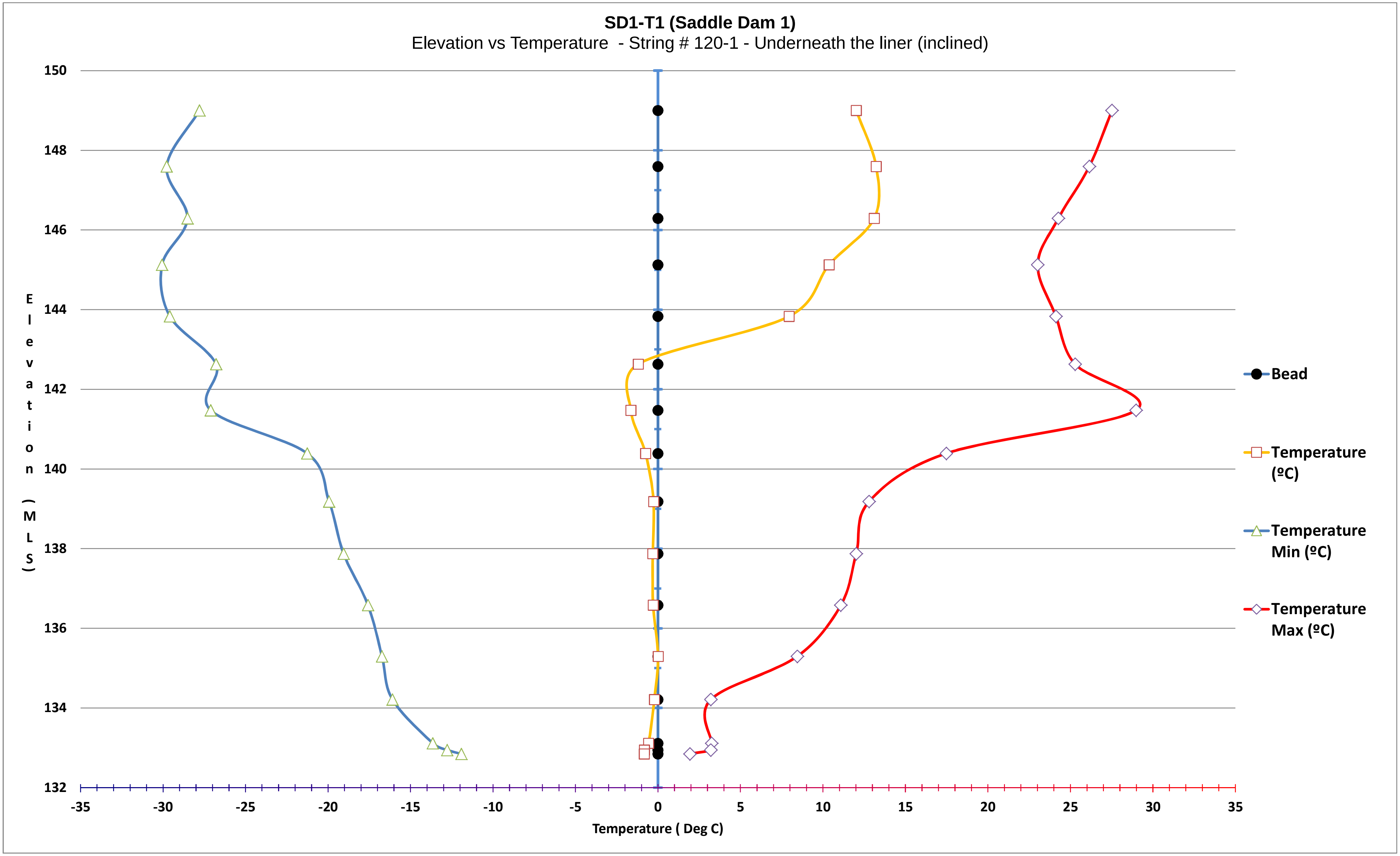

NORTH CELL
Rockfill Road 1 and 2
Thermistor – 4 Total
T121-1, T122-1, RF1-3
and T73-6
Waste Dump
Thermistor – 1 Total RSF1
Saddle Dam 1
Thermistor – 4 Total
T1, T2, T3 and T4
Tailings
Thermistor – 1 Total, 90-2
Saddle Dam 2
Thermistor – 4 Total
T1, T2, T3 and T4
Stormwater Dike
Piezo – 1 Total VWP 13265
Thermistor – 1 Total T147-1

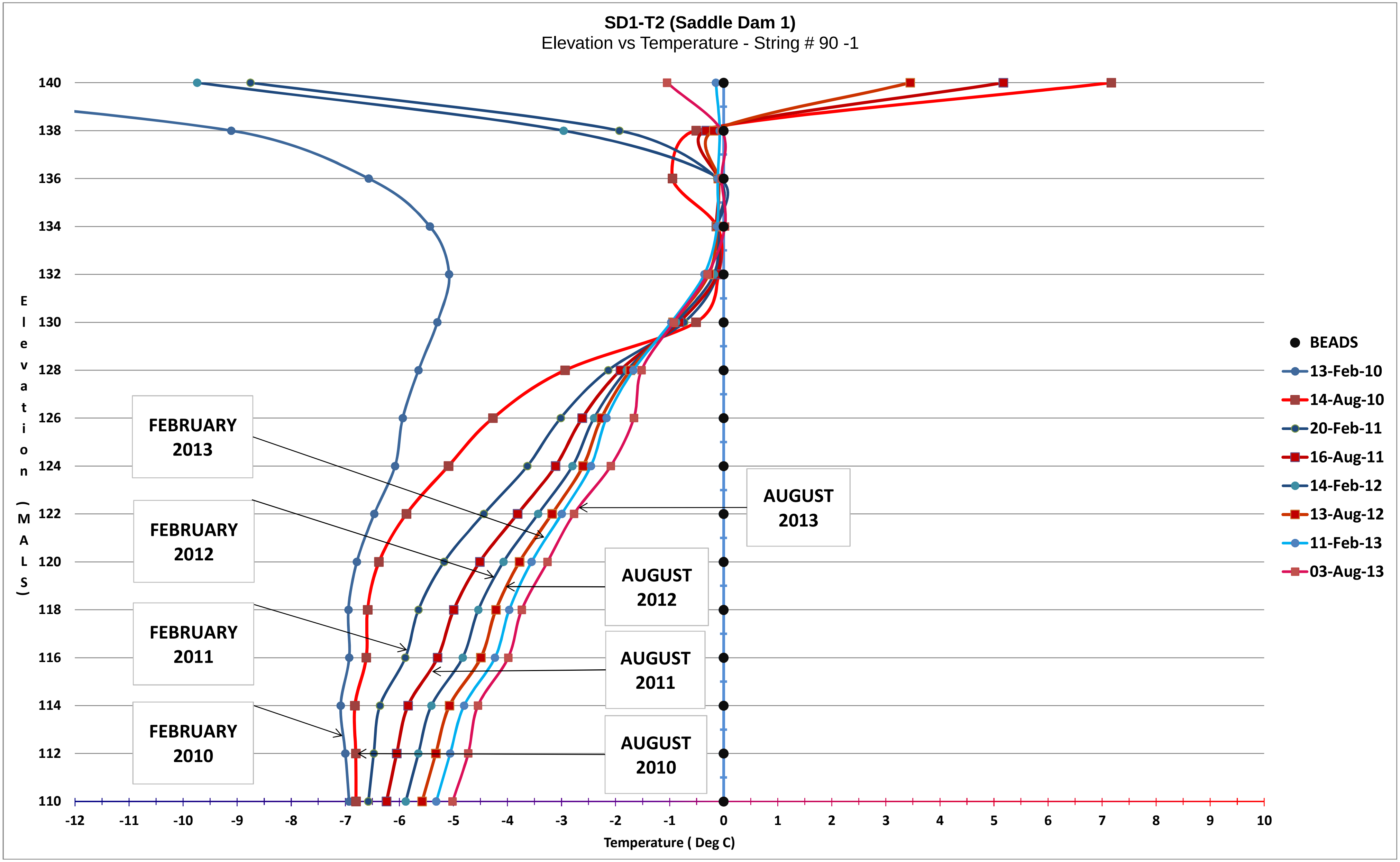
SD 1



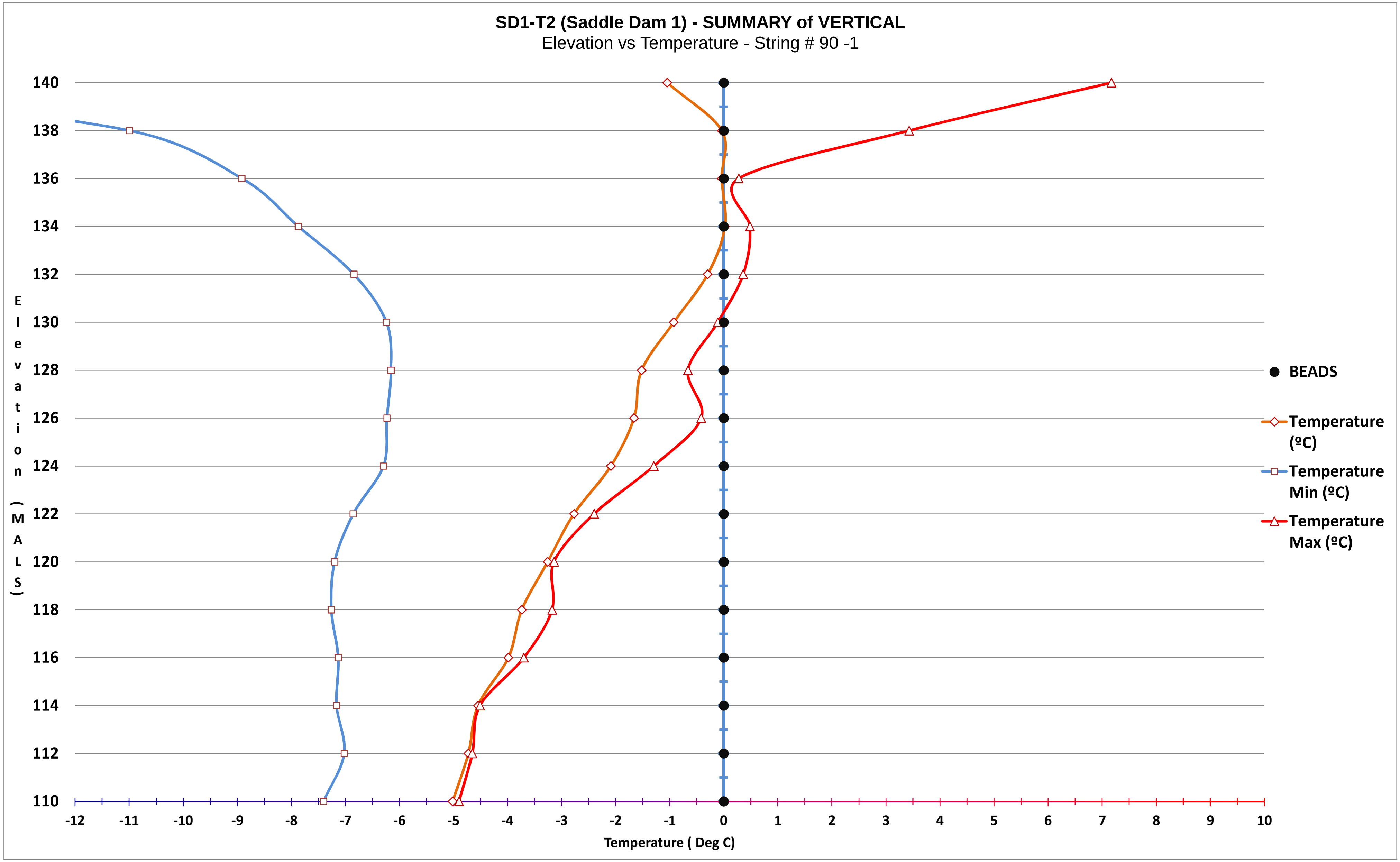
SECTION AT STA. 0+200.00
UPSTREAM
DOWNSTREAM
ELEVATION, m
160
150
140
130
120
−100
−50
0
50
COARSE FILTER (0−6")
FINE FILTER (0−3/4")
LLDPE LINER AND GEOTEXTILE
15m (MIN.)
ROCKFILL
~1.5
1
1.5
3
ORIGINAL GROUND
STRIPPED TO FROZEN GROUND
EXCAVATION LIMIT
ICE−POOR TILL
OR BEDROCK
T1
T2
T3
T4


SD1-T1 (Saddle Dam 1)
Elevation vs Temperature - String # 120-1 - Underneath the liner (inclined)
FEB 2013
FEB 2012
FEB 2011
FEB 2010
AUGUST 2013
AUGUST 2012
AUGUST 2011
AUGUST 2010
Elevation (MLS)
150
148
146
144
142
140
138
136
134
132
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
Temperature (Deg C)
09-Feb-10
10-Aug-10
20-Feb-11
16-Aug-11
14-Feb-12
16-Aug-12
03-Aug-13
11-Feb-13

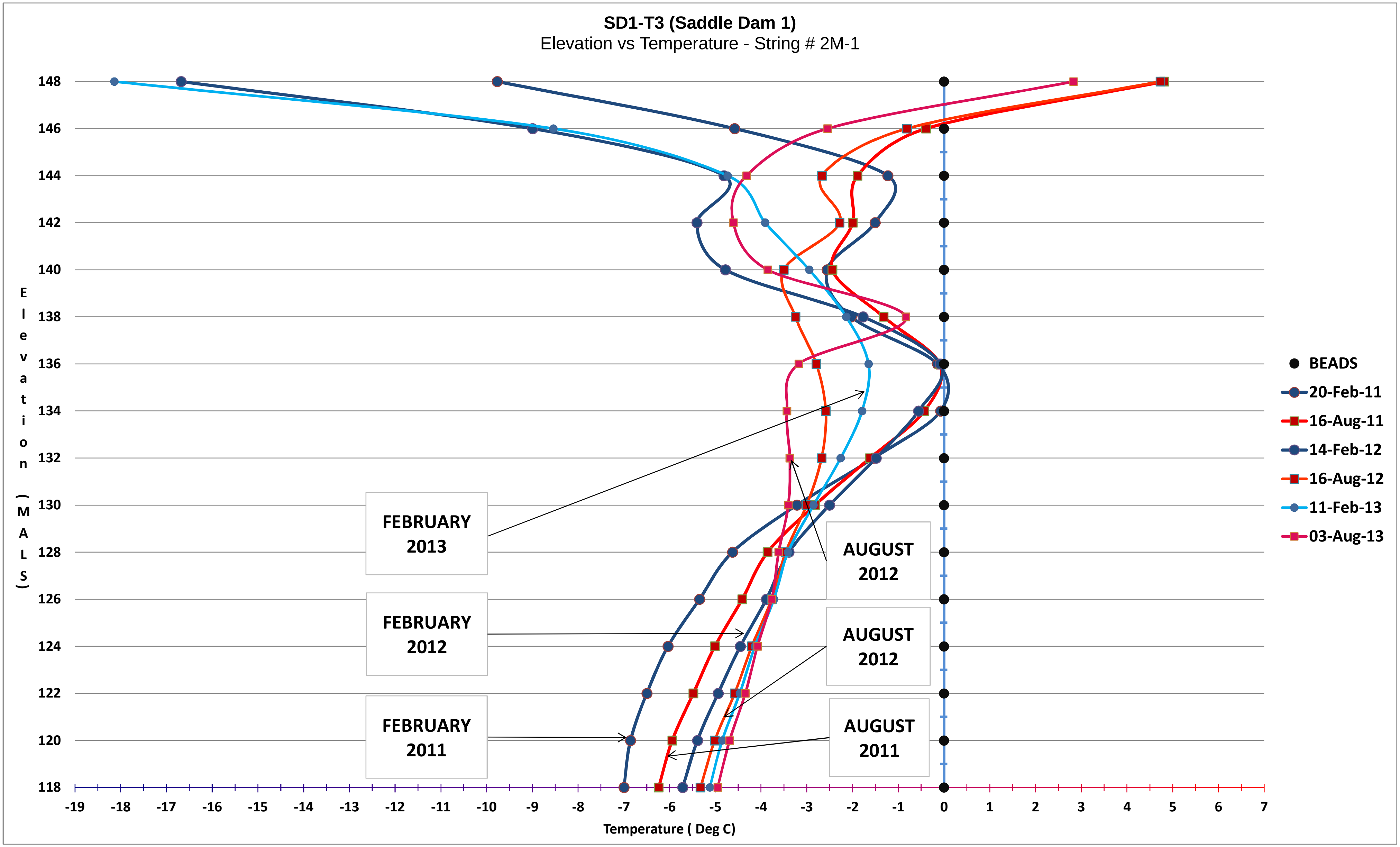

SD1-T1 (Saddle Dam 1)
Elevation vs Temperature - String # 120-1 - Underneath the liner (inclined)
150
148
146
144
142
140
138
136
134
132
Elevation (MLS)
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
Temperature (Deg C)
Bead
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)



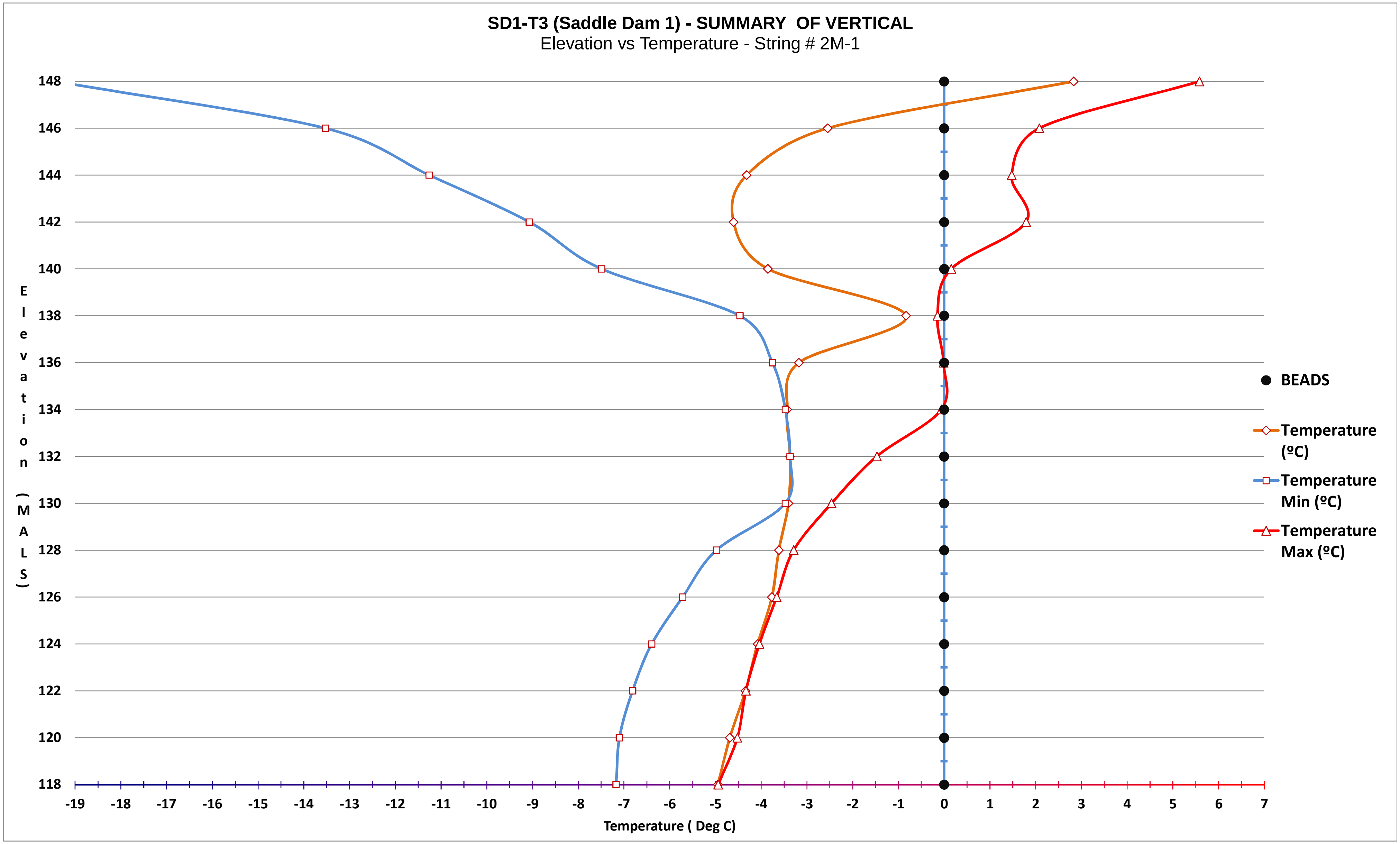
SD1-T2 (Saddle Dam 1)
Elevation vs Temperature - String # 90 -1
Elevation (MASL)
140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
Temperature (Deg C)
FEBRUARY 2013
FEBRUARY 2012
FEBRUARY 2011
FEBRUARY 2010
AUGUST 2013
AUGUST 2012
AUGUST 2011
AUGUST 2010
BEADS
13-Feb-10
14-Aug-10
20-Feb-11
16-Aug-11
14-Feb-12
13-Aug-12
11-Feb-13
03-Aug-13

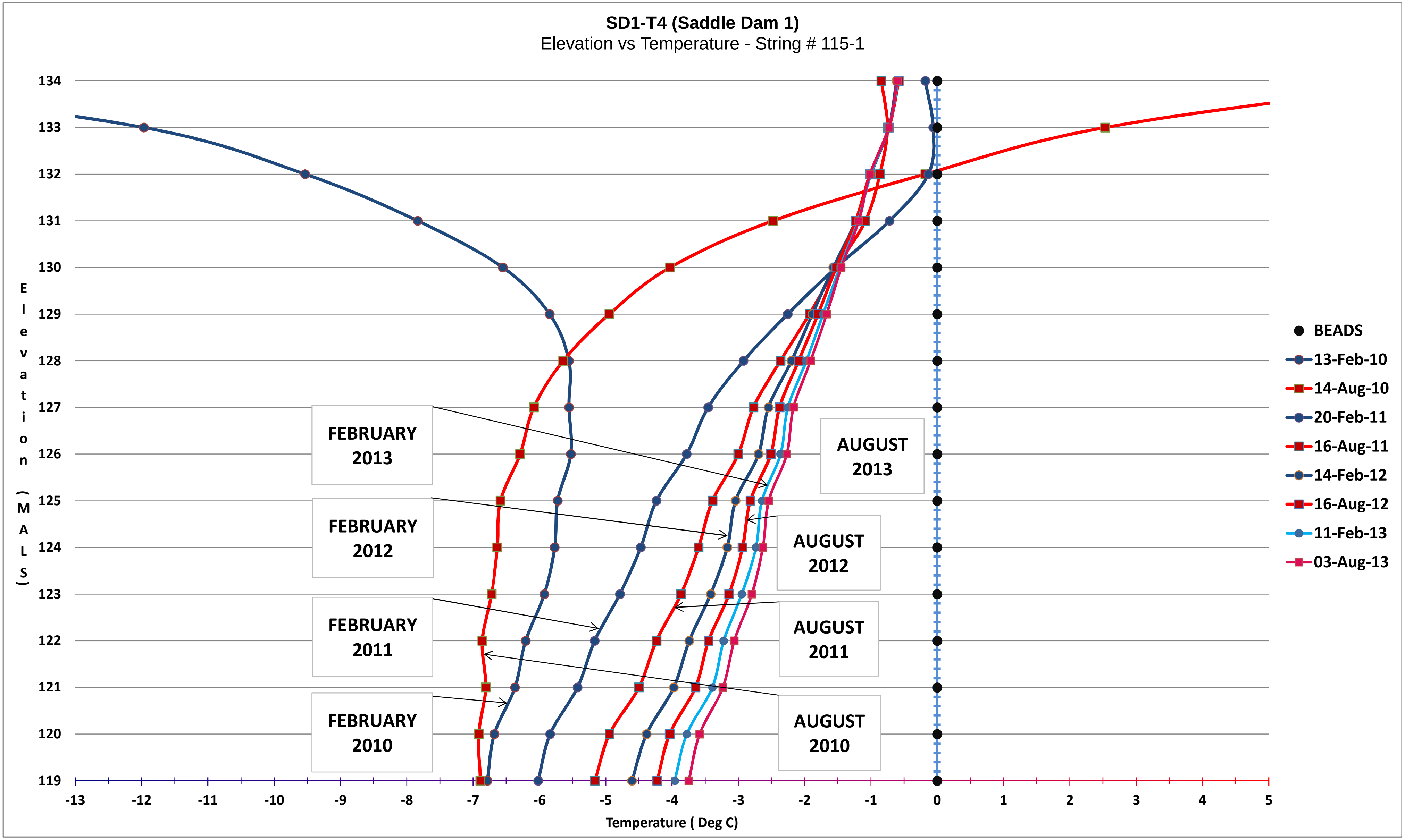


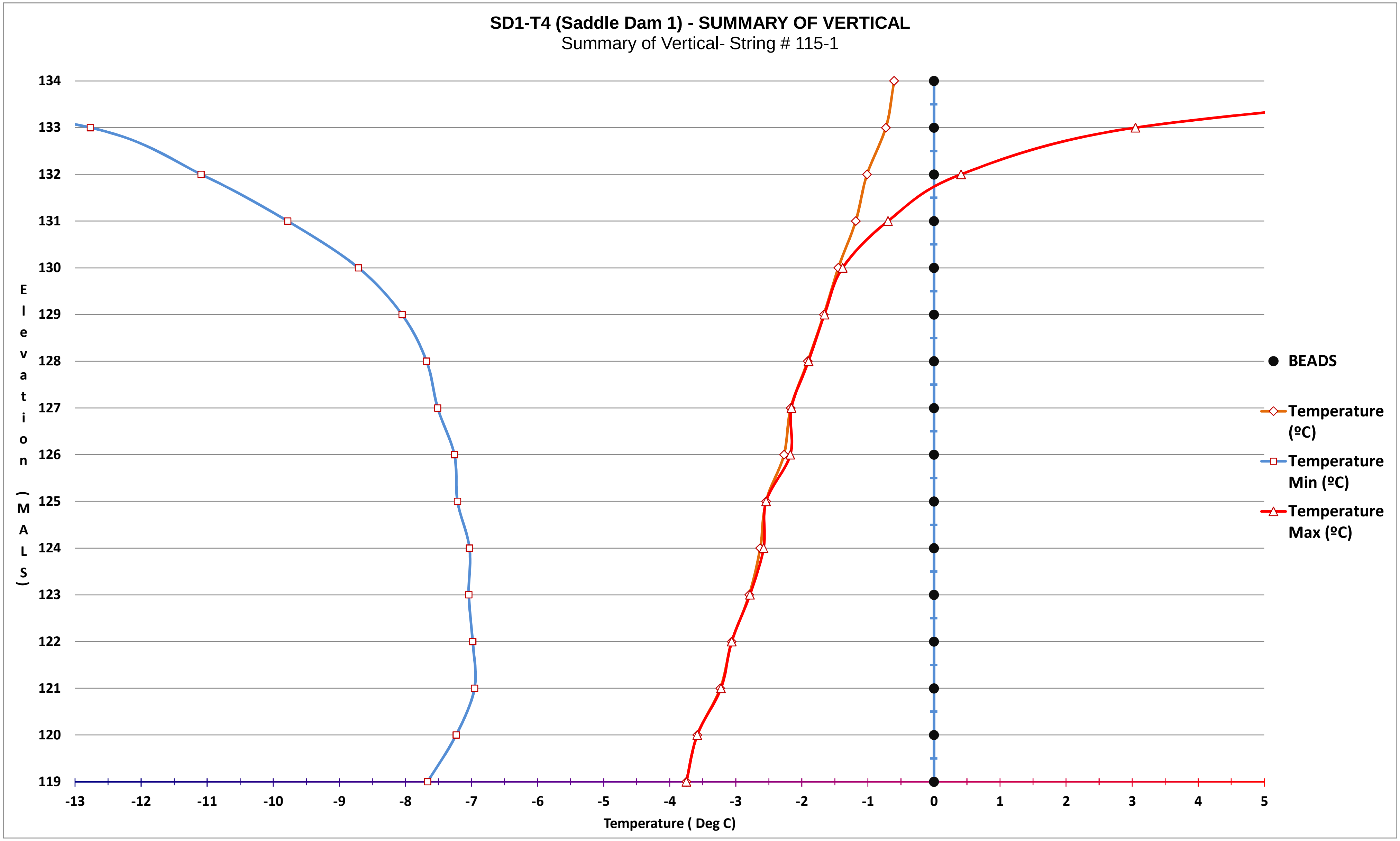
SD1-T2 (Saddle Dam 1) - SUMMARY of VERTICAL
Elevation vs Temperature - String # 90 -1
Elevation (MALS)
Temperature (Deg C)
140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)

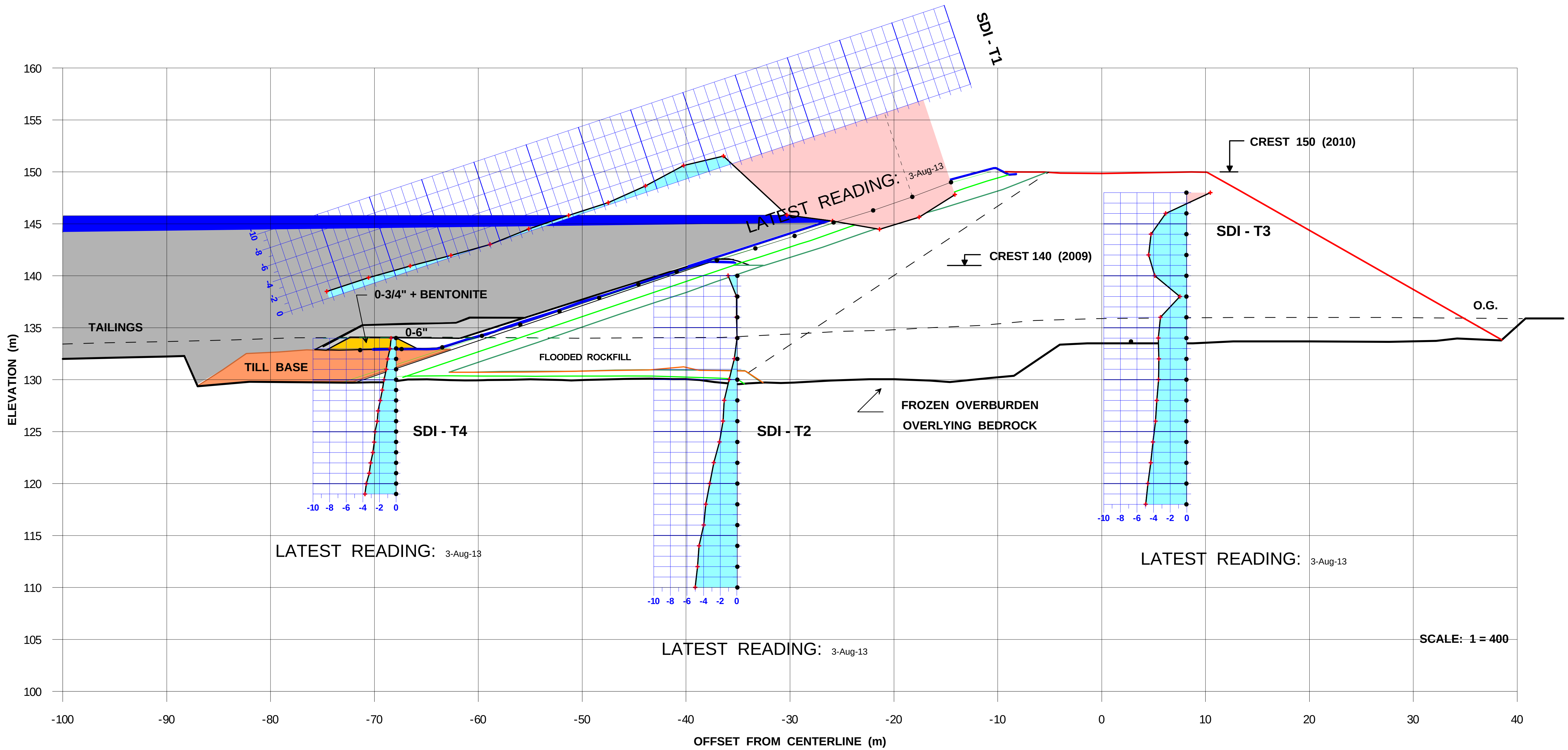


SD1-T3 (Saddle Dam 1)
Elevation vs Temperature - String # 2M-1
Elevation (MALS)
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
-19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7
Temperature (Deg C)
FEBRUARY 2013
FEBRUARY 2012
FEBRUARY 2011
AUGUST 2012
AUGUST 2012
AUGUST 2011
BEADS
20-Feb-11
16-Aug-11
14-Feb-12
16-Aug-12
11-Feb-13
03-Aug-13


SD1-T3 (Saddle Dam 1) - SUMMARY OF VERTICAL
Elevation vs Temperature - String # 2M-1
Elevation (MALS)
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
-19
-18
-17
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)


SD1-T4 (Saddle Dam 1)
Elevation vs Temperature - String # 115-1
Elevation (MASL)
134
133
132
131
130
129
128
127
126
125
124
123
122
121
120
119
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
Temperature (Deg C)
FEBRUARY 2013
FEBRUARY 2012
FEBRUARY 2011
FEBRUARY 2010
AUGUST 2013
AUGUST 2012
AUGUST 2011
AUGUST 2010
BEADS
13-Feb-10
14-Aug-10
20-Feb-11
16-Aug-11
14-Feb-12
16-Aug-12
11-Feb-13
03-Aug-13


SD1-T4 (Saddle Dam 1) - SUMMARY OF VERTICAL
Summary of Vertical- String # 115-1
Elevation (MALS)
134
133
132
131
130
129
128
127
126
125
124
123
122
121
120
119
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)



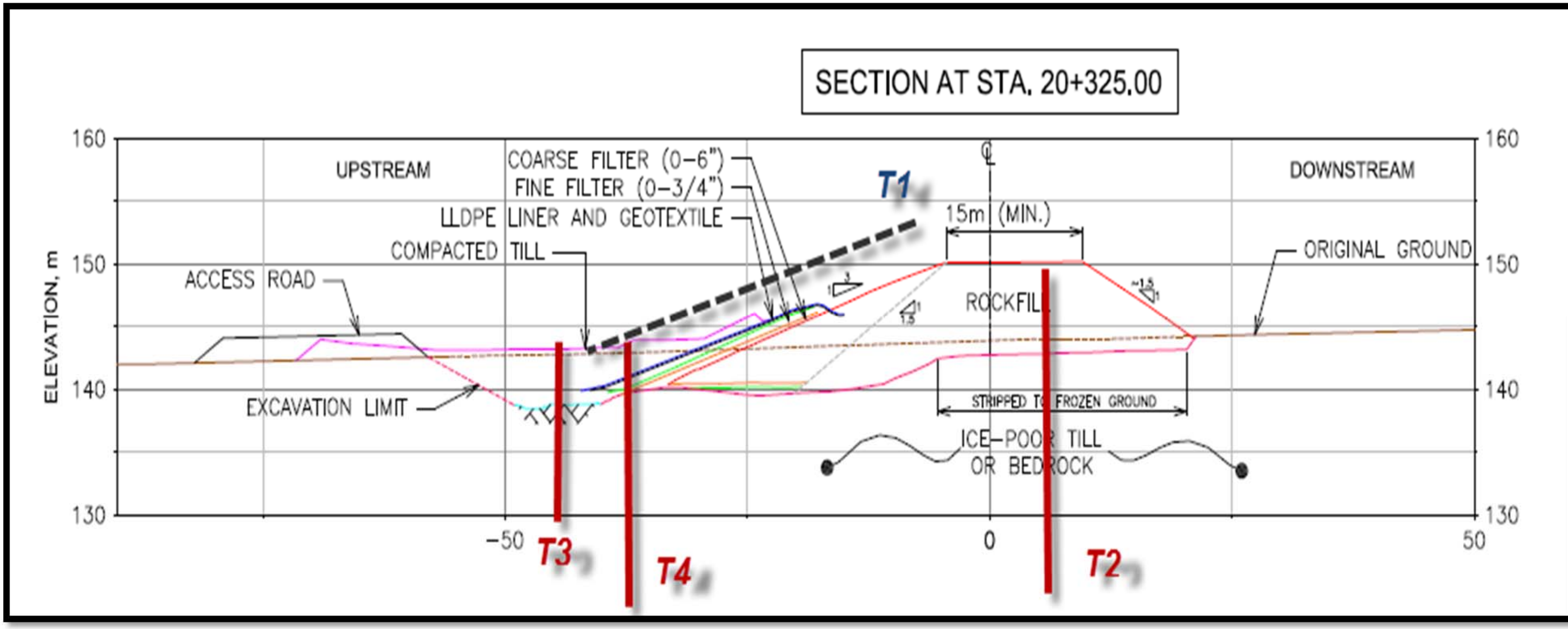
AGNICO-EAGLE MINES LIMITED - MEADOWBANK DIVISION

AGNICO EAGLE - MEADOWBANK MINE
SADDLE DAM 1 - GROUND TEMPERATURE MONITORING
LATEST TEMPERATURE PROFILES - AUGUST 2013
TAILINGS ELEVATION: 145 MASL WATER POND ELEVATION: 145.6 MASL

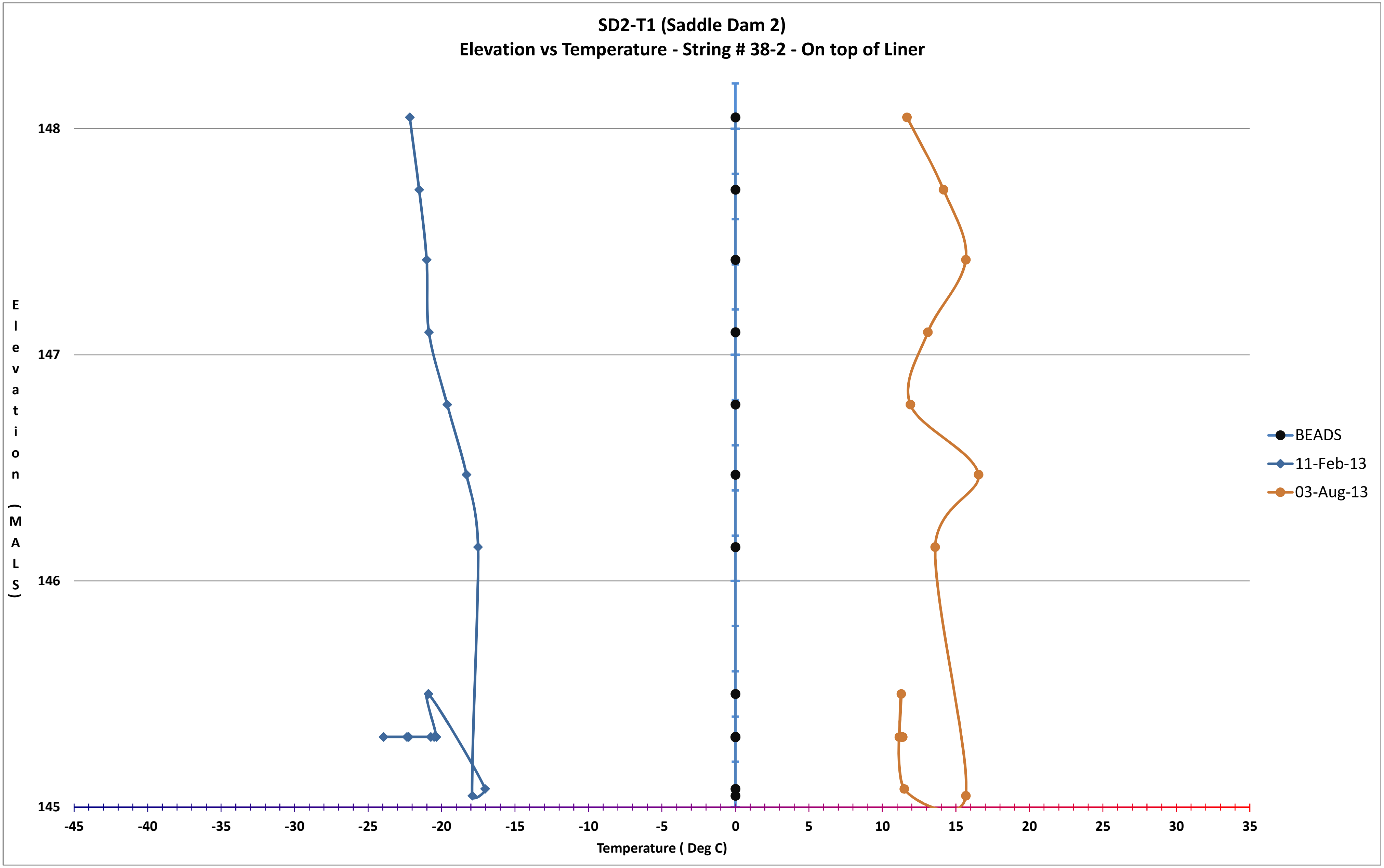
FIGURE 1

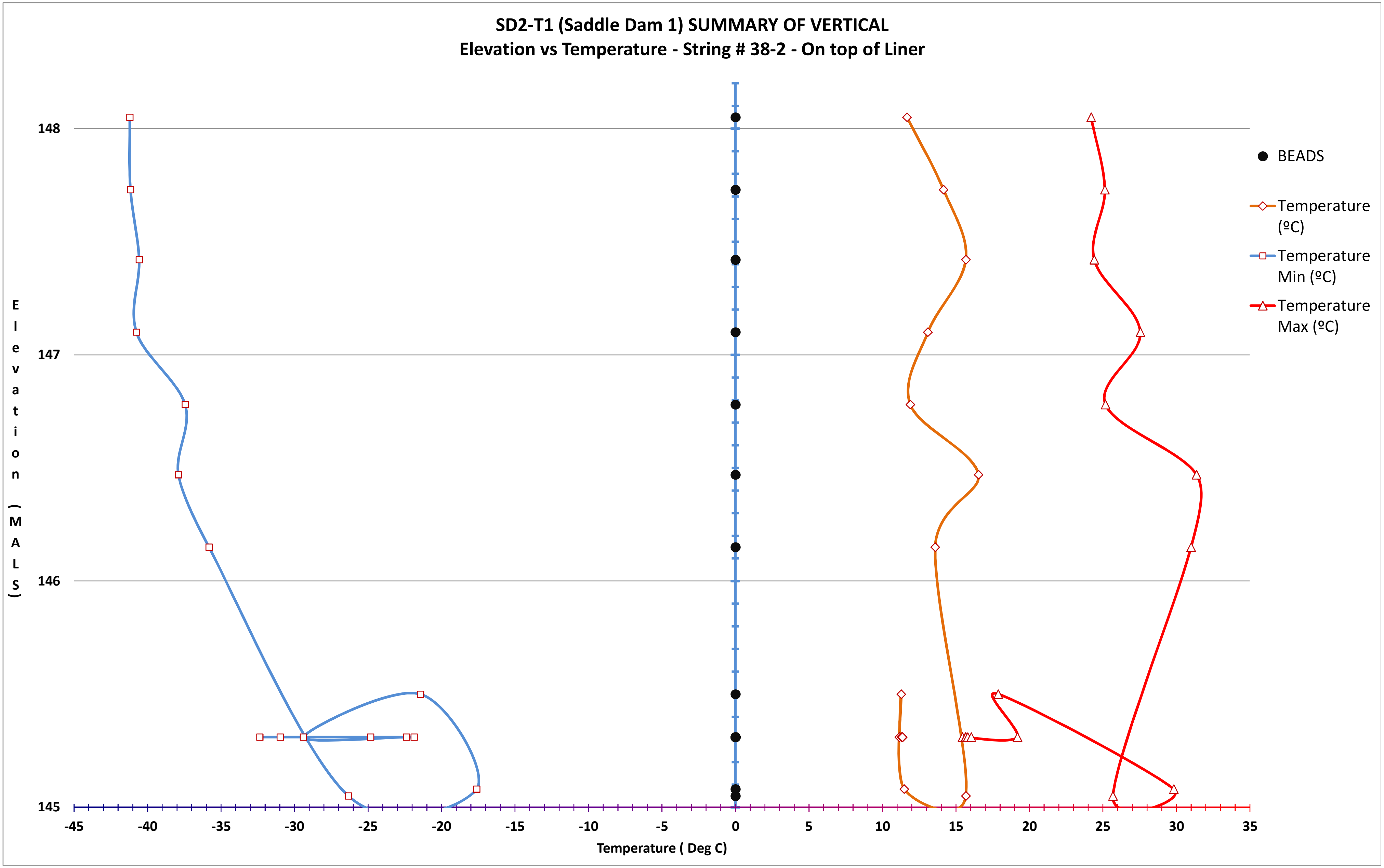
SD1 - TEMPERATURE MONITORING - FULL SECTION.GRF

SD 2

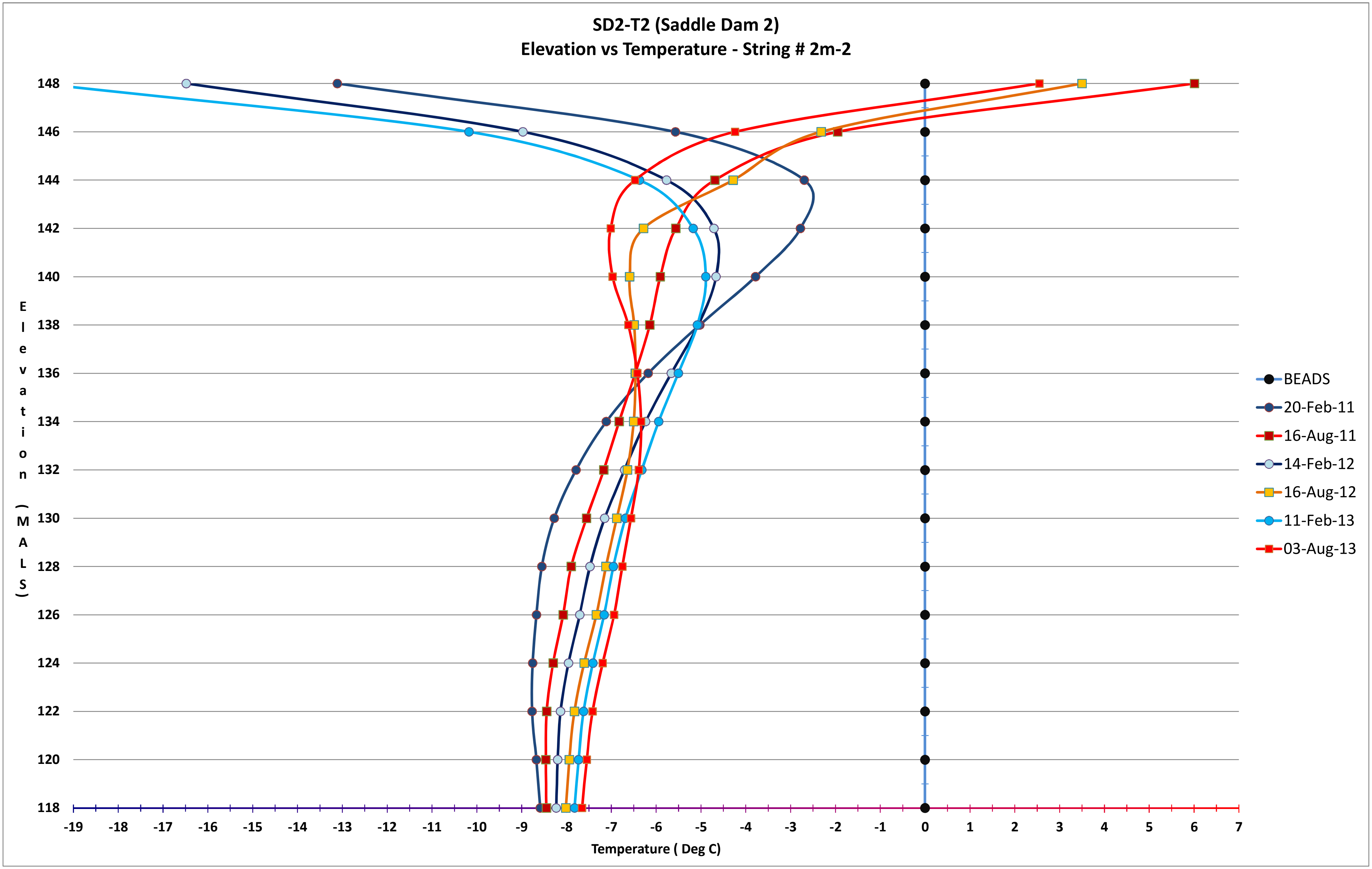


SECTION AT STA. 20+325.00
160
150
140
130
ELEVATION, m
UPSTREAM
DOWNSTREAM
COARSE FILTER (0–6")
FINE FILTER (0–3/4")
LLDPE LINER AND GEOTEXTILE
COMPACTED TILL
ACCESS ROAD
EXCAVATION LIMIT
T1
15m (MIN.)
ROCKFILL
ORIGINAL GROUND
STRIPPED TO FROZEN GROUND
ICE–POOR TILL
OR BEDROCK
−50
0
50
T3
T4
T2

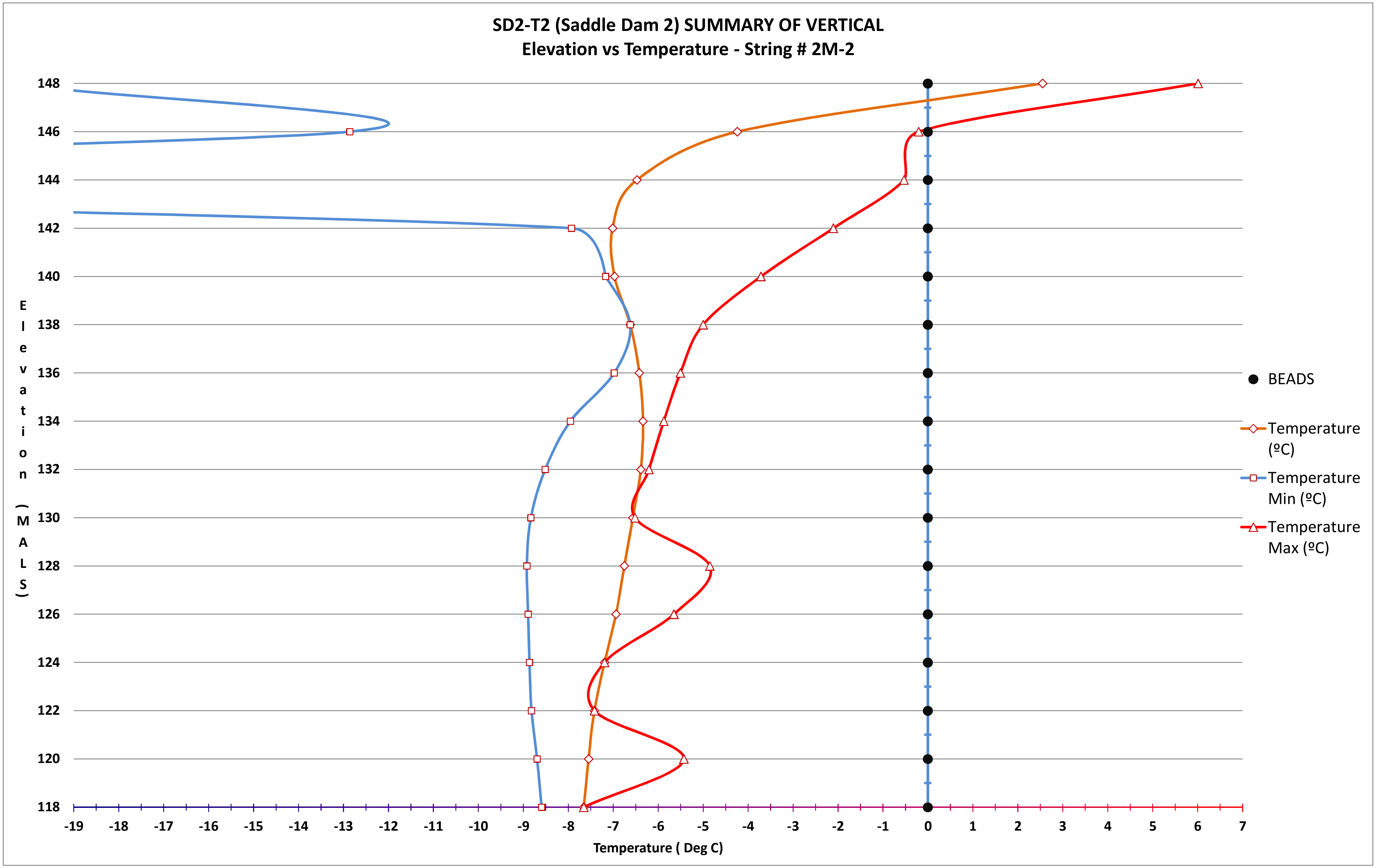

SD2-T1 (Saddle Dam 2)
Elevation vs Temperature - String # 38-2 - On top of Liner
Elevation (MALS)
148
147
146
145
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
Temperature (Deg C)
BEADS
11-Feb-13
03-Aug-13



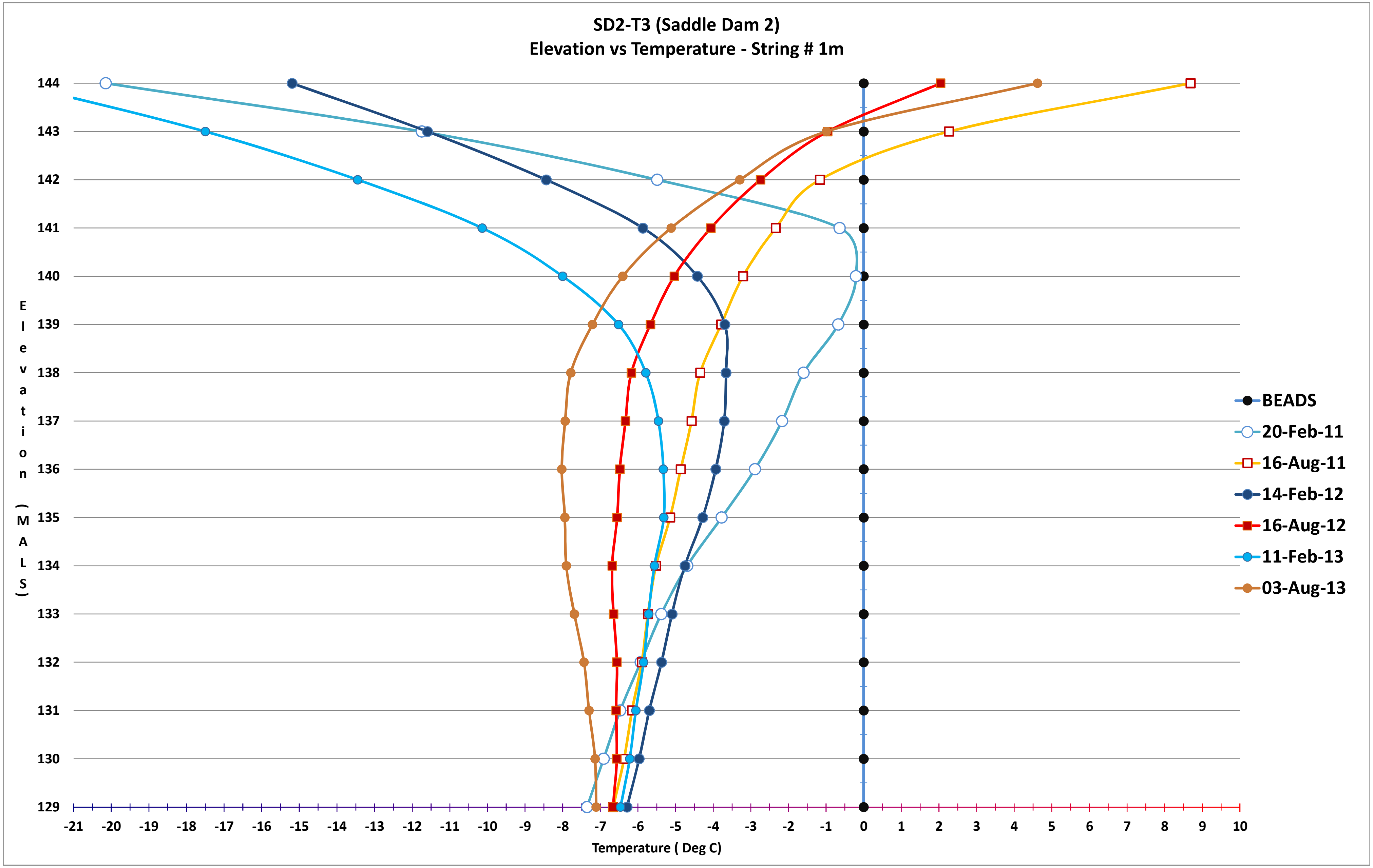
SD2-T1 (Saddle Dam 1) SUMMARY OF VERTICAL
Elevation vs Temperature - String # 38-2 - On top of Liner
Elevation (MALS)
148
147
146
145
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)



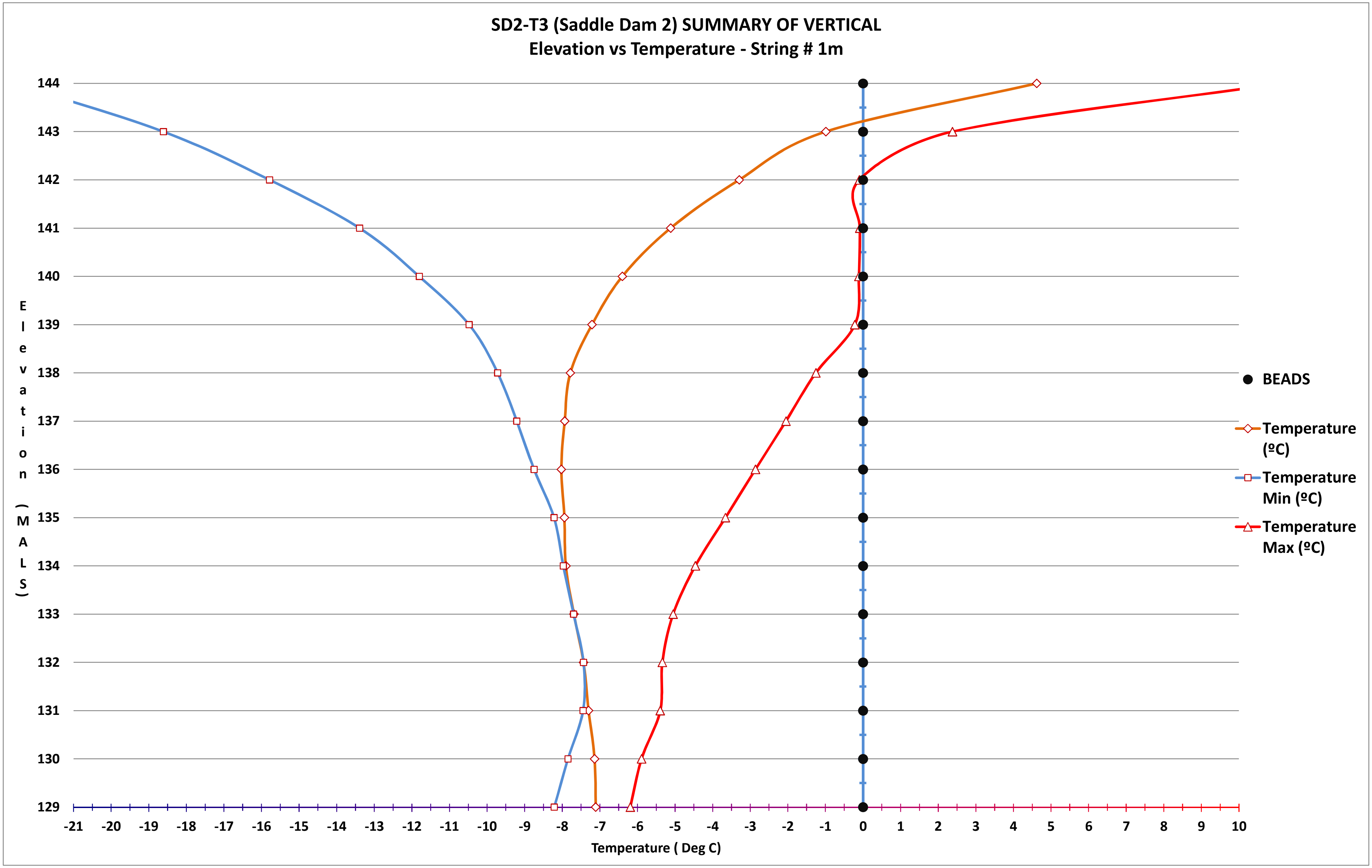
SD2-T2 (Saddle Dam 2)
Elevation vs Temperature - String # 2m-2
Elevation (MALS)
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
-19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7
Temperature (Deg C)
BEADS
20-Feb-11
16-Aug-11
14-Feb-12
16-Aug-12
11-Feb-13
03-Aug-13

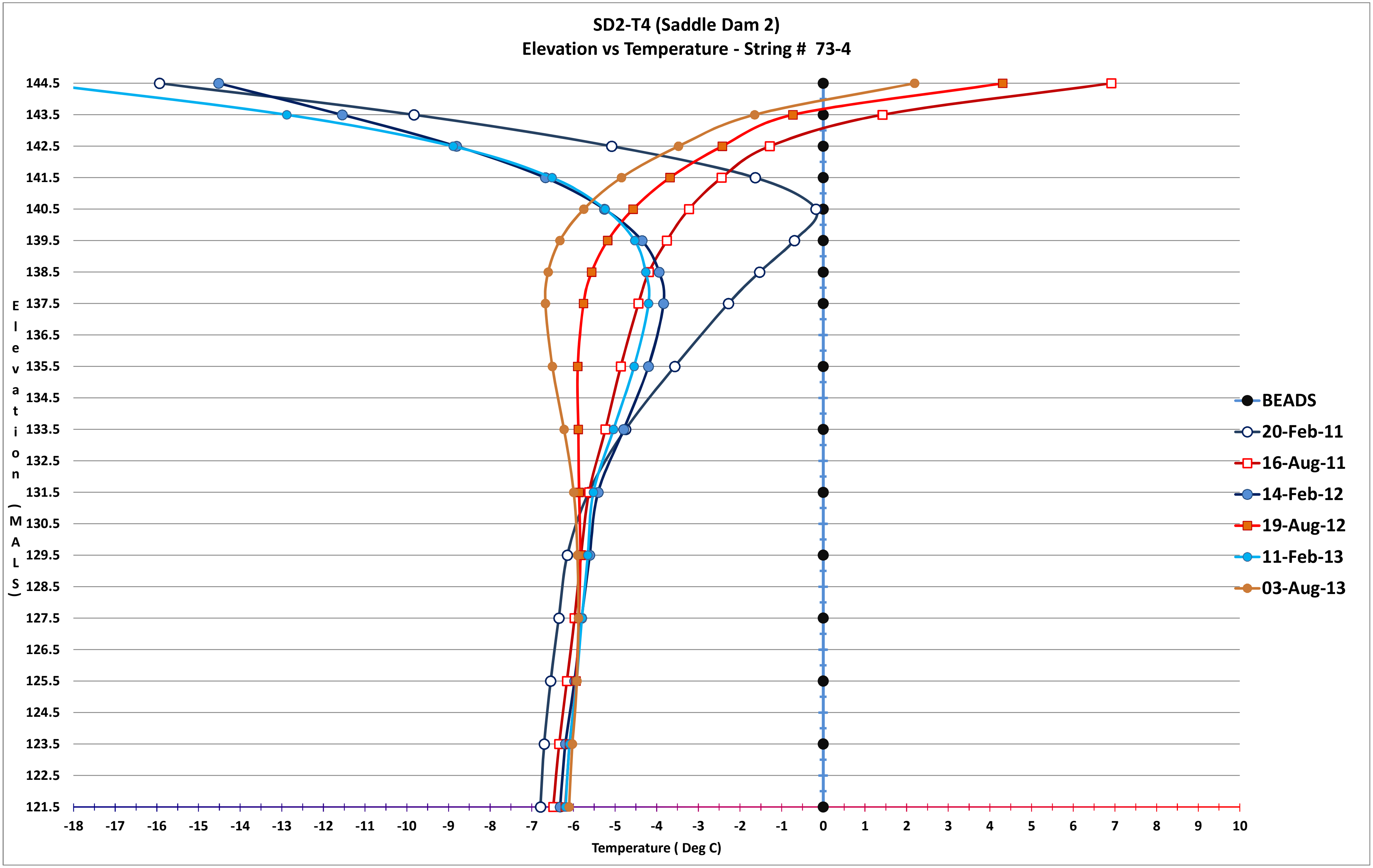


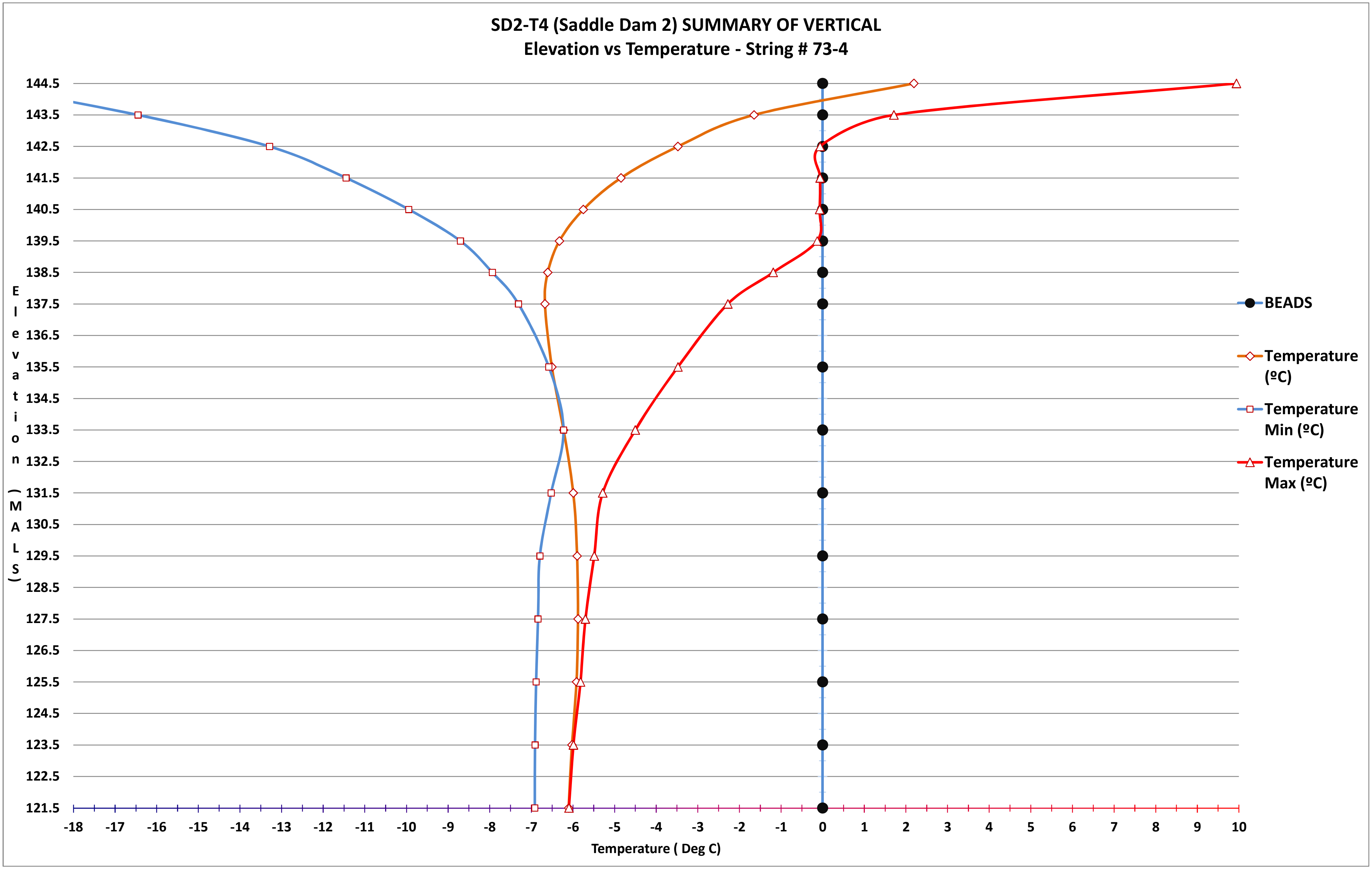
SD2-T2 (Saddle Dam 2) SUMMARY OF VERTICAL
Elevation vs Temperature - String # 2M-2
Elevation (MALS)
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
-19
-18
-17
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)



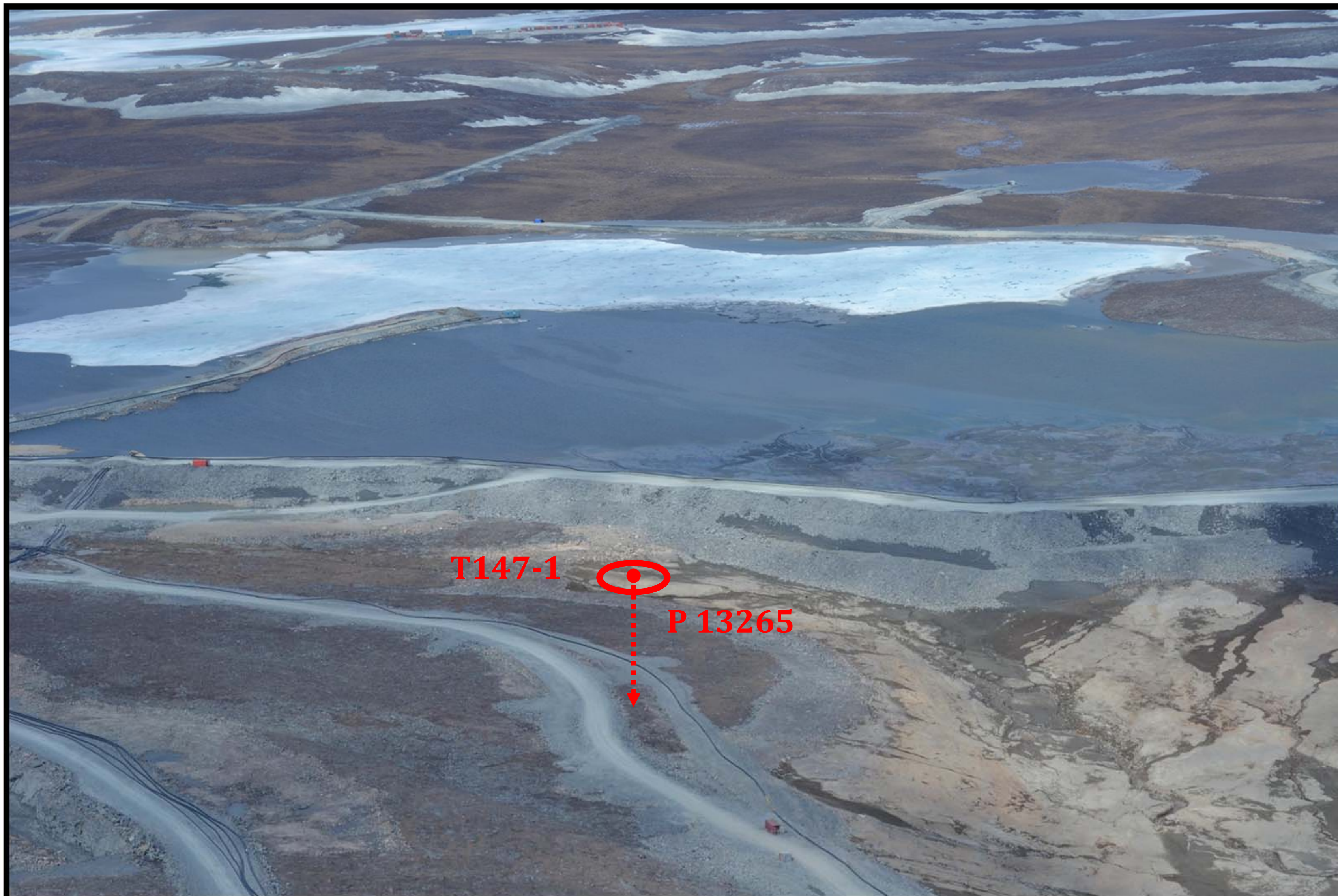
SD2-T3 (Saddle Dam 2)
Elevation vs Temperature - String # 1m
Elevation (MASL)
144
143
142
141
140
139
138
137
136
135
134
133
132
131
130
129
-21
-20
-19
-18
-17
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
Temperature (Deg C)
BEADS
20-Feb-11
16-Aug-11
14-Feb-12
16-Aug-12
11-Feb-13
03-Aug-13

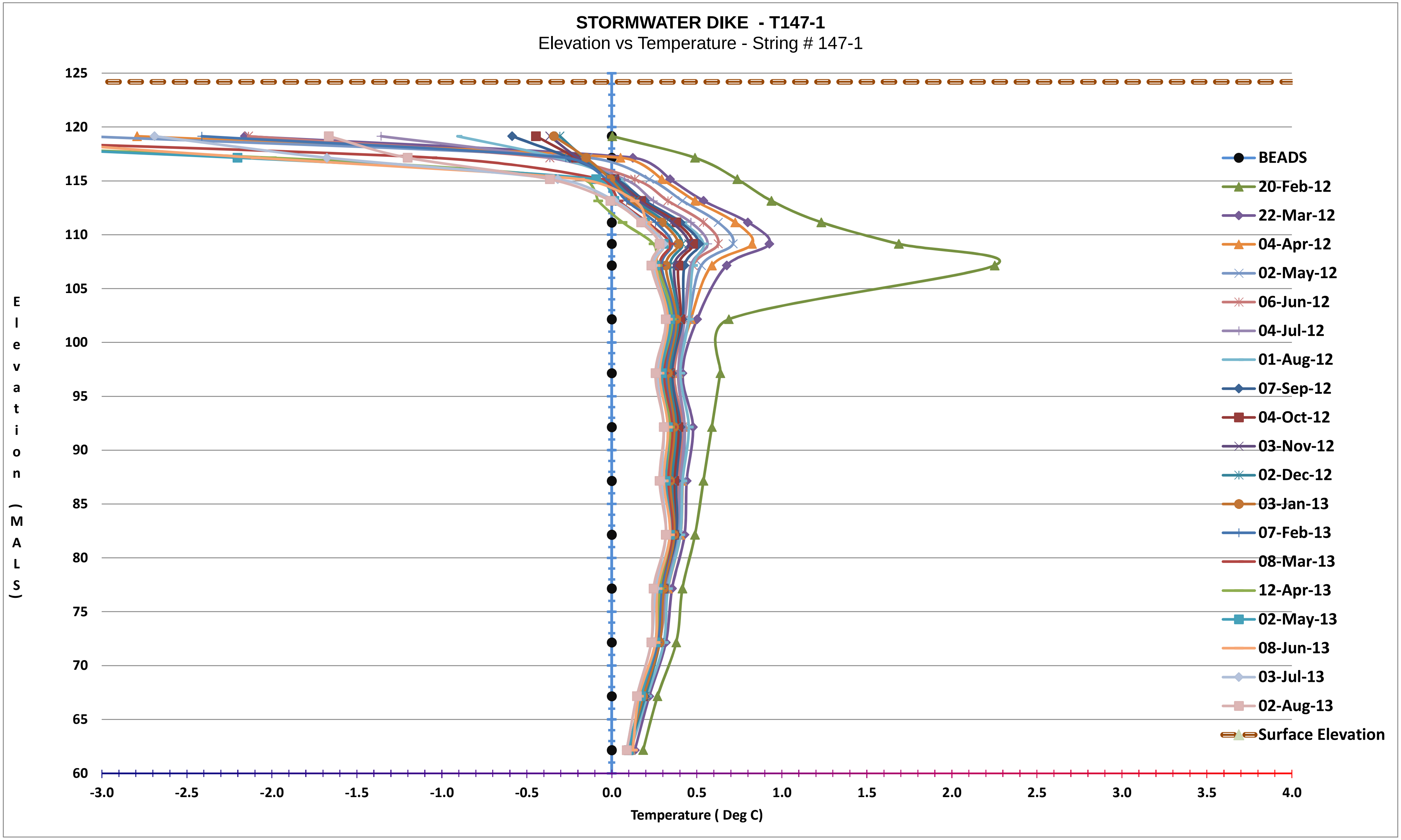

SD2-T3 (Saddle Dam 2) SUMMARY OF VERTICAL
Elevation vs Temperature - String # 1m
Elevation (MALS)
144
143
142
141
140
139
138
137
136
135
134
133
132
131
130
129
-21 -20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)


SD2-T4 (Saddle Dam 2)
Elevation vs Temperature - String # 73-4
Elevation (MASL)
144.5
143.5
142.5
141.5
140.5
139.5
138.5
137.5
136.5
135.5
134.5
133.5
132.5
131.5
130.5
129.5
128.5
127.5
126.5
125.5
124.5
123.5
122.5
121.5
-18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
Temperature (Deg C)
BEADS
20-Feb-11
16-Aug-11
14-Feb-12
19-Aug-12
11-Feb-13
03-Aug-13

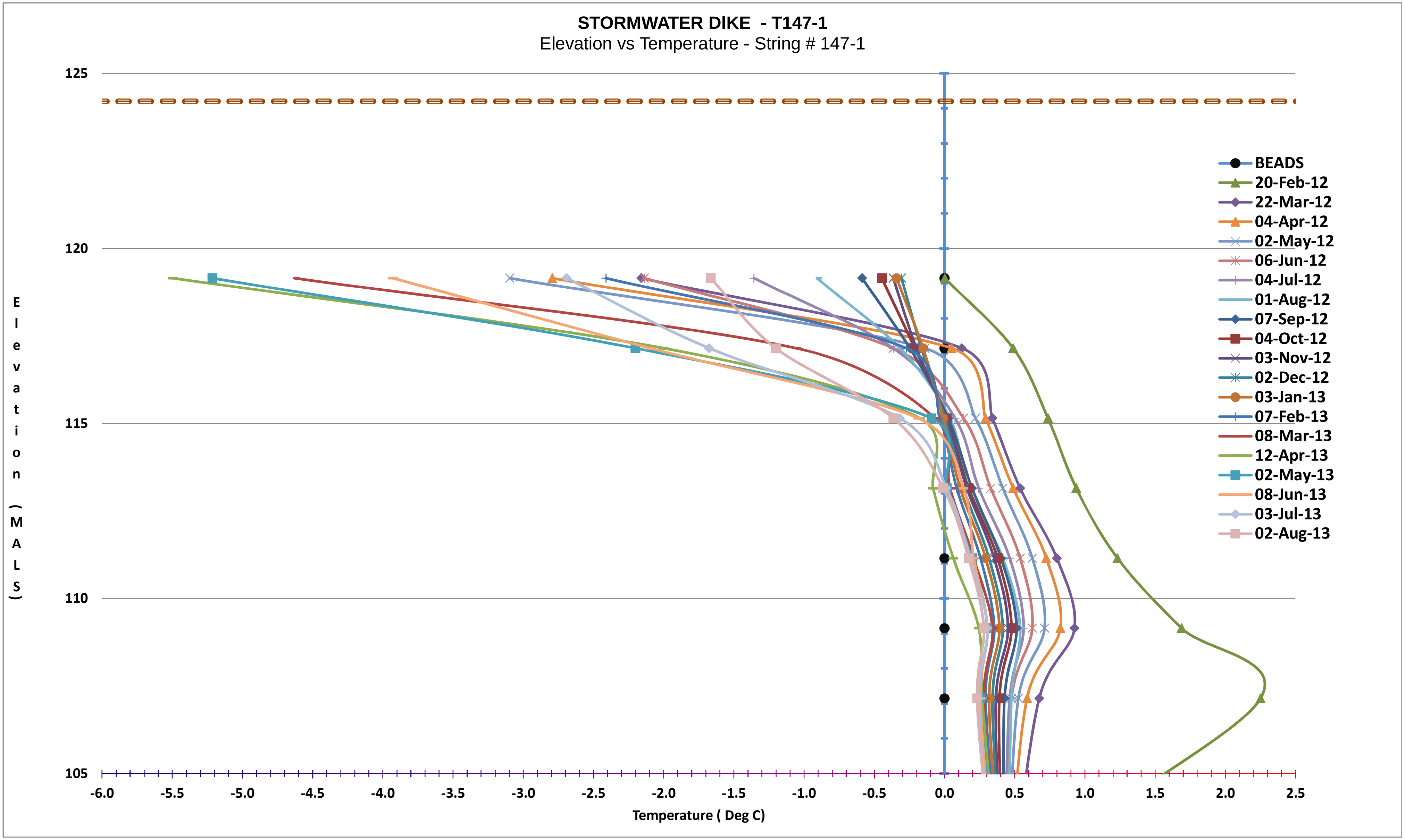

SD2-T4 (Saddle Dam 2) SUMMARY OF VERTICAL
Elevation vs Temperature - String # 73-4
Elevation (MALS)
144.5
143.5
142.5
141.5
140.5
139.5
138.5
137.5
136.5
135.5
134.5
133.5
132.5
131.5
130.5
129.5
128.5
127.5
126.5
125.5
124.5
123.5
122.5
121.5
-18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
Temperature (Deg C)
BEADS
Temperature (ºC)
Temperature Min (ºC)
Temperature Max (ºC)

Stormwater

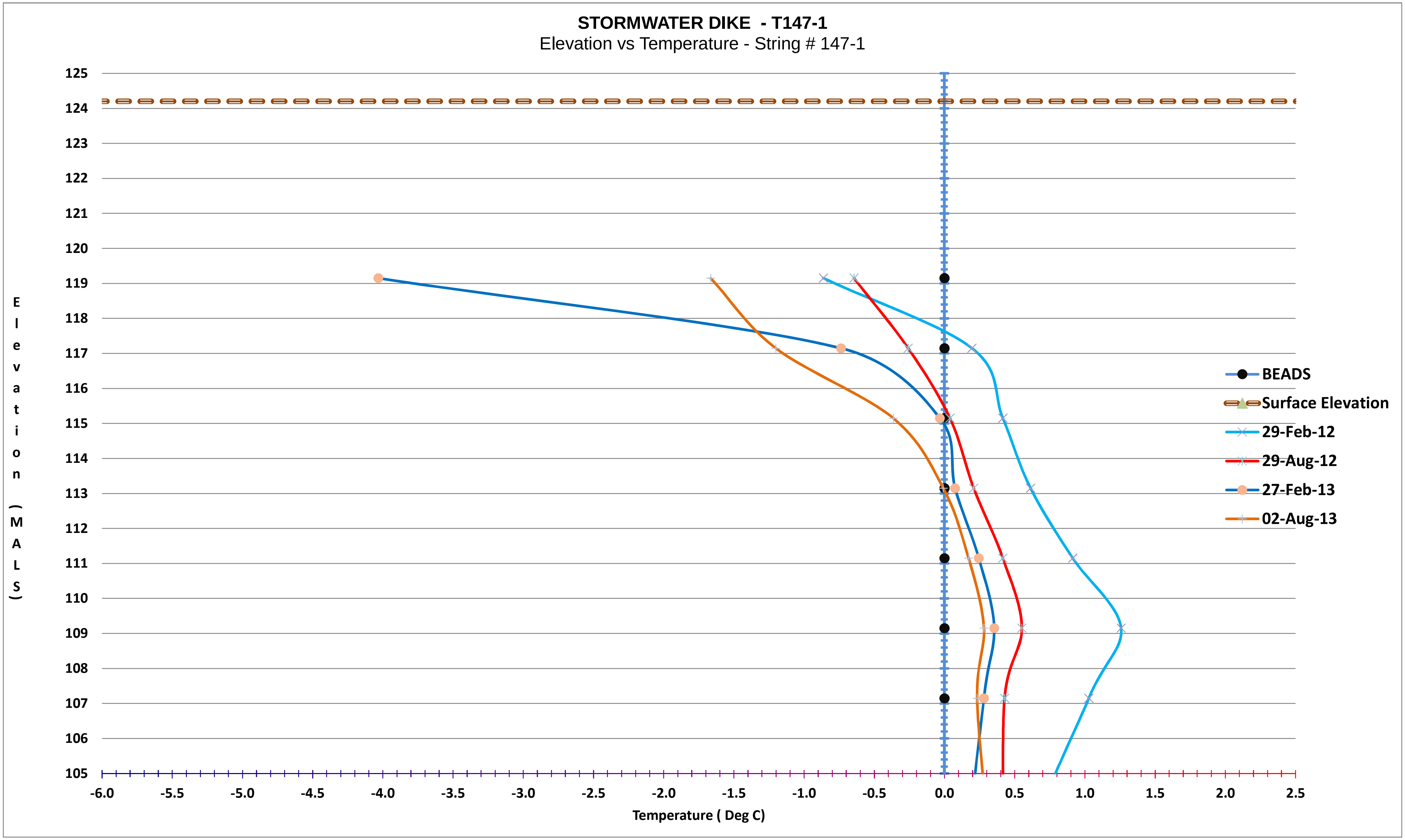




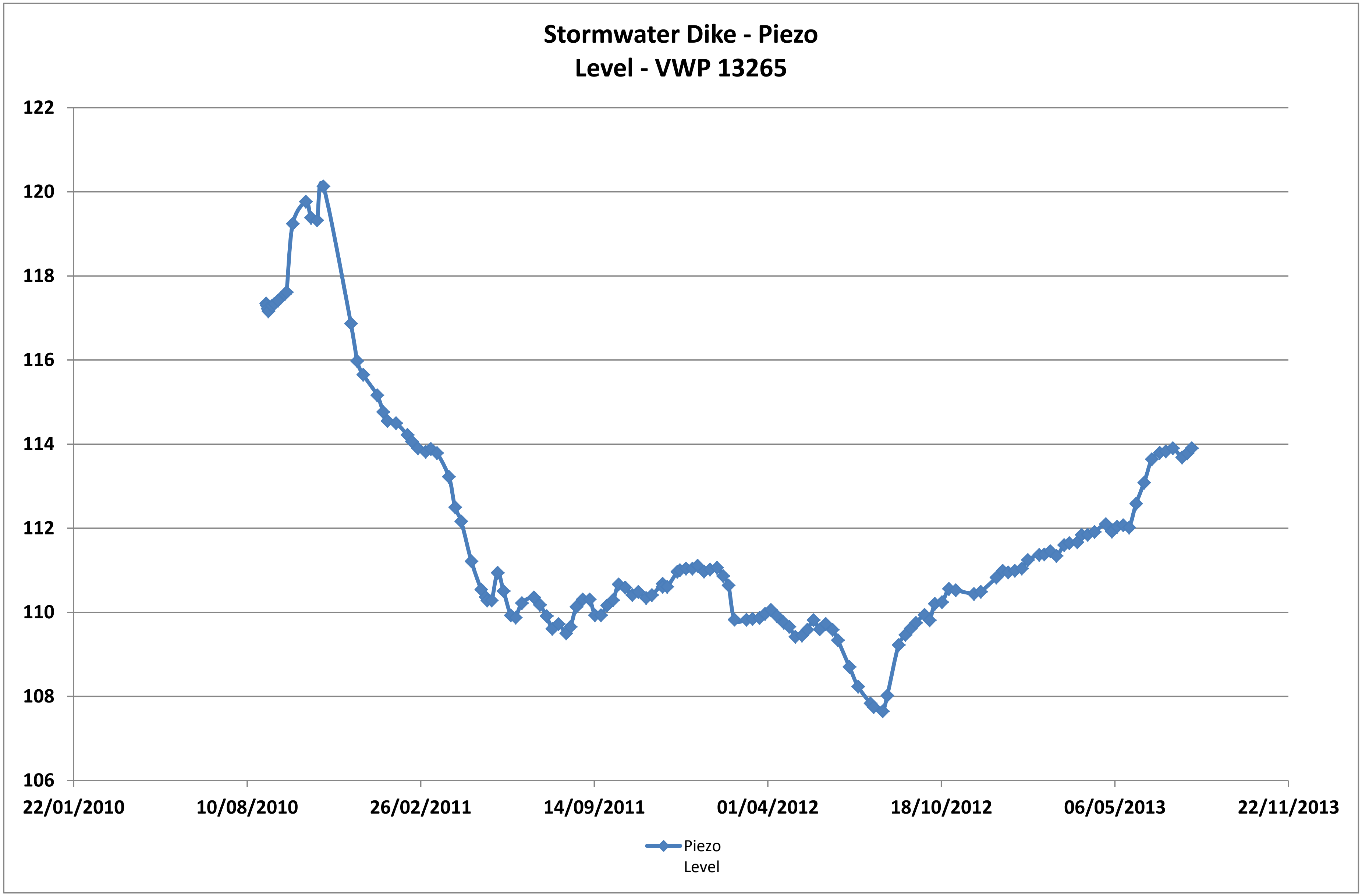
STORMWATER DIKE - T147-1
Elevation vs Temperature - String # 147-1
Elevation (MALS)
Temperature (Deg C)
125
120
115
110
105
100
95
90
85
80
75
70
65
60
-3.0
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
BEADS
20-Feb-12
22-Mar-12
04-Apr-12
02-May-12
06-Jun-12
04-Jul-12
01-Aug-12
07-Sep-12
04-Oct-12
03-Nov-12
02-Dec-12
03-Jan-13
07-Feb-13
08-Mar-13
12-Apr-13
02-May-13
08-Jun-13
03-Jul-13
02-Aug-13
Surface Elevation



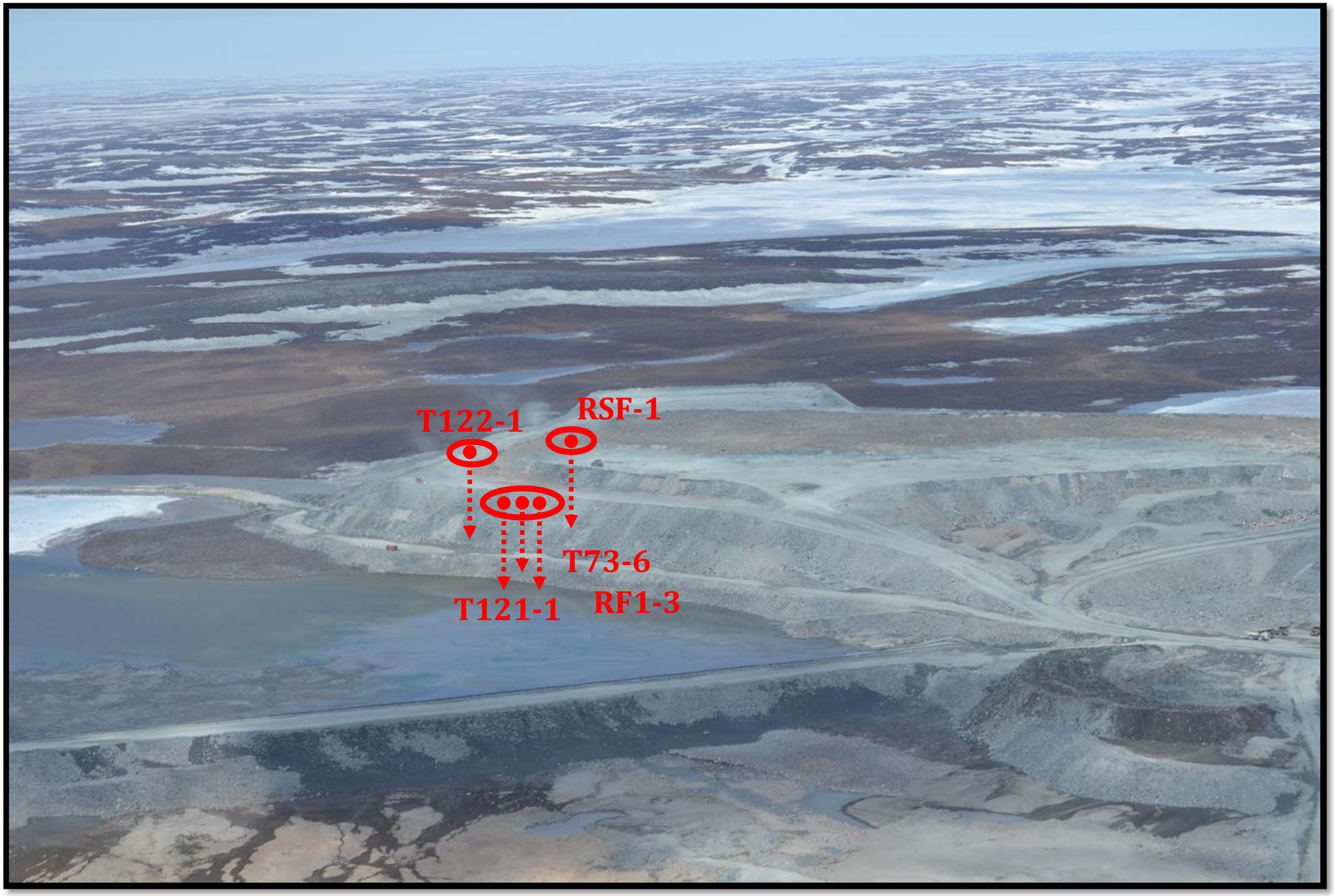
STORMWATER DIKE - T147-1
Elevation vs Temperature - String # 147-1
Elevation (MALS)
Temperature (Deg C)
125
120
115
110
105
-6.0
-5.5
-5.0
-4.5
-4.0
-3.5
-3.0
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
BEADS
20-Feb-12
22-Mar-12
04-Apr-12
02-May-12
06-Jun-12
04-Jul-12
01-Aug-12
07-Sep-12
04-Oct-12
03-Nov-12
02-Dec-12
03-Jan-13
07-Feb-13
08-Mar-13
12-Apr-13
02-May-13
08-Jun-13
03-Jul-13
02-Aug-13

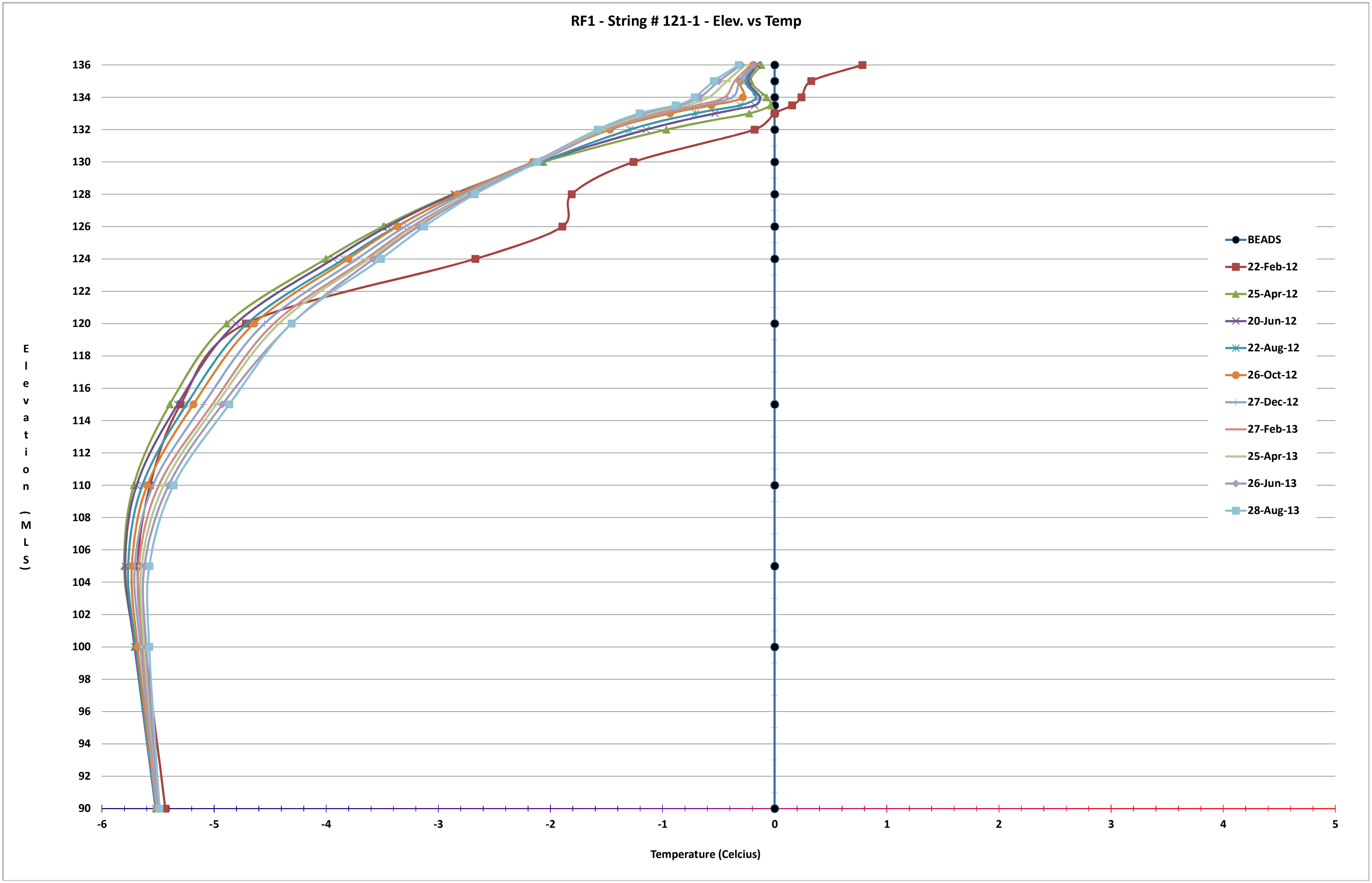


STORMWATER DIKE - T147-1
Elevation vs Temperature - String # 147-1
125
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
Elevation (MASL)
-6.0
-5.5
-5.0
-4.5
-4.0
-3.5
-3.0
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Temperature (Deg C)
BEADS
Surface Elevation
29-Feb-12
29-Aug-12
27-Feb-13
02-Aug-13

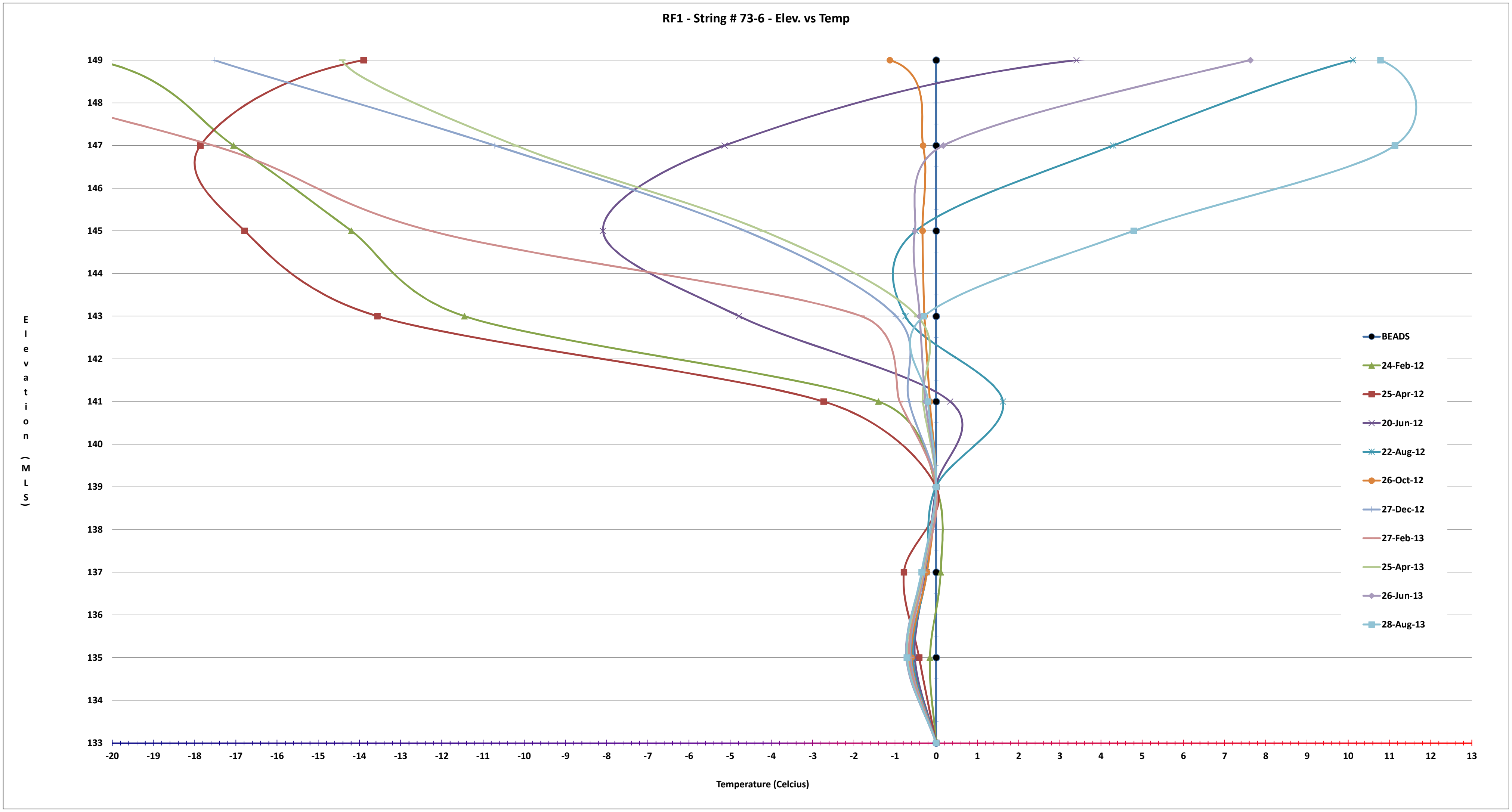

Stormwater Dike - Piezo
Level - VWP 13265
122
120
118
116
114
112
110
108
106
22/01/2010
10/08/2010
26/02/2011
14/09/2011
01/04/2012
18/10/2012
06/05/2013
22/11/2013
Piezo
Level

Waste Dump, RF1 and RF2

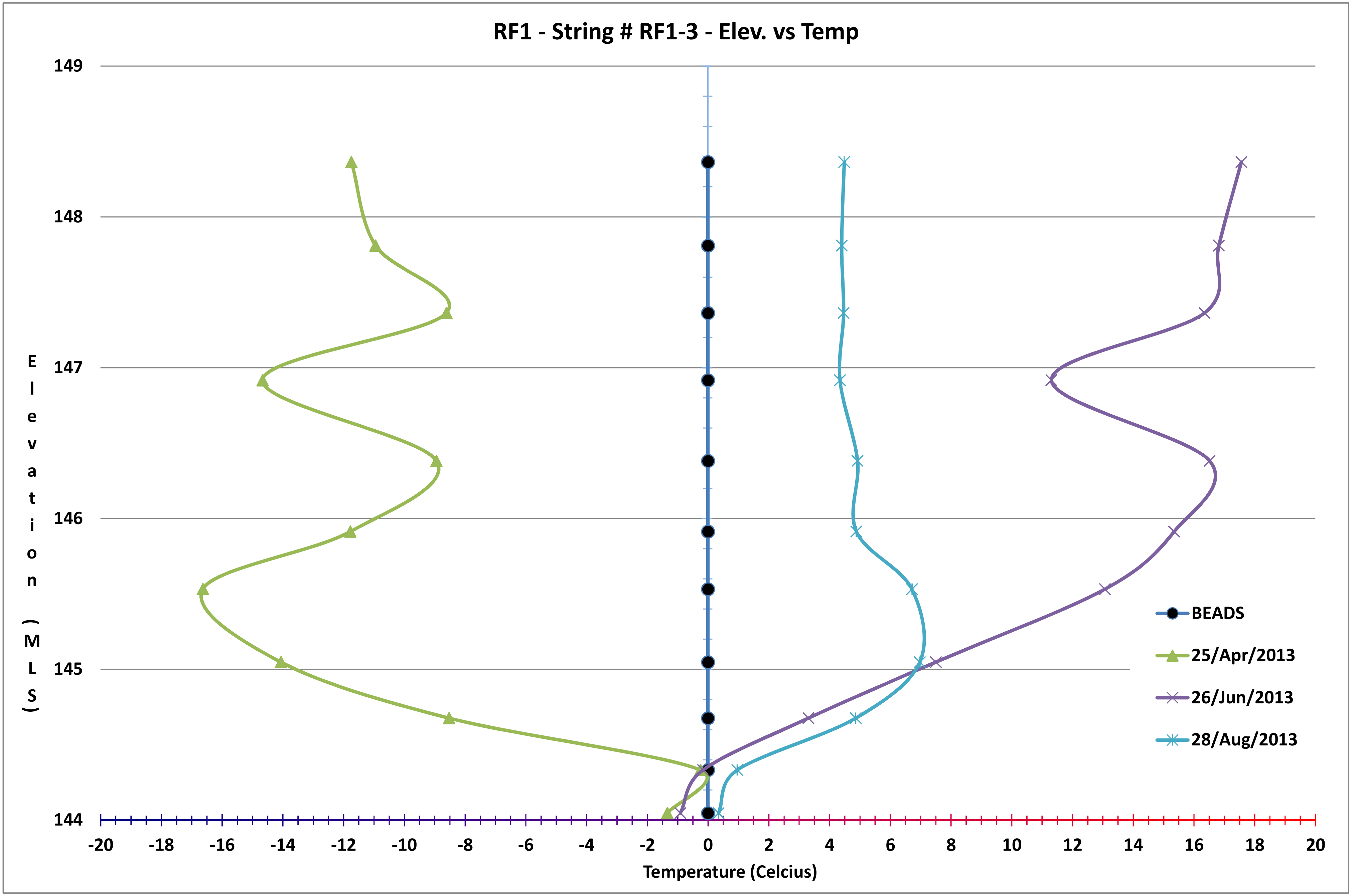


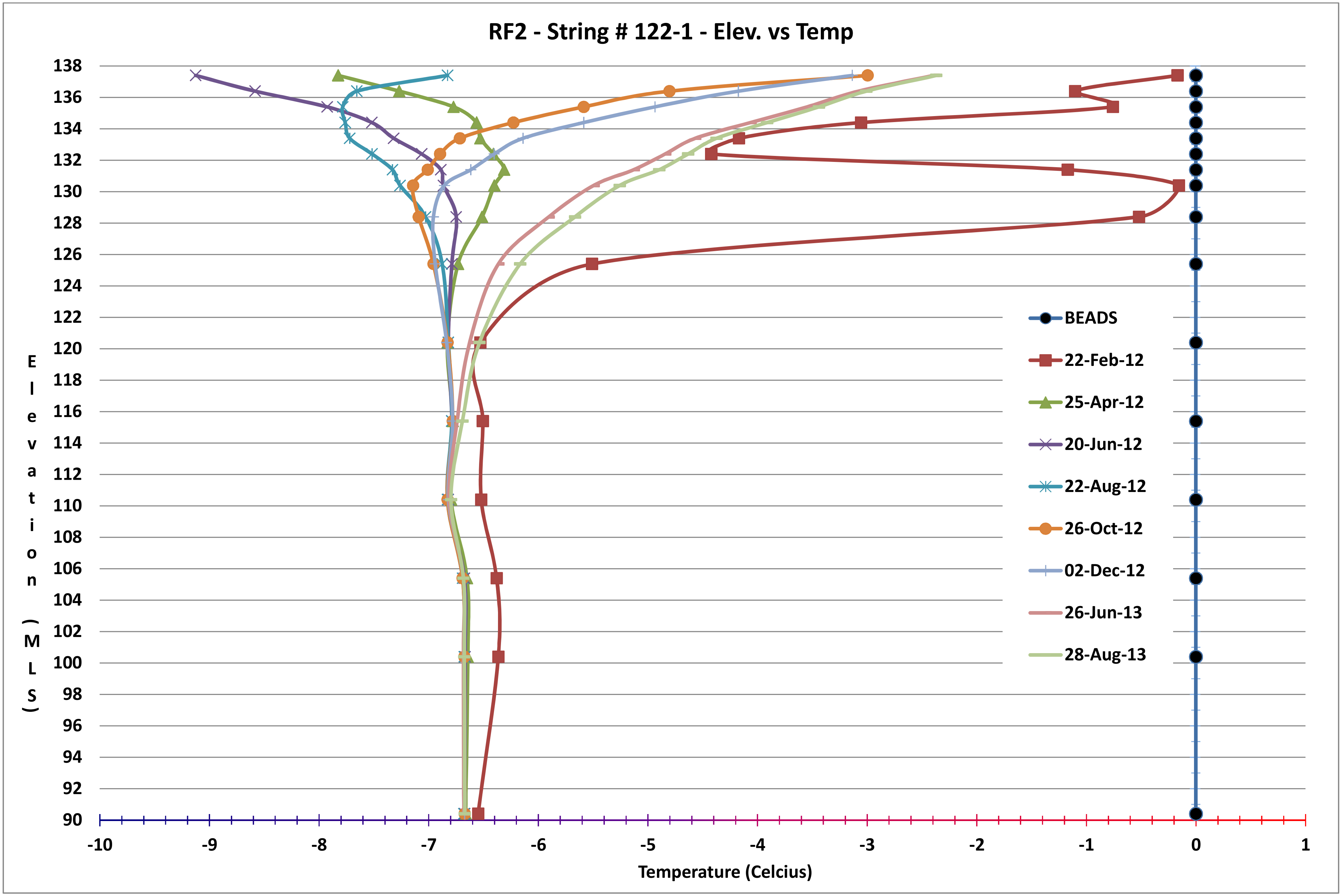


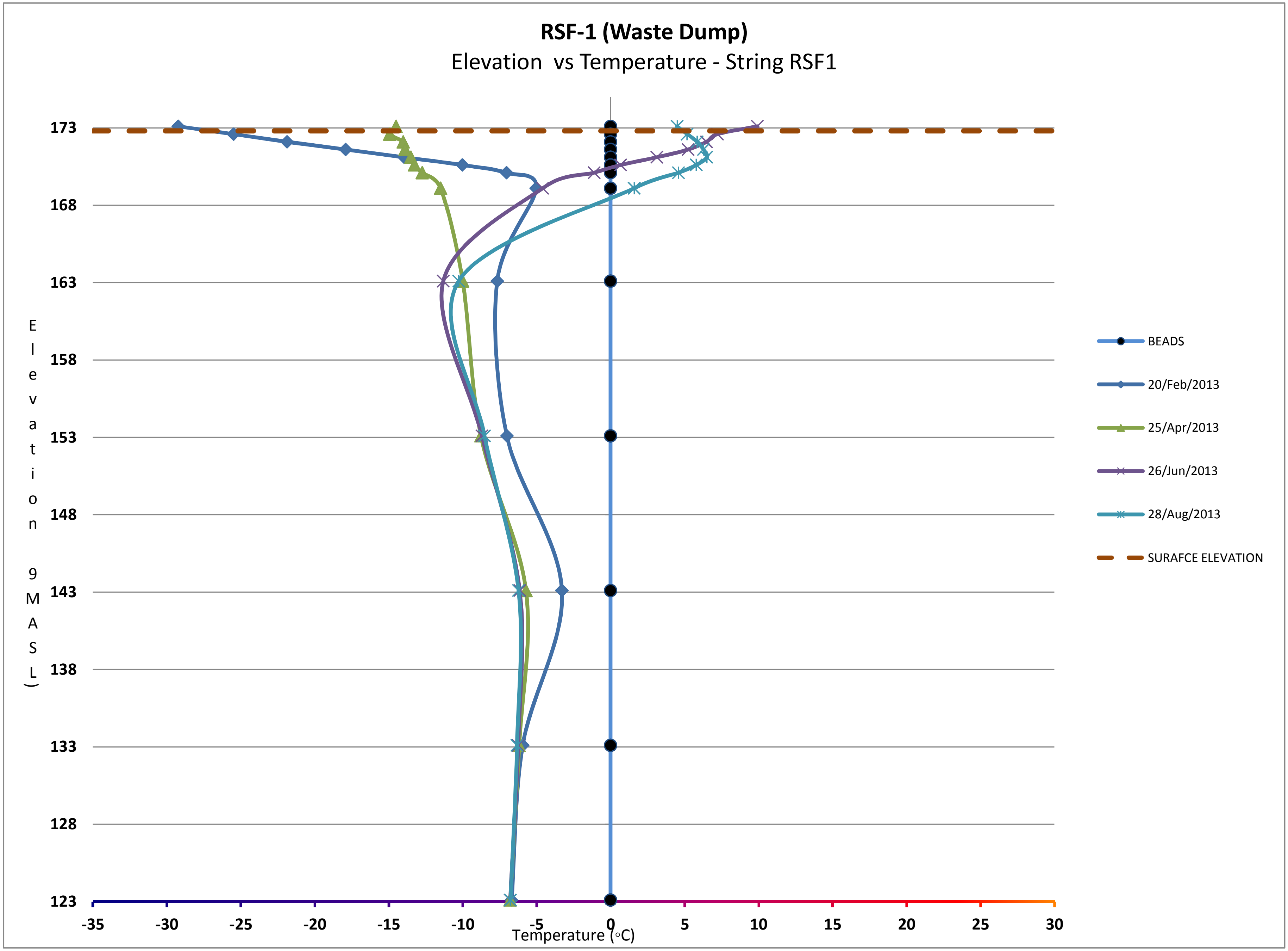
RF1 - String # 121-1 - Elev. vs Temp
Elevation (MLS)
Temperature (Celcius)
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
BEADS
22-Feb-12
25-Apr-12
20-Jun-12
22-Aug-12
26-Oct-12
27-Dec-12
27-Feb-13
25-Apr-13
26-Jun-13
28-Aug-13



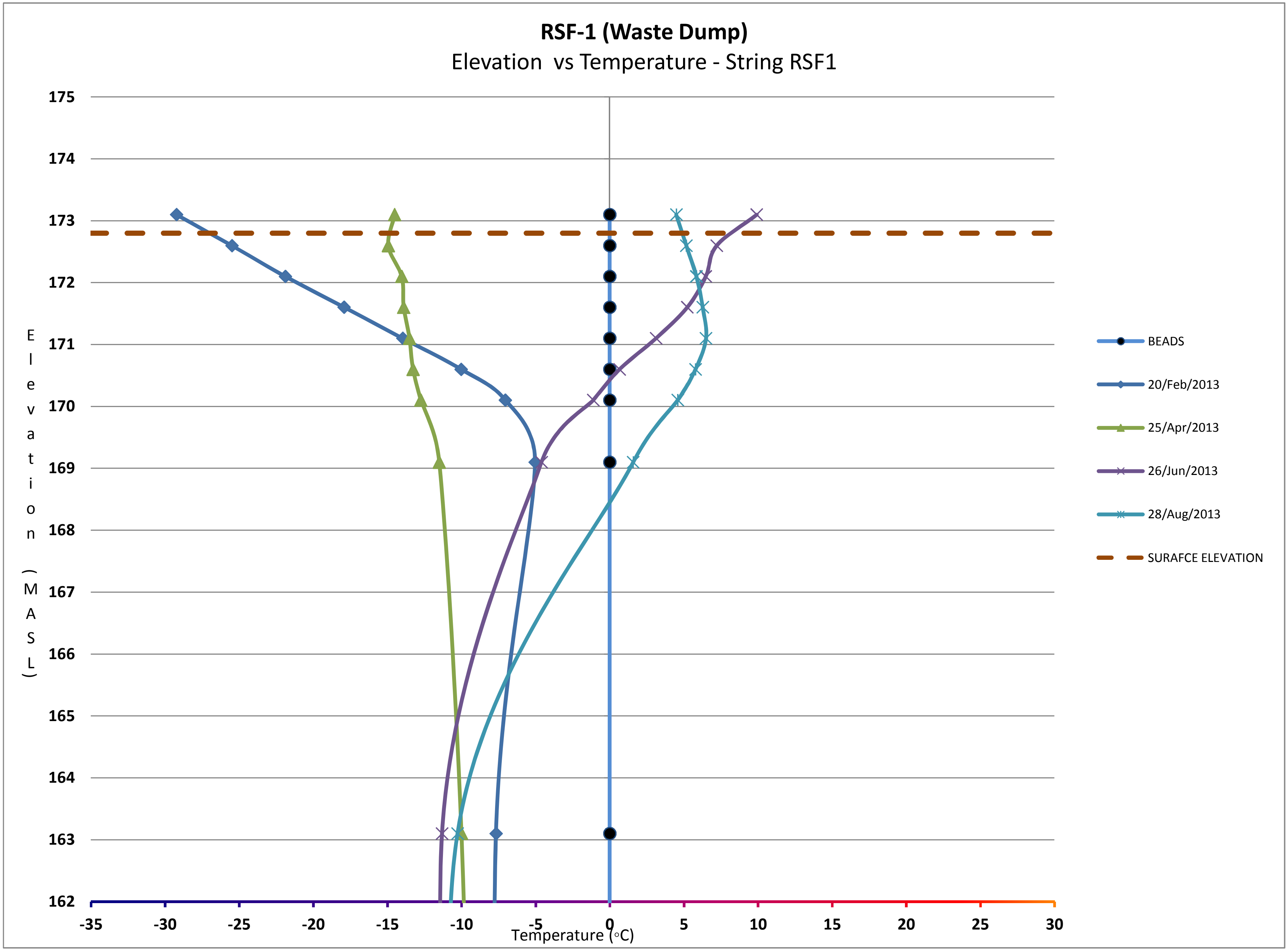
RF1 - String # 73-6 - Elev. vs Temp
Elevation (MLS)
149
148
147
146
145
144
143
142
141
140
139
138
137
136
135
134
133
-20
-19
-18
-17
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Temperature (Celcius)
BEADS
24-Feb-12
25-Apr-12
20-Jun-12
22-Aug-12
26-Oct-12
27-Dec-12
27-Feb-13
25-Apr-13
26-Jun-13
28-Aug-13


RF1 - String # RF1-3 - Elev. vs Temp
149
148
147
146
145
144
Elevation (MLS)
-20
-18
-16
-14
-12
-10
-8
-6
-4
-2
0
2
4
6
8
10
12
14
16
18
20
Temperature (Celcius)
BEADS
25/Apr/2013
26/Jun/2013
28/Aug/2013


RF2 - String # 122-1 - Elev. vs Temp
Elevation (MLS)
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
Temperature (Celcius)
BEADS
22-Feb-12
25-Apr-12
20-Jun-12
22-Aug-12
26-Oct-12
02-Dec-12
26-Jun-13
28-Aug-13

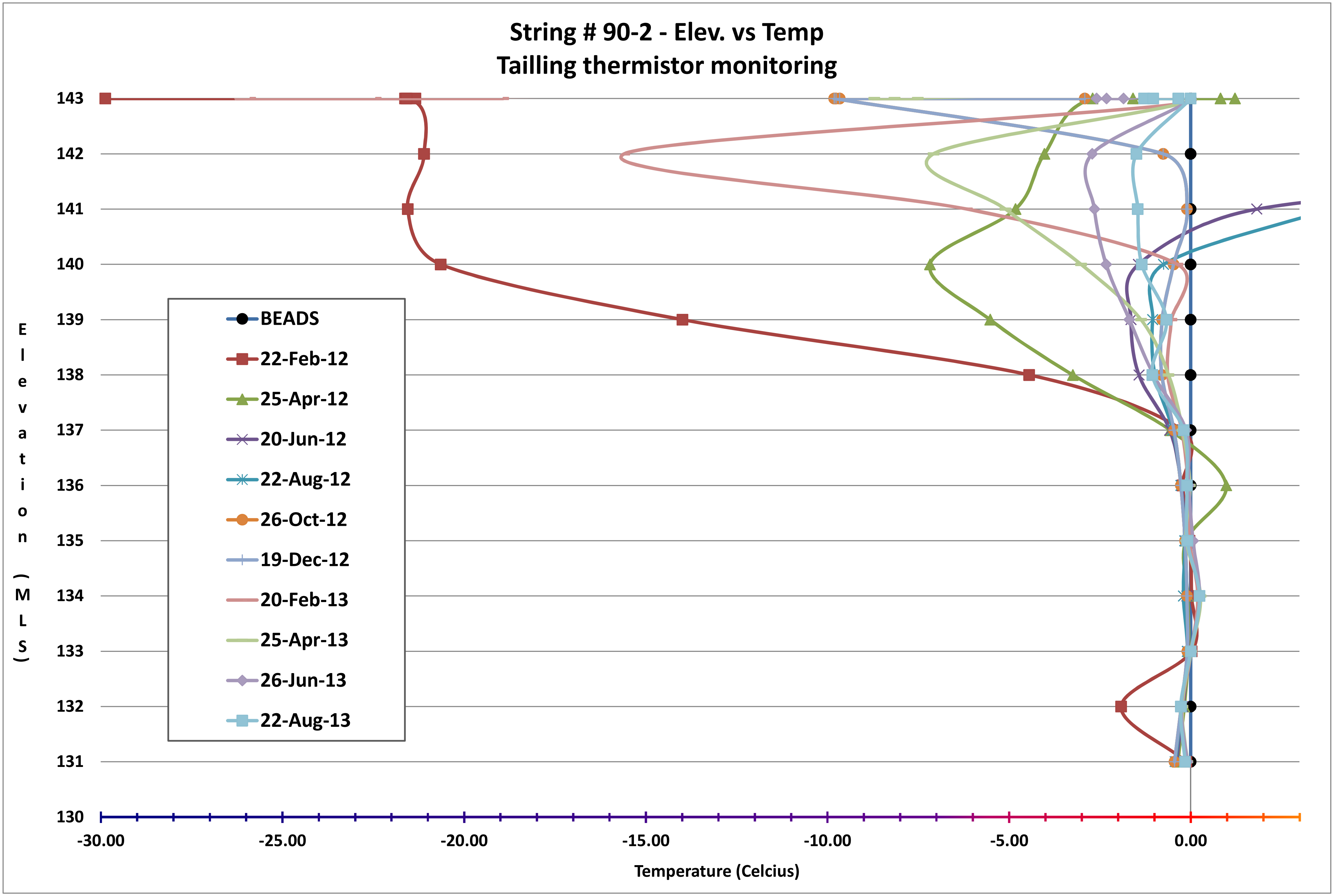


RSF-1 (Waste Dump)
Elevation vs Temperature - String RSF1
173
168
163
158
153
148
143
138
133
128
123
Elevation 9MASL)
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
Temperature (◦C)
BEADS
20/Feb/2013
25/Apr/2013
26/Jun/2013
28/Aug/2013
SURAFCE ELEVATION

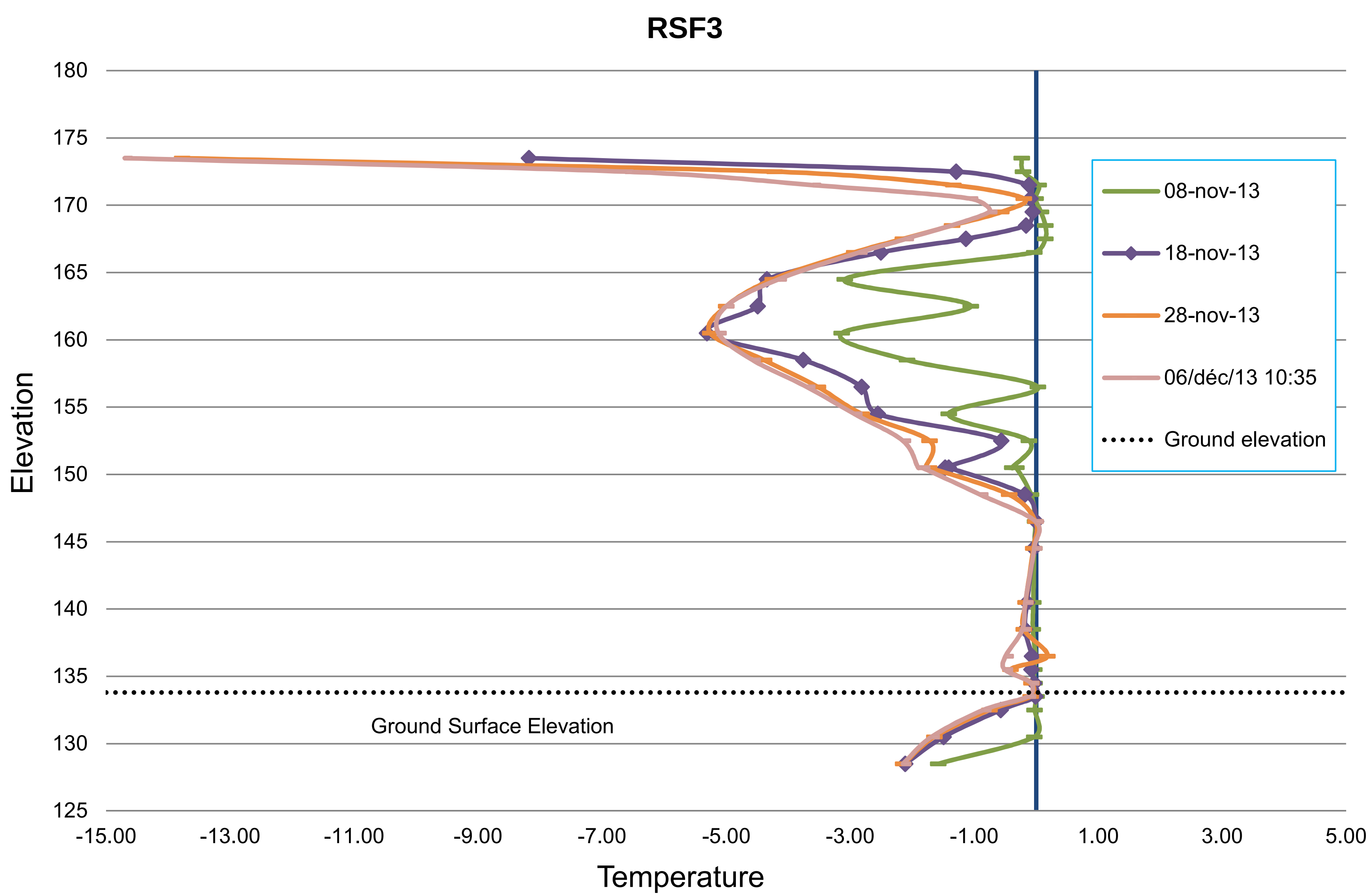


RSF-1 (Waste Dump)
Elevation vs Temperature - String RSF1
Elevation (MASL)
175
174
173
172
171
170
169
168
167
166
165
164
163
162
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
Temperature (◦C)
BEADS
20/Feb/2013
25/Apr/2013
26/Jun/2013
28/Aug/2013
SURAFCE ELEVATION

Tailings


String # 90-2 - Elev. vs Temp
Tailling thermistor monitoring
Elevation (MLS)
143
142
141
140
139
138
137
136
135
134
133
132
131
130
BEADS
22-Feb-12
25-Apr-12
20-Jun-12
22-Aug-12
26-Oct-12
19-Dec-12
20-Feb-13
25-Apr-13
26-Jun-13
22-Aug-13
-30.00
-25.00
-20.00
-15.00
-10.00
-5.00
0.00
Temperature (Celcius)

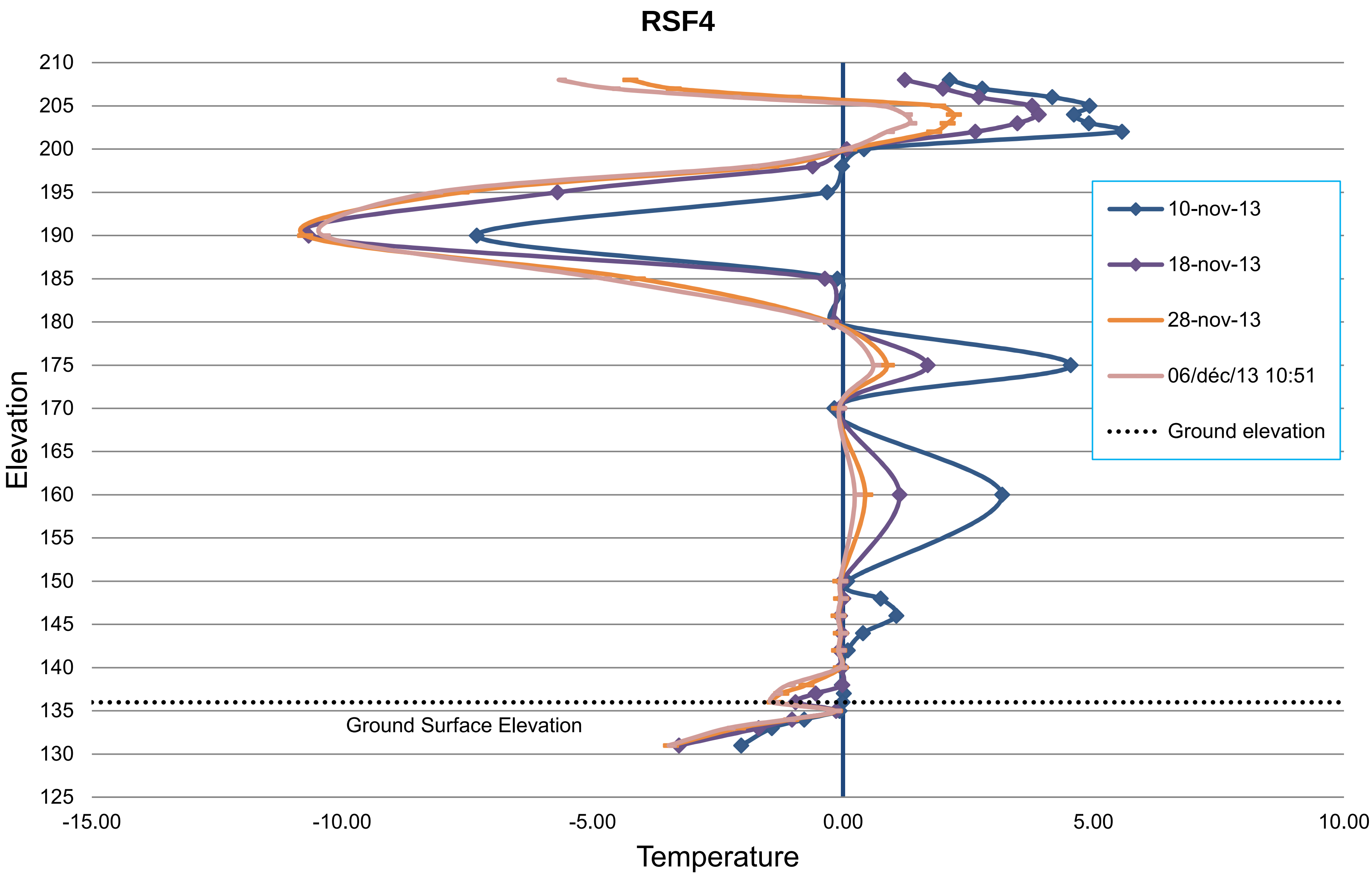
Portage Rock Storage Facilitie Newly Installed Thermistor



Golder Associés	Date : December 2013 Project : 13-1221-0115	Figure and data provided by AEM	**FIGURE C2-A**

N:\Actif\2013\1221\13-1221-0115 AEM- RSF Seepage Report - Meadowbank\5 Préparation livrables\Rev A\Appendix C - TSF and RSF Thermistor Data\Appendix C2 - New RSF Thermistor(b).xlsx

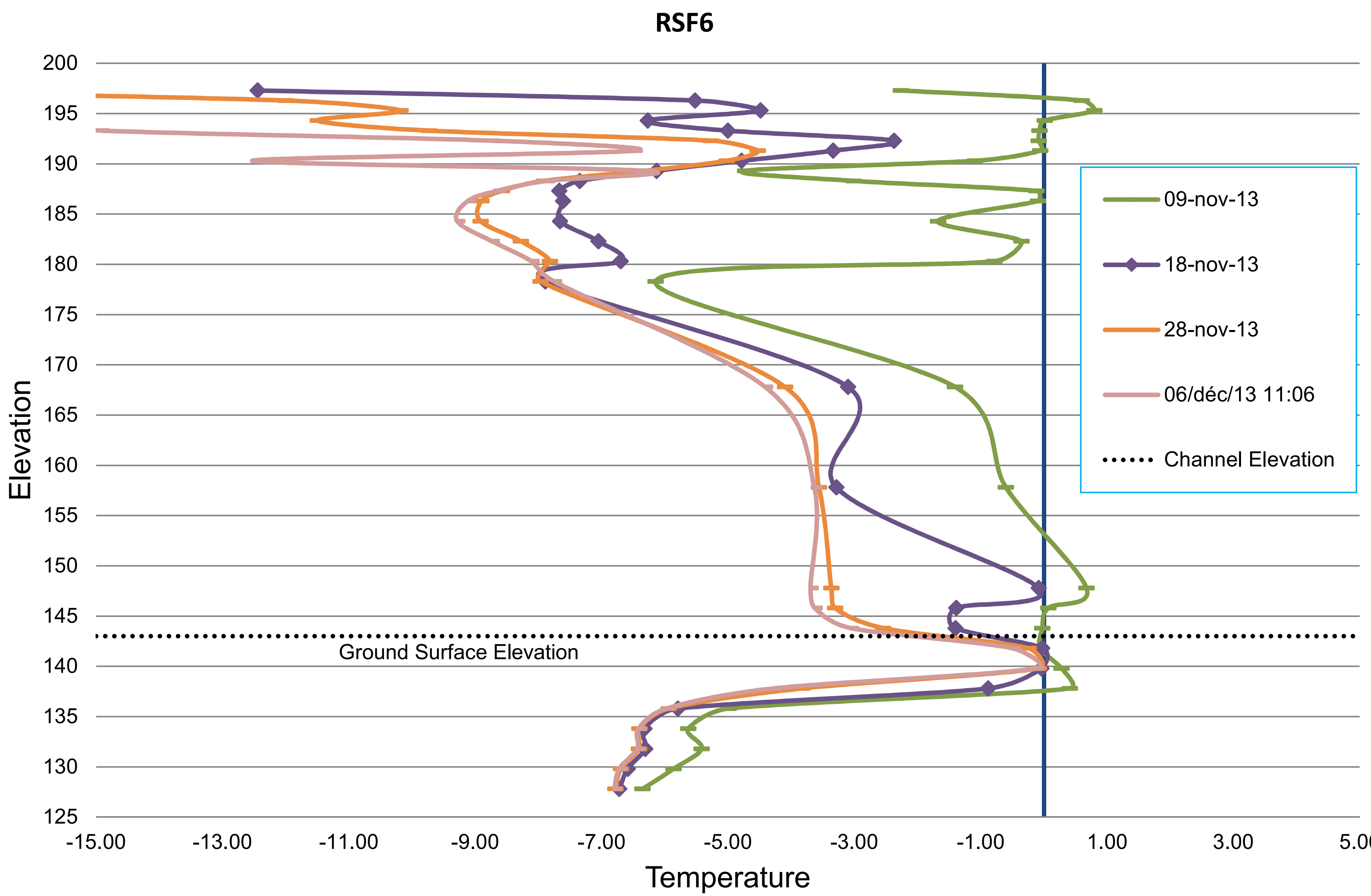
Portage Rock Storage Facilitie Newly Installed Thermistor



Golder Associés	Date : December 2013 Project : 13-1221-0115	Figure and data provided by AEM	**FIGURE C2-B**

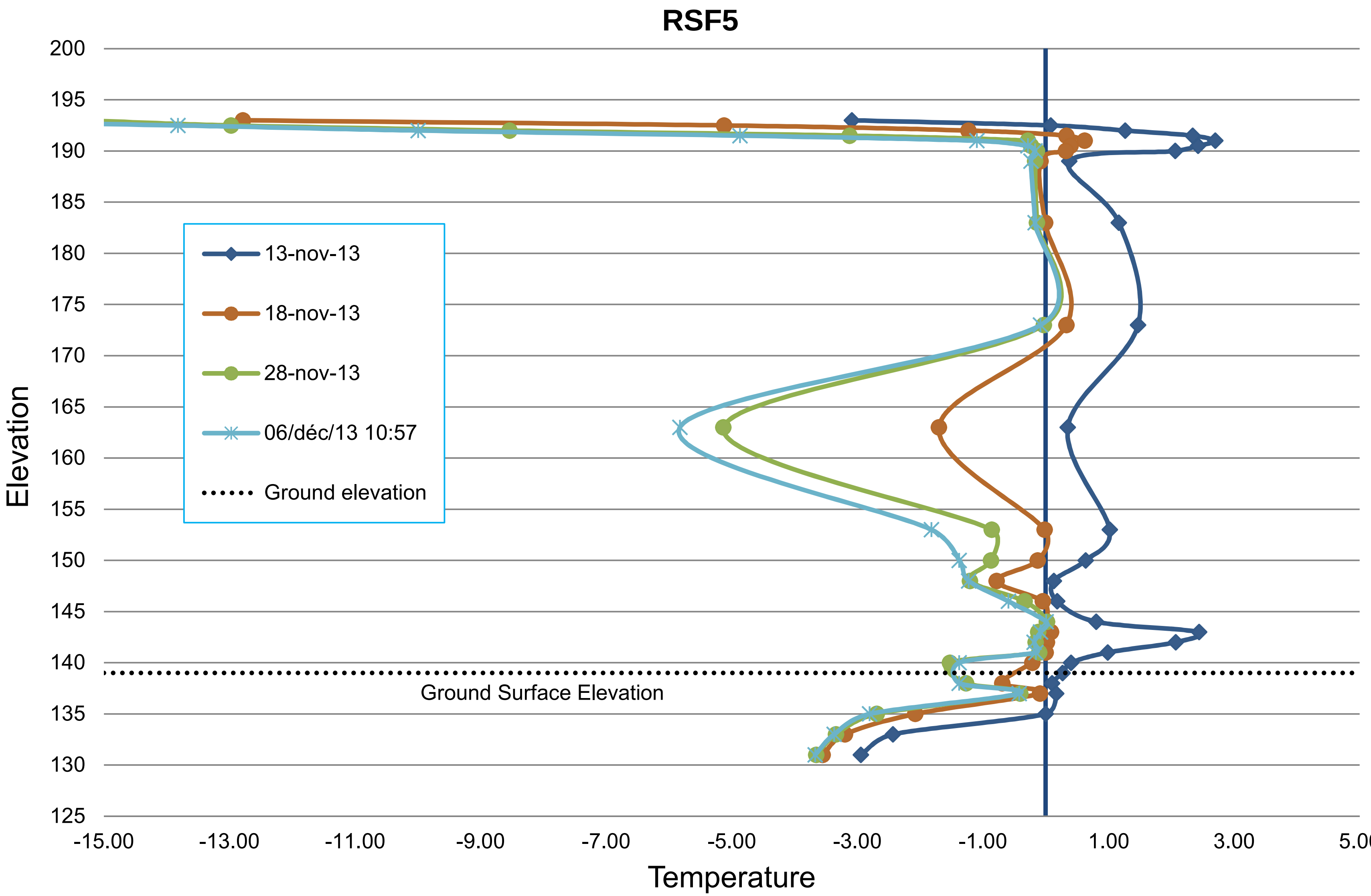
N:\Actif\2013\1221\13-1221-0115 AEM- RSF Seepage Report - Meadowbank\5 Préparation livrables\Rev A\Appendix C - TSF and RSF Thermistor Data\Appendix C2 - New RSF Thermistor(b).xlsx

Portage Rock Storage Facilitie Newly Installed Thermistor



Golder Associés	Date : December 2013 Project : 13-1221-0115	Figure and data provided by AEM	**FIGURE C2-D**

Portage Rock Storage Facilitie Newly Installed Thermistor



	Date :	December 2013	Figure and data provided by AEM	FIGURE C2-C
Golder Associés	Project :	13-1221-0115		

N:\Actif\2013\1221\13-1221-0115 AEM- RSF Seepage Report - Meadowbank\5 Préparation livrables\Rev A\Appendix C - TSF and RSF Thermistor Data\Appendix C2 - New RSF Thermistor(b).xlsx

APPENDIX D

Construction Summary Report Rock Storage Facility - Interim Till Plug

CONSTRUCTION SUMMARY REPORT
ROCK STORAGE FACILITY – INTERIM TILL PLUG

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT

OCTOBER 30TH, 2013

EXECUTIVE SUMMARY

The construction of the Interim till plug at Meadowbank was conducted from August 26th 2013 and September 1st 2013. The till plug is located on the upstream side of the access road to the North Cell Ditches, between the Waste Rock Storage Facility (RSF) and the NP2 lake. The till plug is designed and constructed as a zoned earth fill structure intended to block seepage coming from the RSF to go into NP2 lake and facilitate seepage collection on the upstream side.

Work carried out during construction of the till plug included excavation of soft sediment, till placement and water seepage control work. This construction report issued by AEM presents the general construction procedure.

As-Built data have been sent to the Tailings Storage Facility (TSF) designer for integration of the structure in the North Tailings Cell revised design.

DOCUMENT CONTROL

Document Version	Date	Revised Section	Revision
Draft	2013-09-30		
Final	2013-10-30		

CONSTRUCTION SUMMARY REPORT
ROCK STORAGE FACILITY – INTERIM TILL PLUG

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APPENDIX A	Selected Construction Photos
APPENDIX B	As-Built Drawings

CONSTRUCTION SUMMARY REPORT
ROCK STORAGE FACILITY – INTERIM TILL PLUG

SECTION 1.0 - INTRODUCTION

The Portage Rockfill Storage Facility (RSF) at Meadowbank is located in the north portion of the main mine site, adjacent to the Tailing Storage Facilities (TSF). The Rockfill Roads (RF1 and RF2) along the west side of the RSF are part of the TSF North Cell. The North Cell Diversion Ditches (Diversion Ditches) are located around the North Cell to keep freshet surface drainage water from contacting the RSF and the TSF. The East ditch flows through Lake NP-2 and connects to Lake NP-1. Figure 1 presents the general arrangement of the TSF and RSF.

During an AANDC Water License inspection on July 29th and 30th 2013, it was observed that red colored seepage from the northwest side of the RSF was seeping through the road perimeter into Lake NP-2. Samples were taken by both the Inspector and AEM staff (split sample). Analysis results from this sampling were received by AEM on August 16th, 2013. The results received shown that the water collecting in the sump behind the waste dump and that seeped to NP-2 could originate from the supernatant tailing water.

To avoid further contamination of the Lake NP-2, design and construction of an interim till plug was undertaken by Agnico Eagle Mines (AEM). This construction was aimed to reduce the amount of seepage reported to NP-2 lake and to increase the pumping of the seep water contained within the sump. This construction is considered as a first step emergency action and further investigation will be undertaken to assess, prevent and control possible seepage from the TSF and RSF.

Following assessment of the situation, future permanent structures might be constructed if required. The interim plug structure might be incorporated to the permanent containment structure.

The construction work for the till plug was done by Fernand Gilbert Limited (SANA) under the supervision of AEM. The construction surveillance was done by AEM representatives. Survey of the work was completed by AEM.

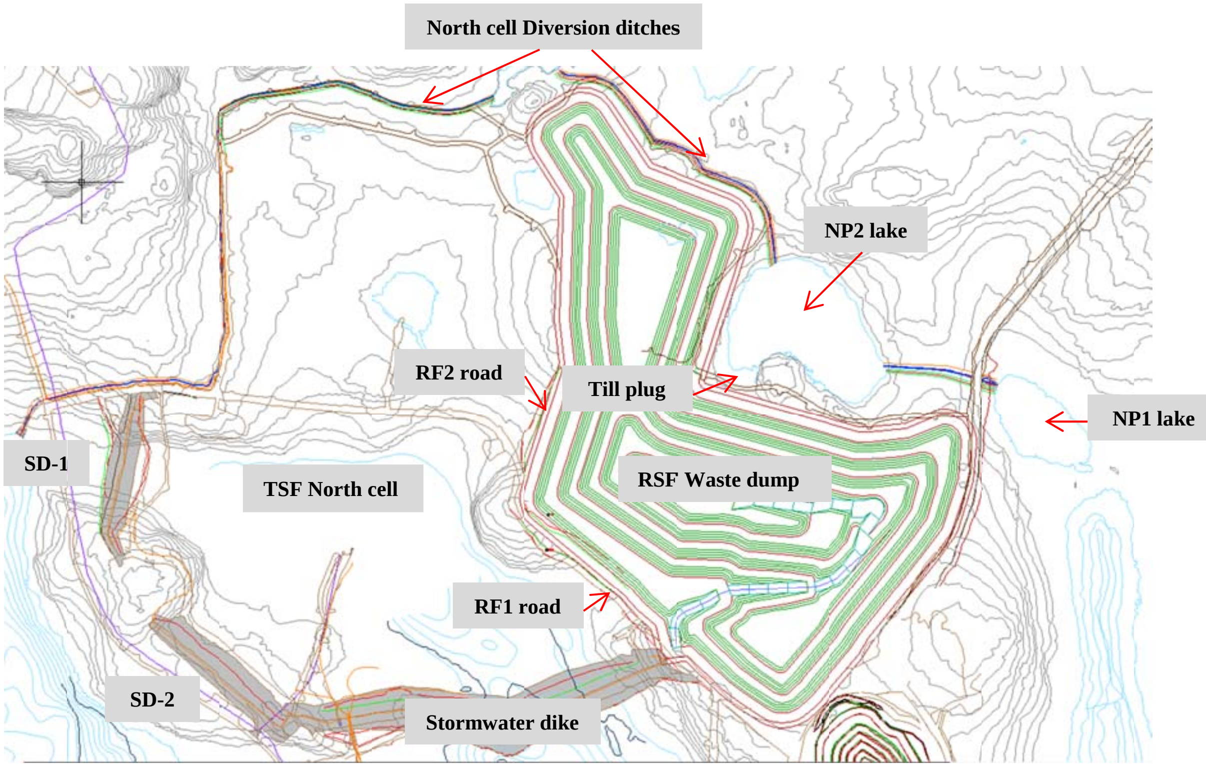


Figure 1: General arrangement of the TSF and RSF

SECTION 2.0 - SCOPE

This construction summary report presents the general construction procedure for the till plug conducted between August 26th 2013 and September 1st 2013 at Meadowbank. Work procedures and construction steps are summarized in this report. A review of the proposed design and technical specifications is presented, followed by the description of construction activities. The site inspection during construction, operation and monitoring are then presented.

SECTION 3.0 - DESIGN AND TECHNICAL SPECIFICATIONS

Design and Technical Specifications were elaborated by AEM Engineering prior to the start of the till plug construction and are resumed in the following section. Typical sections from the original design are available in Figure 2.

3.1 FILL MATERIALS AND PLACEMENT SPECIFICATIONS

The construction of the till plug includes three different zones of material. The requirements for each zone are described below.

3.1.1 Zone 1 – NPAG Rockfill

- The selected fill material consists of waste clean blasted rock from Portage/Goose pit composed of non-potentially acid generating (NPAG) rocks;
- The existing road along NP2 Lake and the RSF includes NPAG Rockfill material.

3.1.2 Zone 1A - Fine Rockfill (0-500 mm)

- The selected fill material consists of waste clean blasted rock (0-500 mm) from Portage/Goose Pit and is composed of NPAG rock;
- No topsoil, unsuitable organic soils, snow, ice are allowed in this zone;
- Lift thickness specified: 500 mm to 1 000 mm before compacting;
- Compaction achieved during placement with excavator bucket.

3.1.3 Zone 2 –Till

- Natural till is obtained from stripping of the Goose Pit or excavation in the Central Dike;
- Non-dispersive soil, including glacial till or clay with fines (sieve # 200 or <0.075 mm) content of minimum 30%, moisture requiring from -2% to +2% of OMC (Optimum Moisture Content).
- No topsoil, unsuitable organic soil, snow, ice, frozen lumps;
- Lift thickness specified: 300 mm to 500 mm before compacting;
- Compaction achieved during placement with excavator bucket.

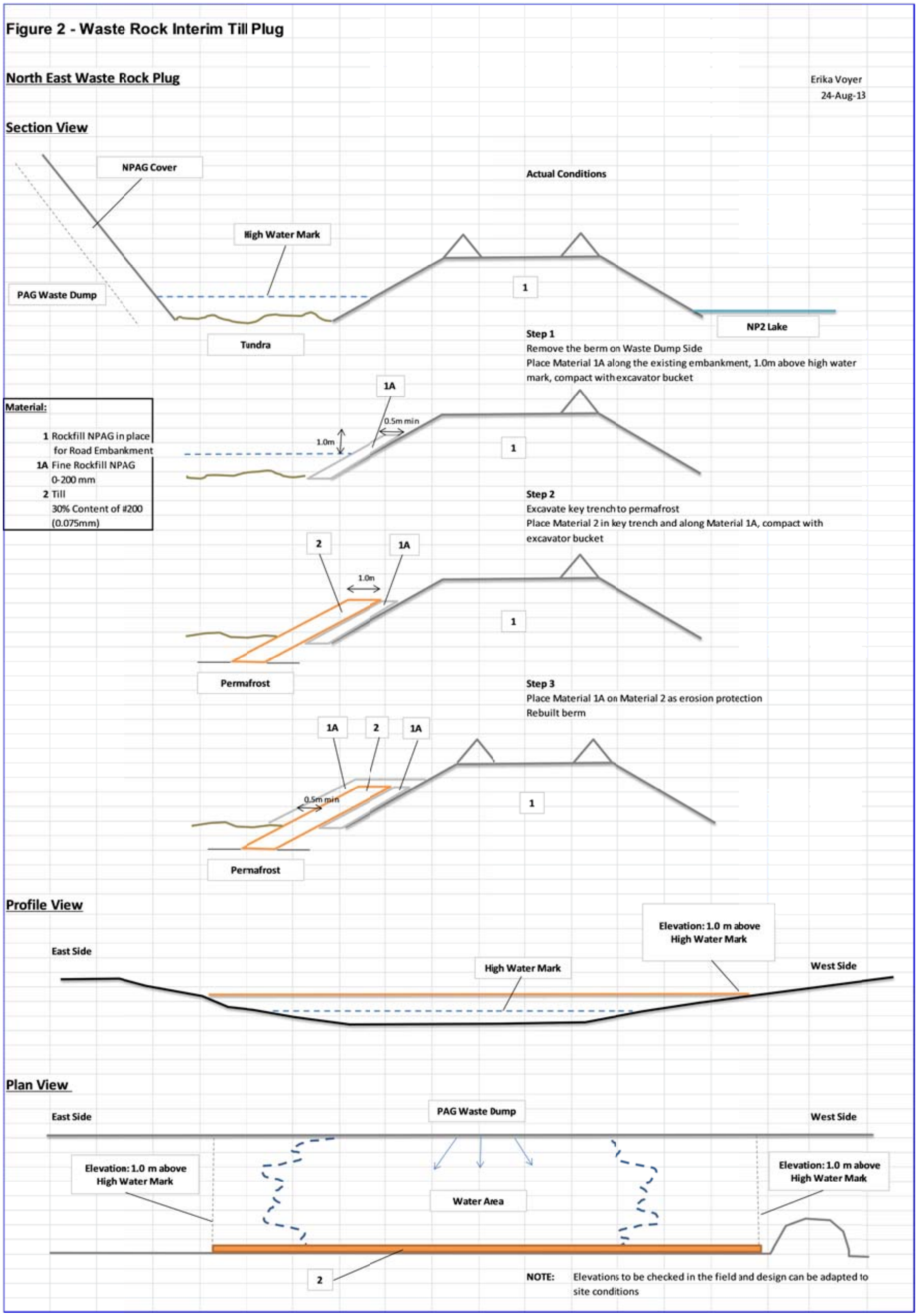


Figure 2: design drawings of the interim waste rock storage facility till plug to prevent seeping water from reaching NP-2 lake.

SECTION 4.0 - CONSTRUCTION ACTIVITIES AND DESCRIPTION OF THE WORK

The scope of work for the construction of the till plug conducted from August 26th 2013 to September 1st 2013 consists of activities listed in the following major work items:

- Sump dewatering and seepage control;
- Placement of the transition layer of Zone 1A "Fine Rockfill" along the road;
- Excavation of the trench below the road elevation;
- Zone 2 "Till" placement in the excavation and along the road;
- Zone 1A "Fine Rockfill" placement over the till as erosion protection.

These items are discussed in the following sections below.

Please note that in order to have the smallest section of the road exposed to seepage at any given time, all works was done in small section not wider than 3-4 meters. The steps followed were: preparation of the upstream slope, excavation of the foundation and till placement. Final cover for erosion protection placement over the till layer was done once before the end of the day. This sequence of events was also chosen to minimize the exposure time of the permafrost to the elements and prevent it to thaw. The concept of the design was to have a foundation composed of either bedrock or permafrost.

Selected photographs of the work progress taken throughout the construction program, showing various aspects of the construction work, are available in Appendix A.

As-built drawings are available in Appendix B.

4.1 SUMP DEWATERING AND SEEPAGE CONTROL

The first step prior to all works in the area is to pump the seepage water from the two main channels out of the till plug area. In order to control the water level through the entire construction period, a water truck from SANA was hauling (as needed) 14,000 litres of seepage water and disposed of it in the tailings pond over the Stormwater dike. A 3" diesel pump (model Godwin CD103) was placed within the 2 main deepest channels to keep them as empty as possible to allow the working area to be as dry as possible for the beginning of the excavation. The pump was moved as the work progresses.

Figure 3: view of the 2 main channels and the pumping station after the completion of the works.

4.2 TRANSITION LAYER OF ZONE 1A NPAG ROCKFILL ALONG THE ROAD

According to the design, a transition layer 1A needs to be put in place prior to the excavation and till placement along the entire upstream side of the road (on the RSF side). As the primary constituent material of the road was already fine NPAG soapstone, the 1A layer was replace by remodeling the in-situ material. The coarser material encountered was removed from the slope and the remaining finer soapstone was flattened and recompacted with the excavator bucket to create a 2 in 1 slope. The preparation of the road upstream slope began 1m above the high water marks left on the tundra after freshet, on both eastern and western abutments of the natural topographic low.

4.3 EXCAVATION OF THE TRENCH BELOW THE ROAD

Excavation of the unfrozen deleterious material was realized with a CAT 345 excavator. The excavation depth was adapted according to the material encountered. Unfrozen tundra, soft till and/or sediments were removed until refusal either on frozen till or bedrock. The foundation exposed was then cleaned and approved by AEM representative before further works performed. The excavation depth over the entire length of the road was ranging from 0.5 to 2.5 m deep (averaging around 1.3m). The deepest portions that had been excavated were the 2 main seepage channels and the shallowest were the eastern and western abutments that were directly over bedrock. As suggested by the Environment department, the excavation debris was put in front of the trench to act as a first barrier against any extraordinary event that might happen in the area. During the excavation, most of the water flooding the trench was flowing from the actual road structure itself and not from the tundra.

4.4 ZONE 2 TILL PLACEMENT IN THE EXCAVATION AND ALONG THE ROAD

Once a zone of 4-5m wide was excavated and the foundation exposed and approved by the AEM representative, a till layer of at least 500mm was placed in the excavation and compacted with the shovel bucket. The selected till was chosen to meet the specifications presented in section 3.1.3. The till was coming from a stock pile that was built in 2012 for Central dike construction, hauled with 50T trucks and dumped in the slope where it was pick up and spread with the excavator. Prior to any till placement, all the material coarser than 150mm was automatically discarded by the operator.

4.5 ZONE 1A FINE ROCKFILL PLACEMENT OVER THE TILL AS EROSION PROTECTION

Once the till layer was completed, a protective layer of fine filter has to be put in place to prevent any erosion of the layer. The selected material was fine soapstone that was hauled with 50T trucks from SANA. The rock was coming from Goose pit and dumped over the till blanket to be spread, placed and compacted by the excavator bucket. Every boulders or rocks over 500mm was discarded by the operator. The thickness of the protective layer was at least 500mm and has been adapted to the topography of the excavation.

SECTION 5.0 - QC CONTINUITY TESTING AND RESULTS

5.1 SITE INSPECTION AND PROCEDURE REVIEW

AEM representatives routinely conducted visual observation of work procedure during the construction. Review of the work procedure was done on a daily basis and corrections were made if needed. Daily survey was conducted by AEM representatives for daily progress and to ensure that limits and grades were followed correctly during the construction. Photographs of the work progress were taken throughout the construction program recorded. Daily report for each shift work were issued and filed by AEM representatives. The foundation of the trench was also assessed, approved and surveyed by the AEM representative prior to all material placements but no report was filed on this activity.

SECTION 6.0 - OPERATION AND MONITORING

Since the completion of the works, the water level is closely monitored by the both Environment and Engineering departments. A staff gauge has been placed at the seepage location to determine and visually quantify the water level increases. A visual daily inspection of the area is done after to ensure we keep the level as low as possible. Whether the water became too high, the Mine department or SANA is advise and a water truck is sent to the area to pump the water and dispose of it in the tailings pond. This operation will be continued until weather permitting in fall 2013 and will be restarted as soon as freshet begins in 2014.

SECTION 7.0 - SUMMARY AND CLOSURE

The construction of the interim till plug was conducted between August 26th and September 1st 2013. Construction was completed in accordance with the requirements of the construction design elaborated by AEM.

During the course of the work, one (1) field change was made to the proposed design to optimize the construction activities.

A visual monitoring program consisting of frequent field visit by the Geotechnical team was put in place to insure the integrity of the structure. As part of their normal routine, a water sampling campaign, of both upstream and downstream sides of the structure, is conducted by the Environment department.

APPENDIX A
Selected Till plug Construction Photos

Figure 1: Excavation of the active layer until reaching the permafrost. Between 0.5 and 3.8 m were required to reach proper foundation.

Figure 2: excavation of the foundation to permafrost / bedrock). The width of the trench at the bottom was at least one bucket wide. Note the excavated material is discarded on the upstream side.

Figure 3: till placement with the excavator bucket and compaction.

Figure 4: preparation of the transition NPAG on the roadside. Once excavation completed, soapstone was flattened and compacted before any till placement. Note the coarser material discarded from the till (red arrow).

Figure 5: final till placement over an entire section after 1 day of work. The till is flattened and compacted before any rockfill placement.

Figure 6: Final placement of soapstone rockfill protective layer (1A) over the till, once compacted.

Figure 7: water accumulation along the side of the road before works begin. View of the eastern channel.

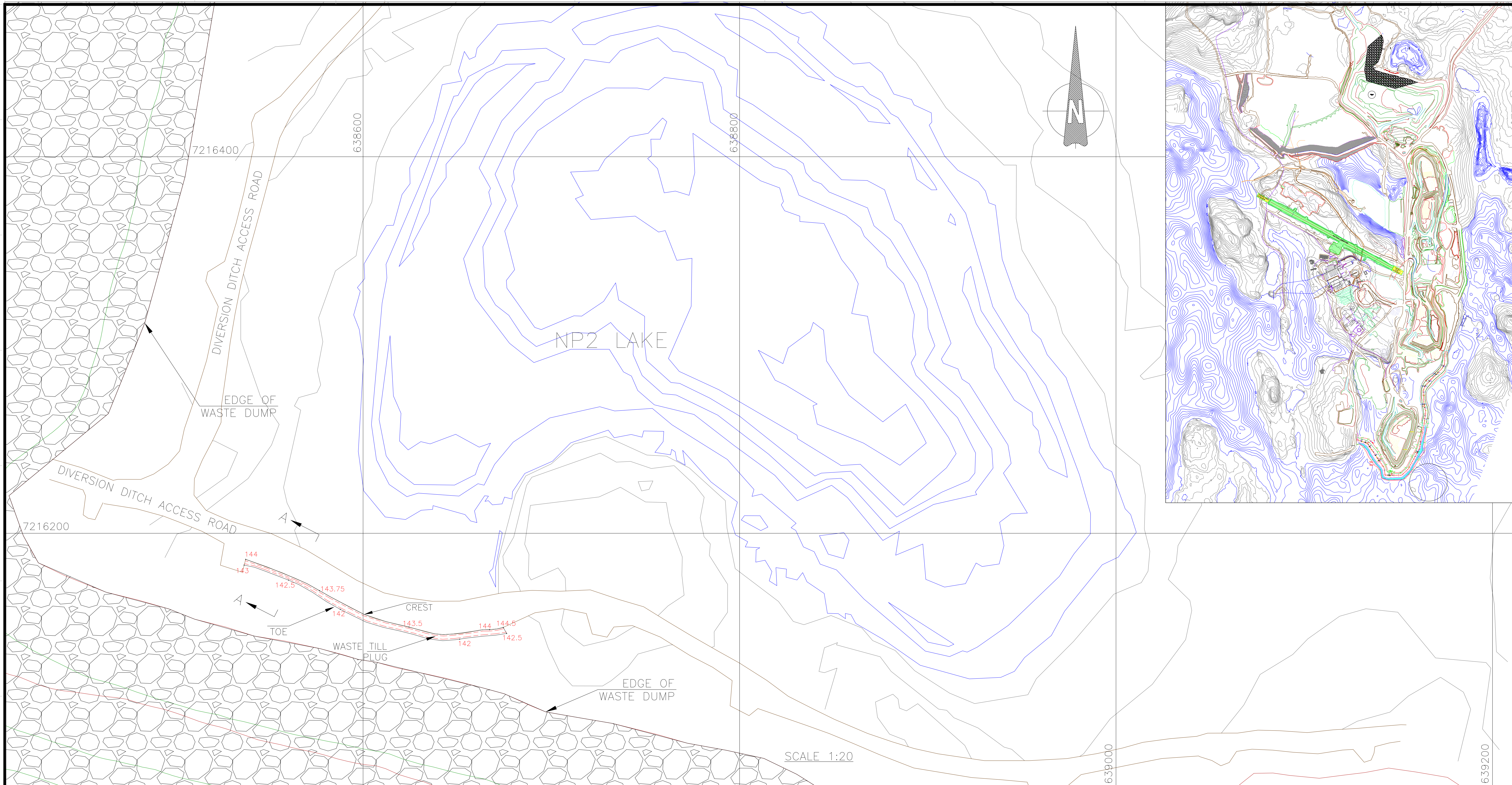
Figure 8: water accumulation along the side of the road before works begin. View of the western channel.

Figure 9: water control during the construction. A small 3" electric pump and a 3" diesel pumps were used.

Figure 10: photo of the final result of the entire till plug from West to East. The actual pumping station and the 2 active seepage channels are visible on the eastern abutment.

APPENDIX B
As-built drawings

FORMAT ANSI B – LANDSCAPE



TITLE	# DWG
REFERENCE DRAWINGS	

REV	DESCRIPTION	DATE	BY
REVISIONS			

AGNICO EAGLE
MEADOWBANK

DRAWN BY	T. DAHM	DATE	2013/10/29
CHECKED BY	P.GAGNON		2013/10/30
APPROVED BY			
PROJECT NO.			
DATE			

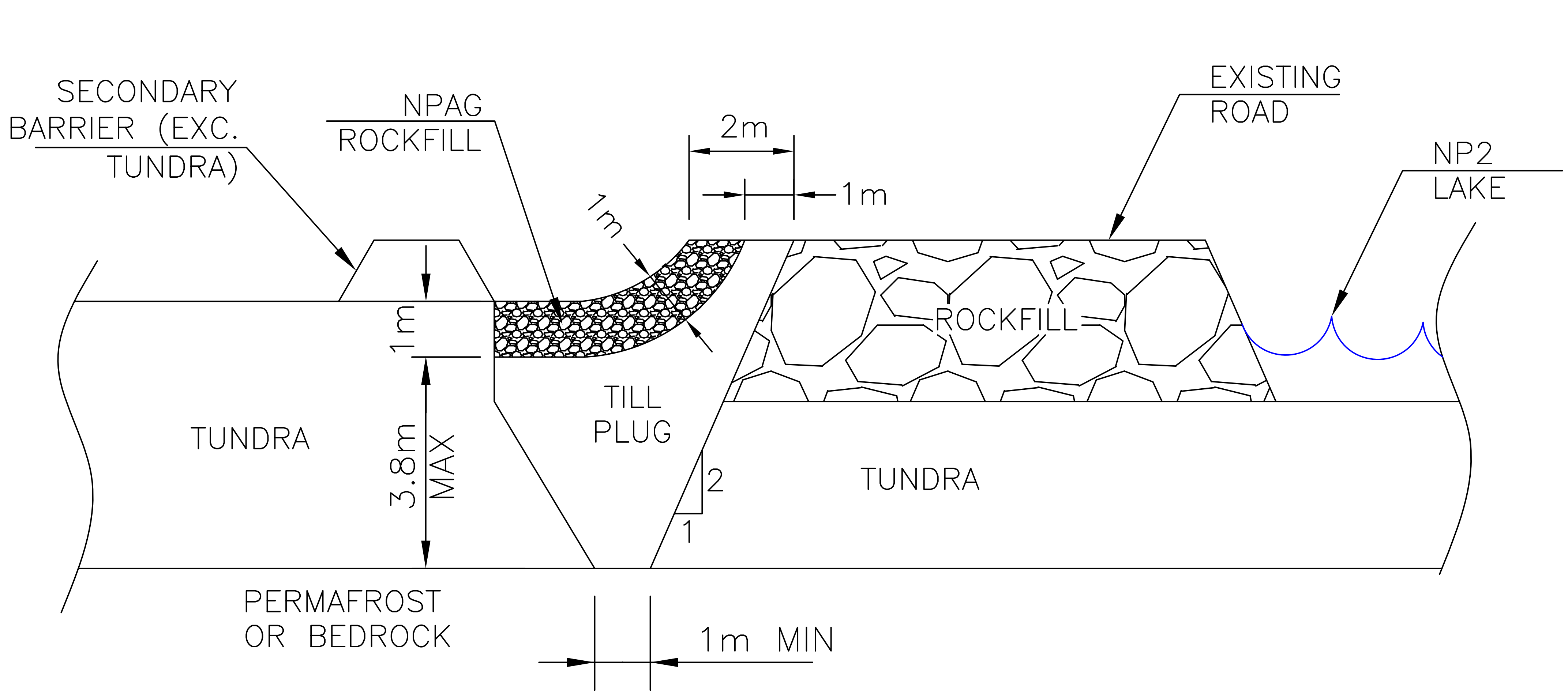
TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION

WASTE DUMP TEMPORARY TILL PLUG AS-BUILT

SCALE	FILE
AS NOTED	.DWG

DRAWING NO.	REVISION	SHEET
		1 / 1

X:\Waste Rock Plug\As-Built\Waste Till Plug.dwg, 30 Oct 2013



MATERIAL:
TILL: 30% CONTENT OF #200 (0.075mm)
ROCKFILL: 0–150mm
FINE ROCKFILL NPAG

SECTION VIEW A–A

TITLE	# DWG	REV	DESCRIPTION	DATE	BY
REFERENCE DRAWINGS		REVISIONS			

AGNICO EAGLE MEADOWBANK

DRAWN BY: T. DAHM — DATE: 2013/10/29
CHECKED BY: P.GAGNON — 2013/10/30
APPROVED BY:
PROJECT NO.:
DATE:

TITLE: AGNICO–EAGLE – MEADOWBANK DIVISION
WASTE DUMP TEMPORARY TILL PLUG TYPICAL SECTION
SCALE: 1:100 — FILE: .DWG
DRAWING NO.: — REVISION: — SHEET: 1 / 1

APPENDIX E

TSF Deposition Plan 2013-Update 2013-10-17

AGNICO EAGLE

TAILINGS DEPOSITION PLAN UPDATE 2013-11-17

North Cell TSF model guideline

GUIDELINE

- Avoiding ice accumulation on the dike liner;
- Prevent tailings beach to reach the reclaim barge;
- Reclaim water pond maximum elevation of 148m;
- A minimum of two days per month of discharge by the by-pass of the booster pump is assumed for maintenance activities;
- Tailings beach to reach elevation 150m;
- Limit as much as possible deposition at the north end of the tailings pond during winter to reduce risk of freezing pipe;
- Raise beach on RF1 and RF2 to prevent tailings water from seeping out of the North Cell;
- Raise beaches on all external structures such as the roads around the tailings pond to prevent reclaim water from seeping towards the diversion ditches.

South Cell TSF model guideline

GUIDELINE

- Avoiding ice accumulation on the Central Dike liner;
- Prevent tailings beach to reach the reclaim barge;
- A minimum of two days per month of discharge by the by-pass of the booster pump is assumed for maintenance activities;
- Modelization of phase 1 of this cell, closure of this cell to be determined.

Model Parameters and assumptions

ASSUMPTIONS

- Deposition points will be moderately mobile in time (i.e. we can extend them on the tundra, and retract them as we deposit tailings throughout time);
- Ice formation in the reclaim pond during winter months follow the ice model table.
- Deposition points are added towards the end of life of the cell for closure purposes;

PARAMETERS

- The water balance used in this model assumes reclaim flow changes in function of season: summer 70 m^3/h fresh water (FW) & 380m^3/hr reclaim water (RW), and winter 90 m^3/h FW & 360 m^3/h RW;
- The model assumes a tailings dry density and a water balance that incorporates ice entrapment of 1.21t/m^3 for both the North and South Cell;
- Sub aerial tailings slope set at 0.5% for both North and South Cell
- Sub aqueous tailings slope set at 2.3% for the North cell (obtained from summer 2013 bathymetric analysis) and 4% for the South Cell (taken from the 2012 Golder Deposition plan of the North Cell) as this value seems to better represent the start of a new cell.

Ice Model	
Month	Ice thickness (m)
January	1.1
February	1.5
March	1.8
April	1.8
May	1.1
June	0
July	0
August	0
September	0
October	0.2
November	0.5
December	0.8

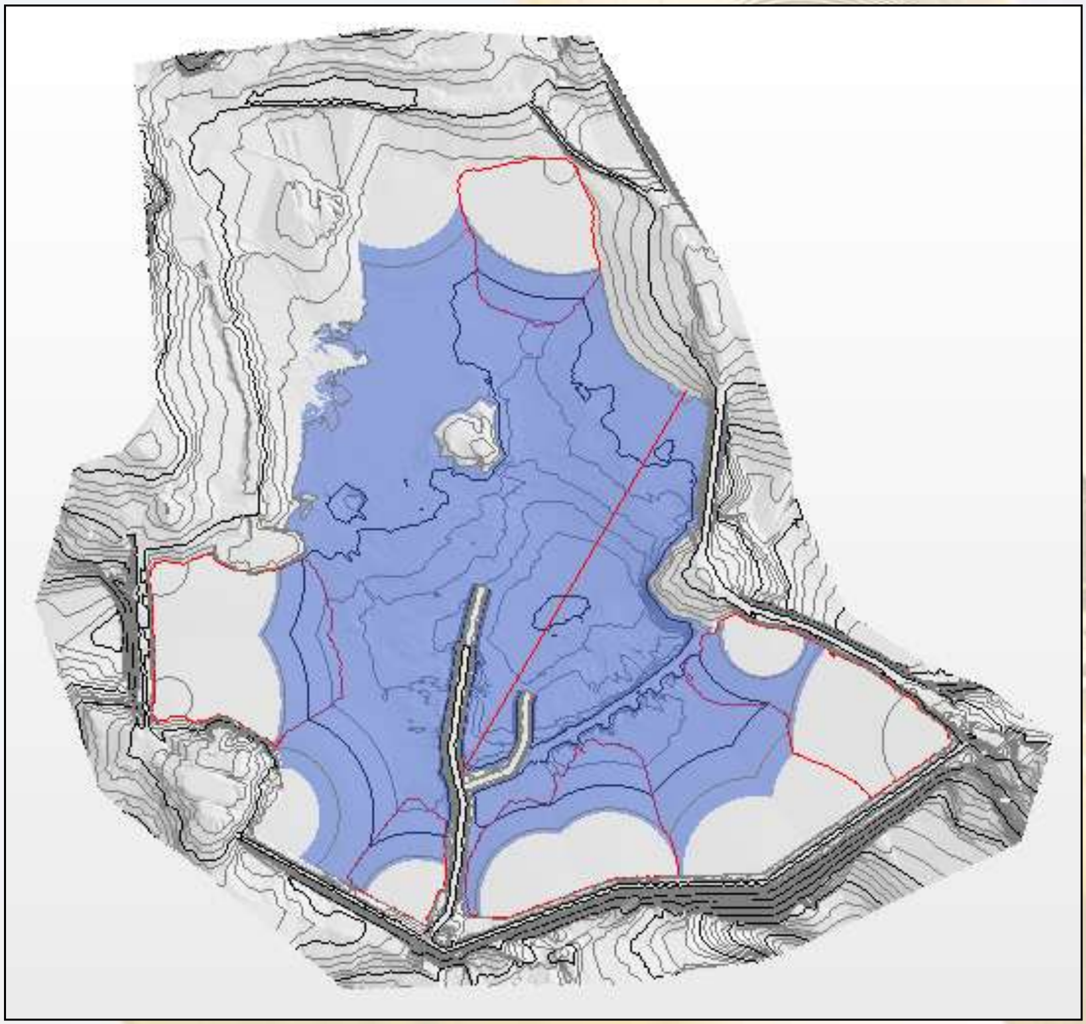
TSF deposition plan schedule

North and South Cell deposition phases

Period	Active Cell – Phase	Description
Current – September 2014	North Cell – Phase 1	- Bring the North Cell to the beginning of the winter 2014; the decreasing size and volume of the pond adversely affects the amount of free water due to ice formation, thus the North Cell cannot be closed off during the 2014/2015 winter.
October 2014 – June 2015	South Cell – Phase 1	- South Cell deposition during the winter months
July 2015 - September 2015	North Cell – Phase 2	- North Cell closure
September 2015 – End of mine life	South Cell - Phase 2	- South Cell deposition until end of mine life ***Still on-going; therefore will not be presented***

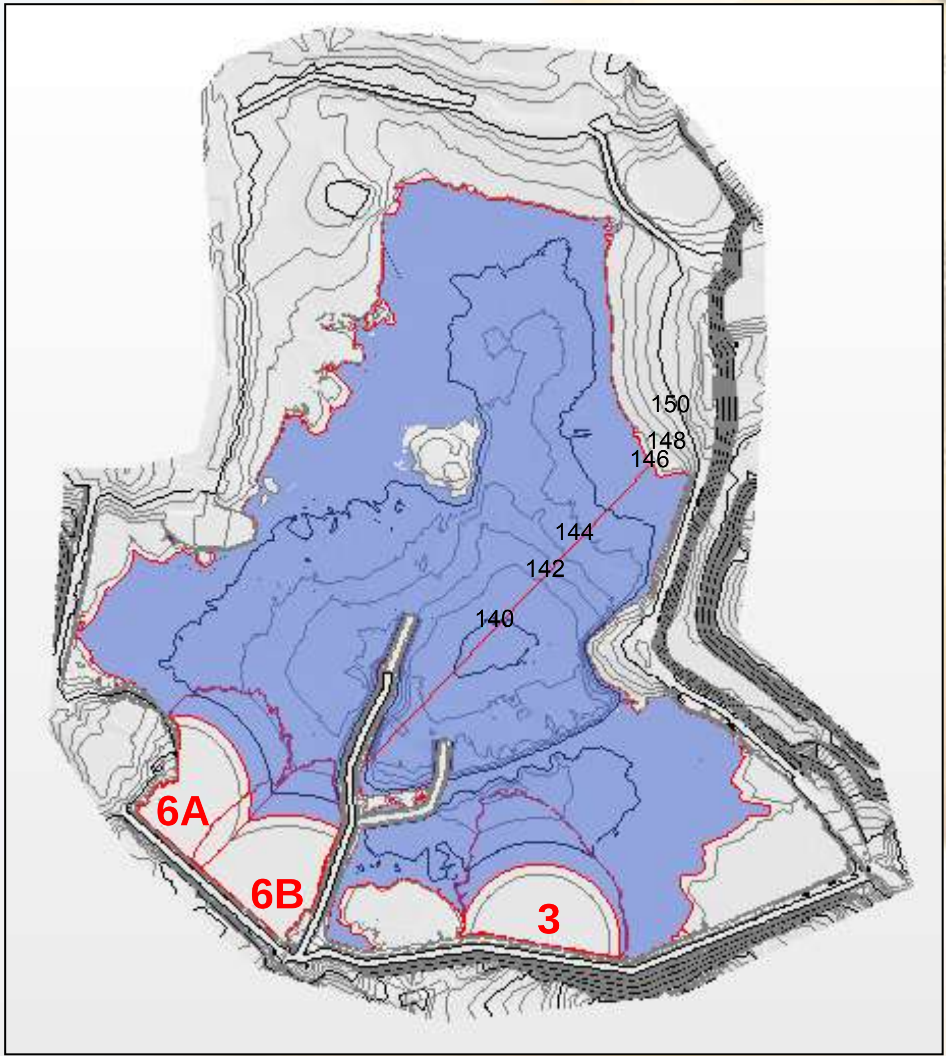
NORTH CELL DEPOSITION PLAN
PHASE 1

Section View Plot



A section view along the alignment shown on the diagram will be included for each month. This will show a section view plotted on an elevation graph to show the change in pond topography across the reclaim water barge area. Left limit of the chart represents the barge area and as you look to the right on the graph you are going towards deposition point 7 (North-eastern direction).

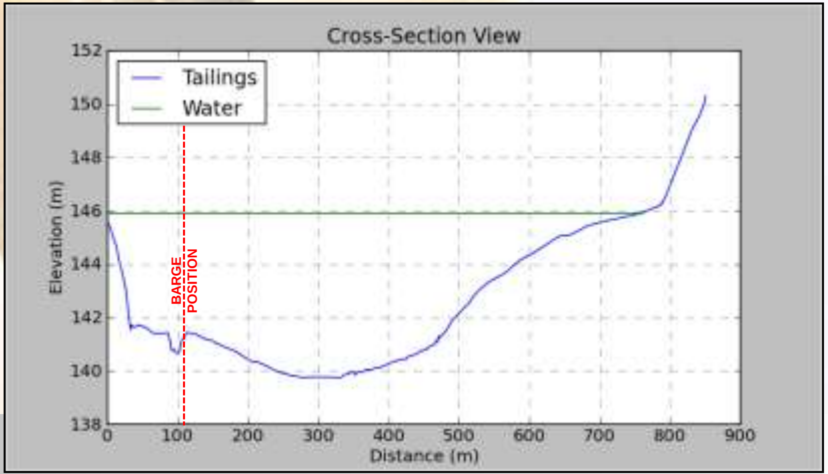
North Cell TSF deposition plan
From 09/16/2013 to 09/30/2013



Duration	Deposition Point	Tonnes
7	6B	76,120
5	3	60,725
3	6A	35,488

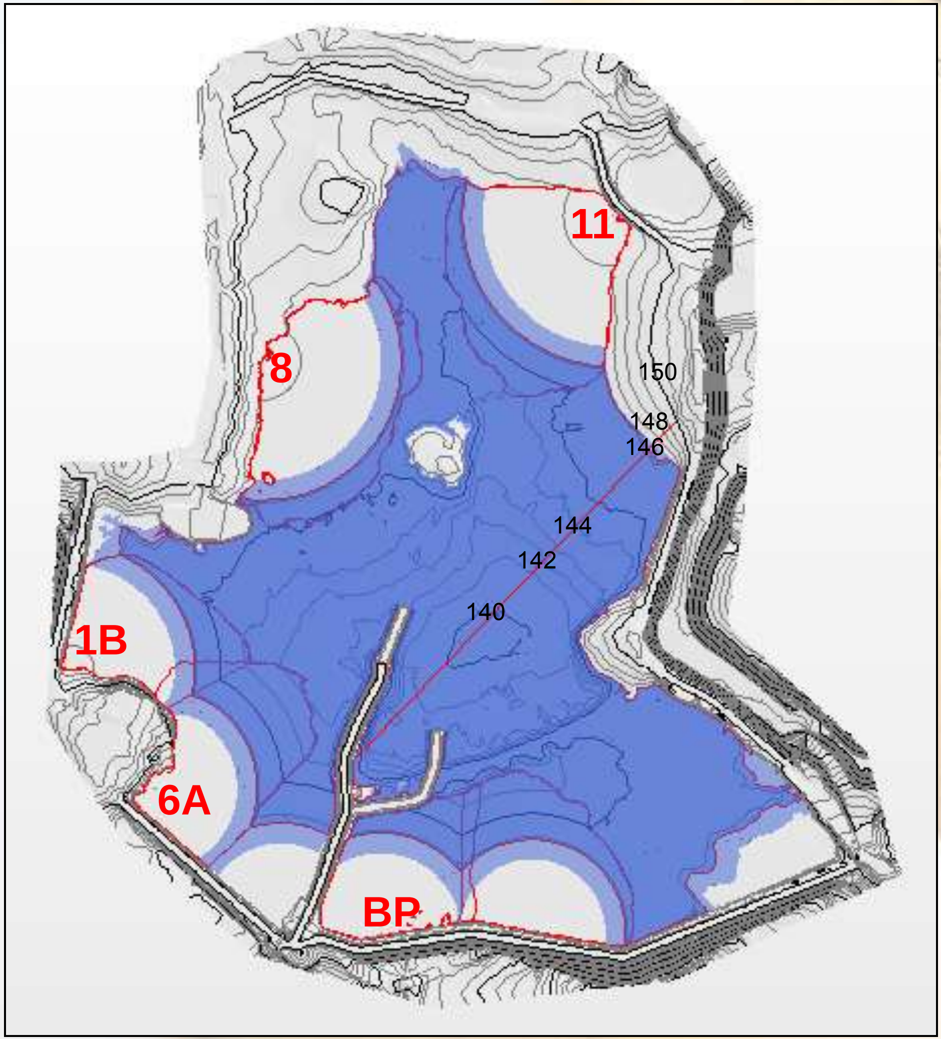
MODEL INPUT	
Water Balance Volume (m³)	1 455 036
Ice thickness (m)	0.00
Tonnes (t)	172 177

MODEL RESULTS	
Pond volume (m³)	1 416 508
Pond depth (m)	6.248
Pond elevation (m)	145.903
Min pond ele (m)	139.655
Ice thickness (m)	0
Unfrozen water elevation (m)	145.903
Ice volume (m³)	0
Ice ratio (%)	0
Transfer from South Cell (m³)	0



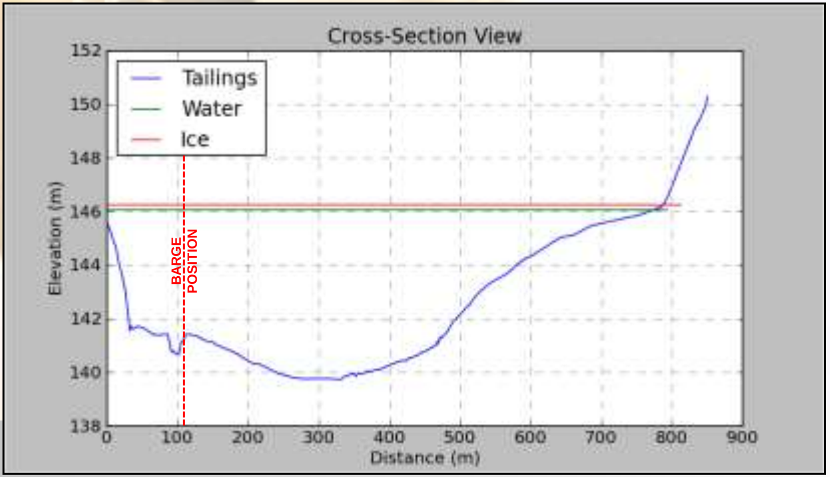
North Cell TSF deposition plan October 2013

Duration	Deposition Point	Tonnes
3	BP	43,009
3	6A	35,470
3	3	38,009
5	1B	56,733
12	11	145,711
5	8	66,857

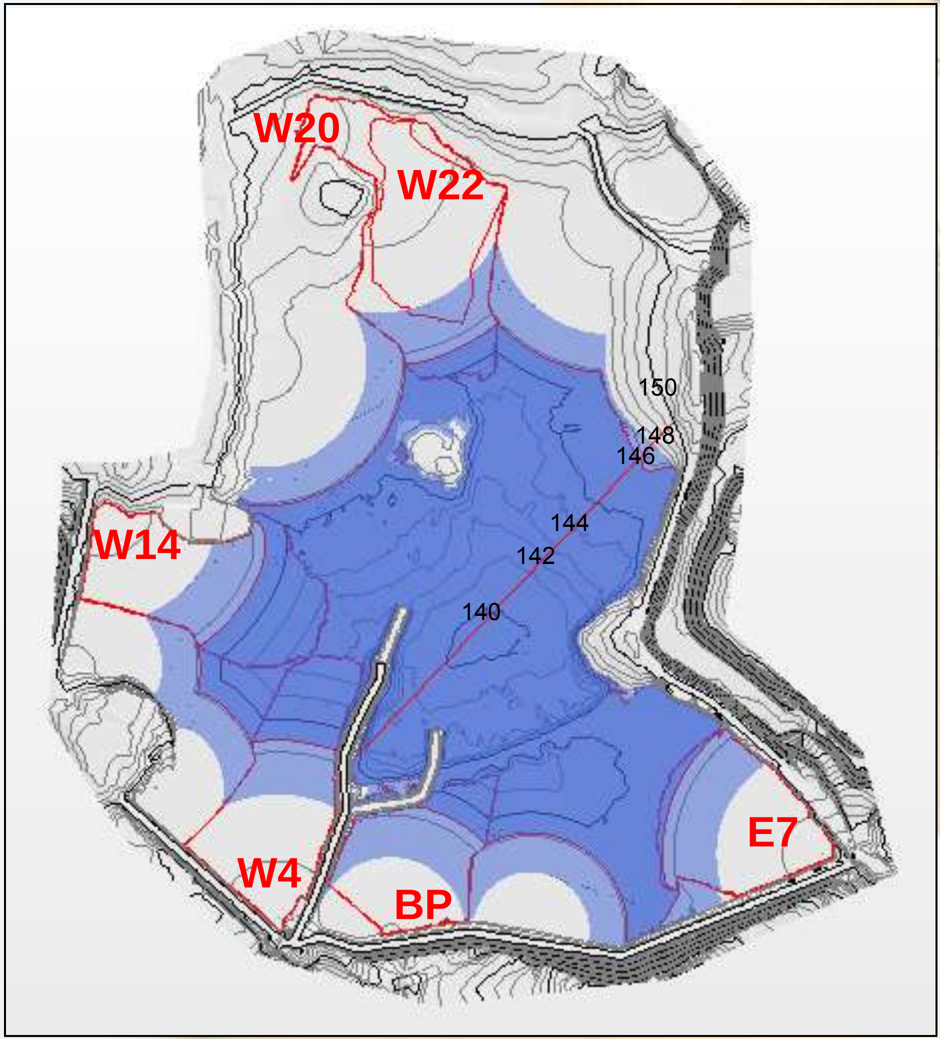


MODEL INPUT	
Water Balance Volume (m³)	1 503 962
Ice thickness (m)	0.20
Tonnes (t)	363,600

MODEL RESULTS	
Pond volume (m³)	1 362 552
Pond depth (m)	6.608
Pond elevation (m)	146.263
Min pond ele (m)	139.655
Ice thickness (m)	0.186
Unfrozen water elevation (m)	146.077
Ice volume (m³)	141 410
Ice ratio (%)	9%
Transfer from South Cell (m³)	140 000



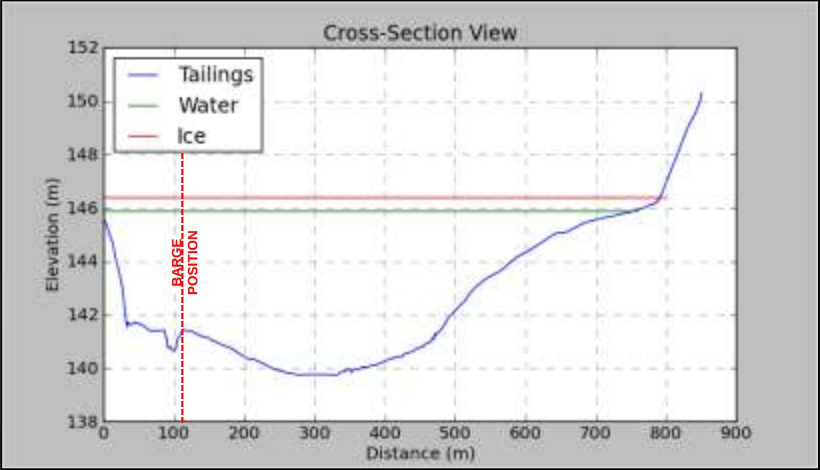
North Cell TSF deposition plan November 2013



Duration	Deposition Point	Tonnes
2	BP	20,474
5	W22	51,004
5	W20	55,385
6	W14	71,786
6	W4	71,875
3	E7	27,937

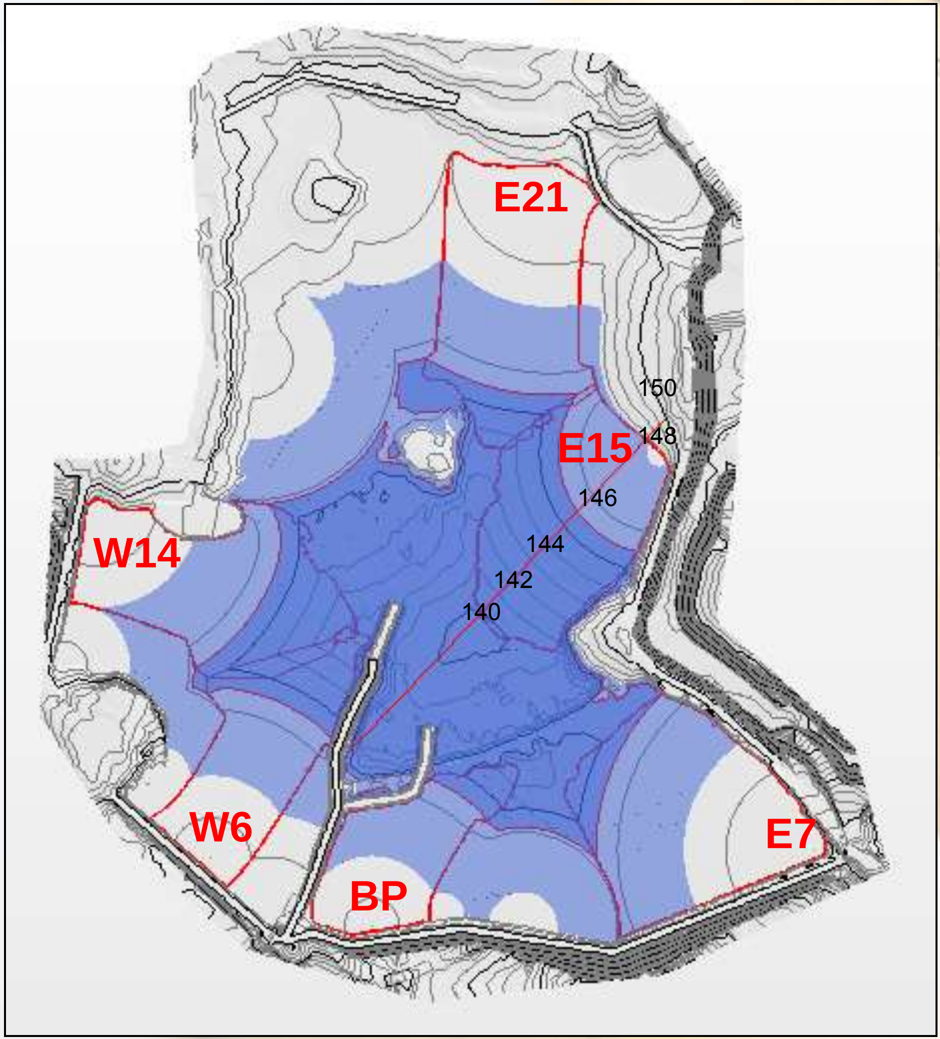
MODEL INPUT	
Water Balance Volume (m³)	1 443 996.00
Ice thickness (m)	0.50
Tonnes (t)	321 180

MODEL RESULTS	
Pond volume (m³)	1 122 802
Pond depth (m)	6.735
Pond elevation (m)	146.390
Min pond ele (m)	139.655
Ice thickness (m)	0.50
Unfrozen water elevation (m)	145.890
Ice volume (m³)	321 194
Ice ratio (%)	22%
Transfer to South Cell (m³)	0



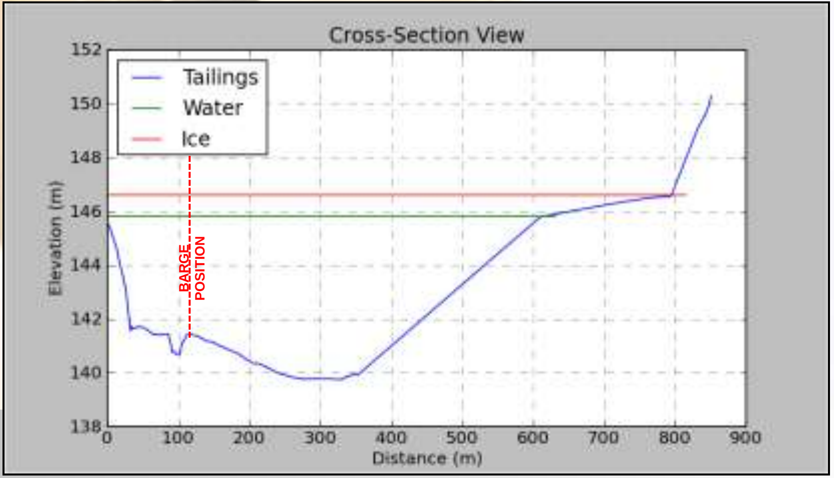
North Cell TSF deposition plan December 2013

Duration	Deposition Point	Tonnes
2	BP	23,445
5	E7	70,165
6	W18	70,259
6	W12	70,252
6	E21	71,365
4	E15	47,694



MODEL INPUT	
Water Balance Volume (m³)	1 372 715
Ice thickness (m)	1.10
Tonnes (t)	369,660

MODEL RESULTS	
Pond volume (m³)	887 636
Pond depth (m)	6.869
Pond elevation (m)	146.610
Min pond ele (m)	139.741
Ice thickness (m)	0.501
Unfrozen water elevation (m)	145.798
Ice volume (m³)	485 079
Ice ratio (%)	35%
Transfer to South Cell (m³)	0

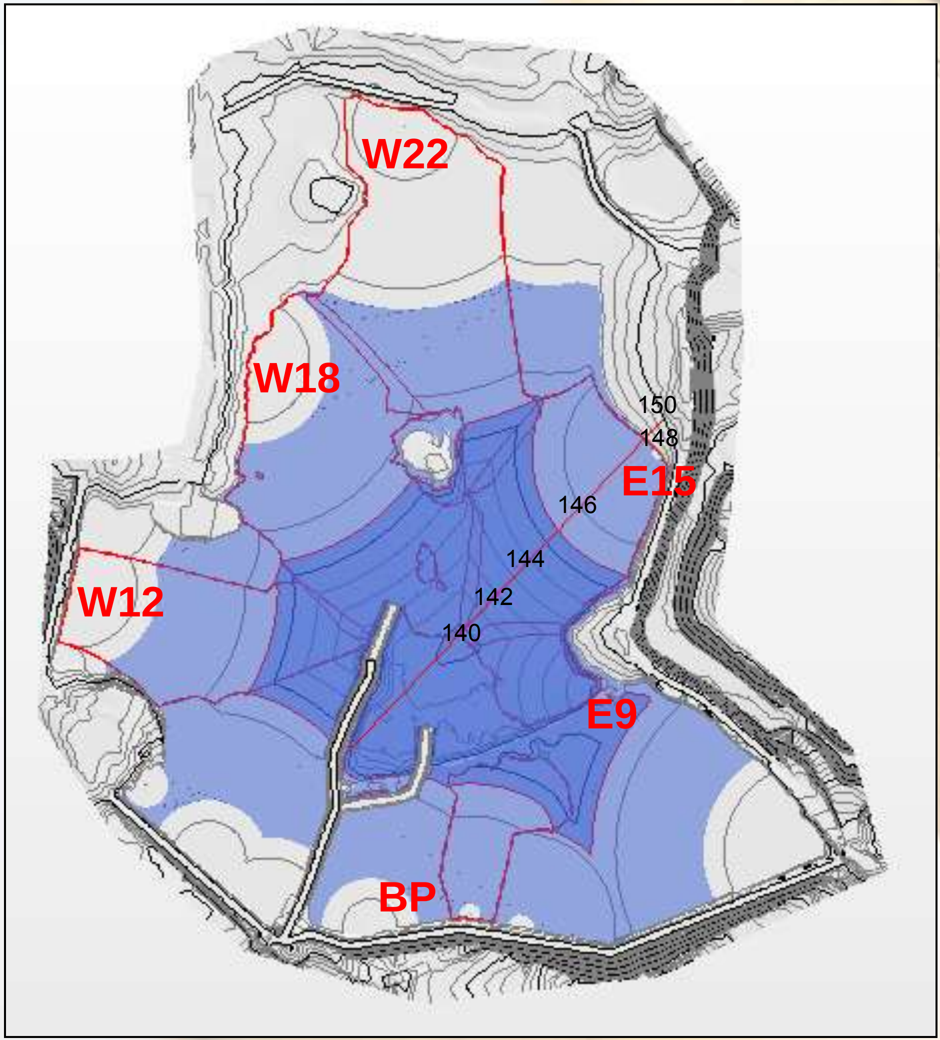


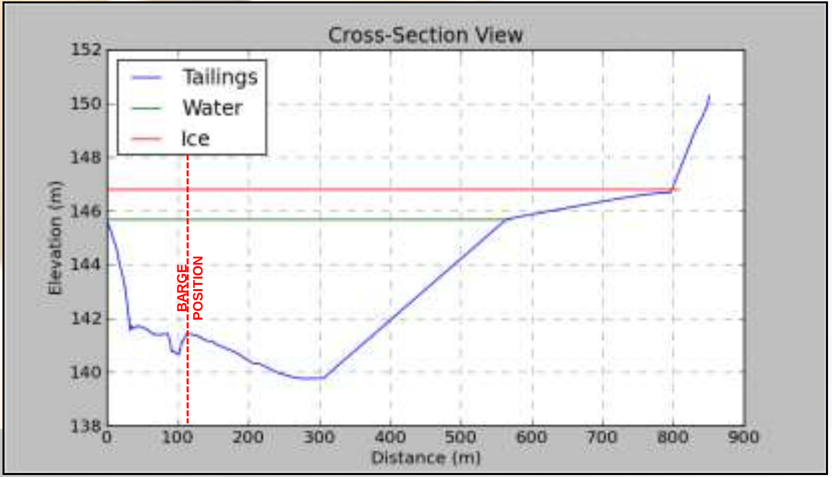
North Cell TSF deposition plan January 2014

Duration	Deposition Point	Tonnes
2	BP	23,196
3	E9	34,873
8	W22	92,932
7	W18	81,366
4	W12	46,472
7	E15	81,419

MODEL INPUT	
Water Balance Volume (m³)	1 300 648
Ice thickness (m)	1.10
Tonnes (t)	360,995

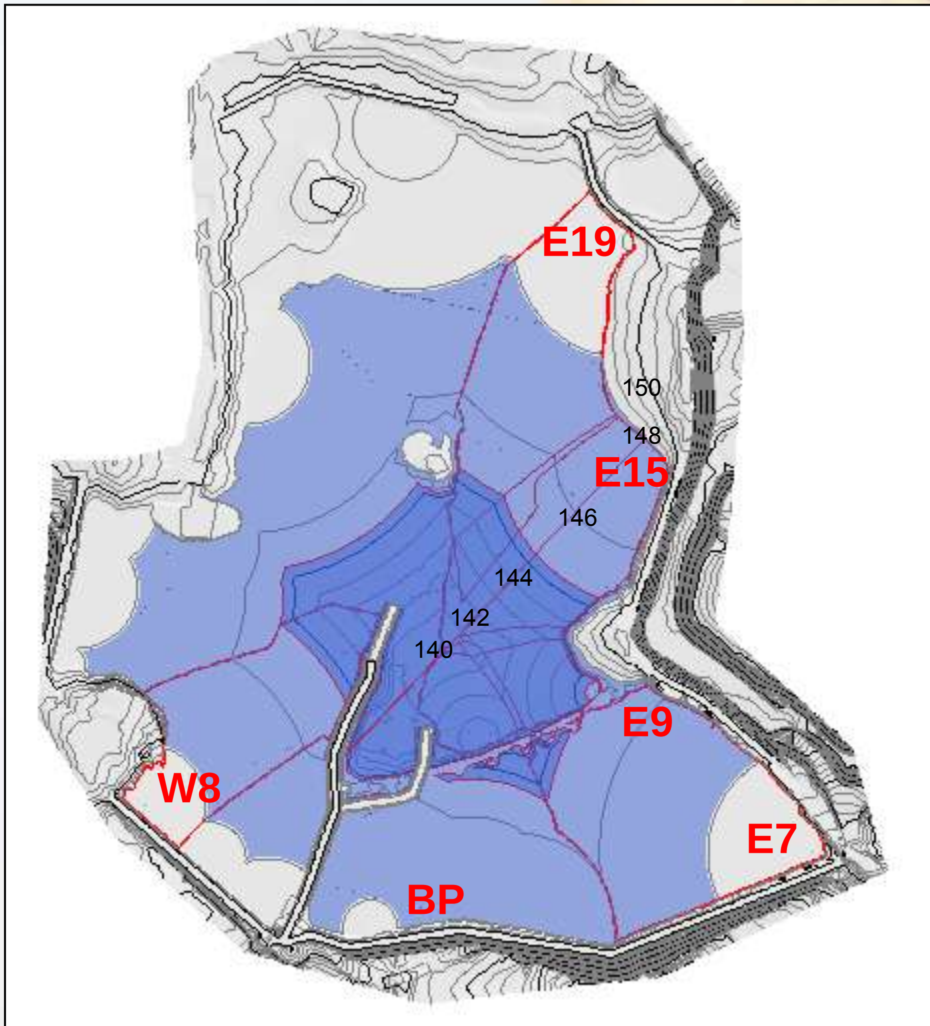
MODEL RESULTS	
Pond volume (m³)	669 758
Pond depth (m)	6.039
Pond elevation (m)	145.701
Min pond ele (m)	139.662
Ice thickness (m)	1.11
Unfrozen water elevation (m)	146.809
Ice volume (m³)	630 890
Ice ratio (%)	49%
Transfer to South Cell (m³)	0





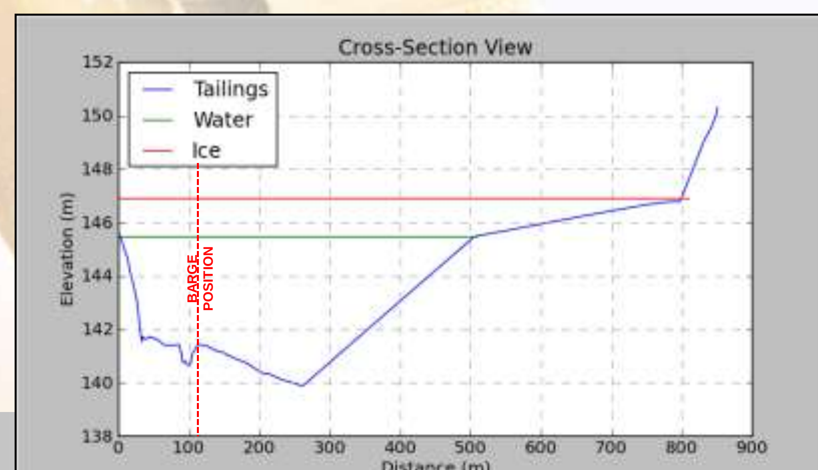
North Cell TSF deposition plan February 2014

Duration	Deposition Point	Tonnes
2	BP	20,669
2	E9	20,665
4	E7	41,080
6	W8	62,027
8	E19	82,452
6	E15	62,077



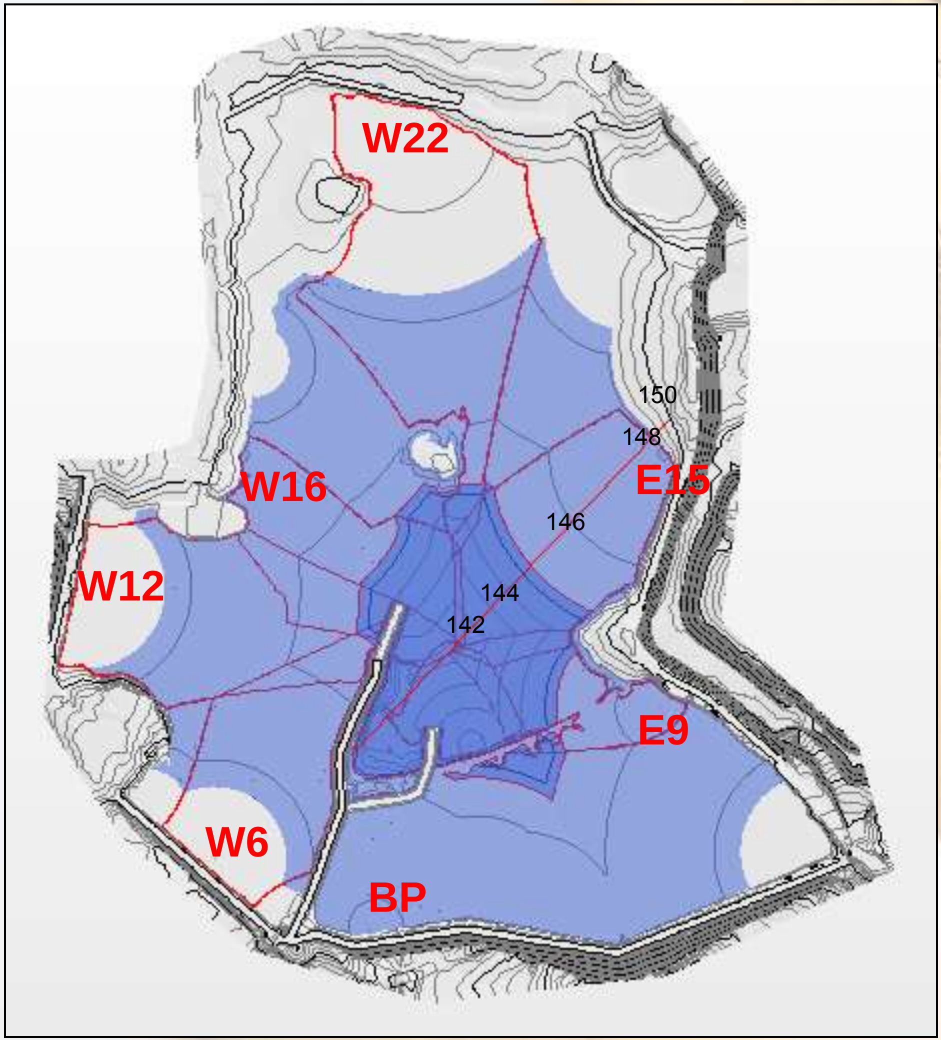
MODEL INPUT	
Water Balance Volume (m³)	1,185,974
Ice thickness (m)	1.50
Tonnes (t)	288,988

MODEL RESULTS	
Pond volume (m³)	459 343
Pond depth (m)	7.029
Pond elevation (m)	146.978
Min pond ele (m)	139.874
Ice thickness (m)	1.504
Unfrozen water elevation (m)	145.474
Ice volume (m³)	797 203
Ice ratio (%)	65%
Transfer to South Cell (m³)	0



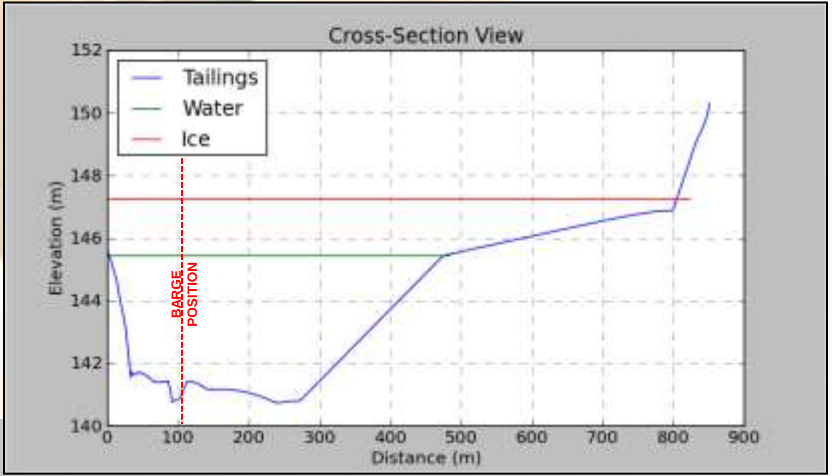
North Cell TSF deposition plan March 2014

Duration	Deposition Point	Tonnes
2	BP	20,662
5	W22	58,960
6	W16	70,926
6	W10	70,984
4	E15	47,335
4	E9	47,188
4	W6	47,771



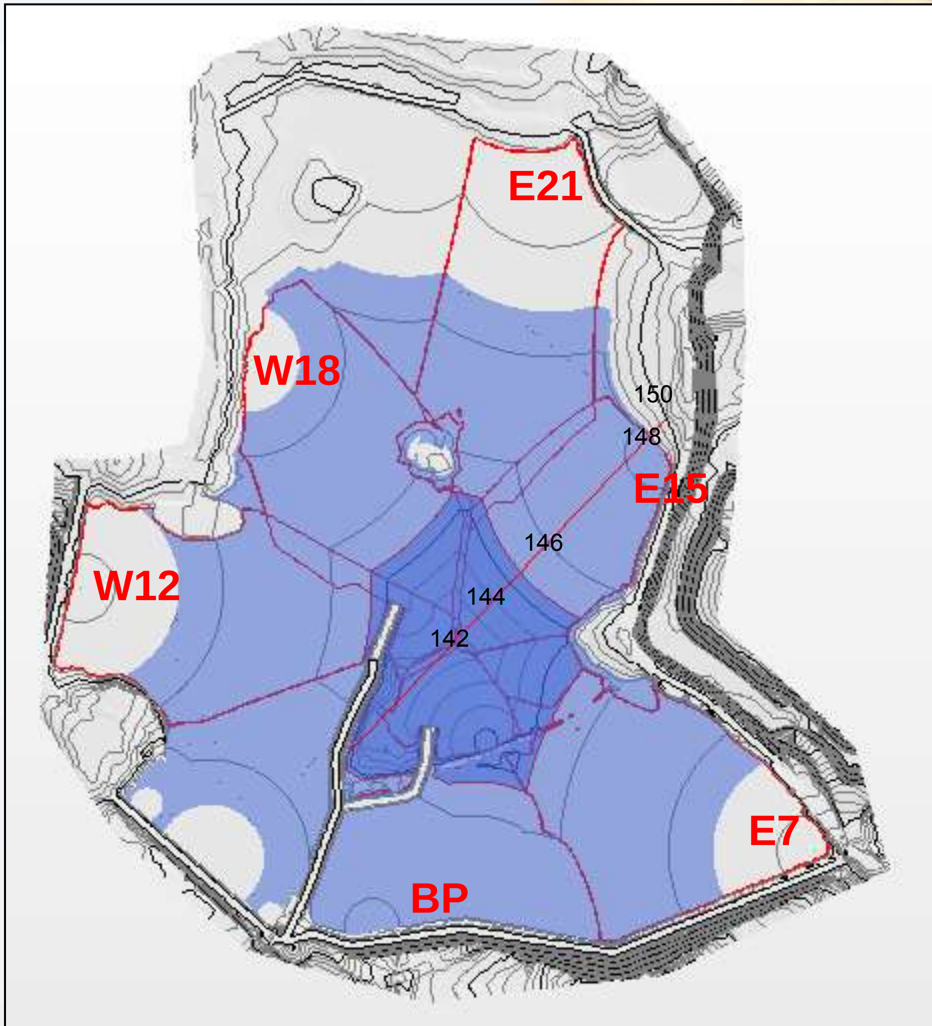
MODEL INPUT	
Water Balance Volume (m³)	1 163 247
Ice thickness (m)	1.80
Tonnes (t)	367,009

MODEL RESULTS	
Pond volume (m³)	309 900
Pond depth (m)	6.728
Pond elevation (m)	147.245
Min pond ele (m)	140.517
Ice thickness (m)	1.795
Unfrozen water elevation (m)	145.450
Ice volume (m³)	853 347
Ice ratio (%)	73%
Transfer to South Cell (m³)	0



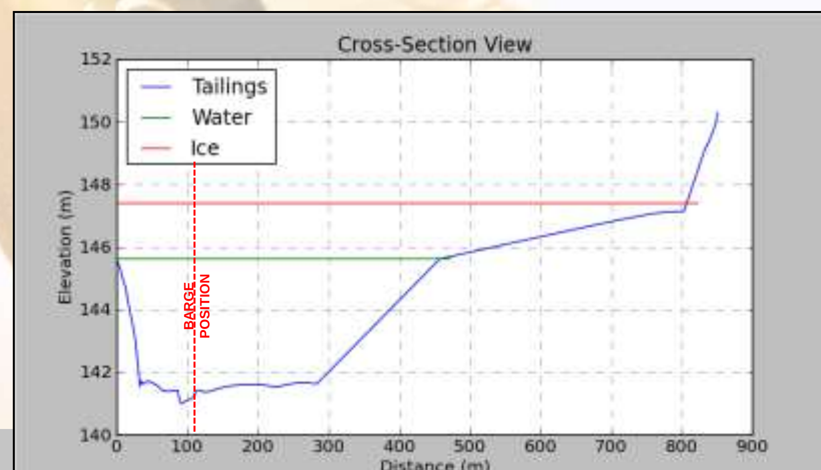
North Cell TSF deposition plan April 2014

Duration	Deposition Point	Tonnes
2	BP	23 478
6	E7	70 435
6	W18	70 435
6	W8	70 435
6	E21	70 435
4	E15	46 956



MODEL INPUT	
Water Balance Volume (m³)	1,054,214
Ice thickness (m)	1.80
Tonnes (t)	348,990

MODEL RESULTS	
Pond volume (m³)	260 298
Pond depth (m)	6.699
Pond elevation (m)	147.411
Min pond ele (m)	140.712
Ice thickness (m)	1.780
Unfrozen water elevation (m)	145.631
Ice volume (m³)	833 459
Ice ratio (%)	76%
Transfer to South Cell (m³)	0

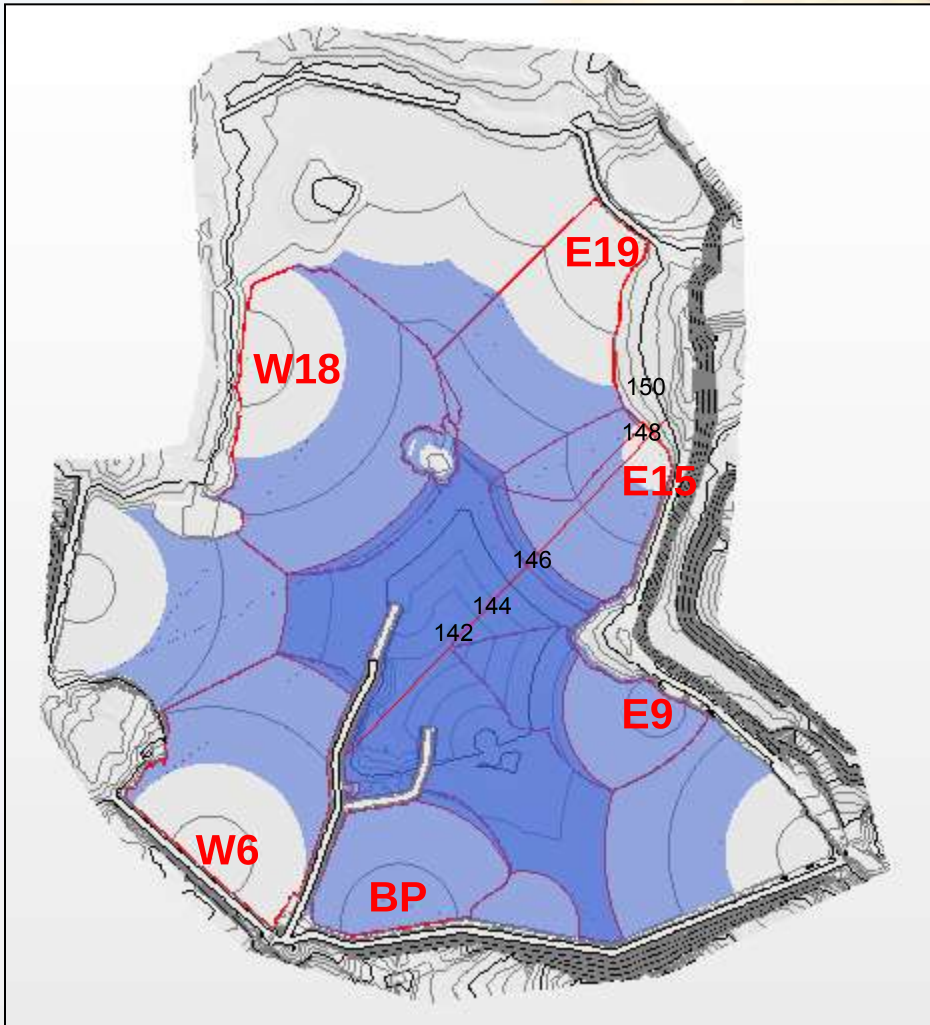


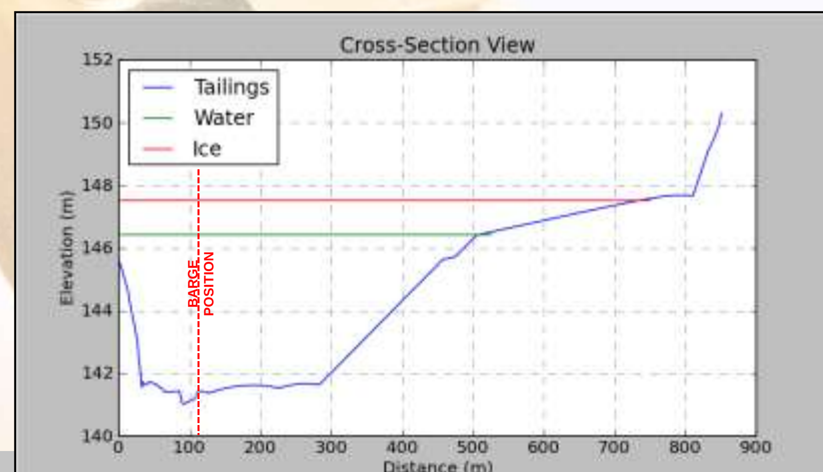
North Cell TSF deposition plan May 2014

Duration	Deposition Point	Tonnes
2	BP	23,401
9	W18	93,536
6	W6	64,411
6	E19	64,344
4	E15	41,497
4	E9	41,577

MODEL INPUT	
Water Balance Volume (m³)	1 044 070
Ice thickness (m)	1.10
Tonnes (t)	325,004

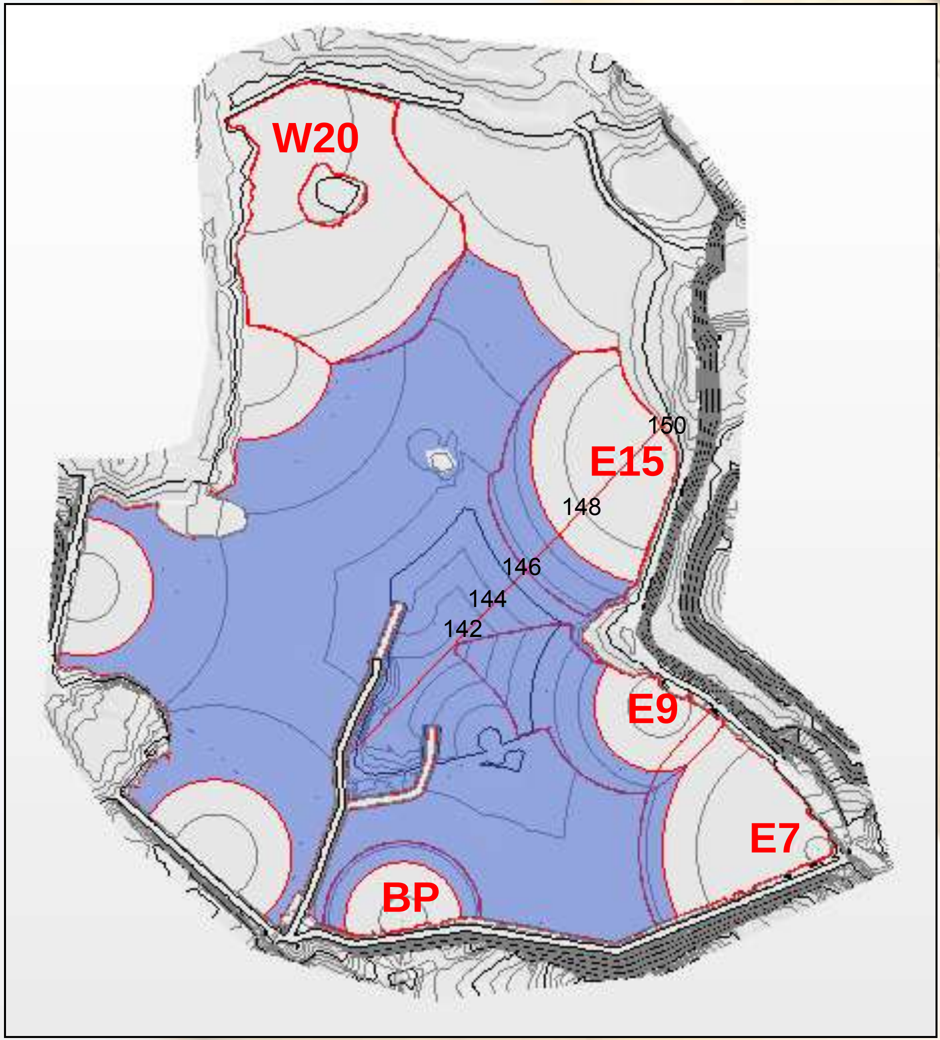
MODEL RESULTS	
Pond volume (m³)	412 777
Pond depth (m)	6.047
Pond elevation (m)	147.518
Min pond ele (m)	141.471
Ice thickness (m)	1.108
Unfrozen water elevation (m)	146.410
Ice volume (m³)	631 293
Ice ratio (%)	60%
Transfer to South Cell (m³)	0





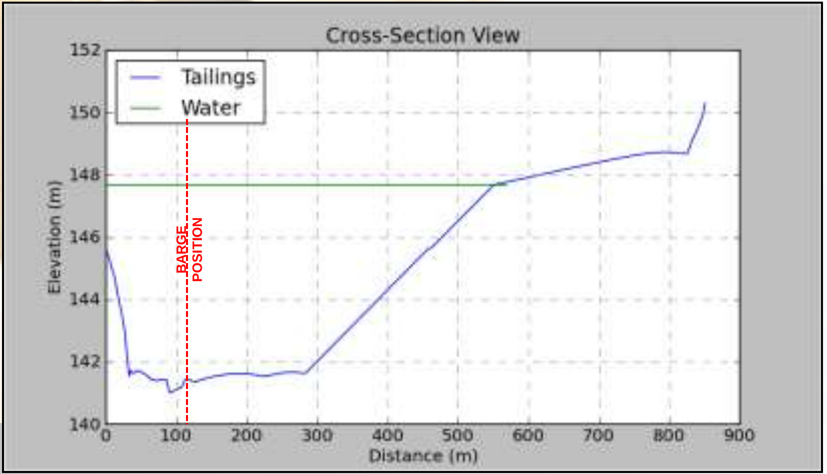
North Cell TSF deposition plan June 2014

Duration	Deposition Point	Tonnes
2	BP	23,377
9	W20	105,309
4	E9	46,790
9	E15	70,141
6	E7	70,141



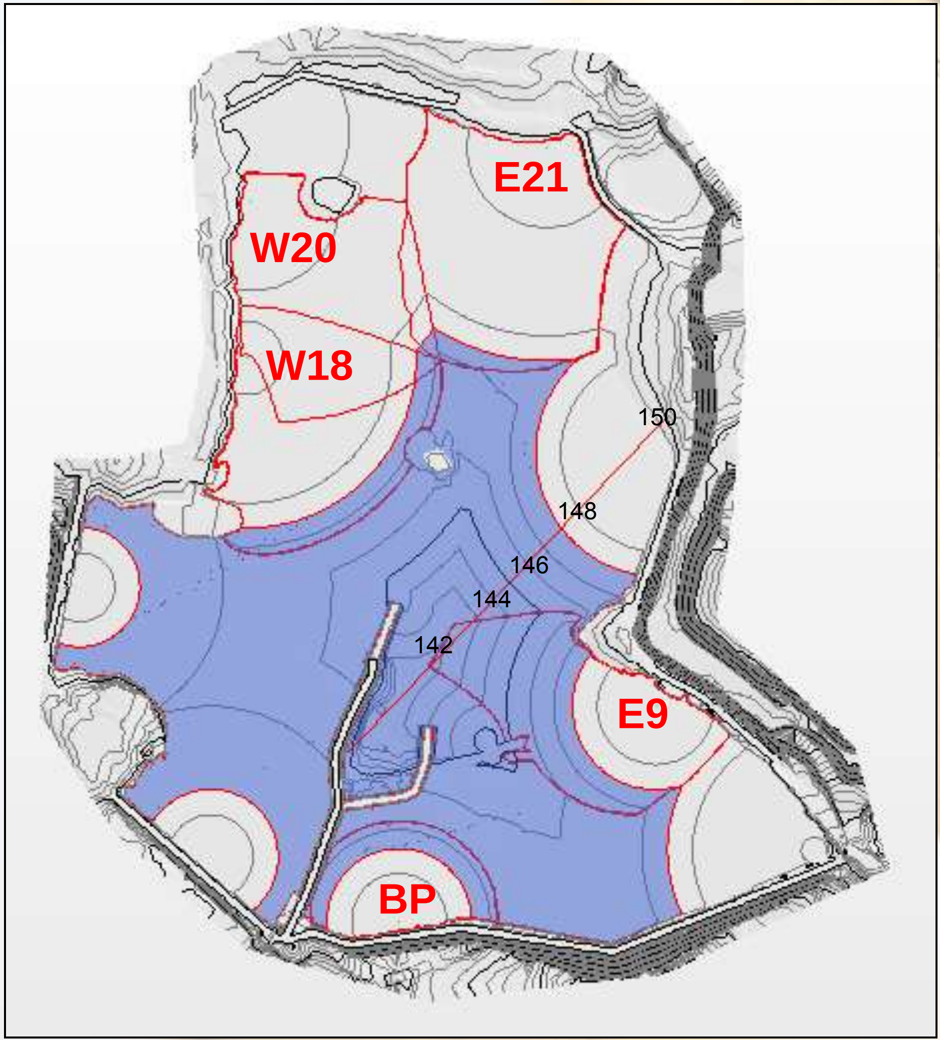
MODEL INPUT	
Water Balance Volume (m³)	1 059 689
Ice thickness (m)	0
Tonnes (t)	354 990

MODEL RESULTS	
Pond volume (m³)	1 056 178
Pond depth (m)	6.202
Pond elevation (m)	147.682
Min pond ele (m)	141.480
Ice thickness (m)	0
Unfrozen water elevation (m)	147.682
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



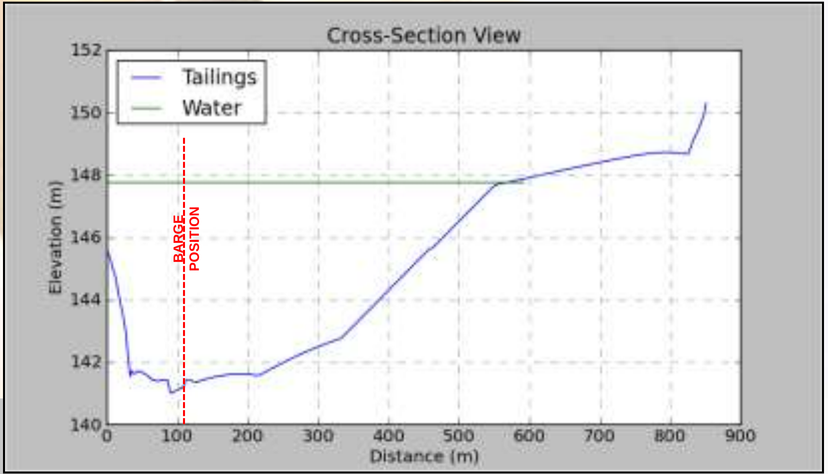
North Cell TSF deposition plan July 2014

Duration	Deposition Point	Tonnes
2	BP	23,269
9	E21	104,342
6	E9	69,856
5	W20	58,066
9	W18	104,633



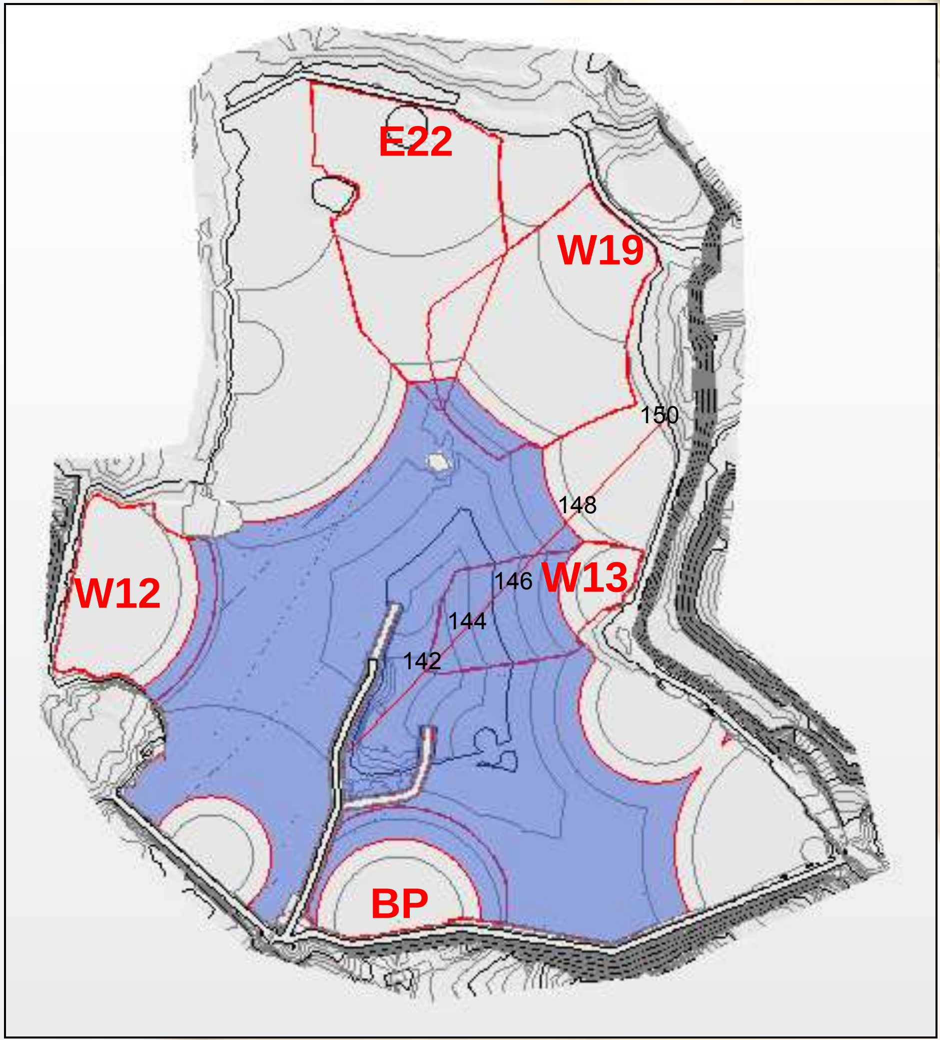
MODEL INPUT	
Water Balance Volume (m³)	999 244
Ice thickness (m)	0
Tonnes (t)	354,234

MODEL RESULTS	
Pond volume (m³)	994 558
Pond depth (m)	6.219
Pond elevation (m)	649 483
Min pond ele (m)	141.549
Ice thickness (m)	0
Unfrozen water elevation (m)	147.768
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



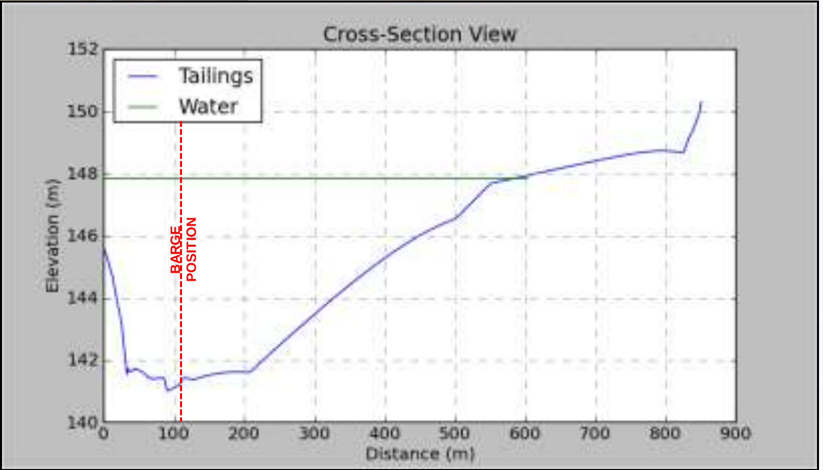
North Cell TSF deposition plan August 2014

Duration	Deposition Point	Tonnes
2	BP	23,401
9	W18	93,536
6	W6	64,411
6	E19	64,344
4	E15	41,497
4	E9	41,577



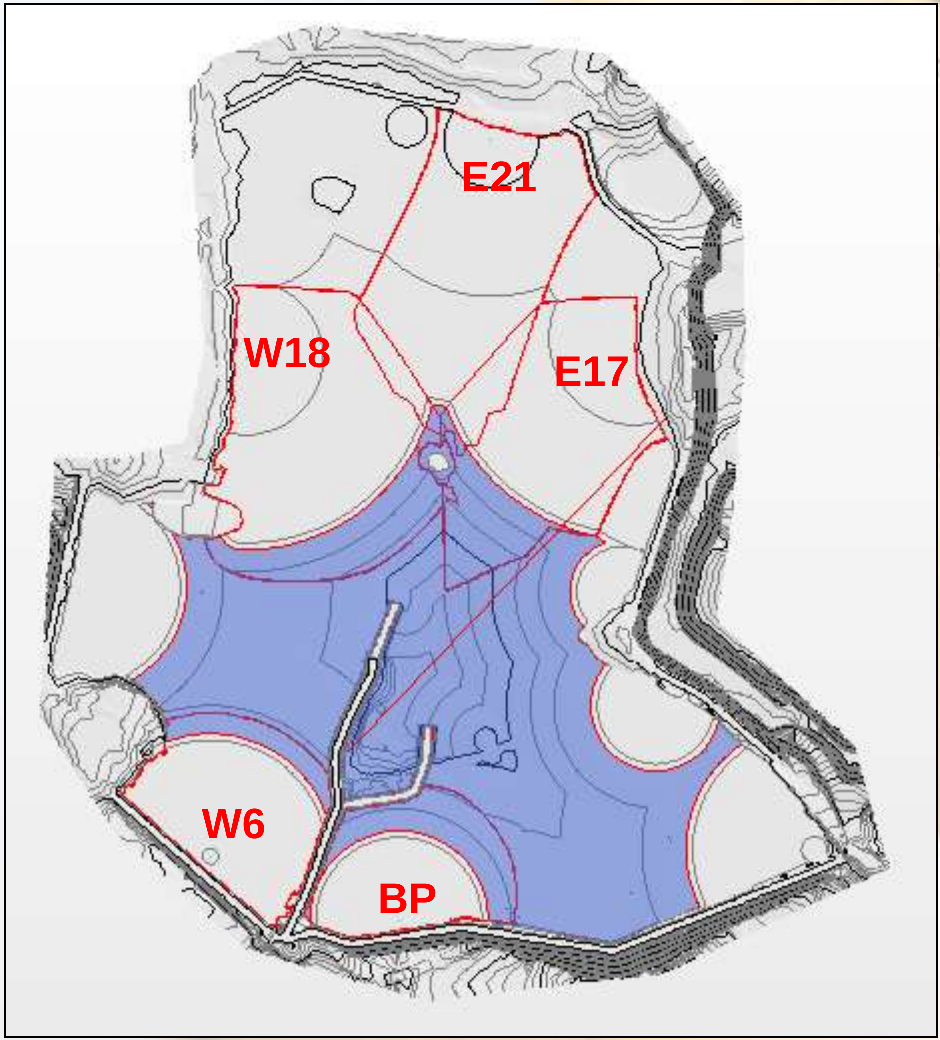
MODEL INPUT	
Water Balance Volume (m³)	1,197,430
Ice thickness (m)	0
Tonnes (t)	354,234

MODEL RESULTS	
Pond volume (m³)	911,888
Pond depth (m)	6.047
Pond elevation (m)	147.855
Min pond ele (m)	141.808
Ice thickness (m)	0
Unfrozen water elevation (m)	147.855
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



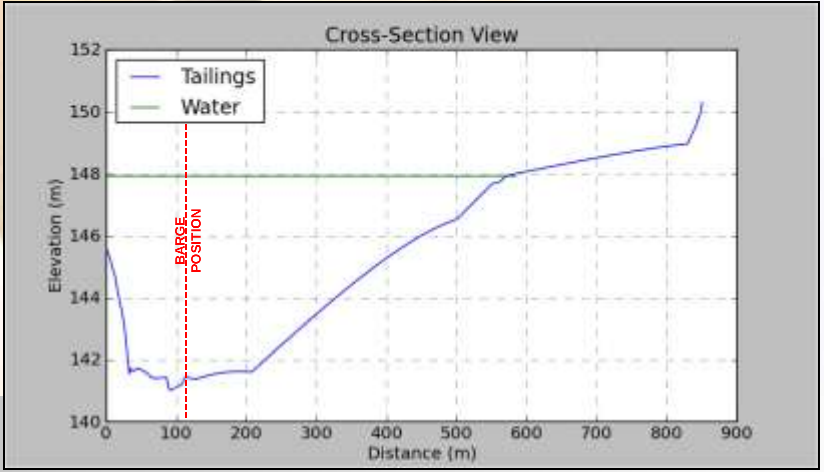
North Cell TSF deposition plan September 2014

Duration	Deposition Point	Tonnes
2	BP	23,265
6	E21	69,639
8	W18	92,798
8	E17	92,949
6	W6	69,749



MODEL INPUT	
Water Balance Volume (m³)	892 523
Ice thickness (m)	0.00
Tonnes (t)	348,990

MODEL RESULTS	
Pond volume (m³)	889 585
Pond depth (m)	6.423
Pond elevation (m)	147.939
Min pond ele (m)	141.516
Ice thickness (m)	0
Unfrozen water elevation (m)	147.939
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



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APPENDIX D – WATER QUALITY REPORT

SNC • LAVALIN

SUSTAINABLE MINE DEVELOPMENT

AGNICO-EAGLE MINES

TECHNICAL NOTE

MEADOWBANK GOLD PROJECT WATER QUALITY FORECASTING UPDATE FOR 2013-2025

Our file: 617429-0000-40ER-0001

March 2014

Certified ISO 9001

WE CARE
NOUS VEILLONS

SNC·LAVALIN	TECHNICAL NOTE **Water Quality Forecasting Update for 2013-2025**	Prepared by: G. Beaudoin-Lebeuf Reviewed by: A.-L. Nguyen		
		Rev.	Date	Page
	617429-0000-40ER-0001	00	March 20th, 2014	i

Title of document: **Water Quality Forecasting Update for 2013-2025**

Client : **AGNICO-EAGLE MINES**

Project : **Meadowbank Gold Project**

Prepared by: Geneviève Beaudoin-Lebeuf, ing. Geneviève BL ing. 2014-03-20

Reviewed by: Anh-Long Nguyen, ing., M.Sc. Anh-Long Nguyen, ing. 2014-03-20

REVISION INDEX

Revision				Pages Revised	Remarks
#	Prep.	App.	Date		
PA	GBL	ALN	2014-02-21	All	For internal review
PB	GBL	ALN	2014-02-25	All	For Client's comments
00	GBL	ALN	2014-03-20	All	

NOTICE TO READER

This document contains the expression of the professional opinion of SNC-Lavalin Inc. ("SLI") as to the matters set out herein, using its professional judgment and reasonable care. It is to be read in the context of the agreement dated * (the "Agreement") between SLI and Agnico Eagle Mine (the "Client") and the methodology, procedures and techniques used, SLI's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context.

SLI has, in preparing estimates, as the case may be, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual values will be consistent with the estimate(s). Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers, etc.) upon which SLI's opinion as set out herein are based have not been verified by SLI; SLI makes no representation as to its accuracy and disclaims all liability with respect thereto.

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1.0 INTRODUCTION

1.1 MANDATE

SNC-Lavalin (SLI) was mandated by Agnico-Eagle Mines (AEM) to review and update the water quality forecasting model developed in 2012 based on the Water Management Plan 2013 evaluated by AEM.

1.2 STUDY OBJECTIVES AND CONTENT

This Technical Note will present the update of the water quality forecast model for the Meadowbank Gold Project. The update developed in this study was based on the Water Management Plan 2013 of AEM that is based on the updated LOM and mine development sequence provided by AEM in January 2014 and summarized in Table 1-1. The updated water quality forecast model applies to the North and South Cell TSF Reclaim Ponds, and the Portage and Goose pits.

The objective of this Technical Note is to forecast the concentration of selected parameters of concern within the North and South Cell TSF Reclaim Ponds, and the Portage and Goose Pits from 2013 until closure, verify last year's assumptions and results, update the model if required, develop recommendations and determine whether water treatment will be required.

For the Vault pit, no treatment would be required when re-flooding the pit. This is largely due to the fact that there is no tailings disposal facility at the Vault site. The Vault Attenuation pond only receives mine pit and freshet water. This will be confirmed through regular monitoring required by the Type A Water License from 2014 – 2018. Active mining of the Vault pit began in Jan, 2014. Water quality results from 2014 will form part of the Water Quality modeling in 2014.

1.3 WATER MANAGEMENT PLAN

The Water Management Plan (2013) and water balance was developed by AEM. They evaluated the monthly flows and volumes in the Portage and Vault areas, including the maximum storage volumes required for the water management infrastructures during the active life of mine, pit re-flooding activities and post closure, all under average hydrologic conditions.

The Water Management Plan (2013) was based on the revised mining schedule presented in Table 1-1 below.

Table 1-1: Water Management Phases

ACTIVITY	UPDATED START DATE[1]	UPDATED END DATE[1]	WMP 2012 START DATE	WMP 2012 END DATE
Pits Mining				
Portage Pit	January 2010	October 2017	January 2010	December 2016
North	January 2010	October 2017	January 2010	December 2015
Central	January 2010	April 2013	January 2010	December 2013
South	January 2010	April 2016	January 2010	December 2016
Goose Island Pit	April 2012	October 2015	April 2012	June 2015
Vault Pit	January 2014	October 2017	January 2014	February 2018
Tailings Storage Facility Operations				
North Cell	January 2010	March 2016	January 2010	March 2015
South Cell	October 2014	October 2017	April 2015	February 2018
Rock Storage Facility (RSF) Operations				
Portage RSF	January 2009	June 2018	January 2009	December 2016
Vault RSF	January 2014	October 2017	January 2014	February 2018
Attenuation / Reclaim Pond Water Management				
Attenuation Pond (South Cell) [2]	January 2009	October 2014	January 2009	March 2015
Attenuation Pond Vault Lake	January 2014	February 2018	January 2014	February 2018
Mill Operations	January 2010	February 2018	January 2010	February 2018
Other Key Activities				
Dewatering of Vault Lake	June 2013	July 2014	September 2013	November 2013
Dewatering of Phaser Lake	September 2016	October 2016	September 2016	October 2016
Flooding of Portage Pit	August 2017	January 2025	March 2017	September 2023
Flooding of Goose Island Pit	May 2015	January 2025	July 2015	September 2023
Flooding of Vault Pit	March 2018	October 2023	March 2018	October 2023
Mine Closure completed	n/a	January 2025	n/a	January 2024

Note :
[1] Periods are given from the beginning of the starting month to the end of the ending month.
[2] After October 2014, the Reclaim Pond is relocated to the South Cell TSF. After this date, there is no Attenuation Pond.

2.0 REVIEW OF MEADOWBANK WATER QUALITY DATA FOR 2013

2.1 DOCUMENTS REVIEWED

A review of the available water quality data measured in 2013 was undertaken by SLI. This included a review of the following documents:

- Chemical analysis results for the Portage Area for 2013. The chemical analysis results of interest for this Technical Note are presented in Appendix A and were integrated in the data previously obtained in 2012, specifically:
  - North Cell TSF Reclaim Pond (ST-21) from 2010 to 2013.
  - Attenuation Pond (future South Cell TSF Reclaim Pond) (ST-18) from November 2011 to October 2013.
  - Mill effluent metal and cyanide concentrations from April 2012 to December 2013.

Moreover, since the water samples for the mill effluent were taken before the cyanide destruction system, additional chemical analyses were requested by SLI in January 2014. These results are presented in section 2.2.3.

It should be noted that the mill effluent is currently discharged to the North Cell TSF. The North Cell TSF Reclaim Pond thus collects water from the mill effluent; and additional runoff water from surrounding areas.

It is important to remember that the review of the Meadowbank water quality data was undertaken to gain a better understanding of the water quality in the Portage Area, particularly as it affects the TSF Reclaim Pond, and to provide a basis for the development and update of the mass balance.

2.1.1 Updates in the Water Management Plan

In the 2012 Water Management Plan, South Cell water was transferred to the pits in 2018 when there was approximately 6 Mm^3 of non-contact water already accumulated in the pits.

In the 2013 Water Management Plan, the South Cell water will be transferred beginning in 2015 when there is very little water in the pits. Runoff water will then be allowed to flow into the pit and mix with the South Cell water. This approach should help improve the attenuation of the contact water with runoff water coming into the pit and minimize stratification.

2.2 REVIEW OF MEADOWBANK WATER QUALITY DATA

Based on the flows in the Portage Area, it was determined that the most important contributor to the water quality in the TSF Reclaim Pond was the mill effluent, since the other inflows consist of snow and ice melt, precipitation, and runoff from nearby areas (assumed to be *non-contact water*, i.e. not contaminated water).

2.2.1 North Cell TSF Reclaim Pond (ST-21)

A review of the chemical analysis for water samples collected in the North Cell TSF Reclaim Pond (station ST-21) was undertaken by SLI in order to identify contaminants that were either above discharge criteria (as stipulated in the MMER, CCME and/or the Water License, Part F). It is understood that the MMER, CCME and Water License criteria apply to mining effluents discharged to the environment and are as such not applicable to the TSF Reclaim Pond since no effluent is discharged from this area to the environment. However, the MMER, CCME and Water License criteria were used as a guide, to identify potential parameters that may become a problem should they be discharged to the environment without treatment.

It should also be noted that the parameters of concern were only determined based on the chemical analyses provided by Meadowbank and summarized in Appendix A. As such, parameters for which the North Cell TSF Reclaim Pond were not analyzed (such as total suspended solids) were not evaluated within the framework of this study.

The updated water quality review showed that the concentrations of the same following parameters identified in 2012 should be estimated since they may represent a potential long-term contamination risk:

- Cyanide (total)
- Copper
- Iron
- Nitrate
- Chloride
- Ammonia

Figure 2-1 presents the concentration of these parameters measured in the North Cell TSF Pond from 2010 till 2013. Also shown in this figure is the estimated concentrations forecasted in the Water Management Plan 2012 by SLI.

Table 2-1 presents the MMER, Water License and CCME discharge criteria for these parameters that may represent a potential contamination risk in the Portage Area when filling Portage and Goose pits after the mining sequence is complete. These criteria are also presented in Figure 2-1, when applicable.

Table 2-1: Discharge Criteria for the Parameters Evaluated

PARAMETER	DISCHARGE CRITERIA		
	MMER (1)	*Water License (2) (Part F)*	*CCME (3) (criteria date)*
Cyanide (CN)	1.00 mg/L	0.5 mg/L	5 µg/L (as free CN) (1987)
Copper (Cu)	0.30 mg/L	0.1 mg/L	4 µg/L(4) (1987)
Iron (Fe)	*no criteria*	*no criteria*	0.3 mg/L (1987)
Ammonia (NH_3)	*no criteria*	16 mg N/L	0.86 mg N/L(5) (2001)
Nitrate (NO_3)	*no criteria*	20 mg N/L	2.94 mg N/L (2012)
Chloride (Cl)	*no criteria*	1,000 mg/L	120 mg/L(6) (2011)

Notes:
(1) MMER criteria corresponding to the maximum average monthly concentration
(2) Water License (Part F) criteria corresponding to the maximum average concentration
(3) CCME criteria as per the Water Quality Guidelines for the Protection of Aquatic Life for freshwater and long-term exposure. Criteria referenced from www.ccme.ca in Feb. 2014.
(4) The copper discharge criterion depends on hardness. For water hardness between 200 to 1000 mg/L of $CaCO_3$ (average hardness levels in the North Cell TSF Reclaim Pond and in Third Portage Lake) the copper limit is 4 µg/L.
(5) The ammonia concentration limit depends on temperature and pH (an increase in temperatures and pH leads to a more stringent ammonia concentration limit). In this case, 1.04 mg/L of NH_3, or 0.855 mg N/L was determined assuming a temperature of 10°C and a pH of 8.0.
(6) This is the long-term chloride concentration limit. The short term concentration limit is 640 mg/L.

Figure 2-1: Concentration in the North Cell TSF Reclaim Pond

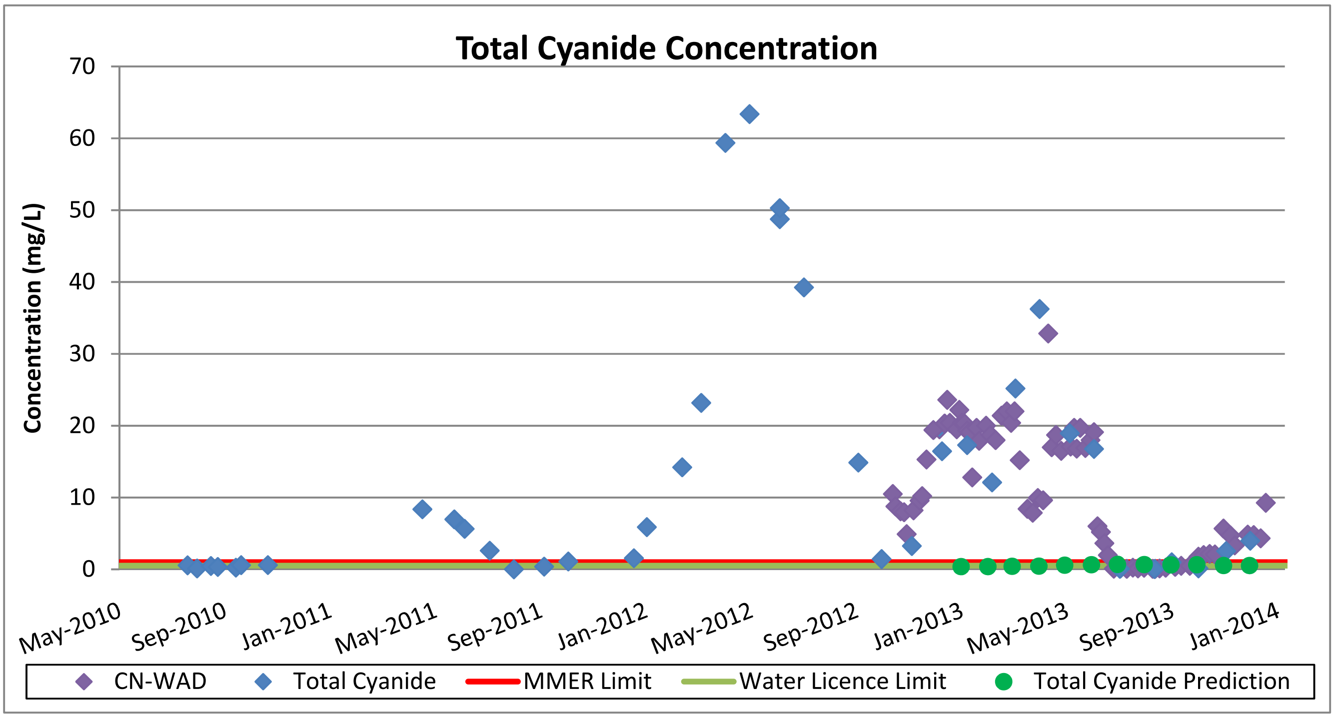
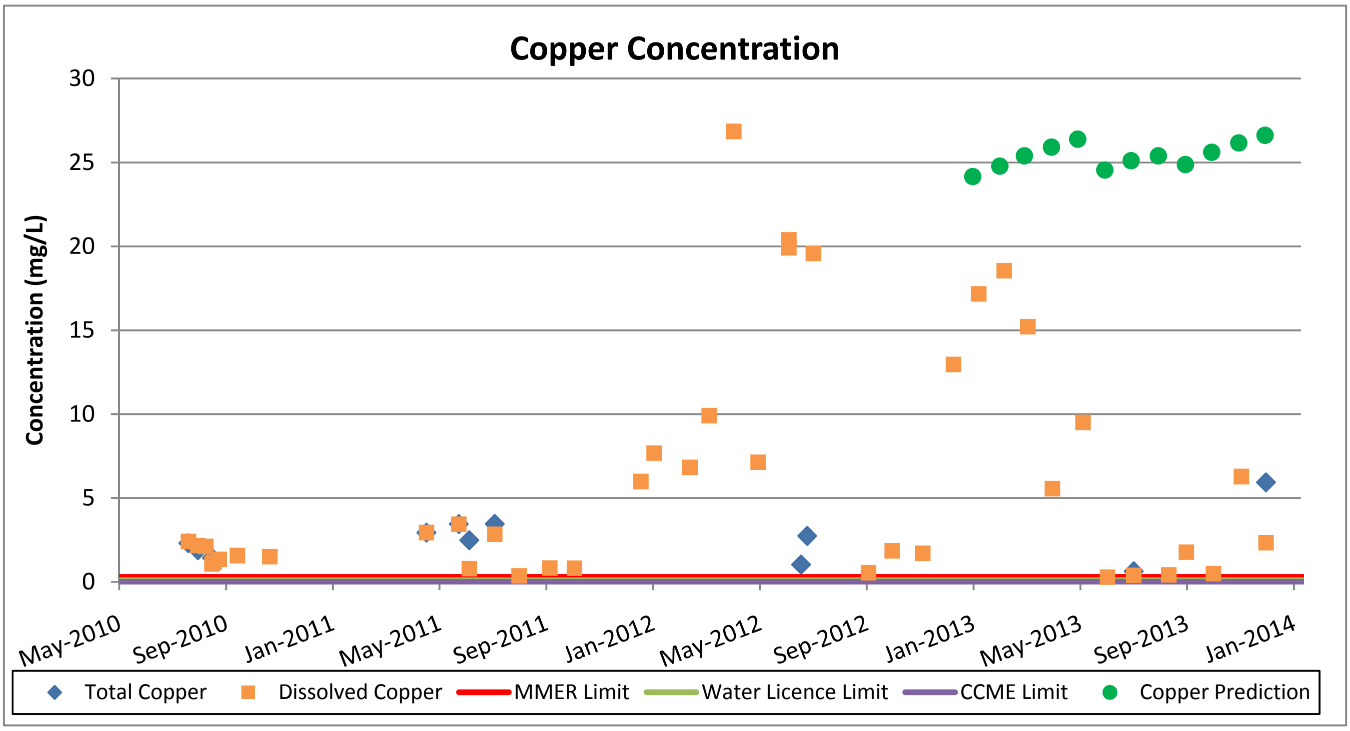


Figure 2-1: (continued) Concentration in the North Cell TSF Reclaim Pond



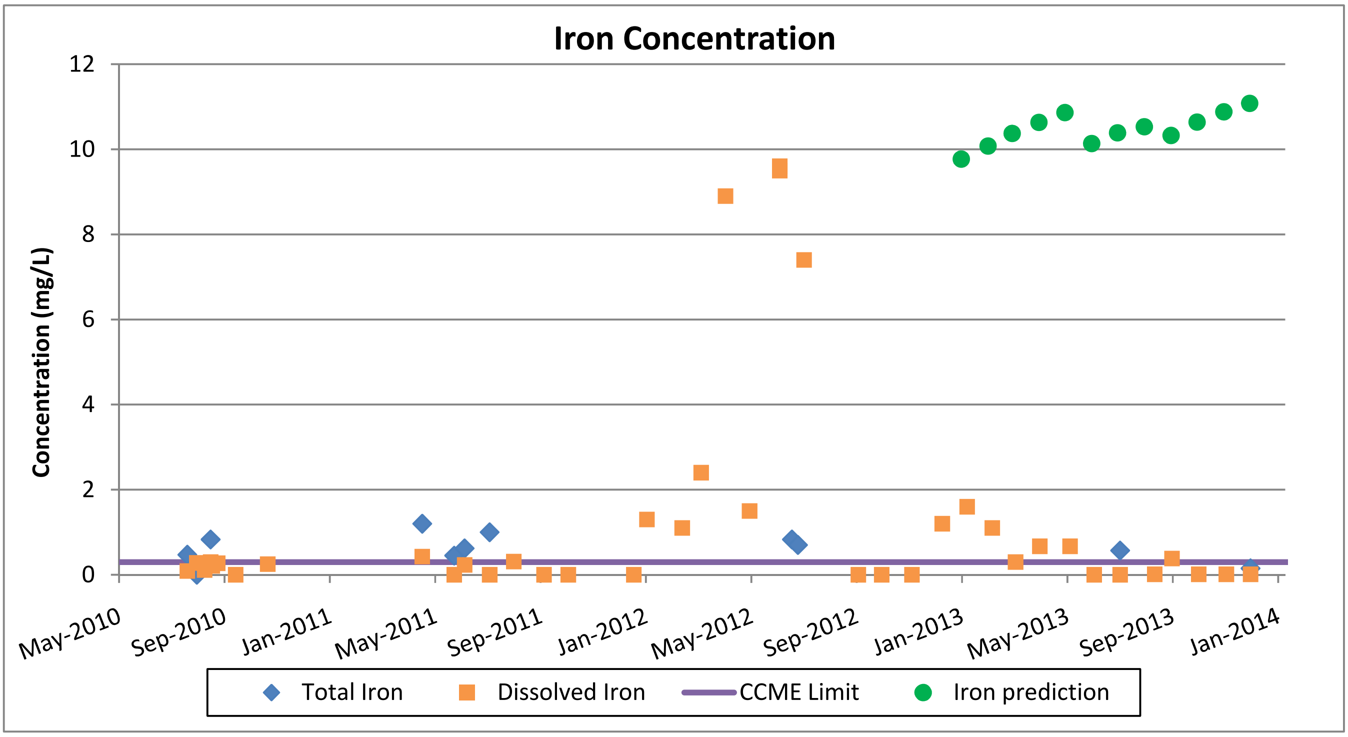
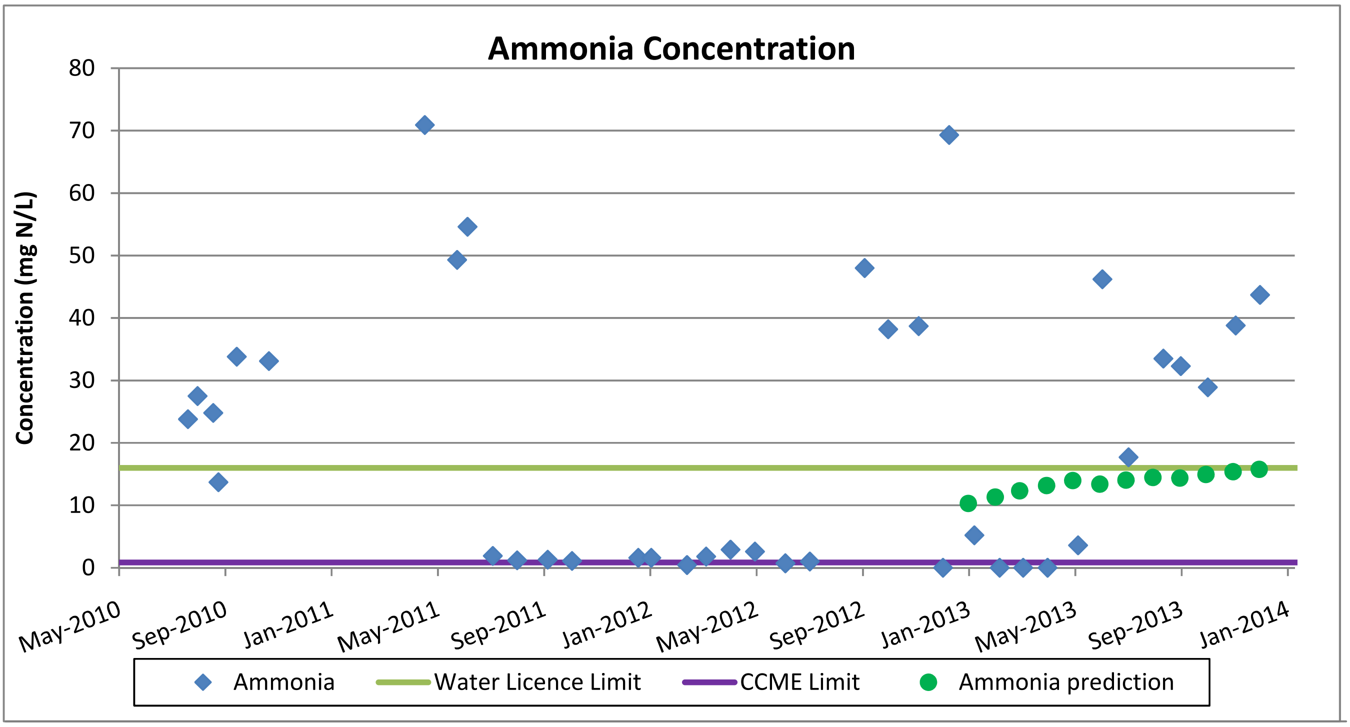


Figure 2-1: (continued) Concentration in the North Cell TSF Reclaim Pond



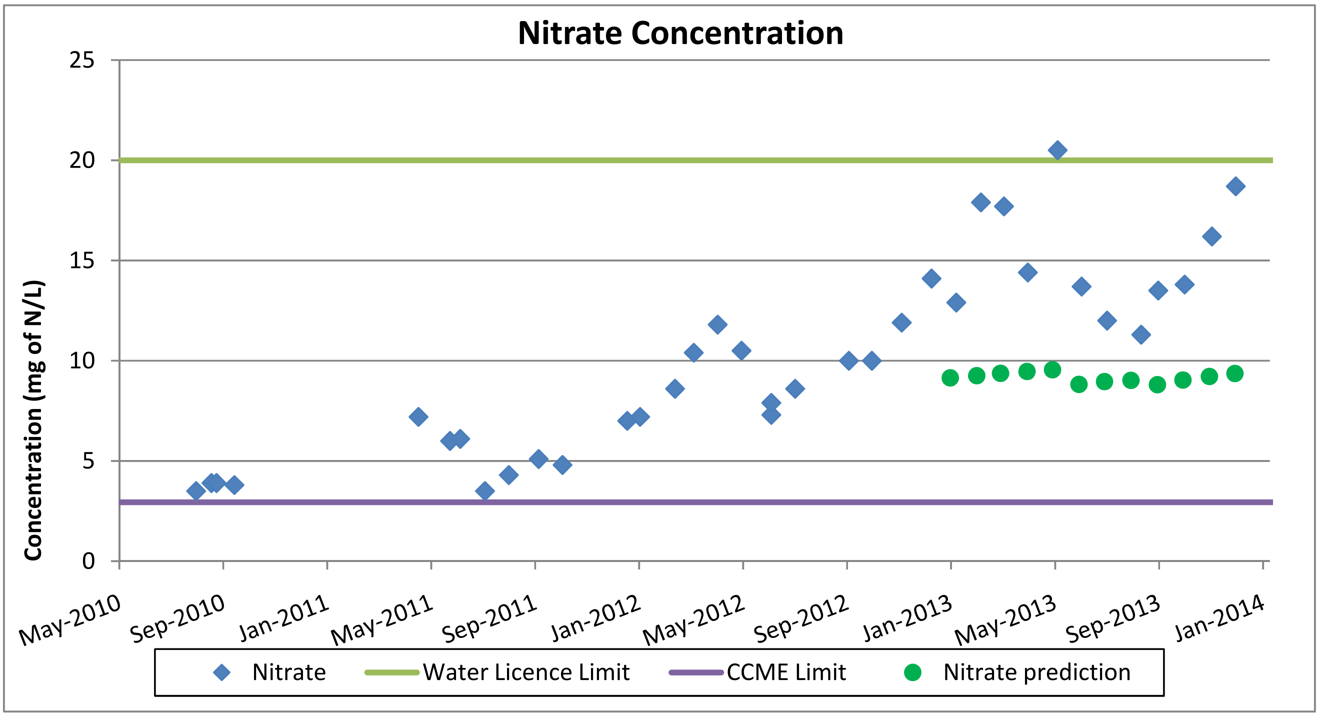
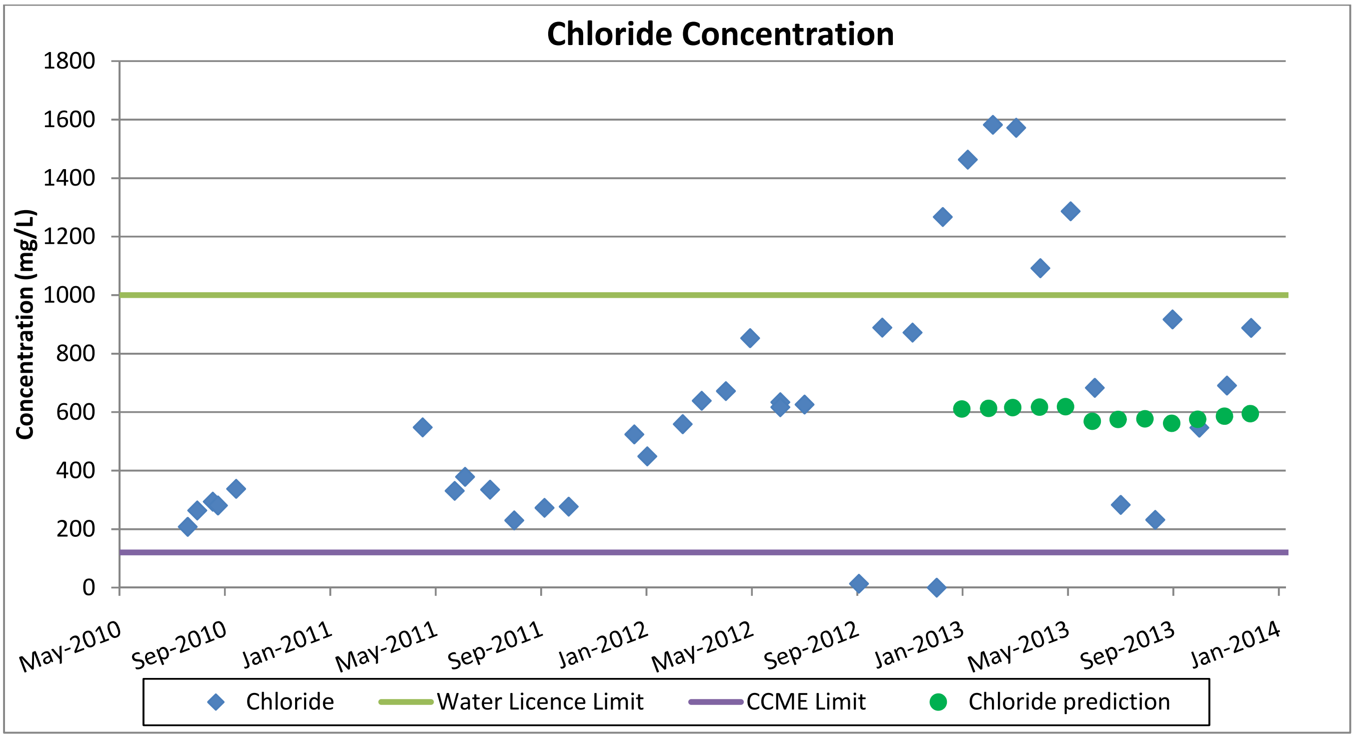


Figure 2-1: (continued) Concentration in the North Cell TSF Reclaim Pond



From the graphs shown in Figure 2-1, the following observations can be made:

i. Cyanide concentration in the North Cell TSF Reclaim Pond was considerably lower in 2013 than in 2012. The concentrations were high at the beginning of the year, increasing from approximately 20 mg/L in Jan. 2013 to a peak of 36 mg/L in April. There were no major issues reported with the cyanide destruction at the mill during that period. The concentrations then started to decrease significantly in the summer months. In October, the concentration started to increase once more, up to a peak concentration of approximately 4 mg/L in December.

ii. Copper concentrations followed the same trend as for cyanide in 2013. The similar trend indicates that the treatment performance of the cyanide destruction system has an influence on the residual copper and cyanide concentration in the TSF Reclaim pond. However, the concentrations measured in 2013 are lower than in 2012, and are considered more representative of the normal operation of the cyanide destruction system at the site.

iii. Dissolved iron concentrations were, in the first six months of 2013, slightly above the CCME limits. There is no criterion for iron in the Water License (Part F) or in the MMER. For the following six months of 2013, concentrations dropped and were under the limits. Note that total iron concentration was only measured twice in 2013 (July and December).

iv. Ammonia concentrations at the start of the year were very low. Afterwards, there was a notable increase in May, rising until December to a value of 44 mg N/L. Ammonia is produced by the hydrolysis of cyanate, which is by-product of the cyanide destruction system. Therefore, when the cyanide destruction system is operating efficiently, it is expected that the concentration of ammonia will increase.

v. Nitrate concentrations also steadily increased in 2013, with a peak value of 21 mg N/L measured in May 2013.

vi. Chloride concentrations were quite variable during 2013. The primary source of chloride found in the TSF Reclaim Pond is due to the use of calcium chloride as an anti-freeze solution. There is a reduction in its use during the summer months, which could explain the drop seen in the summer months.

The graphs in Figure 2-1 also present the 2012 forecasted values versus the actual measured values. A couple of points to note:

i. The forecasted concentrations for cyanide were in the same range as the actual measured values during the summer months. However, during the winter months, the forecasted values were too low. The data suggest that very little natural cyanide degradation occurs during the winter months. The water quality model will be adjusted to take this into account.

ii. Forecasted concentrations for copper and iron are very high when compared to the actual measurements. This is mainly due to assumption of a very high concentration of copper and iron in the mill effluent in 2012. Adjustment will be made to the model based on updated copper and iron concentrations (refer to section 3.4.1).

iii. Forecasted concentrations for ammonia were too low compared to the actual measured values. The 2012 model did not model hydrolysis of cyanate (CNO-) to ammonia (NH_3). The revised model will take this into account.

iv. Forecasted nitrate and chloride concentrations were also too low compared to the measured value. A review of the mill effluent quality for nitrate and chloride concentrations will be undertaken and the model will be updated with the proper concentrations.

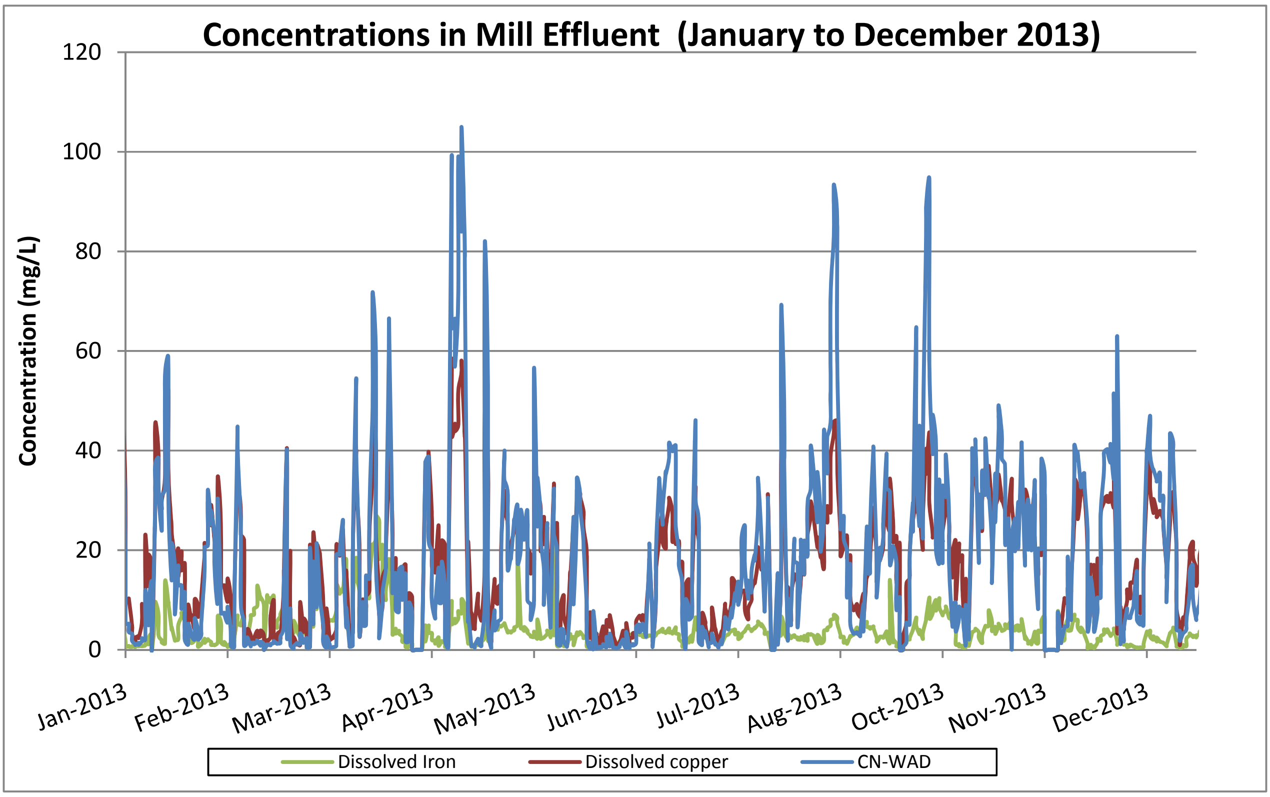
2.2.2 Mill Effluent

A review of the chemical analysis for the mill effluent was undertaken by SLI in order to identify the impact of the mill effluent water quality on the water quality observed in the North Cell TSF Reclaim Pond (section 2.2.1). The mill effluent is tested twice daily for gold (solid and dissolved) and iron (dissolved), copper (dissolved) and cyanide (CN-WAD). These chemical analyses were provided to SLI for January to December 2013 and the results are presented in Appendix A.

Figure 2-2 shows the daily average dissolved metal concentrations and cyanide (CN-WAD) in the mill effluent. This figure illustrates the following:

- Dissolved iron and copper concentrations are present in the mill effluent. Thus the main source of iron and copper in the TSF Reclaim Pond comes from the mill effluent.
- Dissolved iron and copper concentrations peaked in May, August and October. 2013,
- There is a relationship between iron, copper and cyanide concentrations at the mill effluent. This is clearly represented in Figure 2-2, where all three (3) graphs behaved similarly in 2013. A low concentration of CN-WAD is generally accompanied with lower iron and copper concentration.
- Cyanide concentrations have been lower in general in 2013 than in 2012. The cyanide (CN-WAD) concentrations in the mill effluent often meet the 15 ppm discharge criterion, but there are still times when concentrations are higher than 40 ppm.

Figure 2-2: Dissolved Metal Concentrations and Cyanide (CN-WAD) in the Mill Effluent from January to December 2013



2.2.3 Additional Mill Effluent Water Quality Results

SLI requested a sample taken of the water fraction of mill effluent after cyanide destruction in order to have representative data of the tails water being discharged to the North Cell. The sample was collected on January 29th, 2014. It is understood that this data points represent a very limited sampling campaign that may not be representative of the mill effluent water quality of the entire year.

The chemical analysis results of the additional sampling undertaken for the mill effluent are presented in Appendix A and are summarized in Table 2-2. The values of 2012 are also shown for comparison.

Table 2-2: Mill Effluent Concentrations Sampled On January 29, 2014 & October 10 and 11, 2012

PARAMETER	MILL EFFLUENT CONCENTRATION (mg/L)		
	January 29, 2014	October 10, 2012	October 11, 2012
Total Cyanide (CN)	18.80	4.7	10.13
Copper (Cu)	25	10.08	9.02
Dissolved Copper	7.8	9.53	7.07
Iron (Fe)	6.7	1.8	2.2
Dissolved Iron	0.8	0.83	0.83
Ammonia (NH_3)	71.5 (mg N/L)	N/A	N/A
Nitrate (NO_3)	31.6 (mg N/L)	13.2 (mg N/L)	10.8 (mg N/L)
Chloride (Cl)	2129	1288	1375

Table 2-2 shows that concentrations in the mill effluent are higher than those observed in the North Cell TSF Reclaim Pond. This shows that the main parameters of concern identified in the North Cell TSF Reclaim Pond can be traced to the mill effluent.

2.2.4 Attenuation Pond

Table 2-3 presents the average concentrations (November 2011 to November 2012 and for 2013) observed in the Attenuation Pond. The average values measured in 2013 was selected as representing the initial (October 2014 when tailings will first be deposited) concentrations in the South Cell TSF Reclaim Pond.

Table 2-3: Average (2013 and November 2011 to November 2012) Concentrations in the Attenuation Pond

PARAMETER	AVERAGE CONCENTRATIONS IN THE ATTENUATION POND (mg/L)	
	2013	Nov 2011 to Nov 2012
Total Cyanide (CN)	0.15	0.114 (1)
Copper (Cu)	0.02	0.005
Iron (Fe)	1.26	1.26
Ammonia (NH_3)	0.20 (mg N/L)	0,15 (mg N/L)
Nitrate (NO_3)	4.20	8,6
Chloride (Cl)	75.70	39.5

[1] This is a one-time CN-WAD measurement that took place in April 2012.

3.0 UPDATED MASS BALANCE MODEL

3.1 DESCRIPTION

The water quality updated mass balance model presented in this Technical Note was developed to help forecast trends in water quality in the Portage Area of Meadowbank for different parameters of interest from June 2013 to mine closure in 2025. This mass balance model was based on the following:

- Flows and volumes provided in the water balance developed in the Water Management Plan 2013 (AEM, 2013);
- Assumptions presented below in section 3.2;
- Chemical analyses for ST-21 (North Cell TSF Reclaim Pond) (2010-2013);
- Chemical analyses for Third Portage Lake (2013);
- Chemical analyses for ST-18 (Attenuation Pond) (2011-2013);
- Chemical analyses for the mill effluent (2013 and sample taken in January 2014).

3.2 ASSUMPTIONS

The assumptions used in the development of the mass balance model for the Portage Area of Meadowbank were the following:

- For simplification of the model, the North and South Cell TSF Reclaim Ponds and the Portage and Goose pits are assumed to be completely mixed systems.
- The main source of cyanide, copper, ammonia, iron, nitrate, and chloride in the TSF Reclaim Pond is the mill effluent. All other inflow contaminant concentrations (Third Portage Lake[1], precipitation, runoff, etc.) are assumed to be negligible.
- The water quality of the mill effluent is constant over time for cyanide, copper, iron and nitrates. For ammonia, the water quality for this parameter will continue to vary due to the hydrolysis of cyanate to ammonia. For chloride, the water quality for this parameter will continue to increase due to the continued use of calcium chloride on the site.
- The pH in the TSF Reclaim Pond is on average at 8 during the summer months, and on average 8.4 for the year (2013).

[1] 2013 water quality data continue to show that the concentrations observed in Third Portage Lake were on average 95% lower than those in the North Cell TSF Reclaim Pond. It was therefore assumed that any input of contaminants from Third Portage Lake would be negligible.

- For simplification of the model, the parameters of interest are assumed to be inert: they do not degrade or react with other elements in the system, with the exception of cyanide.
- For cyanide, it is assumed that the mill effluent meets AEM's CN-WAD operational target of 15 mg/L at all times.
- The total cyanide in the TSF Reclaim Pond is comprised of free cyanide and metal-cyanide complexes (weak and strong metal cyanide complexes). As per discussions with AEM, most of the iron- and metal-cyanide complexes are precipitated in the mill. However, since the reaction is not complete or perfect, some dissolved iron- and metal-cyanide complexes are expected to remain in the mill effluent. Therefore it was assumed that 10% of the total cyanide concentration was bound as strong iron-cyanide complexes, and that another 10% of the total cyanide concentration was present as weak metal-cyanide complexes (cyanide bound with copper, zinc, and nickel). The balance is present as free cyanide (i.e. HCN and CN^-). This agrees with values observed at other gold mine tailings sites (Simovic, 1984). These same proportions are assumed to apply to the cyanide at the mill effluent.
- For this model, natural cyanide degradation is only considered for the summer months.
- The initial concentration of total cyanide, copper, iron, ammonia, nitrate, and chloride in the Portage and Goose Pits are assumed to be negligible.
- The initial concentration of total cyanide, copper, iron, ammonia, nitrate, and chloride in the North Cell TSF Reclaim Pond is the concentration obtained in June 2013 for station ST-21.
- The initial concentration of total cyanide, copper, iron, ammonia, nitrate, and chloride in the South Cell TSF Reclaim Pond is assumed to be the average concentration obtained of 2013 for station ST-18 (current Attenuation Pond).
- For this analysis, it is assumed that no treatment will take place at the North or South Cell TSF Reclaim Pond, or at the Portage or Goose Pits.

3.3 LIMITATIONS

The limitations of the Meadowbank water quality mass balance model and ensuing results and conclusions presented in this Technical Note are listed below:

- In order to simplify the model, the mass balance model assumes that the pond and pits are completely mixed systems. It is understood that given the nature, size, and location of the ponds and pits, and based on the nature of their inflows and outflows, these ponds and pits are not actual well-mixed systems. Therefore, the concentration may be higher in certain areas within the pond/pit and lower in other areas.

Consequently, the results from this model provide only an indication of the concentrations in the ponds and pits and should not to be considered as an absolute value at this time. Future monitoring results both for flows and water quality will provide for a better indication of concentrations of contaminants.

- The mass balance model is based on the water quality analysis results provided by AEM:
  - Water quality data provided for ST-21 is taken from samples collected at the surface of the North Cell TSF Reclaim Pond. Therefore the concentrations provided by AEM for ST-21 may not be representative of the entire TSF Reclaim Pond water quality.
  - There is limited water quality data available for the mill effluent, in terms of contaminants analyzed: the mill effluent is only analyzed on a regular basis for a total of four (4) parameters: gold, iron, copper, cyanide (CN-WAD).
- The model does not make allowances for the impact that changes in the TSF (surface area, volume, tailings characteristics, etc.) will have on the TSF Reclaim Pond water quality over time.
- The model is based on a monthly time-step and the resulting concentrations provided represent monthly values.
- It should be noted that at this point, given the limitations, assumptions and limited data currently available, the model should be used as a preliminary means to evaluate the impact of mill effluent on the future water quality in the North and South Cell TSF Reclaim Pond and Portage and Goose Pits.
- Furthermore, this model is intended as an initial model for the mass balance in the Portage Area and should be updated and calibrated as concentrations of different flows in the Portage Area become available. Refer to section 5.3 for recommendations on improving the mass balance.

3.4 INPUT PARAMETERS

The mass balance model for the Portage area of Meadowbank was developed to forecast the long-term concentration of cyanide, copper, ammonia, nitrate and chloride in the North and South Cell TSF Reclaim Pond and in the pits, based on the assumptions presented in section 3.2 and on the following input parameters:

- Mill effluent concentration;
- Initial concentration in the North and South Cells TSF Reclaim Pond;
- Initial concentration in the Portage and Goose Pits.

3.4.1 Mill Effluent Concentration

Table 3-1 presents the mill effluent concentrations considered for the mass balance. The additional samples taken in 2014 were used as 2013 values because they were found to be more representative. The 2013 values are also compared to the 2012 values used in the previous model.

Table 3-1: Mill Effluent Concentrations Selected for the Mass Balance Model

PARAMETER	MILL EFFLUENT CONCENTRATION (mg/L)	
	2013	2012
Total Cyanide (CN)	15	16.7 [(1)]
Copper (Cu)	7.8[2]	28.3 [(2)]
Iron (Fe)	0.8[2]	11.8 [(2)]
Ammonia (NH_3)	+ 45 (mg N/L/month)	17.1 (mg N/L) [(3)]
Nitrate (NO_3)	31.6 (mg N/L)	9.9 (mg N/L) [(4)]
Chloride (Cl)	+ 600 (mg/L/month)	674 [(4)]

A couple of items to note on the parameters used for the 2013 updated water quality forecast model:

- For copper and iron, the dissolved concentration values were used instead of the total concentrations since the copper and iron precipitates will settle in the TSF.
- To evaluate the concentration of ammonia that may be added to the TSF Reclaim Pond on a monthly basis, the difference in concentration of CN-WAD before and after the cyanide destruction system was evaluated. In 2013, on average, 83 mg/L of CN-WAD was removed and converted to cyanate (CNO^-). Assuming that 100% of the cyanate is hydrolyzed to ammonia (NH_3), it was evaluated that on average approximately 45 mg N/L of ammonia was added to the mill effluent. For the purpose

[1] The internal CN-WAD criterion for the mill effluent is a CN-WAD concentration of 15 mg/L. Assuming that CN-WAD represents 90% of total CN (refer to section 3.2), then this CN-WAD internal criterion translates to a CN total criterion of 16.7 mg/L.
[2] The dissolved copper and iron concentration were used instead of the total concentrations, since the solids will tend to decant in the TMF.
[3] Average January to December 2012 ST-21 concentrations.
[4] Average April to December 2012 mill effluent concentrations.

of the model, it is assumed that 45 mg N/L of ammonia is added to the mill effluent every month. This additional ammonia load is added to the load already present in the reclaim water.

- Based on the measured data, the chloride concentration continues to increase in the mill effluent. To account for this trend, it is assumed that 600 mg/L of chloride is added to the mill effluent every month. This additional chloride load is added to the load already present in the reclaim water. This value was evaluated by adjusting the model to fit with the measured chloride values in the Reclaim Pond in 2013.

3.4.2 Initial Concentrations in the TSF Reclaim Ponds and Pits

The mass balance model begins in June 2013. Therefore, the initial concentrations selected for the North Cell TSF Reclaim Pond correspond to the June 2013 chemical analysis results from station ST-21. These initial concentrations are presented in Table 3-2.

On the other hand, the initial (October 2014) concentrations selected for the South Cell TSF Reclaim Pond (former Attenuation Pond) correspond to the 12-month (2013) average concentration results from station ST-18 (current Attenuation Pond). Note that in general, the concentrations observed in the Attenuation Pond had little variation from one month to the other. These initial concentrations are also presented in Table 3-2.

At this time, the Portage and Goose Pits collect non-contact water (such as runoff and seepage). Therefore it was assumed that the initial concentration (cyanide, copper, iron, ammonia, nitrate, and chloride) in the Portage and Goose Pits is 0, until the transfer from the TSF Reclaim Pond to the pits begins in 2015.

The results of the mass balance model are presented in section 4.0.

Table 3-2: Initial Concentration in the North and South Cells TSF Reclaim Pond

PARAMETER	INITIAL CONCENTRATION (mg/L)	
	NORTH CELL TSF RECLAIM POND (June 2013)	SOUTH CELL TSF RECLAIM POND (Average 2013)
Total Cyanide (CN)	16.8	0.15
Copper (Cu)	0.6[1]	0.02
Iron (Fe)	0.6[1]	1.26[2]
Ammonia (NH_3)	46.2 (mg N/L)	0.2 (mg N/L)

[1] [1]Initial iron and copper concentrations were not available, so the values taken in July were used instead.
[2] There was no iron data in 2013; therefore the average of November 2010 to November 2012 was used.

PARAMETER	INITIAL CONCENTRATION (mg/L)	
	NORTH CELL TSF RECLAIM POND (June 2013)	SOUTH CELL TSF RECLAIM POND (Average 2013)
Nitrate (NO_3)	13.7 (mg N/L)	4.2 (mg N/L)
Chloride (Cl)	683	75.7

3.5 CYANIDE DECAY

The water quality model developed during this study takes natural cyanide degradation into account: the most important mechanism in the natural degradation of cyanide is the volatilization of hydrogen cyanide (HCN). In fact, tests carried out in Canada found that volatilization of HCN accounted for 90% of cyanide removed from solution in a tailings impoundment (Botz and Mudder, 2000).

Oxidation of cyanide ions (CN-) to orthocyanate (OCN) with atmospheric oxygen is possible but extremely slow when compared to HCN volatilization. Similarly, the probability of microbial degradation of cyanide to carbon dioxide, ammonia, nitrite and nitrate is low due to the limited presence of microorganisms and low nutrient levels in tailings water.

Cyanide volatilization can be summarized as a two (2)-step process presented in Figure 3-1 below. First, metal-cyanide complexes dissociate to free cyanide (HCN and CN^-)[1] based on a first-order decay constant[2] (k_1); followed by HCN volatilization based on a first-order decay constant[2] (k_v). Both decay constants k_1 and k_v depend on the presence of UV light (sun) and air (wind), and water temperature and pH. The volatilization decay constant, k_v, also depends on the surface area to volume ratio of the pond.

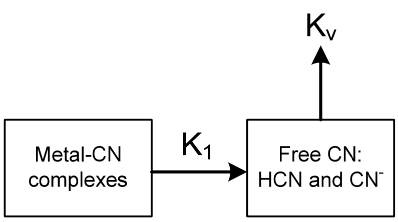


Figure 3-1: Cyanide Volatilization Process

Since both constants depend to a great extent on temperature, UV light and air, separate constants were determined for summer (May to October) and winter (November to April) conditions. The decay constants were based on laboratory values recorded by Simovic

[1] Equilibrium between HCN and CN^- is based on pH.
[2] A first order decay constant signifies that the final concentration (C_f) can be estimated as, $C_f = C_i e^{-kt}$, where k is the first order decay constant.

(1984). The assumptions made for the development of the cyanide decay constants were the following:

- Summer conditions: an average water temperature of 10°C, presence of air and UV light. Furthermore, since metal-CN dissociation and HCN volatilization by air and UV is particularly important in the summer months, the decay constant factors in the physical property of the tailings impoundment, represented by the open surface area to volume ratio. Multiplying the decay constant by this ratio takes into account the accelerated reaction due to a large exposed surface area of the Reclaim Pond.
- Winter conditions: no natural cyanide degradation occurs.
- The pH in the Reclaim Pond is maintained constant at 8.0, which means that most (94%)[1] of the free cyanide will be present as HCN. Note that as the pH decreases, the proportion of free cyanide as HCN increases, which increases cyanide degradation through volatilization.
- As stated in section 3.2, it was assumed that 10% of the total cyanide concentration was bound as iron-cyanide complexes, another 10% as metal (copper, nickel and zinc) cyanide complexes, and 80% as free cyanide. This agrees with values observed at other gold mine tailings impoundments.

It should be noted that these decay constants (referred to as k_0) were established based on an hourly time step, and were not deemed reliable for longer time-periods (i.e. months). Therefore, the summer and winter decay constants obtained based on volatilization conditions and assumptions, were calibrated so as to represent more accurately and conservatively the expected cyanide concentrations on a monthly time-step.

Table 3-3 presents the assumptions and cyanide decay constants used in the water quality model.

Table 3-3: Natural Cyanide Degradation: Assumptions and Constants

DECAY CONSTANT	DESCRIPTION	WINTER CONDITIONS[2]			SUMMER CONDITIONS		
		Conditions	k_0	Calibrated value (k)	Conditions	k_0	Calibrated value (k)
K_1	Metal-CN dissociation	4° No air No UV	n/a	n/a	10° Air (wind) UV (sunlight)	0.01443/hr	2.11/month
K_V [(3)]	HCN volatilization		n/a	n/a		2.382 cm/hr	58.0 m/month

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[1] The dissociation constant for HCN is pKa = $10^{-9.2}$.
[2] During the winter, most of the Reclaim Pond is covered in ice and/or snow. Assume no natural degradation of cyanide is occurring.
[3] In the summer k_v strongly depends on the presence of air and UV, and thus it also depends on the surface area to volume ratio (A/V). Therefore, the k_v value for the summer season has units of cm/h or m/month and should be multiplied by A/V.

4.0 MASS BALANCE RESULTS

4.1 RESULTS

The results of the mass balance model are presented in the Figures 4-1 to 4-14, for total cyanide, copper, iron, ammonia, nitrate, and chloride. The graphs show the forecasted monthly concentration of the parameter from 2013 to 2025. A total of two (2) graphs are presented per parameter: the first shows the forecasted concentration in the North and South Cells TSF Reclaim Pond and the second shows the forecasted concentration in the Portage and Goose Pits, assuming that the water is pumped without treatment. The Water License and CCME limits (refer to Table 2-1) were also included in the figures, when applicable.

Again, it is important to remember that the results presented in Figures 4-1 to 4-14 are based on the concentrations presented in Tables 3-1 and 3-2, and summarized in the following Table 4-1. It is also important to note that the results from this model assume that no treatment of the Reclaim Pond effluent is undertaken; and provide only a forecast of the concentrations of the selected parameters. These results must be reviewed while keeping in mind the assumptions and limitations described in section 3.2 and 3.3.

Table 4-1: Summary of Input Parameter Concentrations in the Mass Balance Model

PARAMETER	CONCENTRATION (mg/L)		
	NORTH CELL TSF RECLAIM POND June 2013	MILL EFFLUENT	SOUTH CELL TSF RECLAIM POND Average 2013
Total Cyanide (CN)	16.8	15	0.15
Copper (Cu)	0.6	7.8	0.02
Iron (Fe)	0.6	0.8	1.26
Ammonia (NH_3)	46.2 (mg N/L)	+ 45 (mg N/L/mth)	0.2 (mg N/L)
Nitrate (NO_3)	13.7 (mg N/L)	31.6 (mg N/L)	4.2 (mg N/L)
Chloride (Cl)	683	+ 600 (mg/L/mth)	75.7

4.2 DISCUSSION

4.2.1 Key Dates

The mass balance model presented in this Technical Note is based on the updated water management plan. The following key dates are important to keep in mind while reviewing the forecasted concentration data presented in Figures 4-1 to 4-14:

1. October 2014: The former Attenuation Pond becomes the South Cell and TSF Reclaim Pond.
2. July 2015: start of water transfer from the South Cell TSF Reclaim Pond to Goose Pit.
3. August 2017: start of water transfer from South Cell TSF Reclaim Pond to Portage Pit
4. June 2018: South Cell TSF Reclaim Pond is completely empty.
5. May 2015 to February 2023: Pumping water from Third Portage Lake to Goose Pit and allow runoff water and ground water to accumulate in pit.
6. October 2017 to January 2025: Pumping water from Third Portage Lake to Portage Pit and allow runoff water, ground water and East Dike Seepage to accumulate in pit.

4.2.2 Forecasted Concentrations in the North and South Cells TSF Reclaim Pond

Table 4-2 summarizes the observations noted in Figures 4-1 to 4-12, specifically for the forecasted concentrations in the Reclaim Pond (North and South cells).

Table 4-2: Summary of Forecasted Concentrations in Reclaim Pond

PARAMETER	FORECASTED CONCENTRATION (mg/L)				WATER LICENSE PART F (CCME) (mg/L)
	NORTH CELL TSF RECLAIM POND		SOUTH CELL TSF RECLAIM POND		
	June 2013 (initial)	2013 to 2016	Oct 2014 (initial)	2014 to 2018	
Total Cyanide (CN)	16.8	Fluctuate from 0.07 to 14.9	0.15	Fluctuate from 0.05 to 9.4	0.5 (free CN 0.005)
Copper (Cu)	0.6	Fluctuate from 1.4 to 7	0.02	Fluctuate from 0.6 to 7.5	0.1 (0.004)
Iron (Fe)	0.6	Fluctuate from 0.5 to 0.7	1.26	Fluctuate from 0.4 to 0.7	n/a (0.3)
Ammonia (NH_3)	46.2 (mg N/L)	Fluctuate from 42 to 111	0.2 (mg N/L)	Fluctuate from 12 to 119	16 (0.86) (mg N/L)
Nitrate (NO_3)	13.7 (mg N/L)	Fluctuate from 14 to 30	4.2 (mg N/L)	Fluctuate from 4 to 30	20 (2.9) (mg N/L)
Chloride (Cl)	683	Fluctuate from 600 to 1502	75.7	Fluctuate from 154 to 1600	1000 (120)

Based on the model for forecasting concentrations in the North and South Cell TSF Reclaim Pond, the following notes and observations can be made:

i. The fluctuations observed from 2013 to 2018 are primarily due on seasonal variability (runoff from nearby areas, snow and ice melt, temperature, etc.).

ii. Natural degradation of cyanide during summer plays a significant role in reducing the concentration of cyanide in the TSF Reclaim Ponds.

iii. For ammonia, it is important to note that (1) the mass balance model developed here does not include seasonal variability (sunlight, microbial or algae degradation of ammonia, etc.), and (2) ammonia concentrations can vary significantly depending on temperature, pH, sunlight, algae activity, etc. Ammonia concentrations may be lower in the summer and higher in the winter.

iv. Similarly, for nitrate, it is important to remember that (1) the mass balance model developed here does not include seasonal variability, and (2) ammonia decomposes to nitrate, therefore nitrate concentrations can vary significantly depending on temperature, pH, sunlight, algae activity, etc. Nitrate concentrations may be lower in the winter and higher in the summer.

v. Guidelines:

   a. For comparison purposes, the forecasted concentrations in the North and South Cells TSF Reclaim pond for all the parameters are above the Water License discharge criteria.

   b. For comparison purposes, the forecasted concentrations for all the parameters are also above the CCME guidelines for the protection of aquatic life

   c. However, it is important to note that no water in the TSF Reclaim Pond from 2013 to July 2018 is discharged to the environment. Thus, the Water License discharge criteria are not applicable.

4.2.3 Forecasted Concentrations in Portage and Goose Pits

Table 4-3 summarizes the observations noted in Figures 4-1 to 4-12, specifically for the forecasted concentrations in Portage and Goose Pits.

Table 4-3: Summary of Forecasted Concentrations in Portage and Goose Pits

PARAMETER	FORECASTED CONCENTRATION (mg/L)				CCME (mg/L)
	PORTAGE PIT		GOOSE PIT		
	August 2017 (initial)	Dec. 2025 [1] (end)	July 2015 (initial)	Dec. 2025 [1] (end)	
Total Cyanide (CN)	0.00	0.00	0.00	0.00	0.005 as free CN
Copper (Cu)	0.0042	0.06	0.0048	0.28	0.004
Iron (Fe)	0.00	0.006	0.00	0.029	0.3
Ammonia (NH_3)	0.2120 (mg N/L)	0.97 (mg N/L)	0.2956 (mg N/L)	3.83 (mg N/L)	0.86 (mg N/L)
Nitrate (NO_3)	0.00 (mg N/L)	0.26 (mg N/L)	0.00 (mg N/L)	1.13 (mg N/L)	2.9 (mg N/L)
Chloride (Cl)	0.00	12.97	0.00	51.61	120

Based on the model for forecasting of the concentrations in the Reclaim Pond, the following notes and observations can be made:

i. In general, the concentrations of all parameters in the pits are initially elevated but then decrease when the pits are flooded with water from Third Portage Lake, and from runoff and seepage inflows to the pits.

ii. Guidelines:

a. In December 2025, the forecasted concentrations are above the Water License discharge criteria guidelines limits for copper in Goose Pit, and above the CCME guidelines limits for copper in Portage and Goose Pits.

b. In December 2025, the forecasted concentrations for Portage and Goose Pit are above the CCME guidelines for ammonia.

c. However, it is important to note that the water quality in the pits will be subject to CCME guidelines once the water level in the Goose and Portage pits are equal to the water level in Second Portage Lake, and the dikes are breached.

d. It is also important to note that once the water elevation in the pits reaches a level above 131 m, both Portage and Goose pits will be hydraulically

[1] This represents the final, stable forecasted concentration in the Pits.

connected. This should help in attenuating some of the concentrations in Goose Pits.

Consequently, the parameters of concern are copper and ammonia.

4.2.4 Treatment Requirements

Based on the results of the water quality mass balance presented in section 4.2, treatment may be required for copper and ammonia. Treatment could be undertaken at the South Cell TSF Reclaim Pond, or in the Portage and Goose Pits.

If high copper concentrations persist, this metal may be removed through pH adjustment: caustic or lime can be added to the effluent to increase the pH to 9, causing the formation of metal hydroxide precipitates, which settle out. The different treatment options that may be considered to implement the precipitation of copper are listed below:

a) The existing Attenuation Pond water treatment plant (WTP) can be modified for copper precipitation with the addition of lime or caustic dosing system. The water from the South Cell TSF pond can be pumped to the WTP for treatment, with the treated water recycled back to the pond. Note that the average pH in 2013 in the Attenuation Pond was 7.4.

b) Treatment in situ at South Cell TSF Reclaim Pond or at Portage and Goose pits. Note that the average pHs in 2013 in the Reclaim Pond, in Portage, and in Goose pit were respectively of 8.4, 7.5 and 7.7.

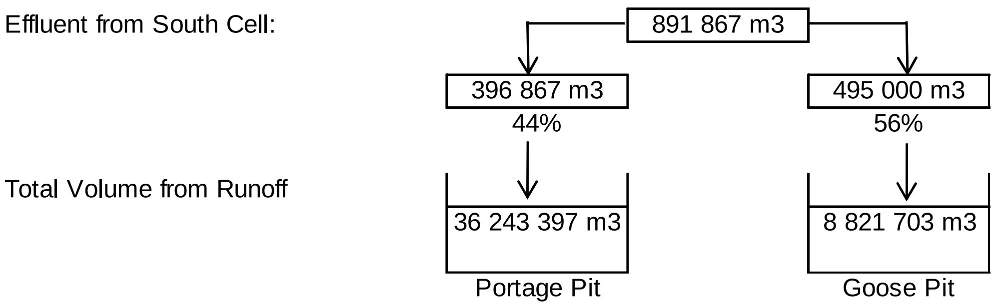
If ammonia concentrations are too high, ammonia can be removed through a variety of treatment methods:

- In-situ aeration during the summer months;
- Biological treatment;
- Chemical oxidation;
- Membrane processes such as reverse osmosis;
- Ion exchange.

These technologies should be studied and evaluated in detail to determine if they are applicable to site and effluent conditions at Meadowbank. Laboratory and/or in-situ pilot tests should also be considered to validate the treatment method selected.

4.2.5 Distribution of South Cell TSF Pond Water to Portage and Goose Pits

In the 2013 water management plan, the South Cell TSF water is sent to Goose Pit beginning in 2015 and Portage Pit in 2017. As shown in the figure below, approximately 44% of the South Cell TSF Reclaim water is sent to Portage Pit, with the balance to Goose Pit.



Considering that Portage Pit has almost 4 times more available volume than in Goose Pit, better attenuation of the loads could be achieved by sending more of the South Cell TSF pond water to Portage Pit.

One scenario that could be looked at is to send, at most, 20% of South Cell TSF pond water to Goose Pit, with the remainder sent to Portage Pit. This should help lower the ammonia concentration forecasted in Goose pit.

Figure 4-1: Total Cyanide Concentration in the North and South Cells TSF Reclaim Pond

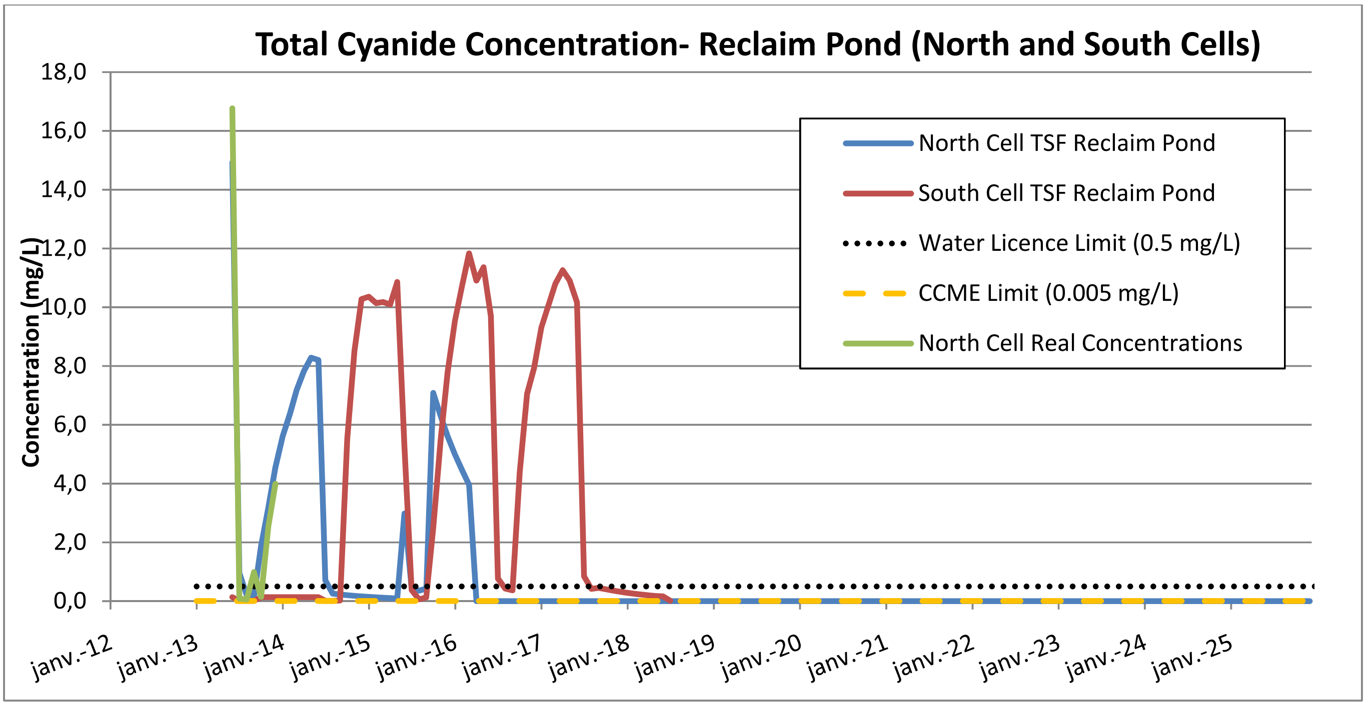


Figure 4-2: Total Cyanide Concentration in the Portage and Goose Pits

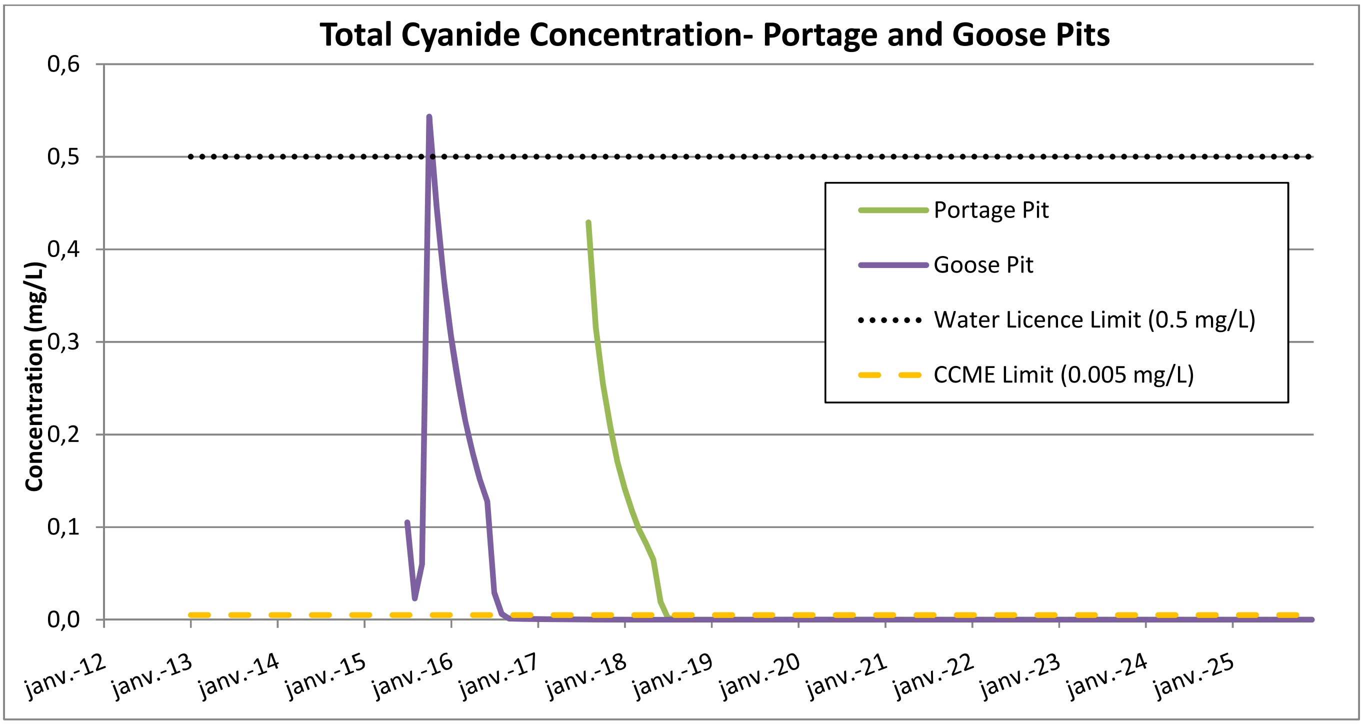


Figure 4-3: Total Copper Concentration in the North and South Cells TSF Reclaim Pond

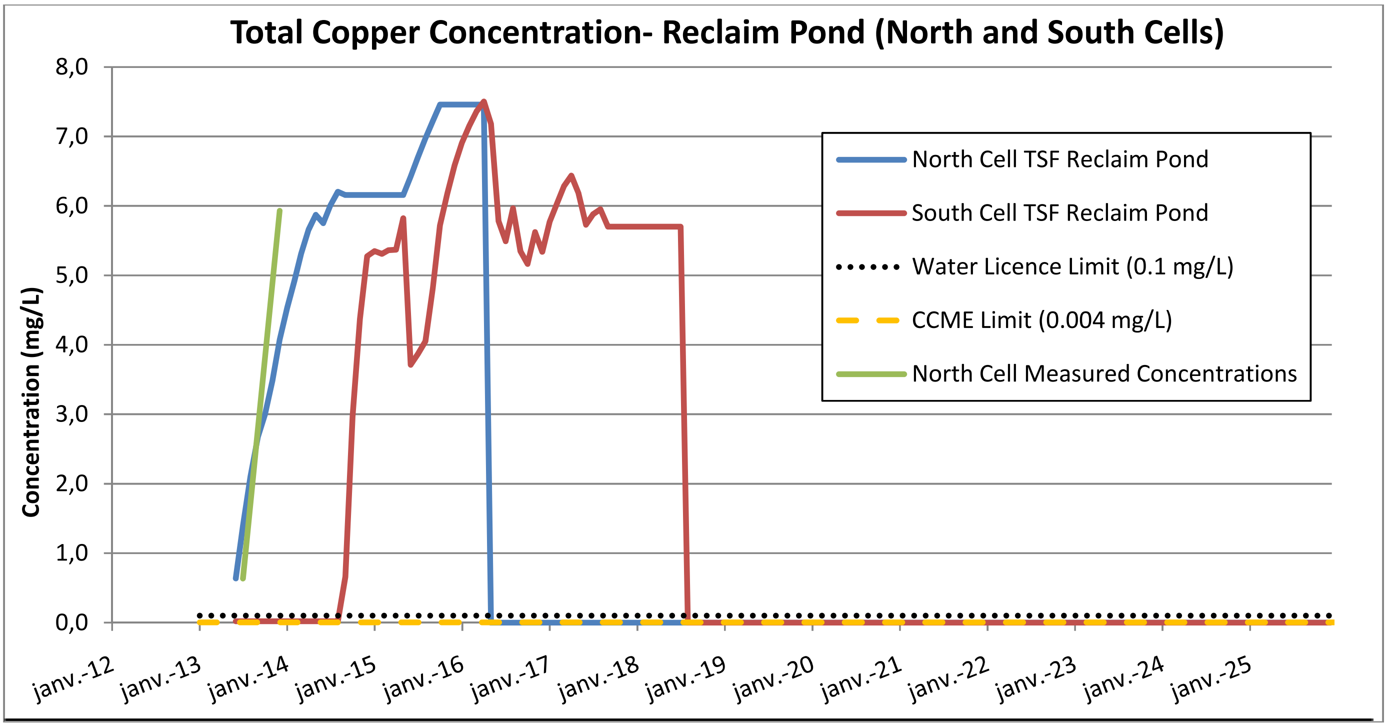


Figure 4-4: Total Copper Concentration in the Portage and Goose Pits

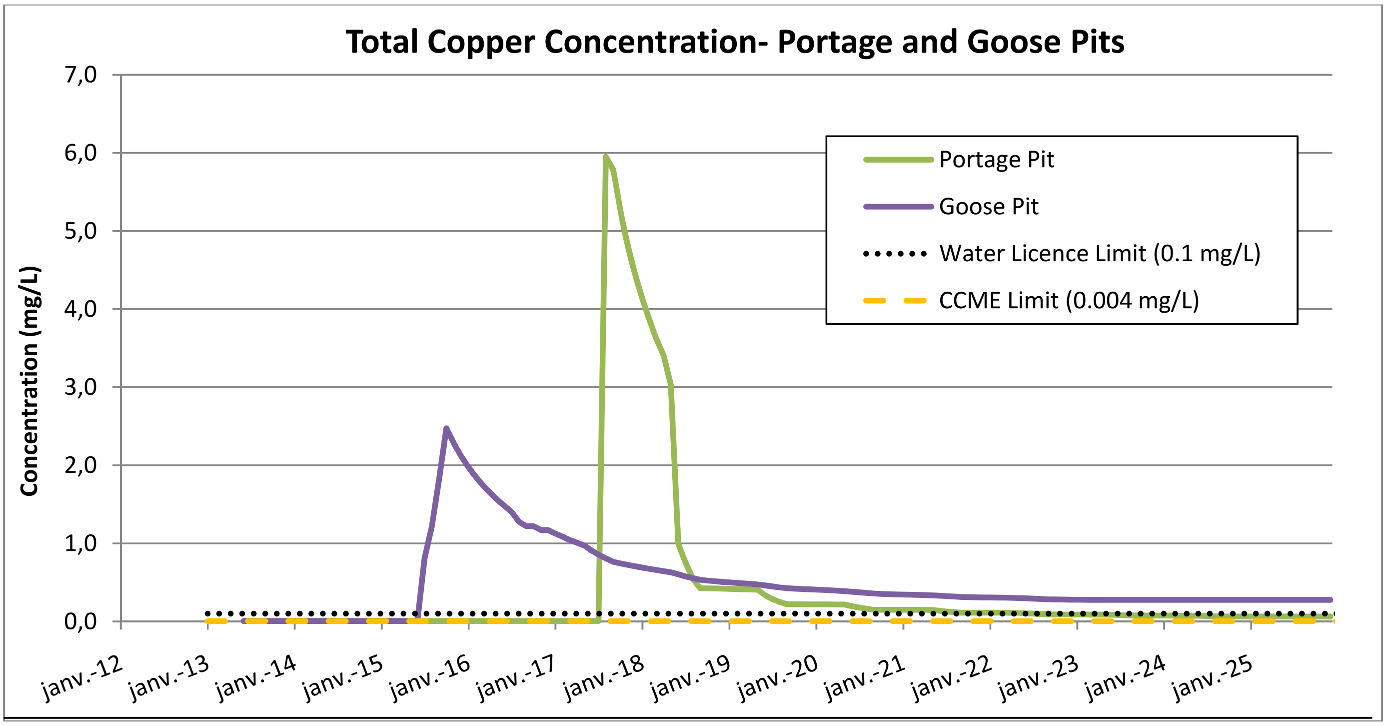


Figure 4-5: Total Iron Concentration in the North and South Cells TSF Reclaim Pond

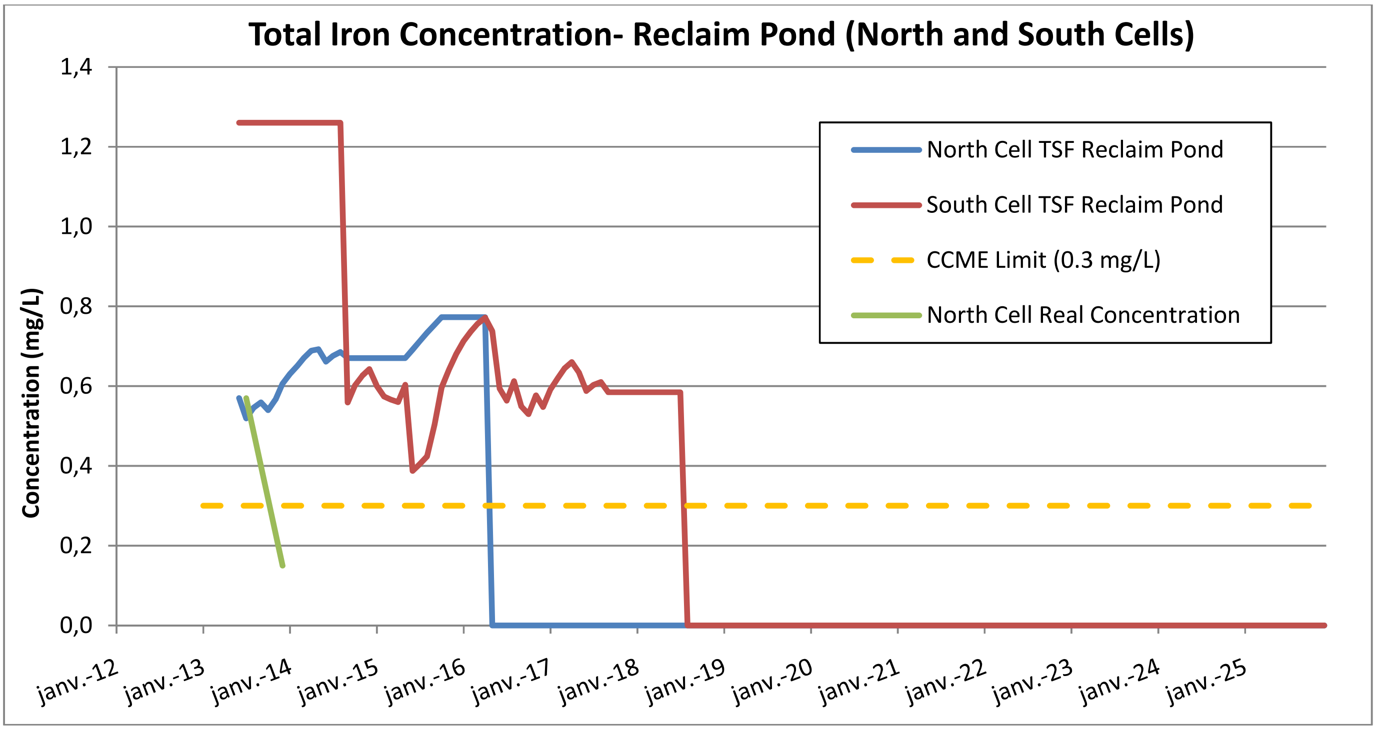


Figure 4-6: Total Iron Concentration in the Portage and Goose Pits

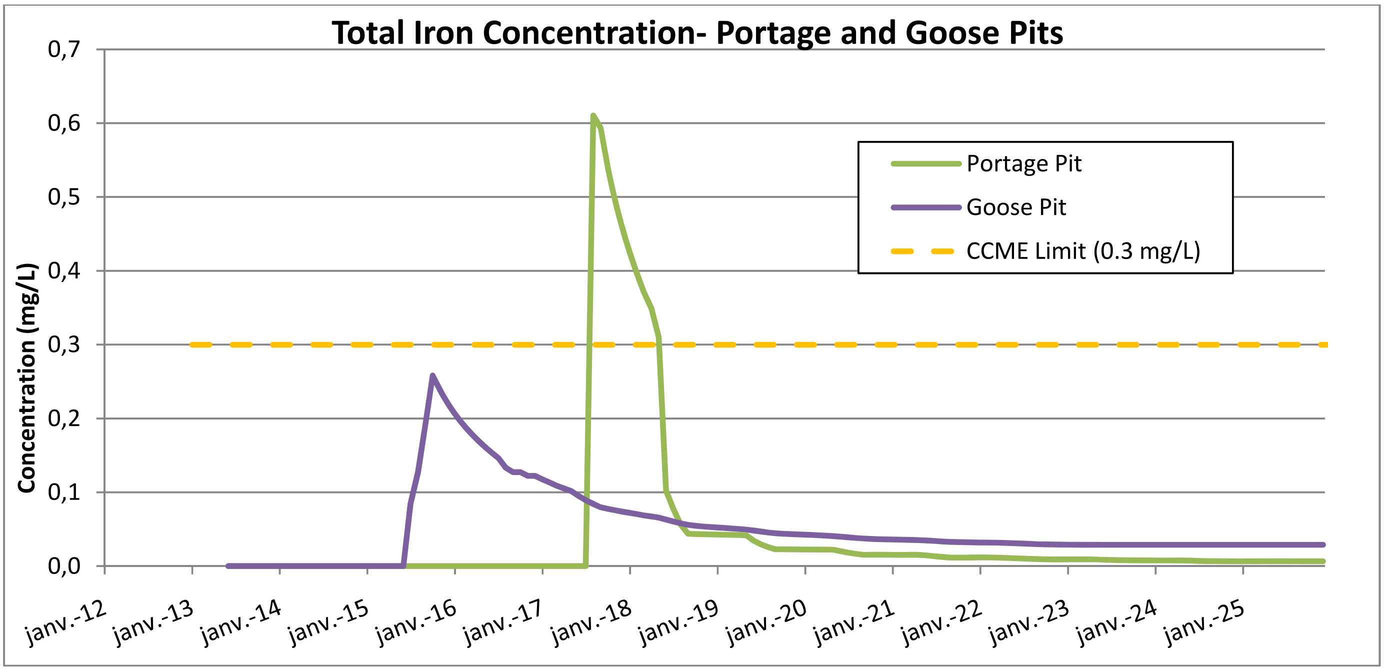


Figure 4-7: Ammonia Concentration in the North and South Cells TSF Reclaim Pond

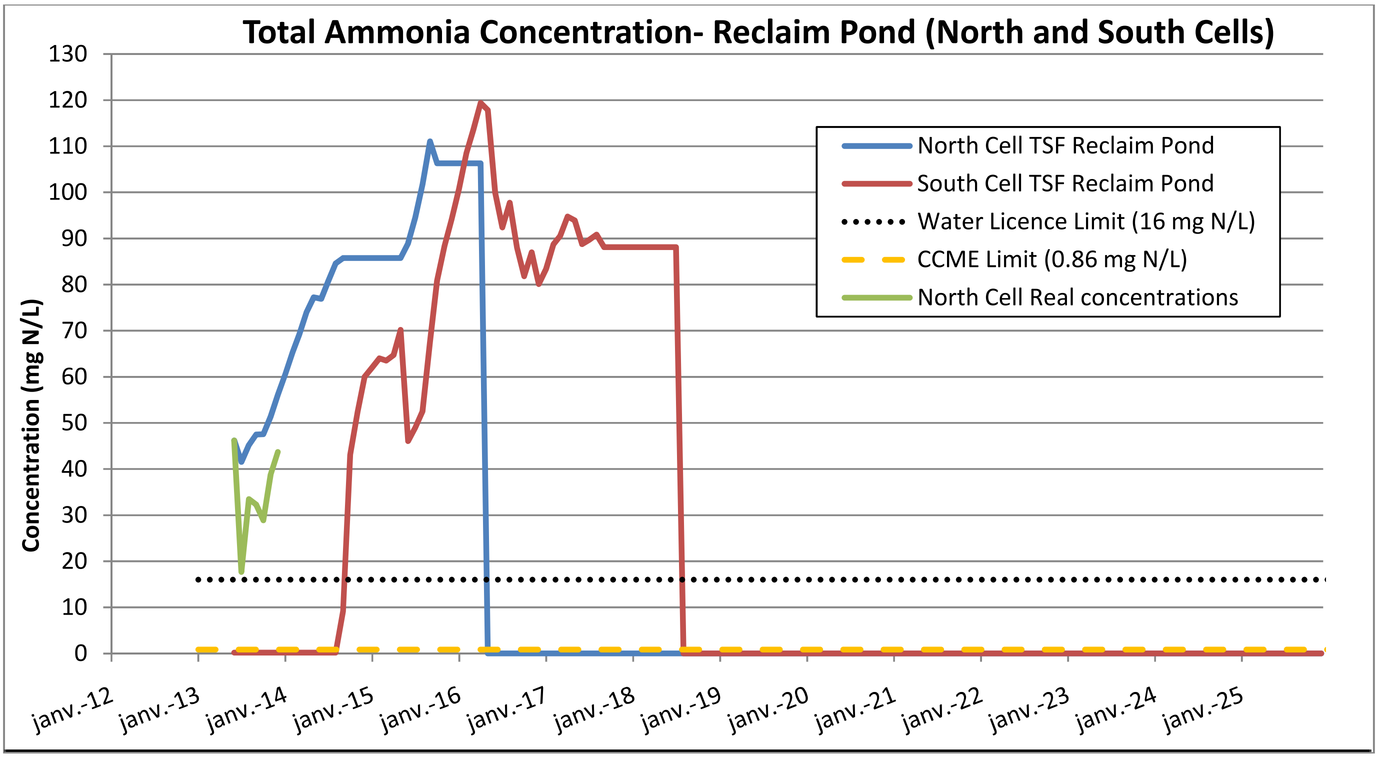


Figure 4-8: Ammonia Concentration in the Portage and Goose Pits

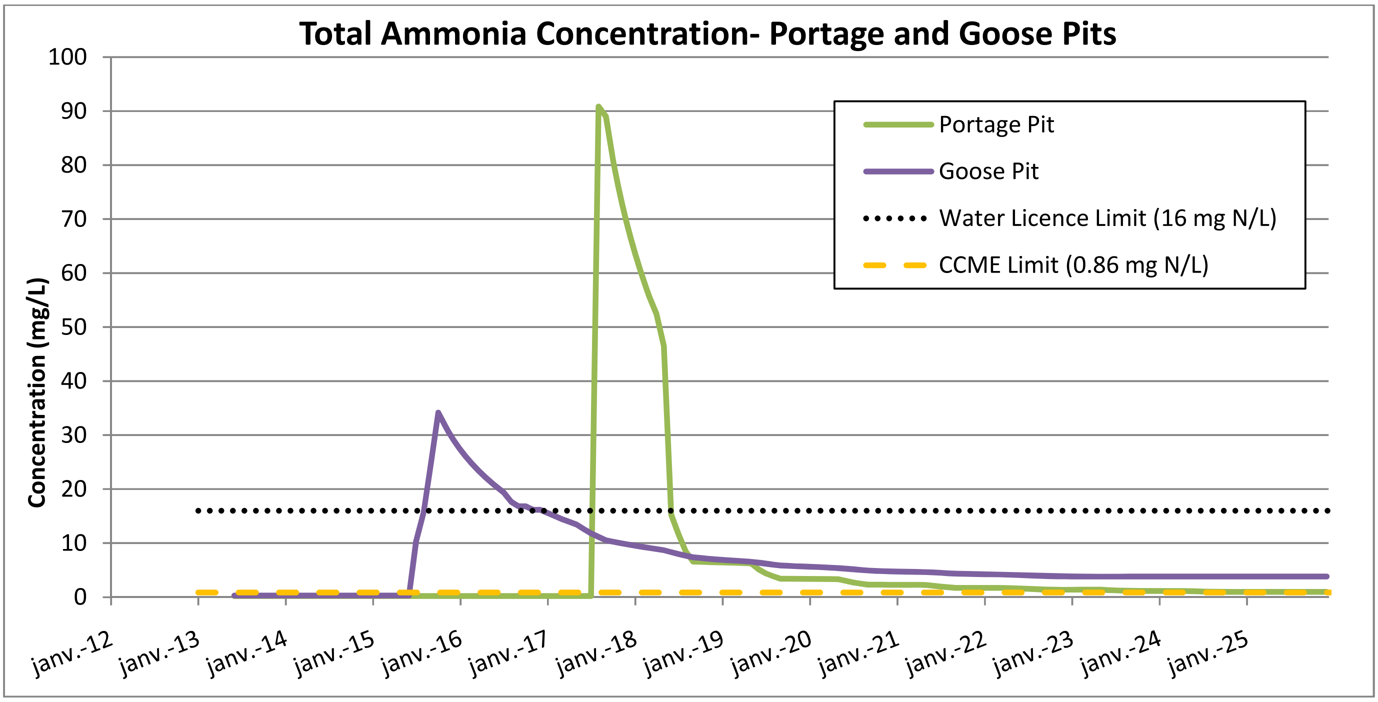


Figure 4-9: Nitrate Concentration in the North and South Cells TSF Reclaim Pond

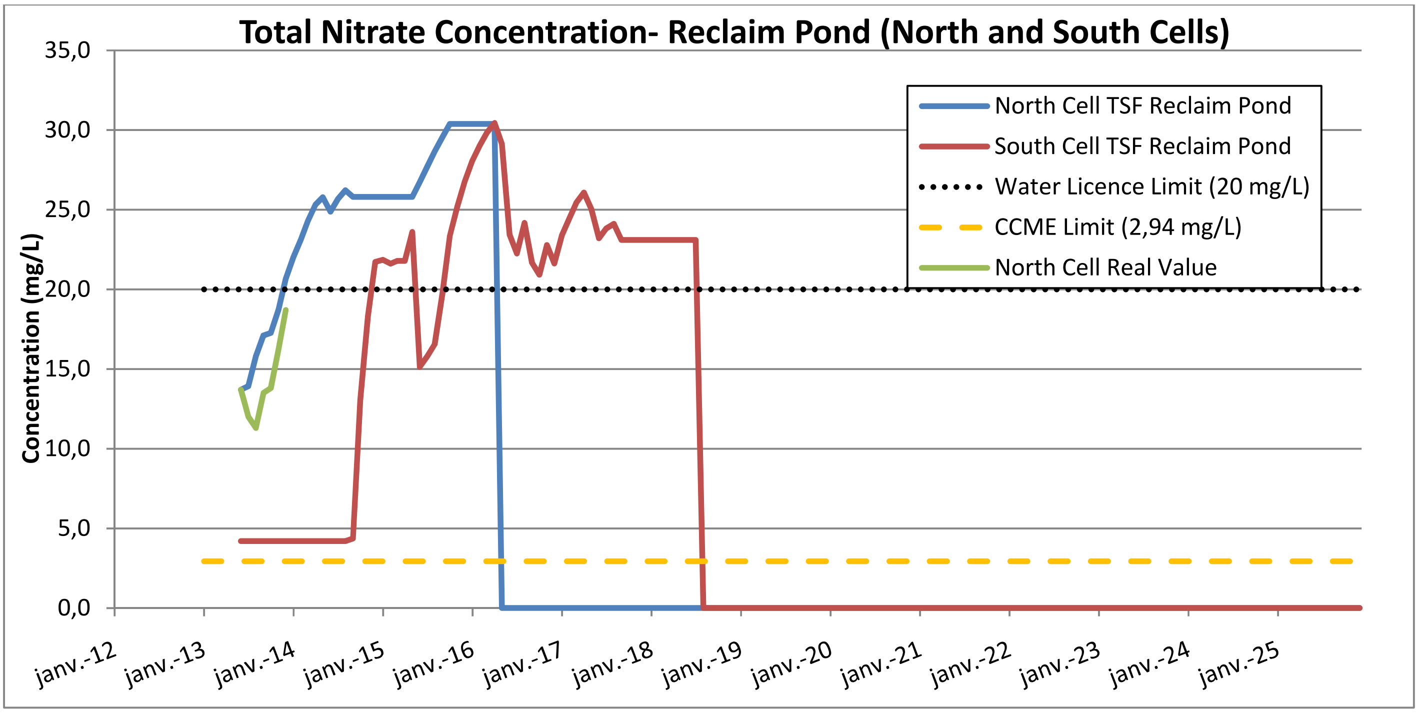


Figure 4-10: Nitrate Concentration in the Portage and Goose Pits

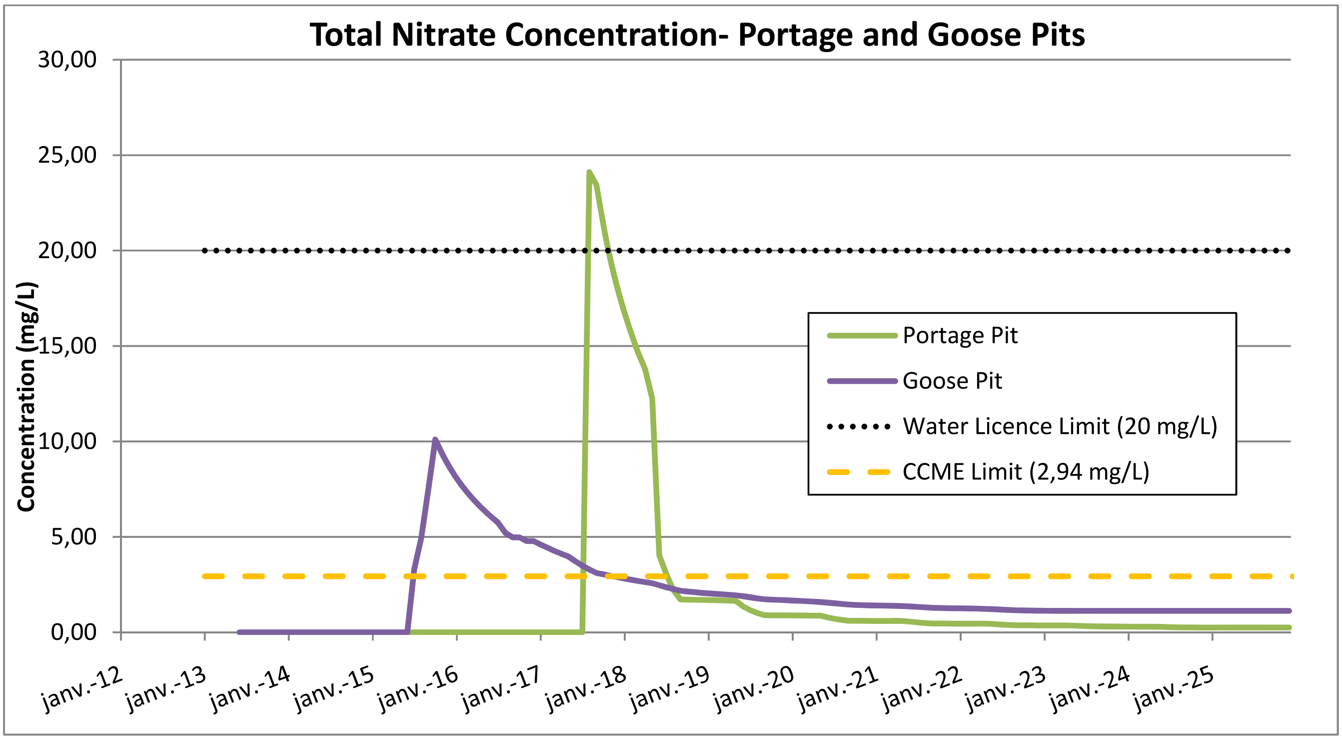


Figure 4-11: Chloride Concentration in the North and South Cells TSF Reclaim Pond

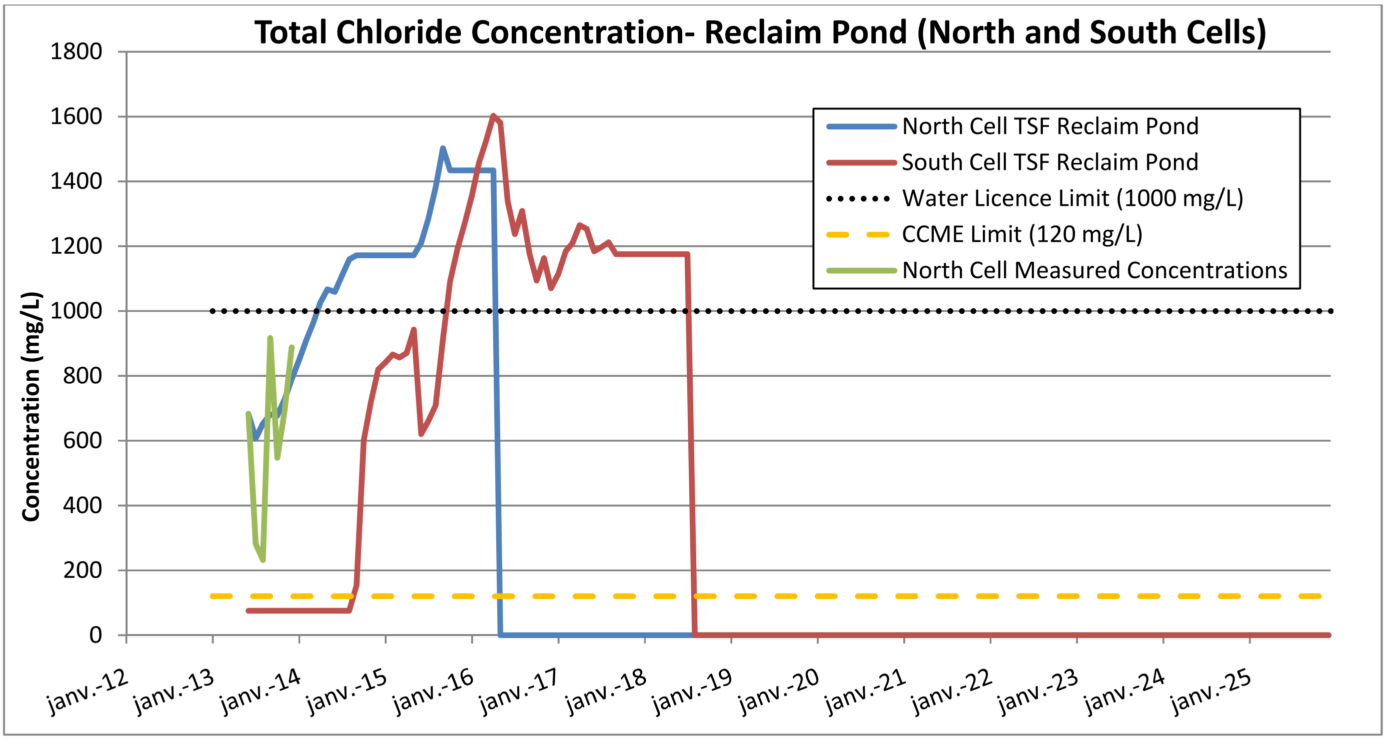
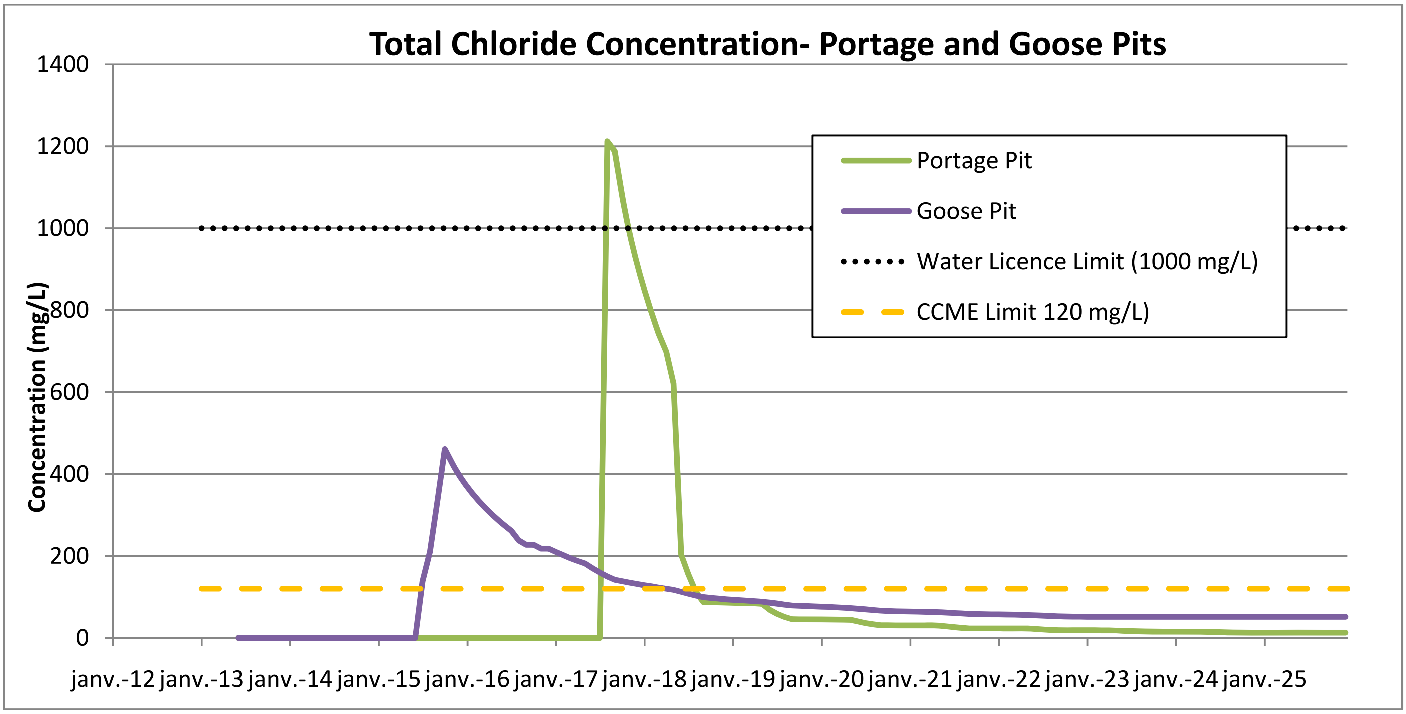


Figure 4-12: Chloride Concentration in the Portage and Goose Pits



5.0 CONCLUSION

Based on the water management plan 2013 developed by AEM, the objective of this Technical Note was to forecast the long term concentration of different contaminants in the North and South Cells TSF Reclaim Pond and in the Portage and Goose Pits from 2013 until closure in 2025. The water quality mass balance model was updated to forecast these long-term concentrations.

5.1 LIMITATIONS

It is important to understand the limitations of the mass balance model and of this Technical Note. The limitations are presented in section 3.3 and are briefly summarized here:

- In order to simplify the model, the mass balance model assumes the following:
  - Pond and pits are completely mixed systems;
  - No change in the water quality of the mill effluent;
  - A monthly time-step.
- The mass balance model is based on a limited set of water quality analysis results provided by AEM:
  - Water quality data provided for ST-21 is taken from samples collected at the surface of the North Cell TSF Reclaim Pond;
  - Limited water quality data available for the mill effluent;
  - Limited water quality data for some of the inflows and outflows of the Reclaim Pond.

5.2 RESULTS SUMMARY AND TREATMENT

Based on the results of the water quality mass balance presented in section 4.2, treatment may be required for the copper and ammonia. Treatment could be undertaken at the Reclaim Pond, or in the Portage and Goose Pits if the trends shown in the model reveal to be true in the field.

However, it is important to note that the water quality in the pits will be subject to CCME guidelines once the water level in the Goose and Portage pits are equal to the water level in Second Portage Lake. The dikes will only be breached once the water quality in the pits meets CCME guidelines.

A potential treatment option for the removal of copper prior to discharge in Portage and Goose Pit is caustic or lime precipitation. Also, to lower the concentration of ammonia in the pits, in-situ aeration can be implemented in Goose and Portage pits during the summer months. However, before such treatments are installed, an evaluation of improving the cyanide destruction at the mill should be undertaken, to ensure (1) that the efficiency of the cyanide destruction system is maximized; and (2) that a separate water treatment operation for copper and/or ammonia removal is necessary.

5.3 RECOMMENDATIONS

The water quality mass balance developed for this study is intended as an updated model (from SNC 2012 model) for the mass balance in the Portage Area. Therefore, in order to improve the accuracy of the model so that it can better forecast the concentration of certain parameters in the Reclaim Pond or Portage and Goose Pits, the following studies, tests and monitoring are recommended.

1. In addition to the current set of chemical analyses, regular (at least monthly) monitoring of all inflows and outflows of the North and South Cells TSF Reclaim Pond for cyanide, copper, iron, ammonia, nitrate, and chloride should be undertaken. In the future, the addition of total copper and iron, free CN in addition to other contaminants regulated by the CCME guidelines should be evaluated (such as Total Suspended Solids).
2. Regular analysis are also required of the mill effluent water discharged to the TSF in order to better monitor the changes in cyanide, copper, iron, ammonia, nitrate and chloride concentrations. Samples should be taken at least once a quarter.
3. Once transfer begins to the Portage and Goose Pits (2017 and 2015, respectively), regular (at least monthly) monitoring of all outflows of the TSF Reclaim Pond for cyanide, copper, iron, ammonia, nitrate, and chloride should be undertaken.
4. Sample and analyze the North and South Cell TSF Reclaim Pond at different depths and locations to determine if there is a concentration gradient in the Reclaim Pond.
5. Continued monitoring of the water in the South Cell TSF Reclaim Pond in 2015 on a regular basis to monitor the evolution of the parameters of concern listed in section 2.2.1. It is understood that this recommendation is required as per the water license.
6. In order to validate the assumption of a well mixed system in Portage and Goose pits, it is recommended to sample and analyze the water at different depths before, during and after the pit is filled with water from South Cell TSF and/or Third Portage Lake.
7. Once Portage and Goose pits are hydraulically connected, it is recommended to sample the water at different points in the pit area in order to evaluate the mixing

efficiency over the entire area. The samples should be taken at different depths over the entire area of the flooded pits before and after the filling season.

8. For the Water Management Plan 2014, consider evaluating the volume of water in Portage and Goose pits once they are hydraulically connected.

9. Consider reviewing the volumes of water sent from South Cell TSF pond to Goose and Portage pit in order to achieve lower concentrations of copper and ammonia in Goose Pit.

REFERENCES

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AEM (2013). Water Management Plan 2013.

APPENDIX A
WATER QUALITY ANALYSES

1. North Cell TSF Reclaim Pond (ST-21)
2. Attenuation Pond (future South Cell TSF Reclaim Pond) (ST-18)
3. Portage pit (ST-19)
4. Goose Pit (ST-20)
5. Mill Effluent for metal and cyanide (CN-WAD)
6. Additional tests requested for the mill effluent

NORTH CELL TSF RECLAIM POND (ST-21)

DATE	pH	Alkalinity	Turbidity	Hardness	Ammonia nitrogen (NH_3)	Nitrate (NO_3)	Nitrite (NO_2)	Chloride	Fluoride	Sulphate	TDS	Total Cyanide	CN-WAD	Dissolved Aluminum	Dissolved Arsenic	Dissolved Barium	Dissolved Cadmium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Manganese
	Units	mg $CaCO_3$/L	NTU	mg CaCO3/L	mg N/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2013-01-02													20.4								
2013-01-05													20.3								
2013-01-08	9.04	115	1.01	1607	5.2	12.9	0.27	1463	21.9	2960	4943	17.30	19.3	0.05	0.019	0.107	<0,005	17.17	1.60	<0,005	<0,005
2013-01-11													19.1								
2013-01-14													12.8								
2013-01-19													19.7								
2013-01-22													17.9								
2013-01-30													20.0								
2013-02-04													18.7								
2013-02-06	9.42	134	36.70	2116	0	17.9	0.29	1582	0.33	3125	568	12.11		0.34	0.012	0.101	<0,005	18.55	1.10	<0,005	0.071
2013-02-10													18.0								
2013-02-17													21.4								
2013-02-23													22.0								
2013-02-28													20.4								
2013-03-04													22.0								
2013-03-05	9.14	142	21.90	1795	0	17.7	0.16	1572	0.23	2876	5354	25.19		0.02	0.010	0.144	<0,005	15.21	0.30	<0,005	0.009
2013-03-10													15.2								
2013-03-19													8.4								
2013-03-25													7.9								
2013-03-31													10.0								
2013-04-02	8.90	113	43.30	1525	0	14.4	0.34	1092	0.38	2248	4242	36.25		0.08	0.011	0.096	<0,005	5.56	0.67	<0,005	<0,005
2013-04-06													9.6								
2013-04-12													32.8								
2013-04-16													17.0								
2013-04-21													18.7								
2013-04-27													16.5								
2013-05-07	9.00	105	8.80	1550	3.6	20.5	0.33	1287	0.33	2205	4476	18.95		0.06	0.015	0.088	0.001	9.51	0.67	<0,0003	<0,0005
2013-05-08													17.1								
2013-05-12													19.7								
2013-05-15													16.8								
2013-05-19													19.7								
2013-05-25													16.9								
2013-05-31													18								
2013-06-04	8.85	77	17.37	891	46.2	13.7	0.06	683	0.07	1276	2954	16.77	19.1	0.14	0.008	0.057	0.001	0.29	<0,01	<0,0003	0.0713
2013-06-08													6.01								
2013-06-12													5.21								
2013-06-16													3.64								
2013-06-20													2.0								
2013-06-27													0.0967								
2013-07-04	8.28	127	9.25	641	17.7	12.0	0.31	283	0.26	1053	1992	0.09		0.15	0.014	0.051	0.000	0.39	<0,01	<0,0021	0.4214
2013-07-05													0.156								
2013-07-12													0.0829								
2013-07-19													0.247								
2013-07-25													0.142								
2013-08-01													0.237								
2013-08-11													0.0829								
2013-08-13	7.72	154	5.65	751	33.5	11.3	0.90	232	1.1	1169		0.05		0.14	0.016	0.061	0.001	0.42	0.01	0.0012	0.5621
2013-08-14													0.0765								
2013-08-19													0.133								
2013-08-26													0.242								
2013-09-02	8.00	143	20.10	759	32.3	13.5	1.10	917	0.16	1457	2020	0.99		0.20	0.025	0.067	0.001	1.78	0.38	0.0045	0.4087
2013-09-06													0.355								
2013-09-13													0.501								
2013-09-23													0.499								
2013-10-03	7.87	135	9.30	935	28.9	13.8	1.00	547	0.47	1954	1796	0.14	1.77	0.12	0.027	0.065	0.001	0.50	0.01	<0,0003	0.2476
2013-10-09													1.99								
2013-10-16													2.16								
2013-10-22													2.09								
2013-11-01													5.69								
2013-11-04	7.92	123	9.21	878	38.8	16.2	0.85	691	0.45	1971	2233	2.55		0.04	0.023	0.073	0.001	6.28	0.01	<0,0003	0.2819
2013-11-09													4.74								
2013-11-14													3.34								
2013-11-29													4.85								
2013-12-02	6.69	133	1.15	1122	43.7	18.7	0.94	888	0.41	1979	1866	3.99		0.10	0.016	0.081	0.001	2.34	0.01	<0,0003	0.1495
2013-12-06													4.78								
2013-12-14													4.33								
2013-12-20													9.27								

NORTH CELL TSF RECLAIM POND (ST-21)

DATE	Dissolved Mercury mg/L	Dissolved Molybdenum mg/L	Dissolved Nickel mg/L	Dissolved Selenium mg/L	Dissolved Silver mg/L	Dissolved Thallium mg/L	Dissolved Zinc mg/L	Antimony mg/L	Arsenic mg/L	Barium mg/L	Beryllium mg/L	Cadmium mg/L	Lead mg/L	Lithium mg/L	Manganese mg/L	Chromium mg/L	Copper mg/L	Iron mg/L	Mercury mg/L	Molybdenum mg/L
2013-01-02																				
2013-01-05																				
2013-01-08	0.0002	0.492	0.056	0.023	<0,005	<0,01	0.005													
2013-01-11																				
2013-01-14																				
2013-01-19																				
2013-01-22																				
2013-01-30																				
2013-02-04																				
2013-02-06	0.0003	0.481	0.032	0.026	0.0110	<0,01	0.569													
2013-02-10																				
2013-02-17																				
2013-02-23																				
2013-02-28																				
2013-03-04																				
2013-03-05	<0,0001	0.469	0.041	0.037	0.0100	<0,01	<0,005													
2013-03-10																				
2013-03-19																				
2013-03-25																				
2013-03-31																				
2013-04-02	0.0002	0.332	0.026	0.019	<0,005	<0,01	0.015													
2013-04-06																				
2013-04-12																				
2013-04-16																				
2013-04-21																				
2013-04-27																				
2013-05-07	0.0002	0.418	0.697	0.029	0.008	<0,005	0.009													
2013-05-08																				
2013-05-12																				
2013-05-15																				
2013-05-19																				
2013-05-25																				
2013-05-31																				
2013-06-04	<0,0001	0.247	0.088	0.008	0.004	<0,005	0.001													
2013-06-08																				
2013-06-12																				
2013-06-16																				
2013-06-20																				
2013-06-27																				
2013-07-04	<0,0001	0.170	0.096	0.010	<0,0002	<0,005	0.004	0.00135	0.0197	0.058	<0,0005	0.000415	0.004	<0,005	0.5	0.00065	0.63635	0.57	<0,00001	0.1985
2013-07-05																				
2013-07-12																				
2013-07-19																				
2013-07-25																				
2013-08-01																				
2013-08-11																				
2013-08-13	0.0001	0.222	0.300	0.010	0.006	<0,005	0.004													
2013-08-14																				
2013-08-19																				
2013-08-26																				
2013-09-02	0.0001	0.309	0.602	0.009	0.014	<0,005	0.015													
2013-09-06																				
2013-09-13																				
2013-09-23																				
2013-10-03	0.0001	0.398	0.583	0.011	0.011	<0,005	<0,001													
2013-10-09																				
2013-10-16																				
2013-10-22																				
2013-11-01																				
2013-11-04	0.0005	0.507		0.024	0.046	<0,005	<0,001													
2013-11-09																				
2013-11-14																				
2013-11-29																				
2013-12-02	0.0002	0.496	0.386	0.047	<0,0001	<0,005	0.002	0.0029	0.0175	0.0826	<0,0005	0.001	<0,0003	<0,005	0.1521	0.0013	5.931	0.15	0.00029	0.4997
2013-12-06																				
2013-12-14																				
2013-12-20																				

NORTH CELL TSF RECLAIM POND (ST-21)

DATE	Nickel mg/L	Selenium mg/L	Strontium mg/L	Thallium mg/L	Tin mg/L	Titanium mg/L	Uranium mg/L	Vanadium mg/L	Zinc mg/L
2013-01-02									
2013-01-05									
2013-01-08									
2013-01-11									
2013-01-14									
2013-01-19									
2013-01-22									
2013-01-30									
2013-02-04									
2013-02-06									
2013-02-10									
2013-02-17									
2013-02-23									
2013-02-28									
2013-03-04									
2013-03-05									
2013-03-10									
2013-03-19									
2013-03-25									
2013-03-31									
2013-04-02									
2013-04-06									
2013-04-12									
2013-04-16									
2013-04-21									
2013-04-27									
2013-05-07									
2013-05-08									
2013-05-12									
2013-05-15									
2013-05-19									
2013-05-25									
2013-05-31									
2013-06-04									
2013-06-08									
2013-06-12									
2013-06-16									
2013-06-20									
2013-06-27									
2013-07-04	0.1168	0.012	0.804	0.275	<0,001	<0,005	0.009	<0,0005	0.0045
2013-07-05									
2013-07-12									
2013-07-19									
2013-07-25									
2013-08-01									
2013-08-11									
2013-08-13									
2013-08-14									
2013-08-19									
2013-08-26									
2013-09-02									
2013-09-06									
2013-09-13									
2013-09-23									
2013-10-03									
2013-10-09									
2013-10-16									
2013-10-22									
2013-11-01									
2013-11-04									
2013-11-09									
2013-11-14									
2013-11-29									
2013-12-02	0.4075	0.047	1.23	<0,005	<0,001	0.345	0.019	<0,0005	0.002
2013-12-06									
2013-12-14									
2013-12-20									

ATTENUATION POND, SOUTH CELL (ST-18)

DATE	pH	Alkalinity	Turbidity	Ammonia	Ammonia-Nitrogen (NH3-NH4)	Arsenic	Chloride	Copper	Dissolved Aluminum	Dissolved Arsenic	Dissolved Barium	Dissolved Cadmium	Dissolved Copper	Dissolved Iron
Units	Units	mg $CaCO_3$/L	NTU	mg N/L	mg N/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2013-06-04	6.75	80	17.32	0.18		0.003		0.0063						
2013-07-04	7.4	97	12.83	0.235	6.15	0.0029	60.1	0.03385	0.009	<0,0005	0.04535	<0,00002	0.0178	<0,01
2013-08-08	7.2	108	13.25	0.35	9.8	0.2403		0.0189						
2013-09-02	7.88	116	24.8	0.12	12.4	0.0133	91.3	0.0169	0.021	0.0064	0.061	0.00008	0.0045	0.01
2013-10-03	7.57	121	30.7	0.11		0.0163		0.0099						

DATE	Dissolved Lead	Dissolved Manganese	Dissolved Mercury	Dissolved Molybdenum	Dissolved Nickel	Dissolved Selenium	Dissolved Silver	Dissolved Thallium	Dissolved Zinc	Fluoride	Hardness	Lead	Nickel	Nitrate
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mgN/L
2013-06-04												<0,0003	0.0371	
2013-07-04	<0,0003	1.8265	0.0001	0.0154	0.04185	0.001	<0,0002	<0,005	<0,001	0.395	320	0.00245	0.0593	5.1
2013-08-08												0.0089	0.0056	
2013-09-02	<0,0003	2.44	<0,0001	0.0306	0.0822	0.002	<0,0001	<0,005	0.004	0.49	396	0.0003	0.0822	3.3
2013-10-03												<0,0003	0.0718	

DATE	Nitrite	Sulphate	TDS	Zinc	Conductivity	Total Cyanide
Units	mgN/L	mg/L	mg/L	mg/L		mg/L
2013-06-04			379	0.001	496	0.117
2013-07-04	0.185	277.5	633.5	0.008	924	0.1725
2013-08-08			779	0.007	1224	0.236
2013-09-02	0.6	451	806	0.009	1420	0.193
2013-10-03			814	<0,001	1472	0.039

PORTAGE PIT (ST-19)

Date	pH	Alkalinity	Turbidity	Ammonia	Ammonia-Nitrogen (NH3-NH4)	Arsenic	Copper	Lead	Nickel	TDS	Zinc
Units	Units	mg $CaCO_3$/L	NTU	mg N/L	mg N/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2013-01-16	7,61	112	61,6	0,41	7,1	0,0179	0,0059	<0,0003	0,0043	252	<0,001
2013-02-06	7,68	95	21,5	0,29	12,6	0,0367	0,0143	<0,0003	0,0032	238	0,116
2013-03-06	7,22	111	25,3	0,99	10,7	0,0107	0,0044	0,0097	0,0045	253	0,008
2013-04-03	7,02	55	2,1	<0,05	0,19	0,0011	0,0073	<0,0003	0,004	57	0,001
2013-05-07	7,17	73	5,48	<0,05	0,35	0,0191	0,0026	<0,0003	0,0024	116	0,011
2013-07-08	8,16	53	5,74	<0,05	0,71	0,0245	0,0012	0,0006	0,0063	103	<0,001
2013-08-14	7,54	50	5,76	<0,05	0,25	0,0493	0,0015	0,0006	0,0094	2	<0,001
2013-09-09	7	52	1,42	<0,01	0,13	0,0083	<0,0005	<0,0003	0,0011	54	0,004
2013-10-07	8	49	1,75	<0,01	0,11	0,0139	<0,0005	<0,0003	<0,0005	64	0,001

GOOSE PIT (ST-20)

Date	pH	Alkalinity	Turbidity	Ammonia	Ammonia-Nitrogen (NH3-NH4)	Arsenic	Copper	Lead	Nickel	TDS	Zinc
Units	**Units**	**mg $CaCO_3$/L**	**NTU**	**mg N/L**	**mg N/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
2013-01-16	7,74	141	29,7	0,7	13,7	0,0058	0,0005	0,0003	0,0085	329	<0,001
2013-02-06	6,94	130	26,9	0,1	3,9	0,0184	0,0092	<0,0003	0,0048	223	0,058
2013-03-06	7,49	125	45,7	0,14	1,5	0,0146	<0,0005	0,0057	0,0032	199	0,004
2013-05-07	7,49	108	33,8	0,16	4	0,0183	0,0048	0,0032	0,0135	202	<0,001
2013-06-11	7,53	100	109,5	0,32	9,5	0,0035	0,015	<0,0003	0,432	280	<0,001
2013-07-08	8,88	110	73,7	0,4	6,6	0,0054	0,0077	0,00065	0,041	422	0,0055
2013-08-13	7,47	140	84,1	0,6	11,5	0,0078	<0,0005	0,0033	0,0556		0,008
2013-09-09	7,57	176	42,1	0,23	13,9	0,0044	0,0041	<0,0003	0,0898	496	0,01
2013-10-07	8	138	28	0,01	6,5	0,0105	<0,0005	<0,0003	0,0692	366	0,003

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-01-01	NS	0.168	0.035	5.38	28.28	20.5
2013-01-01	DS	0.107	0.02	6.83	16.43	21.2
2013-01-02	NS	0.138	0.01	7.17	32.44	21.4
2013-01-02	DS	0.080	0.025	8.87	33.15	38.3
2013-01-03	NS	0.113	0.02	7.87	33.66	24.5
2013-01-03	DS	0.130	0.02	7.79	31.72	20.1
2013-01-04	NS	0.130	0.02	5.85	25.58	15.9
2013-01-04	DS	0.137	0.01	7.22	31.41	19.7
2013-01-05	NS	0.323	0.02	2.24	6.43	2.52
2013-01-05	DS	0.137	0.015	1.22	3.81	1.48
2013-01-06	NS	0.150	0.02	2.72	9.47	4.41
2013-01-06	DS	0.117	0.02	1.04	3.94	1.44
2013-01-07	NS	0.127	0.015	1.04	3.33	1.29
2013-01-07	DS	0.133	0.015	0.86	4.24	1.63
2013-01-08	NS	0.167	0.02	0.94	4.94	1.78
2013-01-08	DS	0.107	0.01	0.84	4.08	1.4
2013-01-09	NS	0.080	0.01	1.42	4.42	1.9
2013-01-09	DS	0.090	0.015	3.55	6.91	3.15
2013-01-10	NS	0.117	0.02	3.14	12.58	4.91
2013-01-10	DS	0.170	0.01	2.79	13.11	4.32
2013-01-11	NS	0.160	0.025	1.7	16.8	7.03
2013-01-11	DS	0.235	0.02	2.37	18.52	9.75
2013-01-12	NS	0.267	0.015	3.21	20.97	9.95
2013-01-12	DS	0.230	0.02	2.77	19.68	11.5
2013-01-13	NS	0.230	0.025	1.22	14.52	5.59
2013-01-13	DS	0.183	0.02	1.58	14.25	9.33
2013-01-14	NS	0.237	0.015	1.46	17.04	6.94
2013-01-14	DS	0.263	0.02	1.46	9.08	3.43
2013-01-15	NS	0.253	0.02	1.47	11.79	4.47
2013-01-15	DS	0.210	0.02	1.4	14.78	5.33
2013-01-16	NS	0.230	< 0.01	0.79	17.3	11.8
2013-01-16	DS	0.213	0.025	1.17	23.25	8.81
2013-01-17	NS	0.173	0.015	0.94	16.64	13
2013-01-17	DS	0.227	0.035	0.93	19.73	10.1
2013-01-18	NS	0.195	0.045	2.08	28.31	19.1
2013-01-18	DS	0.285	0.01	3.76	35.18	25.7
2013-01-19	NS	0.298	0.02	9.42	34.88	74.4
2013-01-19	DS			0	0	0
2013-01-20	NS			0	0	0
2013-01-20	DS			0	0	0
2013-01-21	NS			0	0	0
2013-01-21	DS	0.417	0.09	0.84	3.67	1.68
2013-01-22	NS	0.223	0.035	0.79	9.6	5.23
2013-01-22	DS	0.163	0.025	1.17	15.4	7.79
2013-01-23	NS	0.193	0.03	0.51	15.95	11.4
2013-01-23	DS	0.230	0.025	0.61	16.26	8.09
2013-01-24	NS	0.200	0.04	0.58	9.43	7.99
2013-01-24	DS	0.247	0.02	0.33	1.38	0.345
2013-01-25	NS	0.210	0.025	0.82	17.62	13.6
2013-01-25	DS	0.193	0.035	4.84	47.84	42.9
2013-01-26	NS	0.175	0.03	1.88	31	23.2
2013-01-26	DS	0.173	0.035	0.68	10.04	5.33
2013-01-27	NS	0.190	0.035	0.8	10.32	5.25
2013-01-27	DS	0.230	0.06	0.64	10.28	3.6
2013-01-28	NS	0.243	0.045	0.59	4.85	3.2
2013-01-28	DS	0.267	0.03	0.76	3.12	1.8
2013-01-29	NS	0.240	0.035	0.57	1.65	1.14
2013-01-29	DS	0.310	0.025	1.02	2.43	0.95
2013-01-30	NS	0.330	0.07	0.72	2.75	1.4
2013-01-30	DS	0.393	0.04	0.78	2.37	0.992
2013-01-31	NS	0.398	0.045	0.77	5.52	1.73
2013-01-31	DS	0.327	0.05	0.74	9.23	2.35
2013-02-01	NS	0.290	0.05	0.91	6.69	2.01
2013-02-01	DS	0.245	0.03	1.58	23.06	12
2013-02-02	NS	0.263	0.035	1.14	12.78	4.96
2013-02-02	DS	0.310	0.035	2.47	19.1	9.15
2013-02-03	NS	0.310	0.04	3.1	17.19	13.5
2013-02-03	DS	0.392		0	0	0
2013-02-04	NS	0.358	0.065	6.24	27.76	28.4
2013-02-04	DS	0.270	0.03	9.68	45.29	37.1
2013-02-05	NS	0.230	0.04	7.12	39.65	38.5
2013-02-05	DS	0.207	0.04	2.96	32.15	31.7
2013-02-06	NS	0.182	0.035	1.91	28.3	23.9
2013-02-06	DS	0.205	0.045	1.47	30.02	30.9
2013-02-07	NS	0.178	0.04	1.3	34.53	32.4
2013-02-07	DS	0.178	0.02	13.74	49.05	55.1
2013-02-08	NS	0.153	0.035	9.53	52.12	58.6
2013-02-08	DS	0.160	0.03	9.54	35.93	30.6
2013-02-09	NS	0.198	0.02	4.07	24.39	14.1
2013-02-09	DS	0.185	0.025	4.54	23.48	21.4
2013-02-10	NS	0.183	0.02	1.86	18.02	16.6
2013-02-10	DS	0.200	0.045	2	16.08	7.09

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-02-11	NS	0.215	0.02	2.11	20.37	16.8
2013-02-11	DS	0.242	0.015	4.96	14.69	13
2013-02-12	NS	0.203	0.03	6.61	19.78	12.9
2013-02-12	DS	0.203	0.01	7.45	15.94	8.2
2013-02-13	NS	0.200	0.045	5.75	17.3	11.5
2013-02-13	DS	0.173	0.04	1.87	4.45	2.11
2013-02-14	NS	0.184	0.03	2.44	4.7	1.01
2013-02-14	DS	0.190	< 0.01	2.2	9.09	5.21
2013-02-15	NS	0.202	0.02	2.29	6.02	3.15
2013-02-15	DS	0.187	0.025	1.36	6.94	2.79
2013-02-16	NS	0.173	< 0.01	2.01	4.24	2.12
2013-02-16	DS	0.190	0.02	3.55	10.07	6.35
2013-02-17	NS	0.170	0.02	1.76	8.98	3.9
2013-02-17	DS	0.137	0.04	0.64	6.63	2.07
2013-02-18	NS	0.160	0.025	1.09	7.85	2.96
2013-02-18	DS	0.177	0.035	1.16	10.66	5.29
2013-02-19	NS	0.183	0.025	2.24	18.93	15.5
2013-02-19	DS	0.193	0.035	1.4	21.46	20.6
2013-02-20	NS	0.177	0.05	2.15	21.22	21
2013-02-20	DS	0.200	0.075	1.98	29.79	32.1
2013-02-21	NS	0.147	0.055	1.58	25	25.2
2013-02-21	DS	0.127	0.05	0.99	29.05	28
2013-02-22	NS	0.137	0.05	1.03	21.96	22.8
2013-02-22	DS	0.137	0.045	0.92	22.91	16.8
2013-02-23	NS	0.187	0.035	1.57	17.94	9.62
2013-02-23	DS	0.193	0.04	6.77	34.74	30.4
2013-02-24	NS	0.258	0.025	5.4	24.5	8.13
2013-02-24	DS	0.300	0.05	1.57	13.2	7.28
2013-02-25	NS	0.338	0.055	0.97	12.97	7.45
2013-02-25	DS	0.353	0.03	1.58	12.52	7.07
2013-02-26	NS	0.283	0.035	0.6	9.64	5.46
2013-02-26	DS	0.348	0.045	0.62	14.33	8.64
2013-02-27	NS	0.277	0.04	1.39	9.83	3.81
2013-02-27	DS	0.310	0.04	0.57	1.19	0.78
2013-02-28	NS	0.382	0.04	1.76	3.12	0.544
2013-02-28	DS	0.350	0.045	2.19	10.63	6.87
2013-03-01	NS	0.233	0.04	6.82	35.54	44.4
2013-03-01	DS	0.197	0.045	5.39	34.78	40.7
2013-03-02	NS	0.243	0.05	4.9	28.16	24.2
2013-03-02	DS	0.273	0.055	5.16	23.09	8.99
2013-03-03	NS	0.317	0.05	7.02	21.96	5.63
2013-03-03	DS	0.260	0.035	3.41	1.37	0.865
2013-03-04	NS	0.210	0.03	3.58	1.41	1.35
2013-03-04	DS	0.167	0.03	2.45	4.16	2.5
2013-03-05	NS	0.163	0.05	6.13	2.96	0.713
2013-03-05	DS	0.198	0.015	6.96	1.49	1.31
2013-03-06	NS	0.182	0.03	7.08	1.59	1.48
2013-03-06	DS	0.250	0.035	8.32	2.32	1.1
2013-03-07	NS	0.300	0.05	8.89	3.83	1.5
2013-03-07	DS	0.280	0.04	12.92	2.56	1.84
2013-03-08	NS	0.283	0.025	10.21	2.73	0.802
2013-03-08	DS	0.337	0.03	10.57	3.89	1.63
2013-03-09	NS	0.333	0.03	8.93	2.96	1.16
2013-03-09	DS			0	0	0
2013-03-10	NS	0.287	0.03	10.97	1.92	0.971
2013-03-10	DS	0.153	0.03	10.59	1.67	1.12
2013-03-11	NS	0.160	0.02	10.3	2.65	0.888
2013-03-11	DS	0.193	0.035	9.51	6.63	1.16
2013-03-12	NS	0.137	0.025	10.79	9.91	1.34
2013-03-12	DS	0.150	0.025	5.13	2.12	1.76
2013-03-13	NS	0.157	0.025	4.42	1.28	1.2
2013-03-13	DS	0.203	0.03	5.72	3.06	1.33
2013-03-14	NS	0.172	0.03	6.72	3.58	1.34
2013-03-14	DS	0.170	0.025	7.22	2.25	2.6
2013-03-15	NS	0.160	0.02	8.66	11.38	4.37
2013-03-15	DS	0.260	0.01	7.87	14.08	10.1
2013-03-16	NS	0.210	0.035	11.85	40.47	40.2
2013-03-16	DS	0.207	0.015	3.2	7.11	2.69
2013-03-17	NS	0.217	0.02	8.25	19.89	8.3
2013-03-17	DS	0.250	0.045	3.55	7.48	1.06
2013-03-18	NS	0.243	0.02	3.36	0.85	0.247
2013-03-18	DS	0.217	0.025	5.84	2.58	0.675
2013-03-19	NS	0.227	0.03	4.38	1.07	1.35
2013-03-19	DS	0.235	0.035	3.92	1.27	1.22
2013-03-20	NS	0.377	0.025	2.78	0.97	1.16
2013-03-20	DS	0.168	0.04	6.04	9.58	3.34
2013-03-21	NS	0.113	0.025	3.3	3.65	1.82
2013-03-21	DS	0.100	0.04	4.81	6.27	1.39
2013-03-22	NS	0.147	0.03	3.87	5.06	2.35
2013-03-22	DS	0.120	0.02	3.51	1.88	0.38
2013-03-23	NS	0.117	0.02	3.55	0.67	0.634
2013-03-23	DS	0.163	0.025	6.31	21.08	20.5

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-03-24	**NS**	0.157	0.02	4.71	6.82	5.12
2013-03-24	**DS**	0.193	0.04	8.86	23.49	17.7
2013-03-25	**NS**	0.257	0.045	8.2	14.98	8.56
2013-03-25	**DS**	0.190	0.05	10.87	20.98	21.4
2013-03-26	**NS**	0.217	0.05	9.74	19.34	10.4
2013-03-26	**DS**	0.145	0.055	9.42	19.21	10.2
2013-03-27	**NS**	0.156	0.055	6.82	10.13	4.83
2013-03-27	**DS**	0.130	0.03	6.22	4.09	1.43
2013-03-28	**NS**	0.107	0.035	5.51	2.33	0.451
2013-03-28	**DS**	0.167	0.04	6.64	8.31	2.69
2013-03-29	**NS**	0.158	0.02	5.82	1.91	1.07
2013-03-29	**DS**	0.203	0.02	5.93	2.01	0.38
2013-03-30	**NS**	0.243	0.02	6	2.39	0.515
2013-03-30	**DS**	0.178	0.02	5.84	2.64	0.571
2013-03-31	**NS**	0.212	0.02	7.98	4.3	0.847
2013-03-31	**DS**	0.183	0.03	13.05	21.02	19.1
2013-04-01	**NS**	0.215	0.025	11.5	18.9	19.1
2013-04-01	**DS**	0.207	0.025	11.27	20.17	19.8
2013-04-02	**NS**	0.257	0.045	12.43	24.11	26.1
2013-04-02	**DS**	0.247	0.03	11.75	24.15	20.1
2013-04-03	**NS**	0.187	0.03	18.16	5.2	4.81
2013-04-03	**DS**	0.270	0.02	5.88	15.91	8.44
2013-04-04	**NS**	0.253	0.02	3.27	1.77	0.865
2013-04-04	**DS**	0.282	0.01	4.95	2.71	0.613
2013-04-05	**NS**	0.280	0.01	5.05	3.41	0.929
2013-04-05	**DS**	0.253	0.02	11.05	20.8	20.5
2013-04-06	**NS**	0.277	0.02	18.43	39.63	53.9
2013-04-06	**DS**	0.290	0.04	14.75	33.88	40.5
2013-04-07	**NS**	0.283	0.03	11.78	21.1	17
2013-04-07	**DS**	0.440	0.025	6.56	2.84	2.79
2013-04-08	**NS**	0.710	0.02	5.86	10.06	9.57
2013-04-08	**DS**	0.815	0.03	6.19	6.64	4.91
2013-04-09	**NS**	0.896	0.03	7.52	8.22	4.98
2013-04-09	**DS**	0.960	0.03	10.82	10.73	14.9
2013-04-10	**NS**	0.897	0.05	10.41	11.9	14.3
2013-04-10	**DS**	0.623	0.05	14.12	23.14	27.6
2013-04-11	**NS**	0.340	0.04	21.16	35.42	48.8
2013-04-11	**DS**	0.267	0.02	21.07	45.85	71.7
2013-04-12	**NS**	0.320	0.04	22.28	41.63	59.5
2013-04-12	**DS**	0.353	0.03	26.86	24.37	17.1
2013-04-13	**NS**	0.647	0.035	25.9	10.55	7.05
2013-04-13	**DS**	0.487	0.03	18.33	6.97	2.32
2013-04-14	**NS**	0.567	0.02	21.01	8.34	9.31
2013-04-14	**DS**	0.677	0.025	12.61	14.29	11.7
2013-04-15	**NS**	0.608	0.015	10	16.41	15.9
2013-04-15	**DS**	0.347	0.045	12.22	19.3	18.7
2013-04-16	**NS**	0.177	0.035	16.1	37.88	63
2013-04-16	**DS**	0.180	0.06	18.03	43.72	66.2
2013-04-17	**NS**	0.143	0.045	7.61	25.83	22.2
2013-04-17	**DS**	0.177	0.04	3.12	15.84	11.5
2013-04-18	**NS**	0.173	0.025	4.27	18.43	15.4
2013-04-18	**DS**	0.273	0.03	3.28	14.09	8.05
2013-04-19	**NS**	0.297	0.03	3.84	13.75	7.67
2013-04-19	**DS**	0.283	0.035	3.28	15.71	16
2013-04-20	**NS**	0.207	0.03	2.65	15.69	16.6
2013-04-20	**DS**	0.200	0.03	1.65	16.4	10
2013-04-21	**NS**	0.167	0.04	1.41	17.08	15.2
2013-04-21	**DS**	0.193	0.035	0.57	4.08	1.69
2013-04-22	**NS**	0.170	0.04	0.62	4.54	1.69
2013-04-22	**DS**	0.150	0.03	1.22	11.33	9.4
2013-04-23	**NS**	0.147	0.02	1.31	10.54	7.54
2013-04-23	**DS**			0	0	0
2013-04-24	**NS**			0	0	0
2013-04-24	**DS**			0	0	0
2013-04-25	**NS**			0	0	0
2013-04-25	**DS**			0	0	0
2013-04-26	**NS**			0	0	0
2013-04-26	**DS**			0	0	0
2013-04-27	**NS**	3.190	0.055	4.92	36.11	35.9
2013-04-27	**DS**	0.097	0.015	1.69	29.09	37.7
2013-04-28	**NS**	0.117	0.03	4.89	35.16	38.7
2013-04-28	**DS**	0.110	0.03	3.48	39.48	21.9
2013-04-29	**NS**	0.097	0.02	3.35	26.6	19.6
2013-04-29	**DS**	0.130	0.045	1.98	16.57	9.48
2013-04-30	**NS**	0.093	0.03	1.9	19.96	6.27
2013-04-30	**DS**	0.103	0.04	1.27	15.59	8.11
2013-05-01	**NS**	0.103	0.02	2.55	25	16.5
2013-05-01	**DS**	0.137	0.015	0.82	15.71	9.6
2013-05-02	**NS**	0.113	0.055	1.76	16.13	9.54
2013-05-02	**DS**	0.133	0.03	1.78	21.96	17.7
2013-05-03	**NS**	0.117	0.04	1.22	20.98	11.9
2013-05-03	**DS**	0.137	0.02	0.59	7.77	1.88

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-05-04	NS	0.110	0.03	1.04	3.55	0.484
2013-05-04	DS	0.160	0.025	1.45	15.55	11.5
2013-05-05	NS	0.143	0.03	9.78	57.75	98
2013-05-05	DS	0.130	0.035	5.24	42.98	64.7
2013-05-06	NS	0.123	0.03	6.27	45.41	66.5
2013-05-06	DS	0.133	0.025	5.35	43.89	56.9
2013-05-07	NS	0.137	0.04	6.3	45.1	70.6
2013-05-07	DS	0.127	0.06	7.79	51.9	98.9
2013-05-08	NS	0.103	0.03	7.37	55.59	84
2013-05-08	DS	0.147	0.015	10.18	57.83	105
2013-05-09	NS	0.140	0.015	8.93	42.77	81.3
2013-05-09	DS	0.160	0.055	6.65	44.49	73.4
2013-05-10	NS	0.162	0.01	1.35	7.35	5.7
2013-05-10	DS	0.127	0.03	2.89	21.76	7.29
2013-05-11	NS	0.163	0.035	0.64	4.51	0.741
2013-05-11	DS	0.103	0.035	0.79	7.38	1.03
2013-05-12	NS	0.123	0.03	0.87	4.17	0.444
2013-05-12	DS	0.137	0.02	1.13	5.06	0.844
2013-05-13	NS	0.150	0.03	0.96	11.21	2.21
2013-05-13	DS	0.120	0.04	1.56	8.38	1.44
2013-05-14	NS	0.120	0.045	1.17	5.85	0.72
2013-05-14	DS	0.120	0.03	1.57	5.96	1.79
2013-05-15	NS	0.113	0.05	2.59	15.48	8.89
2013-05-15	DS	0.133	0.04	8.2	46.9	80.4
2013-05-16	NS	0.310	0.035	5.29	38.77	55.6
2013-05-16	DS	0.137	0.05	1.88	11.84	4.22
2013-05-17	NS	0.173	0.045	1.81	1.75	0.338
2013-05-17	DS	0.167	0.065	3.45	4.93	1.9
2013-05-18	NS	0.193	0.06	4.53	14.11	7.92
2013-05-18	DS	0.168	0.055	4.5	10.23	3.98
2013-05-19	NS	0.160	0.04	4.04	9.29	5.08
2013-05-19	DS	0.223	0.06	4.47	12.49	5.72
2013-05-20	NS	0.160	0.05	4.83	13.47	6.35
2013-05-20	DS	0.150	0.045	4.68	21.57	18.2
2013-05-21	NS	0.133	0.03	5.3	31.75	39.4
2013-05-21	DS	0.127	0.055	5.37	28.14	34.1
2013-05-22	NS	0.103	0.05	3.51	25.25	31.8
2013-05-22	DS	0.123	0.065	3.83	17.38	16.2
2013-05-23	NS	0.140	0.055	3.47	20.19	19
2013-05-23	DS	0.180	0.055	3.71	21.16	18.3
2013-05-24	NS	0.215	0.06	3.94	24.21	26.2
2013-05-24	DS	0.210	0.08	4.54	26.13	25.8
2013-05-25	NS	0.197	0.08	5.03	26.06	28.9
2013-05-25	DS	0.303	0.07	18.71	21.22	17.5
2013-05-26	NS	0.277	0.05	4.33	22.76	20.3
2013-05-26	DS	0.233	0.04	4.65	24.4	28.1
2013-05-27	NS	0.170	0.035	3.82	24.03	23.3
2013-05-27	DS	0.167	0.04	4.6	25.55	22.2
2013-05-28	NS	0.117	0.035	3.87	25.88	27.7
2013-05-28	DS	0.113	0.015	3.47	20.86	10
2013-05-29	NS	0.123	0.02	2.82	18.86	9.2
2013-05-29	DS	0.107	0.03	2.67	15.3	5.97
2013-05-30	NS	0.113	0.03	2.62	16.94	9.9
2013-05-30	DS	0.140	0.025	3.67	39.37	56.5
2013-05-31	NS	0.103	0.05	2.28	25.39	25.4
2013-05-31	DS	0.060	0.04	6.12	30.99	34.6
2013-06-01	NS	0.097	0.095	2.62	28.7	27.2
2013-06-01	DS	0.107	0.055	2.2	19.78	21.9
2013-06-02	NS	0.097	0.04	2.47	26.69	16.3
2013-06-02	DS	0.110	0.035	2.47	21.23	9.23
2013-06-03	NS	0.127	0.06	3.24	24.57	25.3
2013-06-03	DS	0.170	0.02	3.88	21.73	16.6
2013-06-04	NS	0.140	0.045	2.64	11.69	4.44
2013-06-04	DS	0.167	0.055	2.54	10.92	4.61
2013-06-05	NS	0.136	0.065	22.53	33.02	31.8
2013-06-05	DS	0.113	0.04	3.04	25.1	23.3
2013-06-06	NS	0.080	0.065	13.36	25.38	19.9
2013-06-06	DS	0.120	0.035	0.84	6.08	1.26
2013-06-07	NS	0.087	0.04	0.85	4.55	0.883
2013-06-07	DS	0.117	0.05	1.91	8.47	4.04
2013-06-08	NS	0.113	0.065	0.85	10.96	3.94
2013-06-08	DS	0.123	0.04	0.76	6.92	1.76
2013-06-09	NS	0.115	0.05	0.79	4.1	0.602
2013-06-09	DS	0.187	0.035	0.82	3.35	0.738
2013-06-10	NS	0.207	0.04	3.15	15.58	8.81
2013-06-10	DS	0.143	0.035	2.25	14.44	9.23
2013-06-11	NS	0.120	0.035	2.55	25.04	26.7
2013-06-11	DS	0.120	0.02	0.93	15.8	9.11
2013-06-12	NS	0.100	0.04	3.47	30.31	27.2
2013-06-12	DS	0.100	0.035	2.86	32.16	34.5
2013-06-13	NS	0.097	0.025	3.39	31.39	31.4
2013-06-13	DS	0.077	0.03	3.59	30.67	28.6

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)					
		Solid	Solution				
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-06-14	NS	0.092	0.04	2.69	27.83	22.4
2013-06-14	DS	0.077	0.035	2.35	24.59	21.2
2013-06-15	NS	0.287	0.025	2.42	19.06	8.77
2013-06-15	DS	0.110	0.02	0.64	4.67	2.37
2013-06-16	NS	0.100	0.035	1.11	2.39	0.221
2013-06-16	DS	0.090	0.025	0.91	7.54	1.52
2013-06-17	NS	0.107	0.03	0.95	1.11	0.229
2013-06-17	DS	0.120	0.02	0.55	3.39	7.79
2013-06-18	NS	0.120	0.025	0.49	3.23	0.272
2013-06-18	DS	0.100	0.045	0.79	2.75	0.221
2013-06-19	NS	0.110	0.045	0.79	0.67	0.621
2013-06-19	DS	0.120	0.06	0.54	1.9	0.345
2013-06-20	NS	0.100	0.04	1.3	4.72	0.712
2013-06-20	DS	0.103	0.045	1.71	0.92	1.14
2013-06-21	NS	0.100	0.02	1.92	0.84	0.507
2013-06-21	DS	0.107	0.03	2.01	5.88	2.61
2013-06-22	NS	0.090	0.02	1.15	4.61	0.684
2013-06-22	DS	0.087	0.03	1.34	6.95	3.26
2013-06-23	NS	0.123	0.03	1.09	3.36	0.465
2013-06-23	DS	0.183	0.045	1.61	2.86	0.387
2013-06-24	NS	0.117	0.015	1.46	0.87	0.38
2013-06-24	DS	0.130	0.045	0.73	0.54	0.274
2013-06-25	NS	0.083	0.01	1.78	1.47	0.592
2013-06-25	DS	0.110	0.02	1.42	1.37	0.883
2013-06-26	NS	0.120	0.02	2.53	3.79	2.07
2013-06-26	DS	0.130	0.035	2.04	2.89	1.44
2013-06-27	NS	0.150	0.035	2.53	2.16	0.42
2013-06-27	DS	0.160	0.115	2.75	5.36	3.6
2013-06-28	NS	0.220	0.08	2.53	0.93	0.337
2013-06-28	DS	0.337	0.04	3	2.25	0.59
2013-06-29	NS	0.287	0.04	3.11	2.48	1.16
2013-06-29	DS	0.377	0.03	3.37	3.32	0.846
2013-06-30	NS	0.325	0.025	3.19	3.64	1.35
2013-06-30	DS	0.177	0.025	3.5	5.73	4.62
2013-07-01	NS	0.133	0.045	3.68	6.84	5.04
2013-07-01	DS	0.117	0.04	3	6.76	3.54
2013-07-02	NS	0.103	0.015	3.04	5.61	4.47
2013-07-02	DS	0.113	0.065	2.63	6.97	5.19
2013-07-03	NS	0.117	0.03	2.57	4.59	2.63
2013-07-03	DS	0.107	0.035	2.52	6.73	3.62
2013-07-04	NS	0.117	0.055	2.93	16.73	18.8
2013-07-04	DS	0.100	0.04	2.89	18.09	21.1
2013-07-05	NS	0.283	0.045	2.76	6.63	4.06
2013-07-05	DS	0.417	0.03	2.39	1.74	0.611
2013-07-06	NS	0.574	0.035	2.98	9.16	10.1
2013-07-06	DS	0.213	0.025	3.12	15.8	19.7
2013-07-07	NS	0.187	0.05	3.72	22.16	34.3
2013-07-07	DS	0.163	0.045	3.57	24.07	34.5
2013-07-08	NS	0.157	0.045	4.24	27.26	25.3
2013-07-08	DS	0.147	0.055	3.64	21.66	28
2013-07-09	NS	0.155	0.035	3.64	20.38	35.8
2013-07-09	DS	0.315	0.045	3.4	24.55	35.3
2013-07-10	NS	0.120	0.05	4.34	29.17	38.5
2013-07-10	DS	0.117	0.08	3.5	30.53	41.6
2013-07-11	NS	0.117	0.05	3.64	27.54	39.9
2013-07-11	DS	0.127	0.06	3.28	21.7	40.4
2013-07-12	NS	0.133	0.065	4.54	24.21	41
2013-07-12	DS	0.130	0.06	3.38	21.26	25.6
2013-07-13	NS	0.140	0.05	3.1	21.8	19.8
2013-07-13	DS	0.130	0.05	2.14	17.68	16.8
2013-07-14	NS	0.117	0.055	1.47	17.59	13.3
2013-07-14	DS	0.143	0.045	0.64	9.71	5.5
2013-07-15	NS	0.207	0.05	0.91	0.95	0.231
2013-07-15	DS	0.143	0.04	2.09	12.92	10
2013-07-16	NS	0.162	0.065	1.48	14.13	8.43
2013-07-16	DS	0.167	0.065	2.22	7.36	6.05
2013-07-17	NS	0.193	0.075	2.94	12.67	6.94
2013-07-17	DS	0.340	0.055	1.75	14.32	17.3
2013-07-18	NS	0.110	0.055	6.49	32.46	45.9
2013-07-18	DS	0.147	0.07	4.5	25.24	30.1
2013-07-19	NS	0.143	0.03	3.64	21.43	26
2013-07-19	DS	0.175	0.04	2.25	2.05	1.69
2013-07-20	NS	0.203	0.05	2.23	1.8	0.925
2013-07-20	DS	0.227	0.05	2.78	7.31	4.61
2013-07-21	NS	0.127	0.04	2.9	5.64	2.45
2013-07-21	DS	0.173	0.115	3.68	4.86	3.72
2013-07-22	NS	0.167	0.04	3.37	1.42	0.586
2013-07-22	DS	0.153	0.055	2.41	1.85	1.31
2013-07-23	NS	0.150	0.035	2.55	4.62	1.52
2013-07-23	DS	0.110	0.05	2.23	8.5	3.26
2013-07-24	NS	0.093	0.04	1.84	3.8	1.06
2013-07-24	DS	0.137	0.045	1.84	4.21	1.4

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-07-25	NS	0.120	0.04	1.27	1.16	0.42
2013-07-25	DS	0.130	0.04	1.35	1.41	0.528
2013-07-26	NS	0.157	0.035	2.53	3.79	2.07
2013-07-26	DS	0.137	0.05	1.35	2.15	1.18
2013-07-27	NS	0.140	0.08	2.73	9.18	4.92
2013-07-27	DS	0.153	0.05	2.79	8.44	6.58
2013-07-28	NS	0.213	0.135	3.1	6.57	5.03
2013-07-28	DS	0.210	0.11	3.14	6.5	4.18
2013-07-29	NS	0.127	0.07	3.94	9.9	8.35
2013-07-29	DS	0.153	0.07	3.79	14.29	6.49
2013-07-30	NS	0.150	0.055	4.09	13.51	11.3
2013-07-30	DS	0.150	0.06	3.12	12.06	9.87
2013-07-31	NS	0.123	0.08	3.42	13.21	13.7
2013-07-31	DS	0.187	0.055	2.18	9.48	9.02
2013-08-01	NS	0.113	0.050	2.72	11.85	14.3
2013-08-01	DS	0.153	0.050	3.13	11.79	22.5
2013-08-02	NS	0.087	0.065	3.76	11.75	24.9
2013-08-02	DS	0.203	0.075	3.81	7.98	16.8
2013-08-03	NS	0.167	0.065	4.84	6.1	10.3
2013-08-03	DS	0.140	0.075	4.41	8.33	13.9
2013-08-04	NS	0.140	0.050	4.06	9.95	11.5
2013-08-04	DS	0.163	0.055	3.77	11.83	15.6
2013-08-05	NS	0.117	0.065	4.52	13.86	19.1
2013-08-05	DS	0.107	0.075	4.31	13.41	18
2013-08-06	NS	0.113	0.070	5.21	17.98	27.1
2013-08-06	DS	0.100	0.075	5.7	20.59	34.5
2013-08-07	NS	0.133	0.060	4.76	16.1	23.3
2013-08-07	DS	0.207	0.065	5.18	18.64	22.6
2013-08-08	NS	0.217	0.060	4.07	12.53	7.67
2013-08-08	DS	0.123	0.060	3.2	12.72	7.79
2013-08-09	NS	0.140	0.055	3.48	21.04	25.8
2013-08-09	DS	0.162	0.060	3.19	30.52	30
2013-08-10	NS			0	0	0
2013-08-10	DS			0	0	0
2013-08-11	NS			0	0	0
2013-08-11	DS			0	0	0
2013-08-12	NS	0.153	0.055	6.54	11.08	15.4
2013-08-12	DS	0.100	0.040	3.17	2.81	1.01
2013-08-13	NS	0.130	0.040	2.99	14.14	16.1
2013-08-13	DS	0.103	0.050	6.71	38.95	68.5
2013-08-14	NS	0.130	0.045	4.51	31.89	46.8
2013-08-14	DS	0.163	0.065	3.31	26.73	34.3
2013-08-15	NS	0.170	0.065	2.21	4.99	2.62
2013-08-15	DS	0.222	0.055	3.28	12.63	10.3
2013-08-16	NS	0.217	0.055	2.36	5.7	4.95
2013-08-16	DS	0.197	0.065	2.61	10.94	7.58
2013-08-17	NS	0.230	0.090	2.96	14.72	22
2013-08-17	DS	0.173	0.090	2.62	15.2	17.6
2013-08-18	NS	0.183	0.080	2.5	13.82	17.3
2013-08-18	DS	0.173	0.090	2.11	7.37	4.49
2013-08-19	NS	0.203	0.065	2.09	14.24	17
2013-08-19	DS	0.180	0.090	2.6	18.94	22.1
2013-08-20	NS	0.203	0.050	1.92	15.12	15.2
2013-08-20	DS	0.160	0.100	2.83	21.31	21.9
2013-08-21	NS	0.277	0.060	1.82	19.03	18.9
2013-08-21	DS	0.185	0.055	3.11	22.94	29.6
2013-08-22	NS	0.223	0.110	3.04	26.94	32.4
2013-08-22	DS	0.143	0.090	3.17	29.82	41
2013-08-23	NS	0.263	0.090	2.79	26.56	35.1
2013-08-23	DS	0.230	0.080	2.5	25.83	34.4
2013-08-24	NS	0.303	0.130	1.2	20.63	25.6
2013-08-24	DS	0.203	0.085	3	22.58	35.7
2013-08-25	NS	0.277	0.085	2.2	18.59	27.1
2013-08-25	DS	0.190	0.100	1.34	19.9	19.7
2013-08-26	NS	0.300	0.110	1.85	16.46	27.1
2013-08-26	DS	0.190	0.170	3.82	28.51	44.1
2013-08-27	NS	0.343	0.165	3.96	25.55	35.4
2013-08-27	DS	0.153	0.125	4.41	28.88	42.8
2013-08-28	NS	0.223	0.175	4.9	27.67	45.4
2013-08-28	DS	0.130	0.290	5.97	38.77	70.3
2013-08-29	NS	0.157	0.080	6.27	43.23	83.1
2013-08-29	DS	0.123	0.180	7.07	45.81	93.4
2013-08-30	NS	0.113	0.065	6.53	45.95	87.3
2013-08-30	DS	0.242	0.125	5.44	36.7	60
2013-08-31	NS	0.143	0.085	3.06	23.13	29
2013-08-31	DS	0.147	0.085	2.52	18.8	24.2
2013-09-01	NS	0.140	0.100	2.6	21.12	26.9
2013-09-01	DS	0.208	0.090	1.45	22.38	22.2
2013-09-02	NS	0.453	0.150	1.83	22.88	19.6
2013-09-02	DS	0.133	0.080	1.25	18.34	10.5
2013-09-03	NS	0.208	0.175	2.8	18.93	17.2
2013-09-03	DS	0.163	0.100	2.61	10.25	5.16

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-09-04	NS	0.187	0.095	3.14	8.07	3.21
2013-09-04	DS	0.327	0.110	3.03	7.92	3.43
2013-09-05	NS	0.510	0.115	4.51	9.2	3.3
2013-09-05	DS	0.393	0.075	3.25	7.79	3.54
2013-09-06	NS	0.358	0.095	3.82	6.59	2.71
2013-09-06	DS	0.283	0.085	3.66	7.94	3.34
2013-09-07	NS	0.187	0.095	5.26	11.25	9.2
2013-09-07	DS	0.290	0.090	4.76	6.11	4.15
2013-09-08	NS	0.157	0.090	5.64	15.73	24.5
2013-09-08	DS	0.150	0.110	4.64	14.5	15.7
2013-09-09	NS	0.135	0.140	4.57	17.03	15.4
2013-09-09	DS	0.217	0.140	4.25	18.91	24.4
2013-09-10	NS	0.163	0.105	4.73	28.35	40.8
2013-09-10	DS	0.407	0.100	4.4	26.22	40.3
2013-09-11	NS	0.207	0.085	2.39	19.33	17.7
2013-09-11	DS	0.797	0.035	1.63	13.61	10.5
2013-09-12	NS	0.390	0.040	2.48	19.78	20.3
2013-09-12	DS	0.233	0.055	2.67	18.04	17.9
2013-09-13	NS	0.160	0.040	2.62	20.7	22.5
2013-09-13	DS	0.187	0.025	2.43	22.74	25.7
2013-09-14	NS	0.190	0.040	3.73	31.97	39.3
2013-09-14	DS	0.167	0.020	2.73	26.47	32.4
2013-09-15	NS	0.163	0.030	1.44	24.19	31.7
2013-09-15	DS	0.253	0.100	14.05	34.4	17.3
2013-09-16	NS	0.203	0.060	1.56	25.23	20.4
2013-09-16	DS	0.180	0.085	2.11	21.59	20.8
2013-09-17	NS	0.150	0.055	1.26	22.75	17.6
2013-09-17	DS	0.563	0.035	0.67	13.43	8.09
2013-09-18	NS	0.170	0.025	0.86	21.19	10.4
2013-09-18	DS			0	0	0
2013-09-19	NS			0	0	0
2013-09-19	DS	0.120	0.010	1.09	2.85	0.628
2013-09-20	NS	0.143	0.030	1.38	5.53	1.56
2013-09-20	DS	0.142	0.010	1.93	13.21	5.46
2013-09-21	NS	0.123	0.030	2.1	14.43	5.08
2013-09-21	DS	0.080	0.015	2.39	19.71	17.6
2013-09-22	NS	0.077	0.020	4.02	27.95	29.5
2013-09-22	DS	0.113	0.030	4.09	26.11	24.2
2013-09-23	NS	0.120	0.025	6.51	30.51	64.6
2013-09-23	DS	0.093	0.020	4.82	29.13	38.8
2013-09-24	NS	0.126	0.110	3.14	26.38	24.9
2013-09-24	DS	0.107	0.030	4.02	27.62	45
2013-09-25	NS	0.073	0.015	2.2	20.06	22.4
2013-09-25	DS	0.113	0.030	3.4	26.78	40.2
2013-09-26	NS	0.150	0.035	6.05	40.2	82.8
2013-09-26	DS	0.133	0.080	6.4	35.33	89
2013-09-27	NS	0.117	0.025	10.52	43.61	94.3
2013-09-27	DS	0.160	0.030	6.34	29.7	57.4
2013-09-28	NS	0.133	0.025	7.4	23.64	39.5
2013-09-28	DS	0.163	0.020	8.55	22.54	47.2
2013-09-29	NS	0.120	0.020	10.02	24.52	41.3
2013-09-29	DS	0.147	0.040	7.87	26.26	20.2
2013-09-30	NS	0.180	0.025	10.39	23.89	17.4
2013-09-30	DS	0.173	0.030	8.6	30.03	34.2
2013-10-01	NS	0.153	0.025	6.95	21.99	17.4
2013-10-01	DS	0.150	0.045	7.16	23.82	32.8
2013-10-02	NS	0.140	0.020	8.11	28.51	30.7
2013-10-02	DS	0.173	0.035	8.66	31.45	39.2
2013-10-03	NS	0.123	0.035	6.36	25.33	27
2013-10-03	DS	0.137	0.020	7.17	21.29	16.7
2013-10-04	NS	0.148	0.020	5.36	14.54	4.87
2013-10-04	DS	0.140	0.035	5.48	18.99	8.51
2013-10-05	NS	0.133	0.035	4.02	21.7	9.4
2013-10-05	DS	0.153	0.020	1.1	9.99	3.72
2013-10-06	NS	0.130	0.040	1.18	21.12	6.27
2013-10-06	DS	0.150	0.030	0.69	17.72	8.68
2013-10-07	NS	0.153	0.015	0.85	18.87	7.11
2013-10-07	DS	0.180	0.030	0.46	12.63	8
2013-10-08	NS	0.163	0.020	0.52	1.09	0.84
2013-10-08	DS	0.160	0.030	1.37	14.21	9.02
2013-10-09	NS	0.150	0.020	0.81	6.18	2.07
2013-10-09	DS	0.117	0.010	0.9	5.58	6.05
2013-10-10	NS	0.120	0.020	3.57	30.4	33.6
2013-10-10	DS	0.173	0.065	3.54	33.12	40.5
2013-10-11	NS	0.140	0.020	3.97	37.06	35.1
2013-10-11	DS	0.167	0.020	4.24	35.5	41.7
2013-10-12	NS	0.160	0.020	3.53	26.66	17.6
2013-10-12	DS	0.220	0.013	2.44	26.18	31.1
2013-10-13	NS	0.223	0.015	1.36	23.95	24.6
2013-10-13	DS	0.188	0.020	2.82	30.07	35.9
2013-10-14	NS	0.193	<0.01	4.84	36.69	31.2
2013-10-14	DS	0.223	0.040	4.77	34.65	42.5

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-10-15	NS	0.223	0.035	4.87	31.41	30.6
2013-10-15	DS	0.200	0.030	7.96	36.92	32.3
2013-10-16	NS	0.187	<0.01	5.67	27.96	21
2013-10-16	DS	0.180	0.020	3.77	25.81	13.9
2013-10-17	NS	0.190	0.030	4.66	29.26	35.2
2013-10-17	DS	0.162	0.040	3.2	28.88	25.7
2013-10-18	NS	0.187	0.025	4.76	31.27	43.2
2013-10-18	DS	0.150	0.030	5.25	35.21	49.1
2013-10-19	NS	0.147	0.015	3.92	29.94	43.2
2013-10-19	DS	0.267	0.020	3.79	30.25	38.3
2013-10-20	NS	0.173	0.030	4.22	27.93	37
2013-10-20	DS	0.187	0.035	5.16	26.84	21.3
2013-10-21	NS	0.243	0.025	4.36	22.48	26.4
2013-10-21	DS	0.220	0.030	5.03	27.52	23.3
2013-10-22	NS	0.190	0.030	5.81	34.35	0
2013-10-22	DS	0.193	0.045	4.28	29.24	22.6
2013-10-23	NS	0.203	0.030	3.91	23.24	26.3
2013-10-23	DS	0.232	0.020	4.66	22.57	19.8
2013-10-24	NS	0.167	0.020	4.9	27.65	29.7
2013-10-24	DS	0.177	0.025	3.87	25.44	20.6
2013-10-25	NS	0.147	0.020	4.32	34.91	41.6
2013-10-25	DS	0.192	0.020	6.15	32.14	41
2013-10-26	NS	0.137	0.025	2.25	26.45	17.5
2013-10-26	DS	0.122	0.030	2.77	32.11	24.5
2013-10-27	NS	0.123	0.020	1.57	29.45	30.1
2013-10-27	DS	0.083	0.025	1.25	25.32	20.1
2013-10-28	NS	0.100	0.010	1.87	25.57	28.9
2013-10-28	DS	0.110	0.060	1.17	26.38	20
2013-10-29	NS	0.190	0.030	3.68	31.31	34.1
2013-10-29	DS	0.183	0.025	1.83	21.75	21.7
2013-10-30	NS	0.173	0.020	1.37	15	8.17
2013-10-30	DS	0.173	<0.01	3.81	20.13	20.3
2013-10-31	NS	0.180	0.025	3.65	19.11	20.3
2013-10-31	DS	0.217	0.025	5.85	30.63	38.3
2013-11-01	NS	0.187	0.020	6.69	31.16	35.2
2013-11-01	DS			0		0
2013-11-02	NS			0		0
2013-11-02	DS			0		0
2013-11-03	NS			0		0
2013-11-03	DS			0		0
2013-11-04	NS			0		0
2013-11-04	DS			0		0
2013-11-05	NS			0		0
2013-11-05	DS	0.460	0.030	7.81	5.11	7.58
2013-11-06	NS	0.140	0.020	1.81	4.76	1.35
2013-11-06	DS	0.167	0.010	1.83	4.68	1.56
2013-11-07	NS	0.223	<0.01	2.02	10.38	4.57
2013-11-07	DS	0.333	0.015	4.04	10.3	4.7
2013-11-08	NS	0.440	0.025	6.16	9.29	4.87
2013-11-08	DS	0.467	0.080	3.98	12.49	18.7
2013-11-09	NS	0.492	0.030	3.94	11.64	6.05
2013-11-09	DS	0.322	0.025	3.93	13.74	9.28
2013-11-10	NS	0.283	0.025	7.04	26.38	34.1
2013-11-10	DS	0.200	0.138	5.95	34.09	41.1
2013-11-11	NS	0.167	0.060	6.01	32.45	38
2013-11-11	DS	0.180	0.020	4.56	26.26	39.6
2013-11-12	NS	0.187	0.020	3.56	31.59	32.8
2013-11-12	DS	0.163	0.013	4.5	32.31	34.4
2013-11-13	NS	0.097	0.010	3.45	31.12	35.5
2013-11-13	DS	0.147	0.020	3.16	31.6	34
2013-11-14	NS	0.133	0.015	1.31	20.63	23.3
2013-11-14	DS	0.170	0.025	0.31	8.72	4.19
2013-11-15	NS	0.204	0.010	1.04	17	9.15
2013-11-15	DS	0.203	0.020	0.46	15.88	14.5
2013-11-16	NS	0.204	0.015	0.75	16.91	8.81
2013-11-16	DS	0.308	0.020	0.33	6.68	3.6
2013-11-17	NS	0.322	0.025	1.49	10.39	7.41
2013-11-17	DS	0.473	0.025	2.24	18.28	10.5
2013-11-18	NS	0.403	0.020	1.81	17.13	10.5
2013-11-18	DS	0.342	0.015	2.74	27.37	27.1
2013-11-19	NS	0.210	0.020	3.22	29.65	35.6
2013-11-19	DS	0.183	0.020	4.13	30.28	39.6
2013-11-20	NS	0.137	0.020	3.53	30.9	40.3
2013-11-20	DS	0.133	0.020	4.13	29.8	40
2013-11-21	NS	0.170	0.010	2.79	29.92	37.6
2013-11-21	DS	0.133		2.79	31.45	41.3
2013-11-22	NS	0.130	0.105	3.68	28.6	34.5
2013-11-22	DS	0.103	0.020	4.25	35.15	50.7
2013-11-23	NS	0.097	0.020	1.67	10.41	5.21
2013-11-23	DS	0.140	0.025	1	3.46	63
2013-11-24	NS	0.150	0.020	1.92	4.77	1.35
2013-11-24	DS	0.147	0.025	1.3	8.68	3.58

MILL EFFLUENT (FINAL TAILS 360-SA-008)

Metal and Cyanide

		Final tails (360-SA-008)				
		Solid	Solution			
Date	Shift	Au (g/t)	Au (mg/L)	Iron (mg/L)	Copper (mg/L)	CN-WAD (ppm)
2013-11-25	NS	0.143	0.020	1.23	4.03	1.65
2013-11-25	DS	0.250	0.010	1.04	6.9	4.15
2013-11-26	NS	0.173	0.010	1.01	9.77	8.23
2013-11-26	DS	0.187	0.055	0.56	12.13	6.61
2013-11-27	NS	0.177	0.025	0.83	10.31	6.39
2013-11-27	DS	0.153	0.035	1.07	13.4	6.65
2013-11-28	NS	0.130	0.020	0.67	13.43	8.89
2013-11-28	DS	0.133	0.025	0.6	13.8	9.45
2013-11-29	NS	0.180	0.030	0.51	18.07	15.8
2013-11-29	DS	0.343	0.020	0.41	10.88	6.1
2013-11-30	NS	0.110	0.020	0.53	7.35	5.08
2013-11-30	DS	0.093	0.025	0.48	10.67	6.61
2013-12-01	NS	0.190	0.020	0.57	8.64	4.99
2013-12-01	DS	0.103	0.030	1.22	16.41	16.6
2013-12-02	NS	0.127	0.020	3.66	32.65	40.2
2013-12-02	DS	0.127	0.075	3.05	32.91	39.6
2013-12-03	NS	0.213	0.020	3.87	38.07	47
2013-12-03	DS	0.150	0.050	2.61	32.08	39
2013-12-04	NS	0.160	0.010	2.04	27.48	36
2013-12-04	DS	0.232	0.045	2.75	30.27	36.2
2013-12-05	NS	0.426	0.035	1.68	27.66	34.1
2013-12-05	DS	0.167	0.025	2.48	26.63	33.8
2013-12-06	NS	0.210	0.025	1.63	27.9	35.5
2013-12-06	DS	0.170	0.045	1.67	27.92	30
2013-12-07	NS	0.163	0.025	1.43	26.01	30.9
2013-12-07	DS	0.147	0.025	1.46	24.67	25.8
2013-12-08	NS	0.160	0.030	0.73	16.3	16.6
2013-12-08	DS	0.170	0.060	1.03	14.62	10.3
2013-12-09	NS	0.190	0.025	3.32	25.38	34.5
2013-12-09	DS	0.197	0.060	3.34	28.81	43.3
2013-12-10	NS	0.173	0.035	4.11	31.74	41.8
2013-12-10	DS	0.157	0.015	4.45	29.4	38.5
2013-12-11	NS	0.140	0.030	1.06	20.71	20.5
2013-12-11	DS	0.147	0.015	0.65	8.52	4.1
2013-12-12	NS	0.157	0.030	0.7	4.84	3.81
2013-12-12	DS	0.173	0.020	0.36	0.93	1.8
2013-12-13	NS	0.267	0.015	0.54	6.42	3.3
2013-12-13	DS	0.137	0.020	0.99	5.09	3.32
2013-12-14	NS	0.127	0.030	0.75	8.13	4.07
2013-12-14	DS	0.127	0.020	2.25	9.03	5.83
2013-12-15	NS	0.117	0.025	2.96	18.27	11.5
2013-12-15	DS	0.107	0.010	3.32	20.27	15.8
2013-12-16	NS	0.110	0.020	2.58	21.68	16.9
2013-12-16	DS	0.110	0.020	2.87	18.58	10.5
2013-12-17	NS	0.107	0.035	2.5	16.24	6.06
2013-12-17	DS	0.127	0.020	2.92	12.83	6.69
2013-12-18	NS	0.175	0.020	3.08	16.89	9.32
2013-12-18	DS	0.300	0.020	3.68	18.84	9.45
2013-12-19	NS	0.173	0.020	3.88	21.82	15.9
2013-12-19	DS	0.193	0.045	4.94	19.59	10.5
2013-12-20	NS	0.187	0.020	3.84	24.65	19.8
2013-12-20	DS	0.158	0.020	3.23	13.37	8.09
2013-12-21	NS	0.107	0.025	3.14	16.67	7.72
2013-12-21	DS	0.120	0.010	4.46	17.23	15.9
2013-12-22	NS	0.150	0.020	2.82	19.14	16.5
2013-12-22	DS	0.093	0.045	3.77	25.14	18
2013-12-23	NS	0.137	0.030	3.42	24.58	18.7
2013-12-23	DS	0.110	0.040	4	23.83	9.62
2013-12-24	NS	0.123	0.025	3.3	20.36	16.3
2013-12-24	DS	0.113	0.020	2.56	19.97	15.4
2013-12-25	NS	0.127	0.020	2.68	23.09	17.9
2013-12-25	DS	0.130	0.035	5.18	33.93	38.6
2013-12-26	NS	0.113	0.030	5.53	40.43	47.3
2013-12-26	DS	0.113	0.170	5.32	33.06	42.4
2013-12-27	NS	0.163	0.040	7.18	45.23	90.8
2013-12-27	DS	0.100	0.035	6.7	45.7	79.4
2013-12-28	NS	0.123	0.020	5.4	40.86	44.1
2013-12-28	DS	0.093	0.035	5.64	42.1	46.2
2013-12-29	NS	0.137	0.040	5.3	40.66	42.7
2013-12-29	DS	0.137	0.160	3.6	30.78	30.4
2013-12-30	NS	0.123	0.035	1.84	18.58	7.37
2013-12-30	DS	0.138	0.055	1.67	20.9	7.84
2013-12-31	NS	0.183	0.025	0.89	16.13	5.38
2013-12-31	DS	0.200	0.045	2.08	12.29	5.12

MILL EFFLUENT (ADDITIONAL TESTS)

DATE	Alkalinity	Aluminium (Al)	Dissolved Aluminium (Al)	Antimony (Sb)	Dissolved Antimony (Sb)	Silver (Ag)	Dissolved Silver (Ag)	Arsenic (As)	Dissolved Arsenic (As)	Barium (Ba)	Dissolved Barium (Ba)	Beryllium (Be)	Dissolved Beryllium (Be)	Bismuth (Bi)	Boron (B)	Dissolved Boron (B)
	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2013-11-11		1.29		0.0001		0.5847		0.2303		0.0895		<0.0005		<0.0005	0.52	
2013-11-11		1.21		<0.0001		0.0183		0.2129		0.0812		<0.0005		<0.0005	0.44	
2014-01-29	91	0.22	0.16	<0.02	0.003	<0.01	0.002	<0.05	0.022	0.17	0.14	<0.002	<0.002		0.39	0.37

	Cadmium (Cd)	Dissolved Cadmium (Cd)	Calcium (Ca)	Chloride	Chrome (Cr)	Dissolved Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Dissolved Copper (Cu)	Cynanide WAD	Total Cyanide (CNt)	Hardness	Tin (Sn)	Dissolved Tin (Sn)	Iron (Fe)	Dissolved Iron (Fe)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L
2013-11-11	0.01278		710	2247	0.0007		0.5794	9.189		176	181		<0.001		8.4	
2013-11-11	0.00956		640	2047	<0.0006		0.4891	5.002		159	165		<0.001		4.9	
2014-01-29	<0.01	<0.001		2129	<0.01	<0.005		25	7.8	0.898	18.80	1500	<0.05	<0.05	6.7	0.8

	Fluoride (F)	Lithium (Li)	Dissolved Lithium (Li)	Magnesium	Manganese (Mn)	Dissolved Manganese (Mn)	Mercury (Hg)	Dissolved Mercury (Hg)	Molybdenum (Mo)	Dissolved Molybdenum (Mo)	Ammonia (NH_3) (ionized)	Ammonia (NH3-NH4)	Nickel (Ni)	Dissolved Nickel (Ni)	Nitrate (NO_3)	Nitrite (NO2)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg N/L		mg/L	mg/L	mg N/L	
2013-11-11	0.36			0.63	0.0051		0.00063		0.6445				6.695			
2013-11-11	0.36			0.93	0.0038		0.00052		0.4291				3.491			
2014-01-29	0.41	<0.1	<0.1		<0.01	<0.003	<0.0001	<0.0001	0.81	0.75	11.8	71.5	0.06	<0.01	31.6	0.69

	Lead (Pb)	Dissolved Lead (Pb)	Potassium (K)	Selenium (Se)	Dissolved Selenium (Se)	Silica (Si)	Sodium (Na)	Strontium (Sr)	Dissolved Strontium (Sr)	Sulfate (SO_4)	Thallium (Tl)	Dissolved thallium (Tl)	Tellurium (Te)	Titanium (Ti)	Dissolved titanium (Ti)	Uranium (U)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg SO_4/L	mg/L	mg/L		mg/L	mg/L	mg/L
2013-11-11	0.0005		114	0.048		4.3	877			1341			<0.0005	0.95		<0.001
2013-11-11	0.0007		103	0.037		4.0	809			1403			<0.0005	0.85		<0.001
2014-01-29	<0.01	<0.001		0.19	0.17			2.5	2.3	2565	<0.01	<0.01		<0.05	<0.05	<0.02

	Dissolved Uranium (U)	Vanadium (V)	Dissolved Vanadium	Zinc (Zn)	Dissolved Zinc		
	mg/L	mg/L	mg/L	mg/L	mg/L		
2013-11-11		<0.0005		0.266		Certificat V-31299	before cyanide destruction
2013-11-11		<0.0005		0.116		Certificat V-31300	
2014-01-29	0.003	<0.01	<0.01	<0.02	<0.005	Certificat V-32370	final tailings

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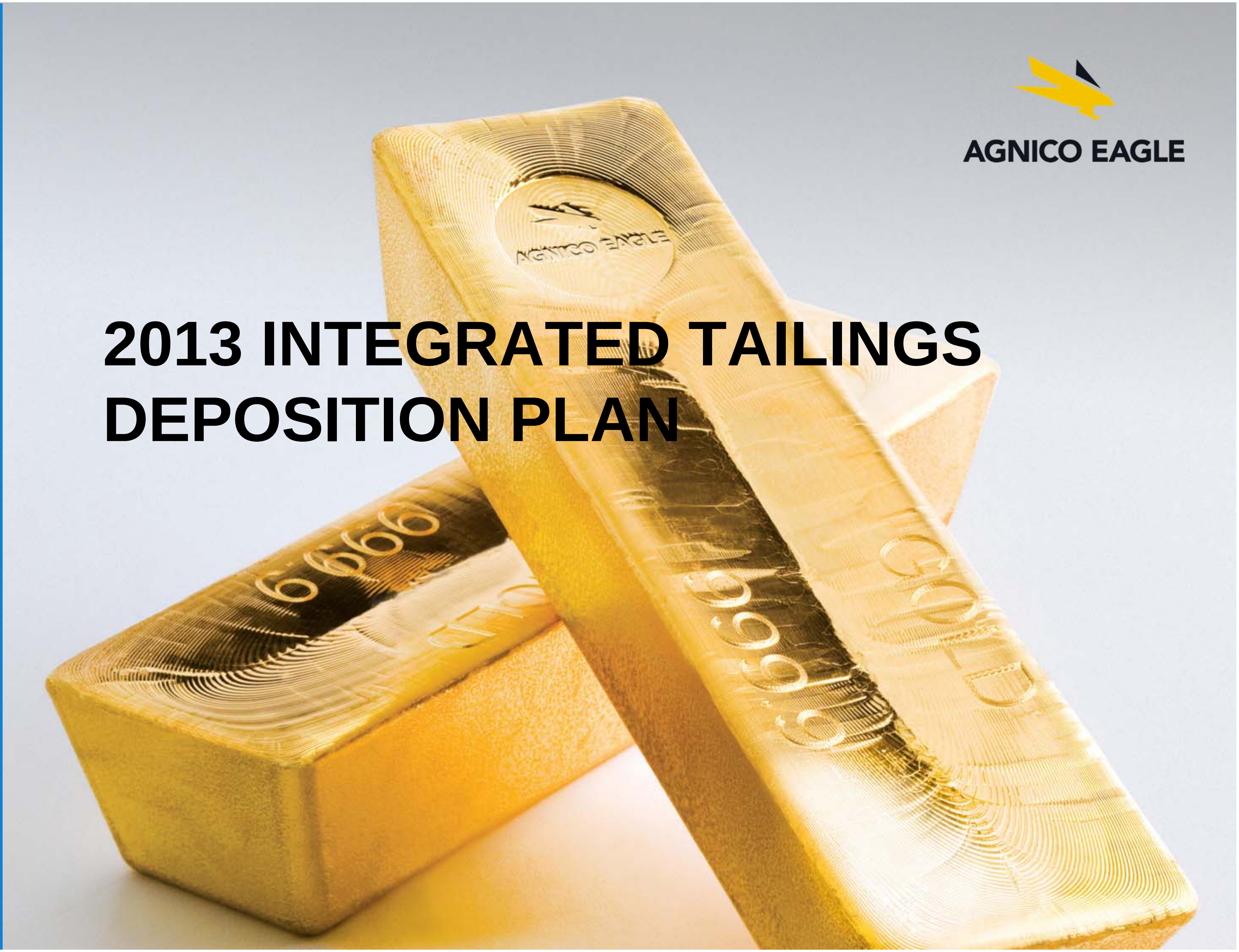
APPENDIX E – 2013 INTEGRATED TAILINGS DEPOSITION PLAN

AGNICO EAGLE



2013 INTEGRATED TAILINGS DEPOSITION PLAN

TSF Historical Information

WINTER 2012/2013

•During this period we ran into problems with our booster pump which prevented deposition at the northern deposition points of the North Cell (NC)

- Deposition from the South put the reclaim barge in jeopardy by pushing the reclaim pond North and creating preferencial channels towards the barge
- The decision was then taken to build an internal structure to act as a reclaim barge barrier from the southern tailings deposition

•A water deficit in the cell also led to the reclaim barge pumping tailings (water with high level of suspended solids)

- A diesel pump was subsequently used to pump reclaim water due to the shutdwon of the reclaim barge to prevent further damage

•The June 2013 bathymetry showed that the reclaim pond had been pushed North leading to the analysis of a new reclaim barge location in the NC

- From the analysis completed it was determined that the current location of the reclaim barge is optimal requiring two protective structures (North & South) to protect from the western and southern deposition points.

North Cell TSF model guideline

GUIDELINE

- Avoiding ice accumulation on the dike liner;
- Prevent tailings beach to reach the reclaim barge;
- Reclaim water pond maximum elevation of 148m;
- A minimum of two days per month of discharge by the by-pass of the booster pump is assumed for maintenance activities;
- Tailings beach to reach elevation 150m;
- Limit as much as possible deposition at the north end of the tailings pond during winter to reduce risk of freezing pipe;
- Raise beach on RF1 and RF2 to prevent tailings water from seeping out of the North Cell;
- Raise beaches on all external structures such as the roads around the tailings pond to prevent reclaim water from seeping towards the diversion ditches.

South Cell TSF model guideline

GUIDELINE

- Avoiding ice accumulation on the Central Dike liner;
- Prevent tailings beach to reach the reclaim barge;
- A minimum of two days per month of discharge by the by-pass of the booster pump is assumed for maintenance activities;
- Modelization of phase 1 of this cell, closure of this cell to be determined.

Model Parameters and assumptions

ASSUMPTIONS

- Deposition points will be moderately mobile in time (i.e. we can extend them on the tundra, and retract them as we deposit tailings throughout time);
- Ice formation in the reclaim pond during winter months follow the ice model table.
- Deposition points are added towards the end of life of the cell for closure purposes;

PARAMETERS

- The water balance used in this model assumes reclaim flow changes in function of season: summer 70 m^3/h fresh water (FW) & 380m^3/hr reclaim water (RW), and winter 90 m^3/h FW & 360 m^3/h RW;
- The model assumes a tailings dry density and a water balance that incorporates ice entrapment of 1.21t/m^3 for both the North and South Cell;
- Sub aerial tailings slope set at 0.5% for both North and South Cell
- Sub aqueous tailings slope set at 2.3% for the North cell (obtained from summer 2013 bathymetric analysis) and 4% for the South Cell (taken from the 2012 Golder Deposition plan of the North Cell) as this value seems to better represent the start of a new cell.

Ice Model	
Month	Ice thickness (m)
January	1.1
February	1.5
March	1.8
April	1.8
May	1.1
June	0
July	0
August	0
September	0
October	0
November	0.3
December	0.8

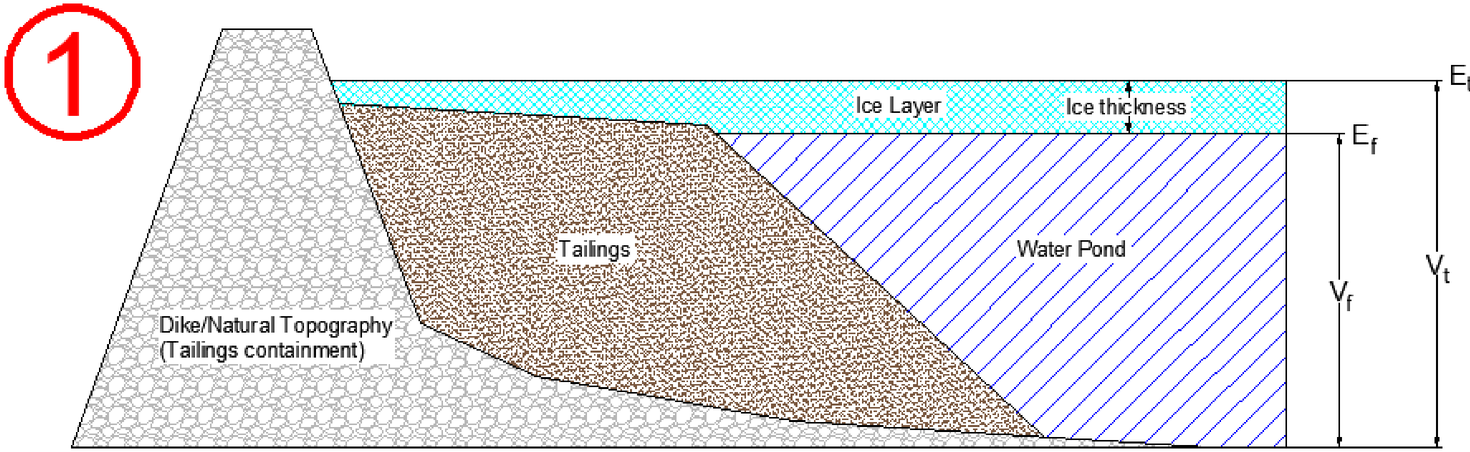
TSF deposition plan schedule

North and South Cell deposition phases

Period	Active Cell – Phase	Description
Current – September 2014	North Cell – Phase 1	- Bring the North Cell to the beginning of the winter 2014; the decreasing size and volume of the pond adversely affects the amount of free water due to ice formation, thus the North Cell cannot be closed off during the 2014/2015 winter.
October 2014 – June 2015	South Cell – Phase 1	- South Cell deposition during the winter months
July 2015 - November 2015	North Cell – Phase 2	- North Cell closure
December 2015 – End of mine life	South Cell - Phase 2	- South Cell deposition until end of mine life ***Still on-going; therefore will not be presented***

Ice Modelization Methodology

STEP 1 - Determine Free Water Volume For New Month Deposition Run



(a) Load previous months output surface

(b) Using the 'Create Pond From Fixed Volume' function, create a pond on the loaded surface with the volume of the total water (ice+water) from the current months water balance (V_t)

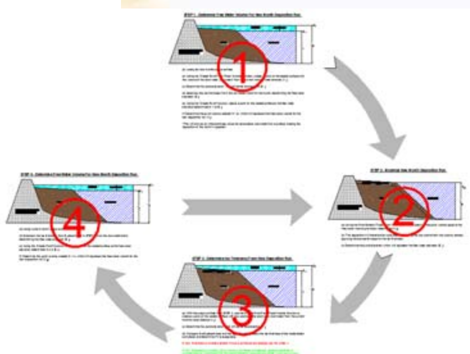
(c) Determine the pond elevation - this will be the ice elevation (E_t)

(d) Substract the ice thickness *(from the ice model chart) for the month*, determining the free wat elevation (E_f)

(e) Using the 'Create Pond' function, create a pond on the loaded surface at the free water elevation determined in 1-d (E_f).

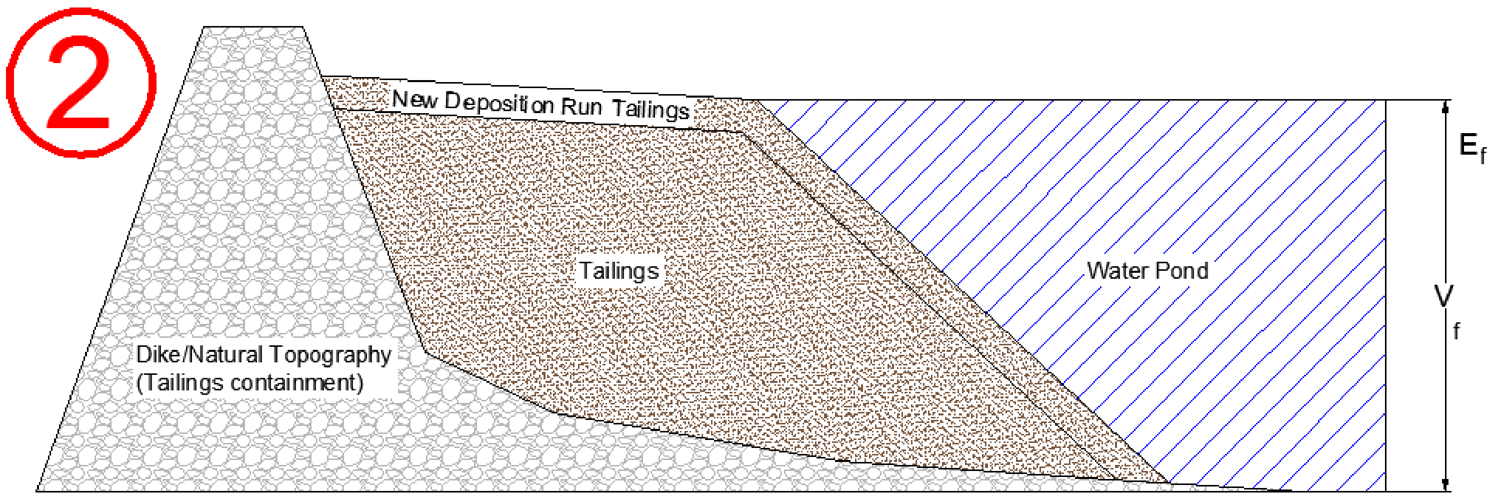
(f) Determine the pond volume created in 1-e, which will represent the free water volume for the new deposition run (V_f)

*This will only be an initial estimate, since the calculations are made from a surface missing the deposition of the month in question.



Ice Modelization Methodology

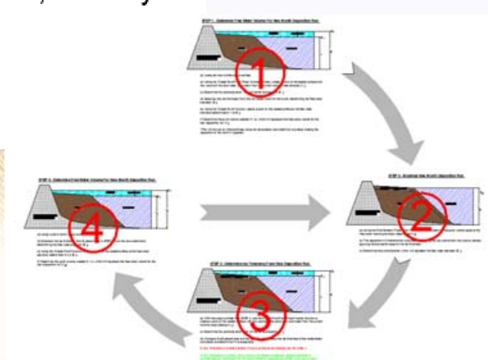
STEP 2 - Modelize New Month Deposition Run



(a) Using the 'Multi-Stream Fixed Pond Volume', run the model with the pond volume equal to the free water volume previously determined (V_f)

(b) The deposition will therefore be completed by omitting the ice volume from the volume, thereby applying the sub-aerial slope for the ice thickness.

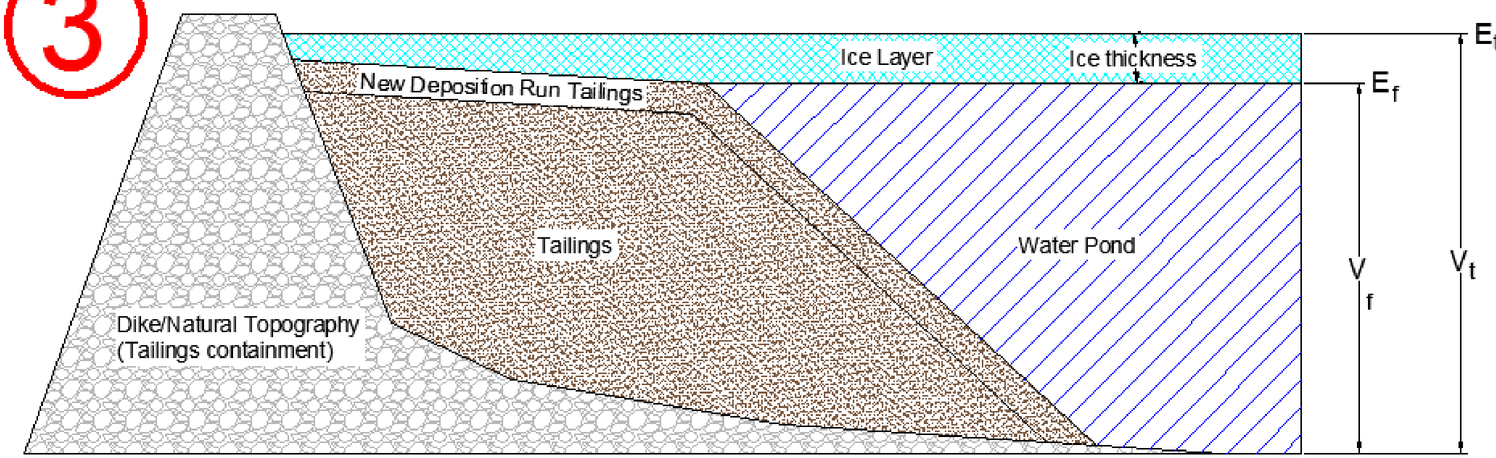
(c) Determine the pond elevation which will represent the free water elevation (E_f)



Ice Modelization Methodology

3

STEP 3 - Determine Ice Thickness From New Deposition Run



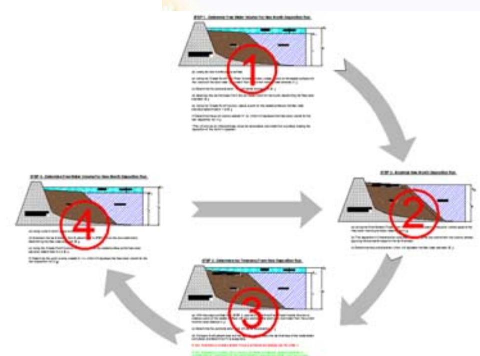
(a) With the output surface from STEP 2, use the 'Create Pond From Fixed Volume' function to create a pond on the loaded surface with the volume of the total water (ice+water) from the current months water balance (V_t)

(c) Determine the pond elevation - this will be the ice elevation (E_t)

(d) Compare the E_t determined and the E_f , this will represent the ice thickness of the modeliza completed and determine if it is acceptable.

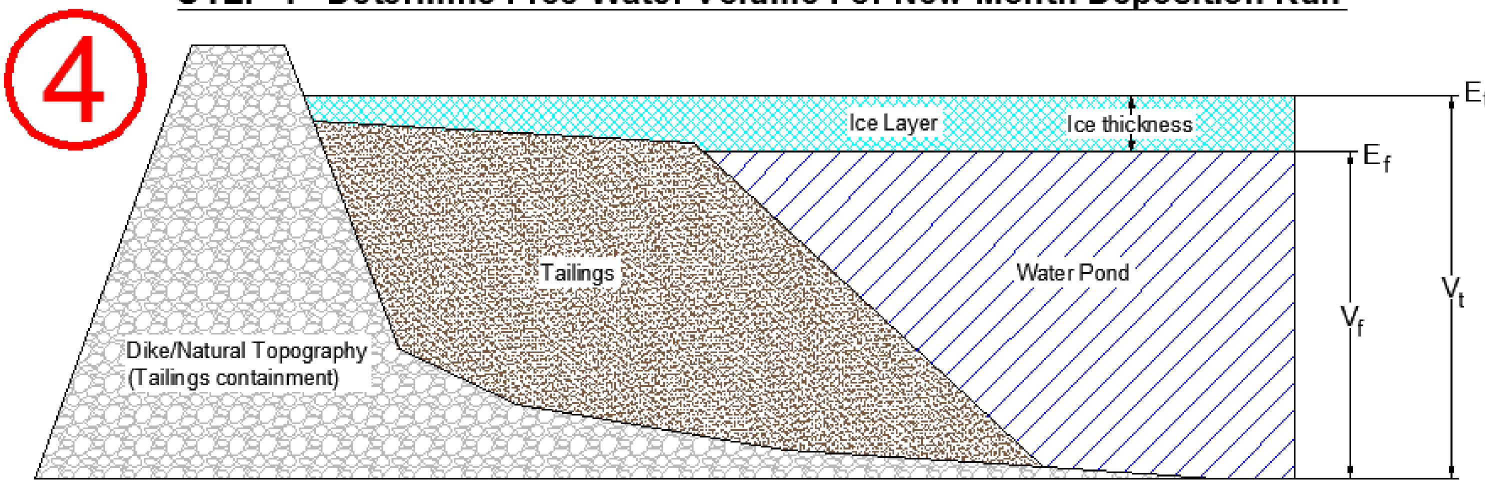
IF ICE THICKNESS VARIES MORE THAN 0.05 FROM ICE MODEL GO TO STEP 4

IF ICE THICKNESS VARIES LESS THAN 0.05 FROM ICE MODEL, MODELIZATION IS ACCEPTABLE; CONTINUE TO THE NEXT MONTH (restarting at STEP 1 with the current output surface)



Ice Modelization Methodology

STEP 4 - Determine Free Water Volume For New Month Deposition Run



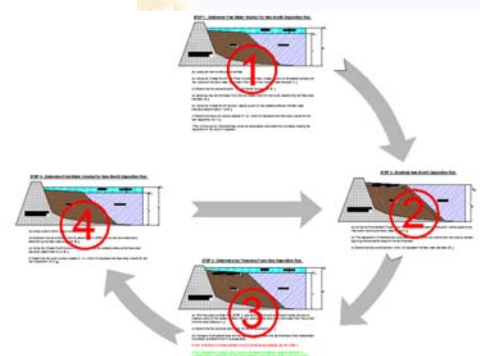
(a) Using current month output surface from STEP 3

(b) Substract the ice thickness from E_t determined in STEP 3 (from the ice model chart), determining the free water elevation (E_f)

(c) Using the 'Create Pond' function, create a pond on the loaded surface at the free water elevation determined in 4-b (E_f).

(d) Determine the pond volume created in 4-c, which will represent the free water volume for the new deposition run (V_f)

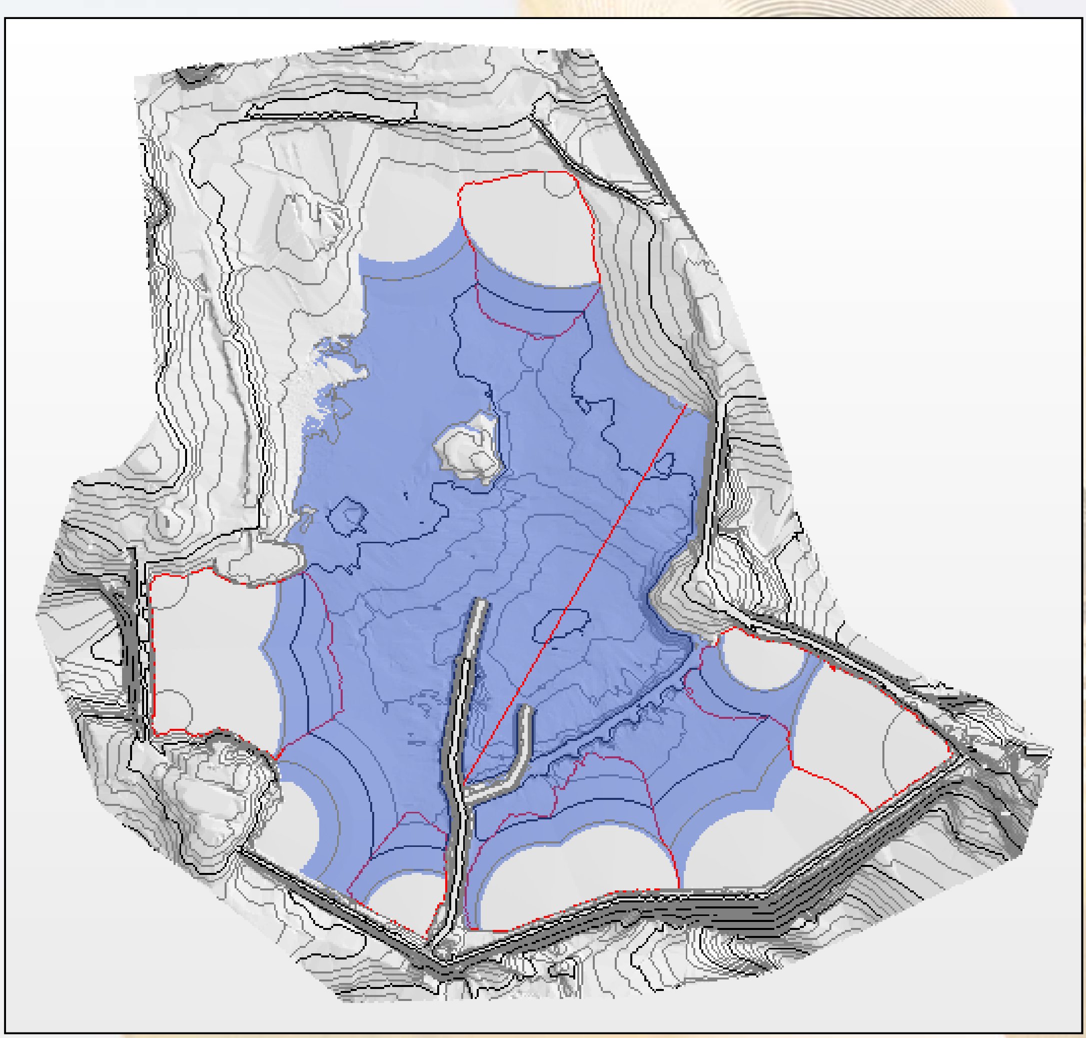
(e) Repeat STEP 2 & 3



This usually requires 2-3 iterations to obtain an acceptable ice thickness

NORTH CELL DEPOSITION PLAN
PHASE 1

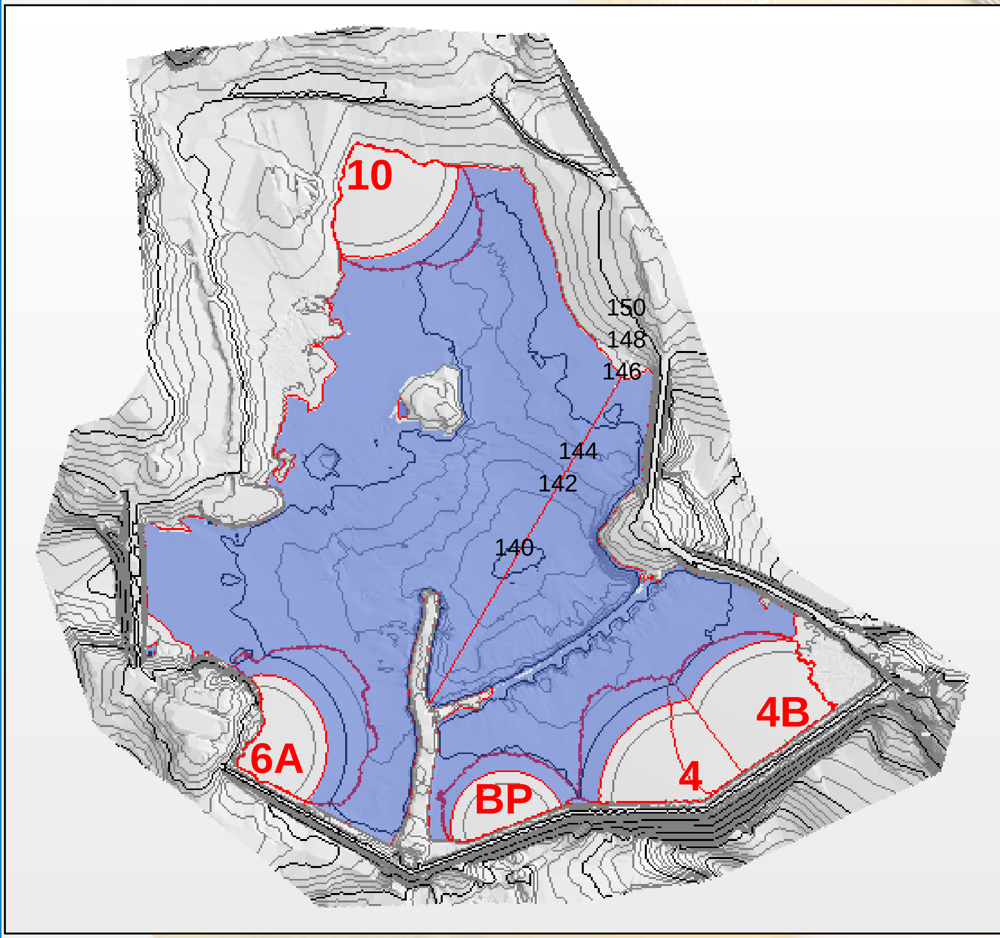
Section View Plot



A section view along the alignment shown on the diagram will be included for each month. This will show a section view plotted on an elevation graph to show the change in pond topography across the reclaim water barge area. Left limit of the chart represents the barge area and as you look to the right on the graph you are going towards deposition point 7 (North-eastern direction).

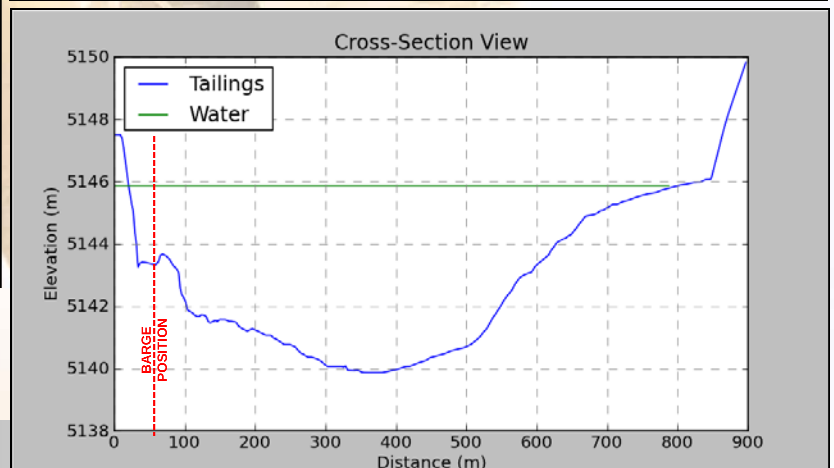
North Cell TSF deposition plan
From 08/09/2013 to end of August 2013

Duration	Deposition Point	Tonnes
2	BP	20,981
6	4B	62,780
5	10	52,668
4	4	41,953
6	6A	63,234

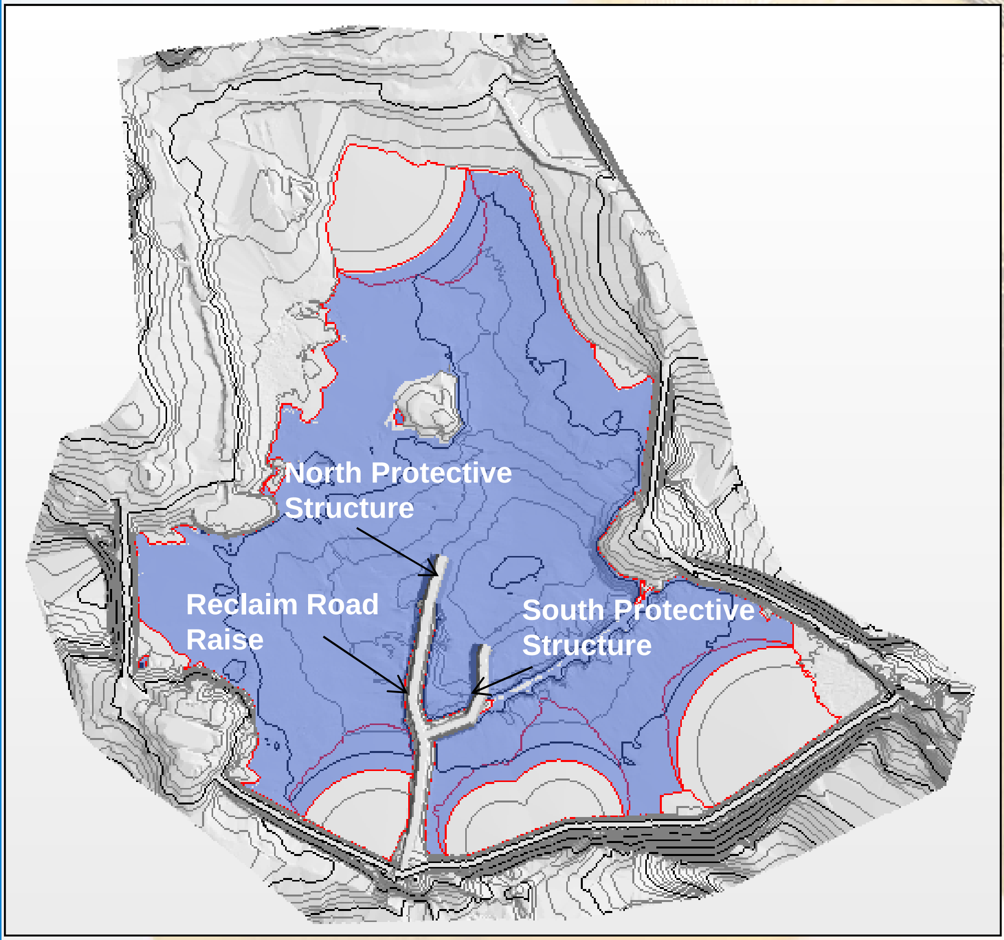


MODEL INPUT	
Water Balance Volume (m³)	1,487,509
Ice thickness (m)	0.00
Tonnes (t)	242,791

MODEL RESULTS	
Pond volume (m³)	1,486,244
Pond depth (m)	6.215
Pond elevation (m)	145.870
Min pond ele (m)	139.655
Ice thickness (m)	0
Unfrozen water elevation (m)	145.870
Ice volume (m³)	0
Ice ratio (%)	0
Transfer from South Cell (m³)	82,395



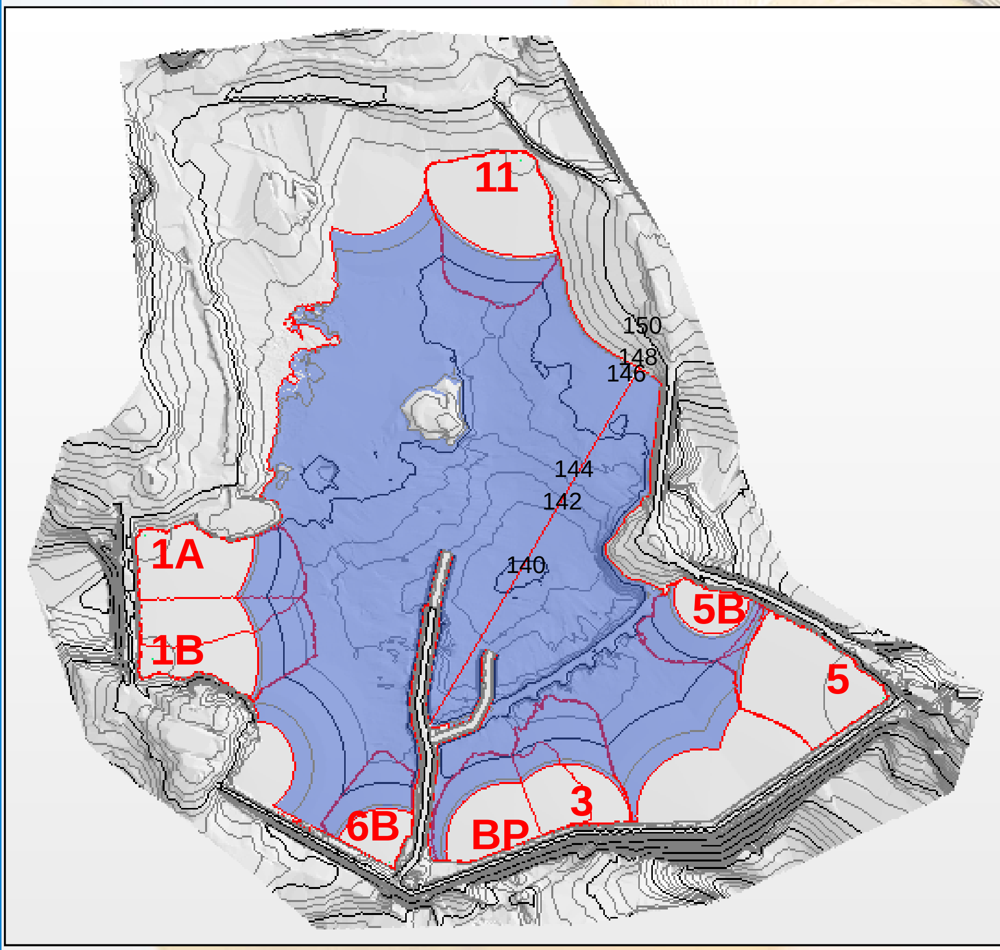
North Cell TSF deposition plan
Beginning September 2013 – Structure Modifications



Structure	Elevation (m)	Volume (m^3)
Reclaim Road Raise	150.0m	34,227
South Protective Structure	148.0m	21,740
North Protective Structure	148.0m	19,188

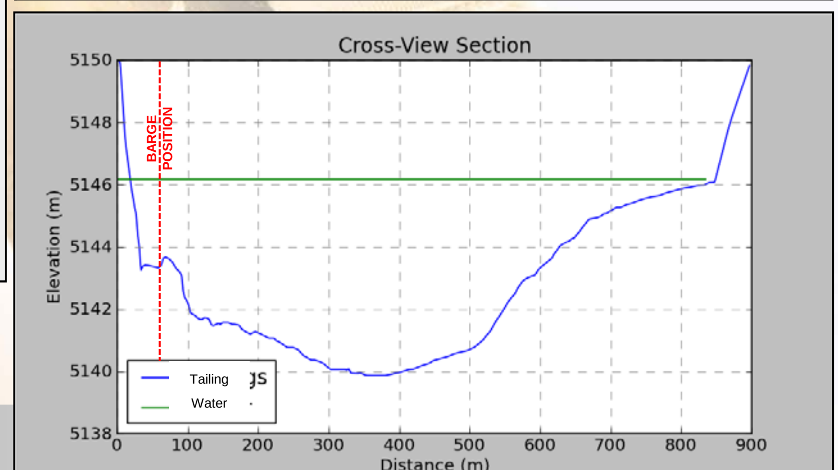
North Cell TSF deposition plan September 2013

Duration	Deposition Point	Tonnes
2	BP	23,894
3	5B	35,846
6	1A	71,655
3	3	35,800
3	6B	35,861
6	11	71,574
4	1B	47 642
3	5	35701



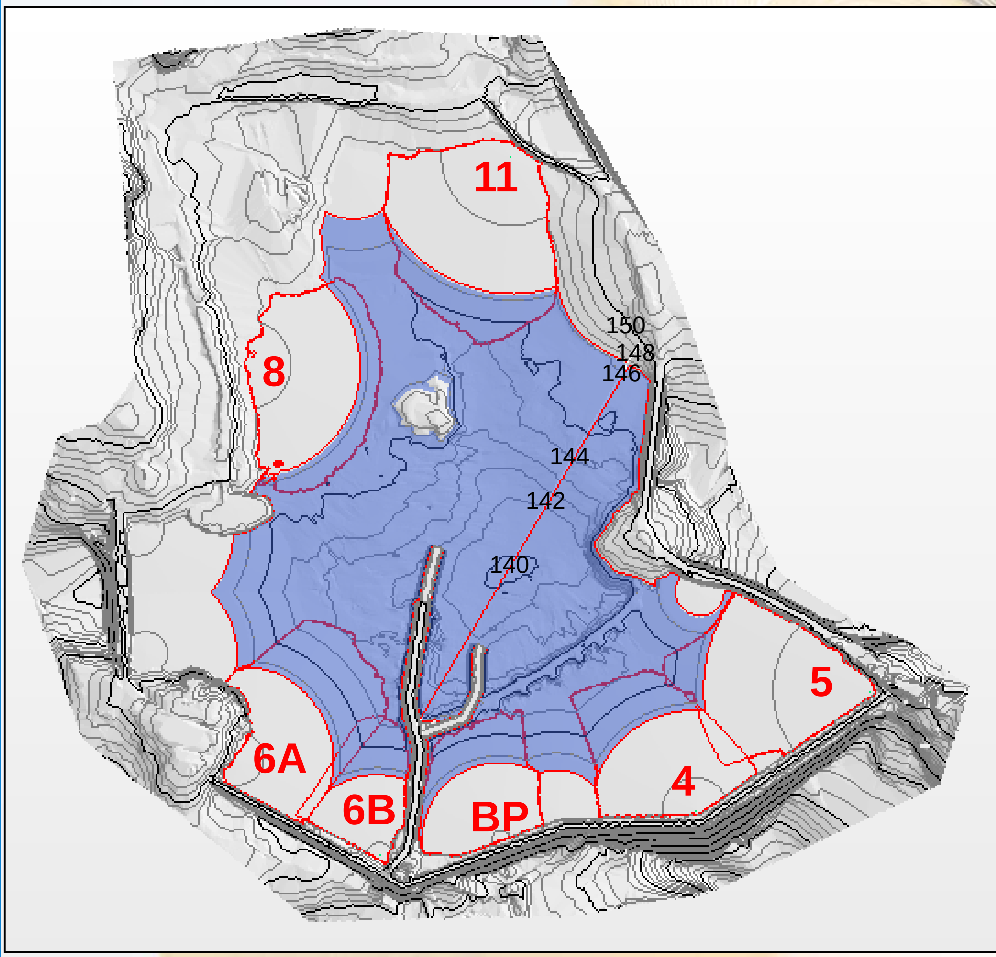
MODEL INPUT	
Water Balance Volume (m³)	1,439,747
Ice thickness (m)	0.00
Tonnes (t)	357,540

MODEL RESULTS	
Pond volume (m³)	1,521,792
Pond depth (m)	6.526
Pond elevation (m)	146.181
Min pond ele (m)	139.655
Ice thickness (m)	0
Unfrozen water elevation (m)	146.181
Ice volume (m³)	0
Ice ratio (%)	0
Transfer from South Cell (m³)	111,629



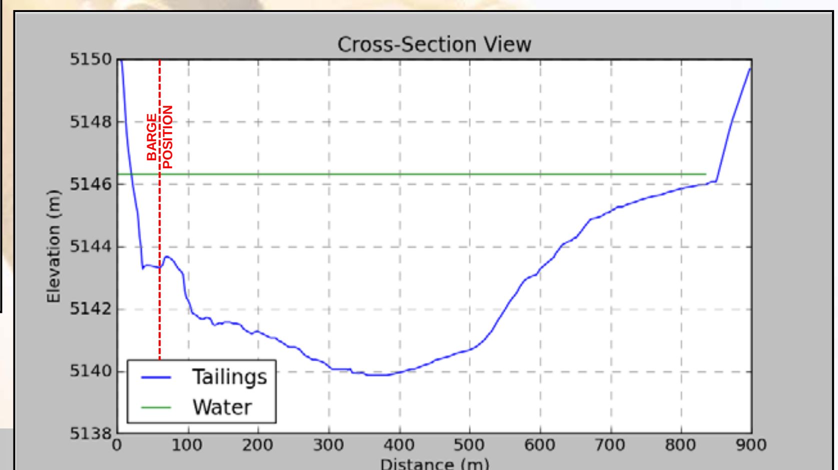
North Cell TSF deposition plan October 2013

Duration	Deposition Point	Tonnes
2	BP	23,609
3	6B	35,106
8	11	93,643
6	8	69,925
3	5	35,018
6	6A	70,149
3	4	35,132



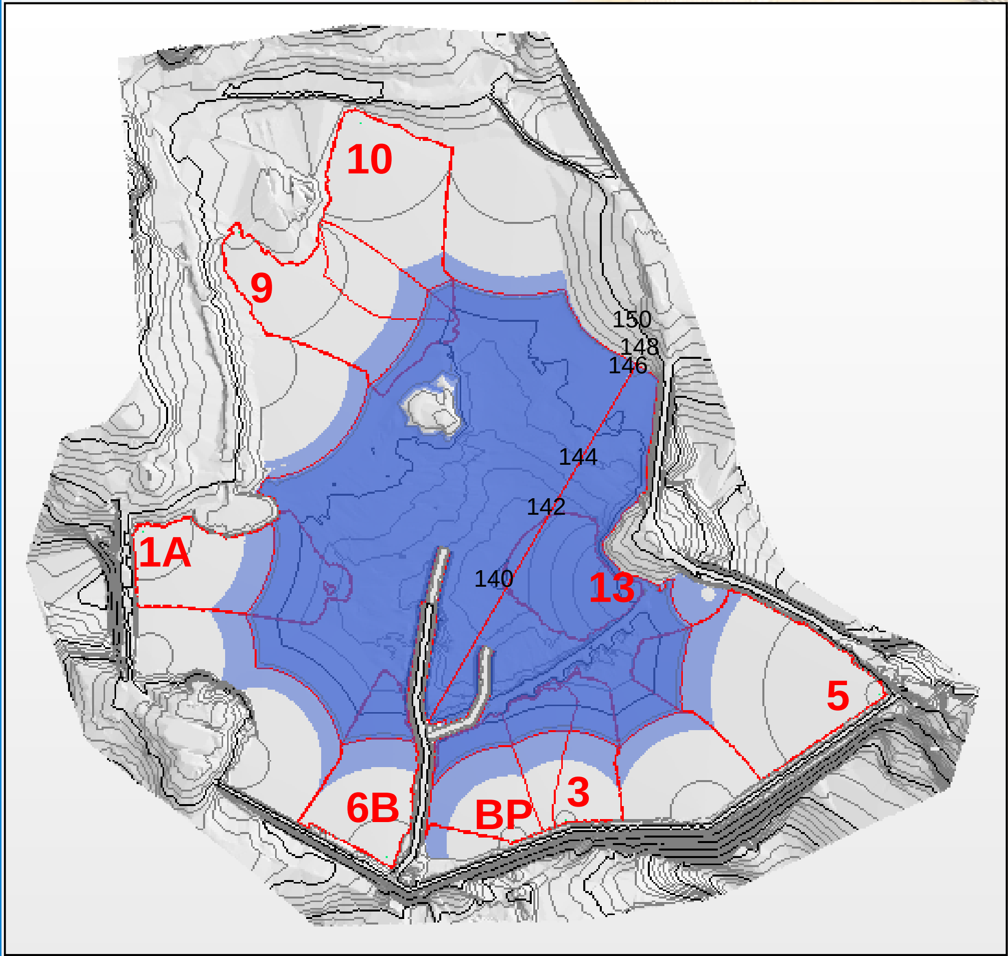
MODEL INPUT	
Water Balance Volume (m³)	1,445,174.00
Ice thickness (m)	0.00
Tonnes (t)	363,600

MODEL RESULTS	
Pond volume (m³)	1,442,985
Pond depth (m)	6.658
Pond elevation (m)	146.313
Min pond ele (m)	139.655
Ice thickness (m)	0
Unfrozen water elevation (m)	146.313
Ice volume (m³)	0
Ice ratio (%)	0
Transfer from South Cell (m³)	137,629



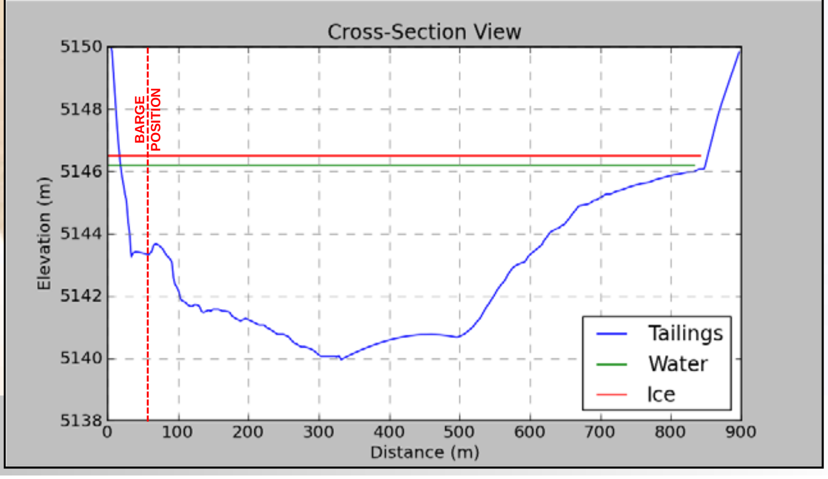
North Cell TSF deposition plan
November 2013

Duration	Deposition Point	Tonnes
2	BP	21,400
6	10	64,056
6	13	64,281
3	1A	32,180
3	3	32,141
3	6B	32,182
3	5	32,192
4	9	42,593



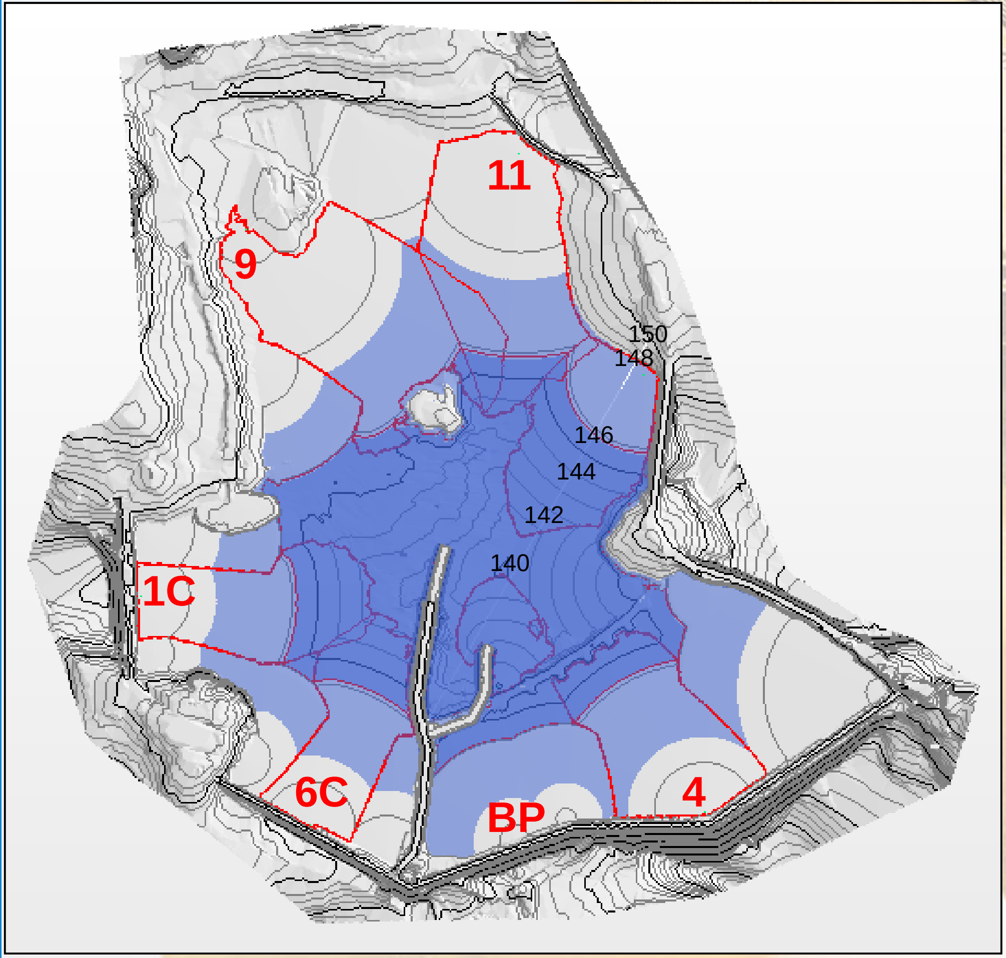
MODEL INPUT	
Water Balance Volume (m³)	1,461,120
Ice thickness (m)	0.29
Tonnes (t)	321,513

MODEL RESULTS	
Pond volume (m³)	1,461,120
Pond depth (m)	6.913
Pond elevation (m)	146.568
Min pond ele (m)	139.655
Ice thickness (m)	0.29
Unfrozen water elevation (m)	146.276
Ice volume (m³)	188,797
Ice ratio (%)	13%
Transfer to South Cell (m³)	0



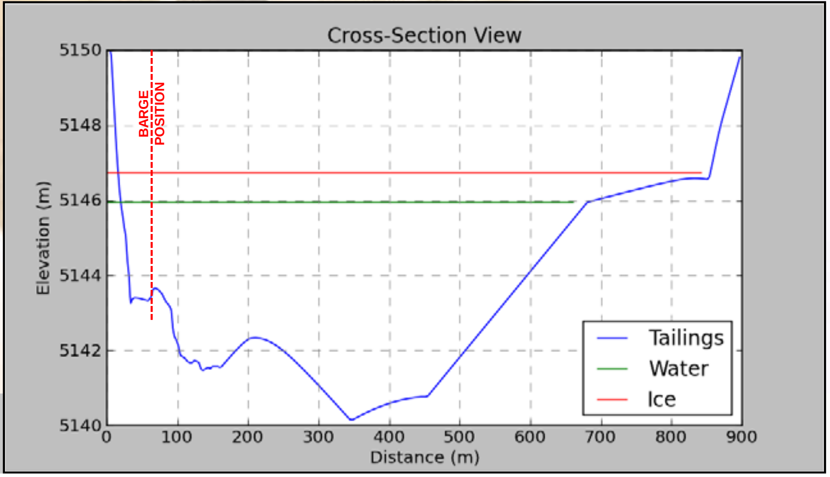
North Cell TSF deposition plan December 2013

Duration	Deposition Point	Tonnes
2	BP	23,981
5	9	59,612
6	11	71,435
4	1C	47,667
6	7	71,365
4	6C	47,694
4	4	47,680



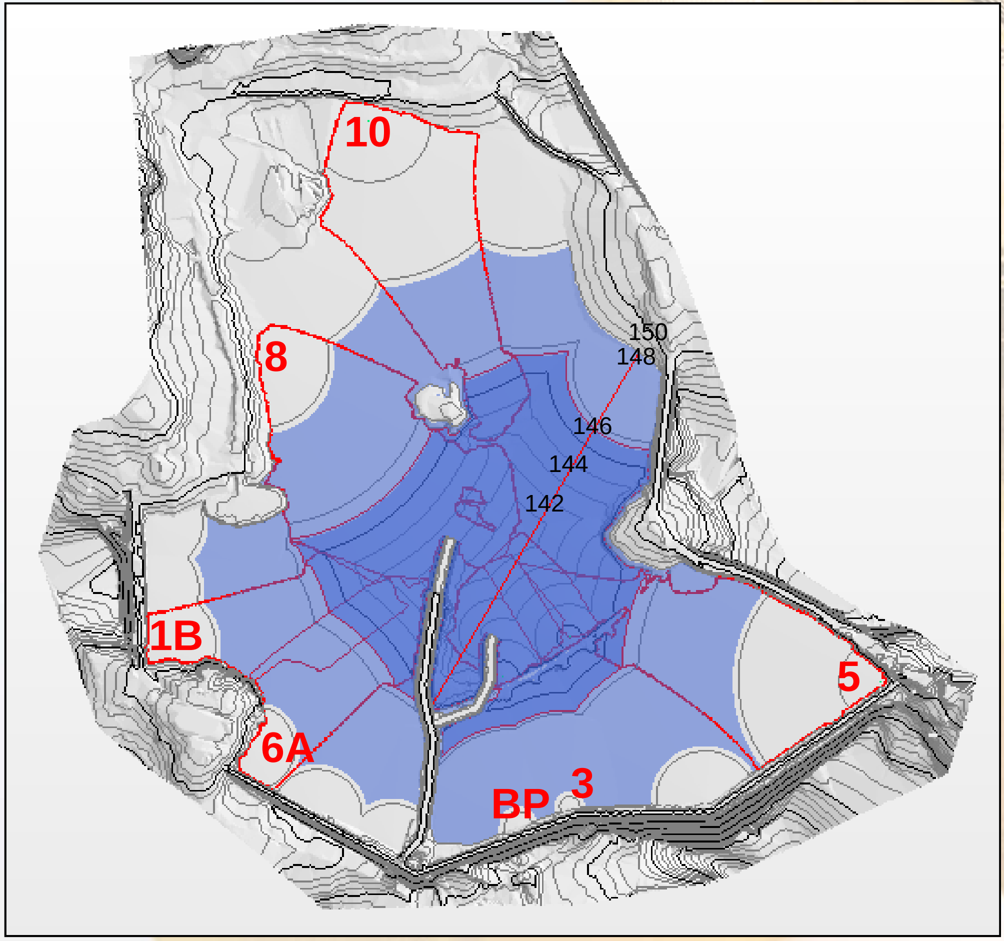
MODEL INPUT	
Water Balance Volume (m³)	1,313,414
Ice thickness (m)	0.80
Tonnes (t)	369,660

MODEL RESULTS	
Pond volume (m³)	1,313,414
Pond depth (m)	6.869
Pond elevation (m)	146.742
Min pond ele (m)	139.876
Ice thickness (m)	0.79
Unfrozen water elevation (m)	145.955
Ice volume (m³)	449,169
Ice ratio (%)	34%
Transfer to South Cell (m³)	0



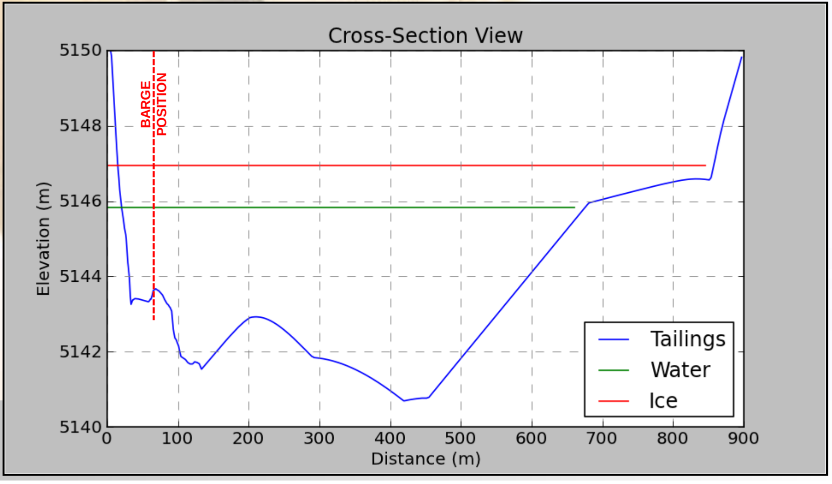
North Cell TSF deposition plan January 2014

Duration	Deposition Point	Tonnes
2	BP	23,277
9	8	104,552
5	5	58,133
6	10	69,799
3	3	34,904
3	1B	34,869
3	6A	34,927



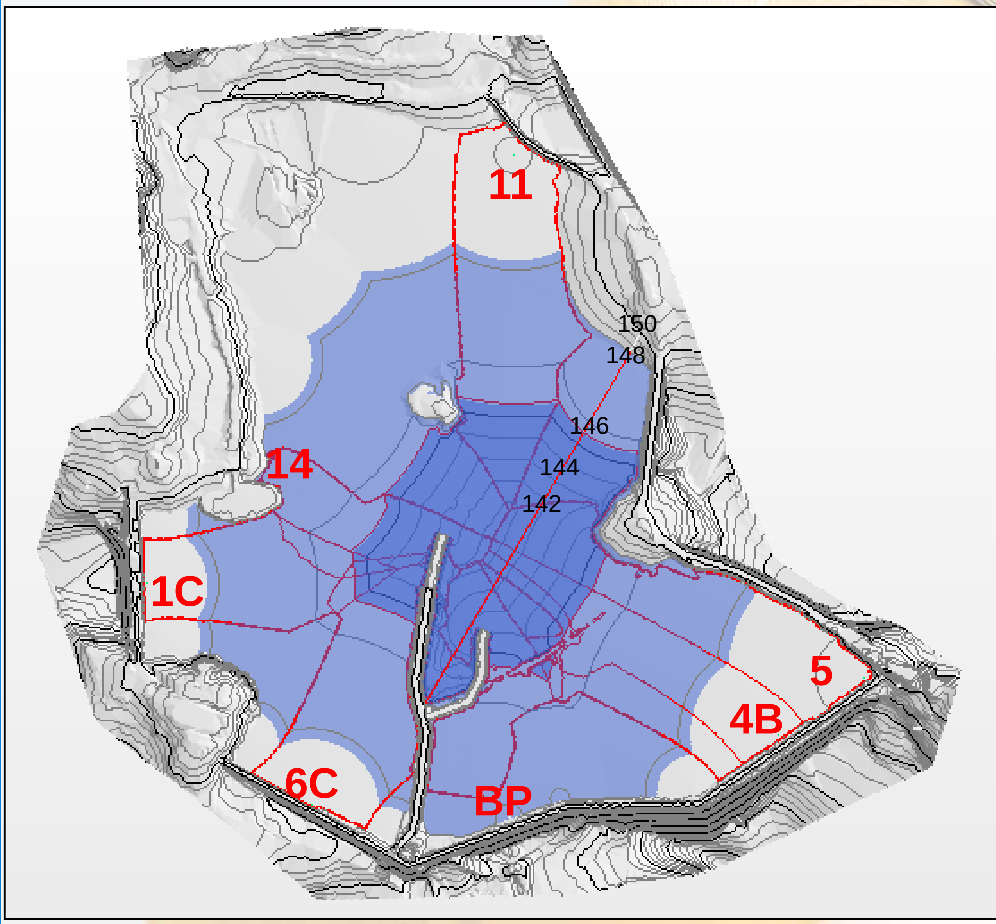
MODEL INPUT	
Water Balance Volume (m³)	1,246,454
Ice thickness (m)	1.10
Tonnes (t)	360,995

MODEL RESULTS	
Pond volume (m³)	1,246,454
Pond depth (m)	6.758
Pond elevation (m)	146.946
Min pond ele (m)	140.188
Ice thickness (m)	1.11
Unfrozen water elevation (m)	145.838
Ice volume (m³)	604,588
Ice ratio (%)	49%
Transfer to South Cell (m³)	0



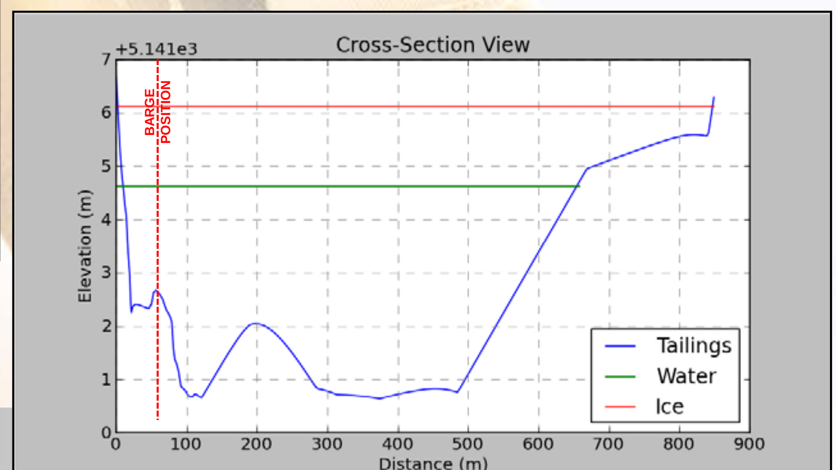
North Cell TSF deposition plan February 2014

Duration	Deposition Point	Tonnes
2	BP	20,853
6	11	61,828
6	6C	61,962
6	5	61,684
3	14	30,925
3	3	30,753
2	1C	20,662



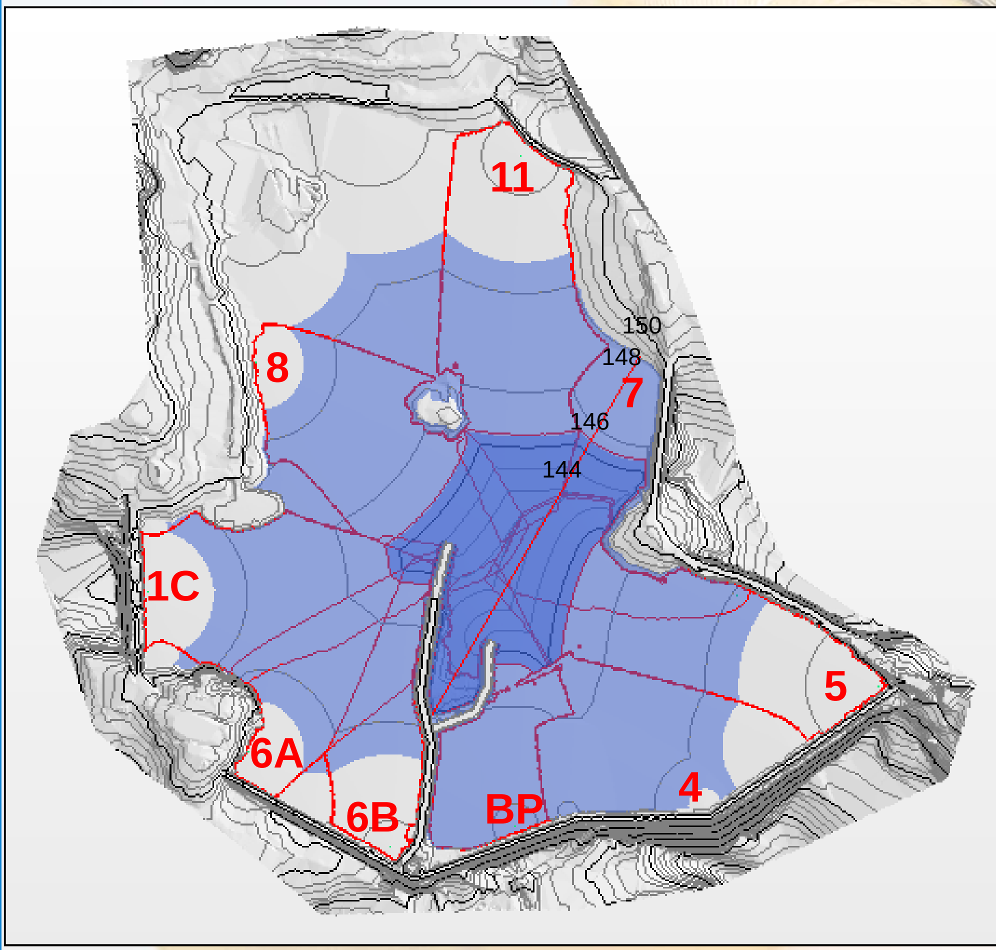
MODEL INPUT	
Water Balance Volume (m³)	1,185,974
Ice thickness (m)	1.50
Tonnes (t)	288,988

MODEL RESULTS	
Pond volume (m³)	1,185,974
Pond depth (m)	6.597
Pond elevation (m)	147.115
Min pond ele (m)	140.518
Ice thickness (m)	1.495
Unfrozen water elevation (m)	145.620
Ice volume (m³)	746,150
Ice ratio (%)	63%
Transfer to South Cell (m³)	0



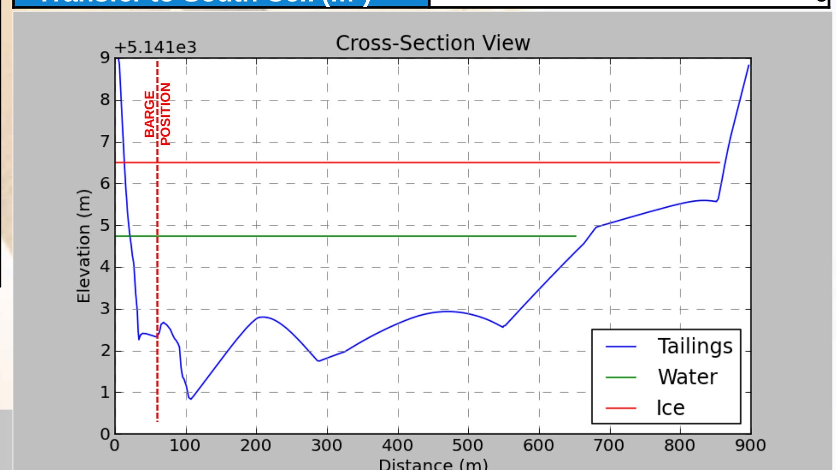
North Cell TSF deposition plan March 2014

Duration	Deposition Point	Tonnes
2	BP	23,682
4	1C	47,350
6	7	70,981
6	8	70,673
3	4	35,483
3	6A	35,653
4	5	47,387
3	6B	35,663



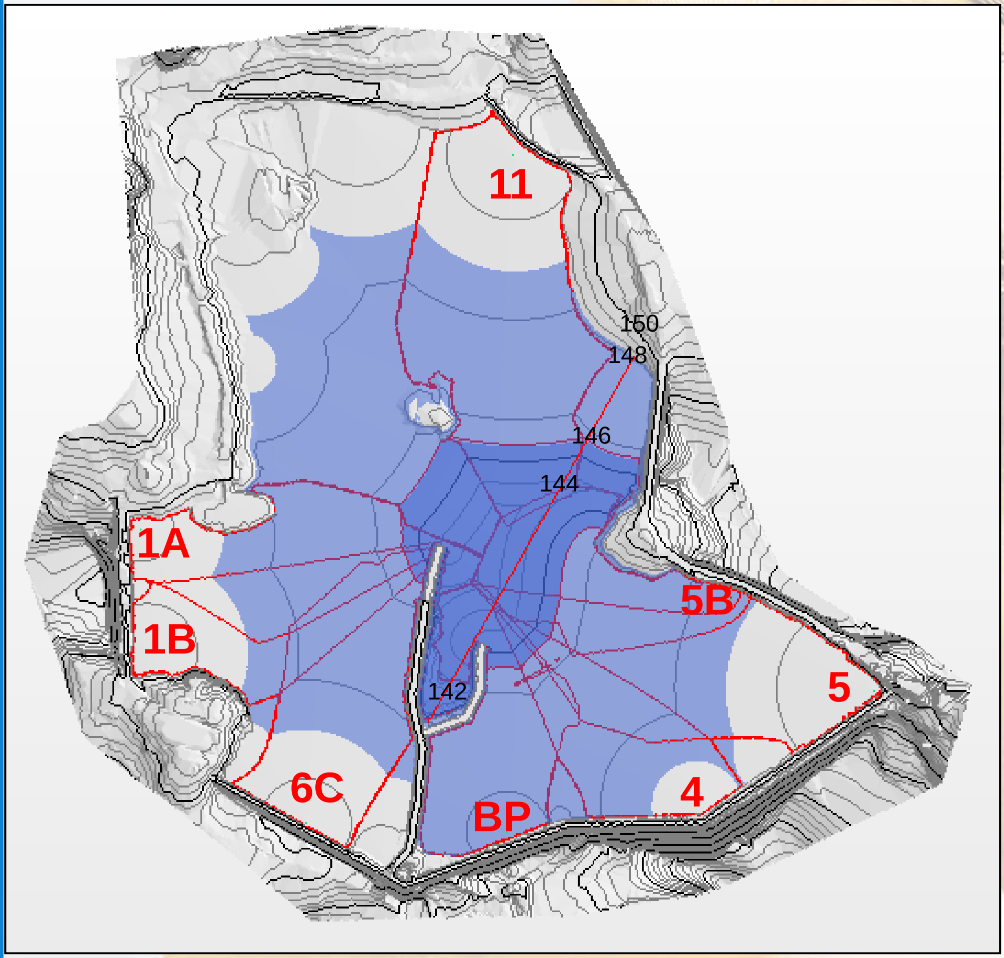
MODEL INPUT	
Water Balance Volume (m³)	1,119,014
Ice thickness (m)	1.80
Tonnes (t)	367,009

MODEL RESULTS	
Pond volume (m³)	1,119,014
Pond depth (m)	6.025
Pond elevation (m)	147.333
Min pond ele (m)	141.308
Ice thickness (m)	1.78
Unfrozen water elevation (m)	145.565
Ice volume (m³)	848,734
Ice ratio (%)	76%
Transfer to South Cell (m³)	0



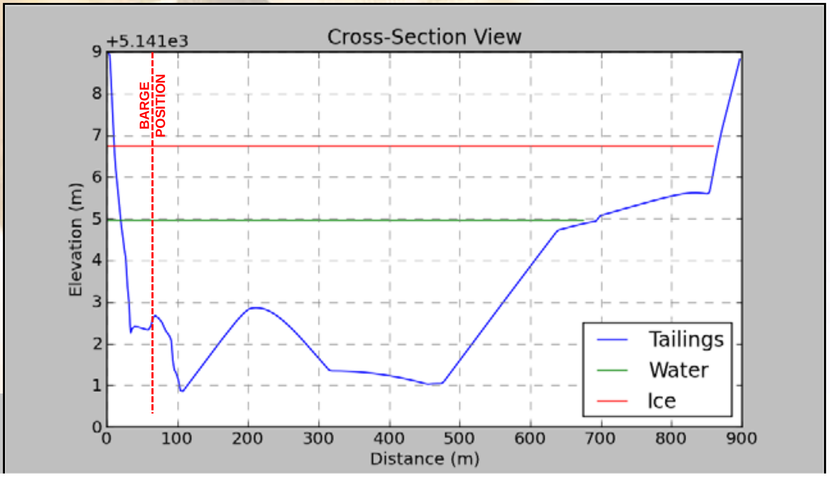
North Cell TSF deposition plan
April 2014

Duration	Deposition Point	Tonnes
2	BP	23,351
6	11	69,811
4	6C	46,493
4	5C	46,493
4	1A	46,344
3	5	34,892
4	1B	46,139
3	4	34,747



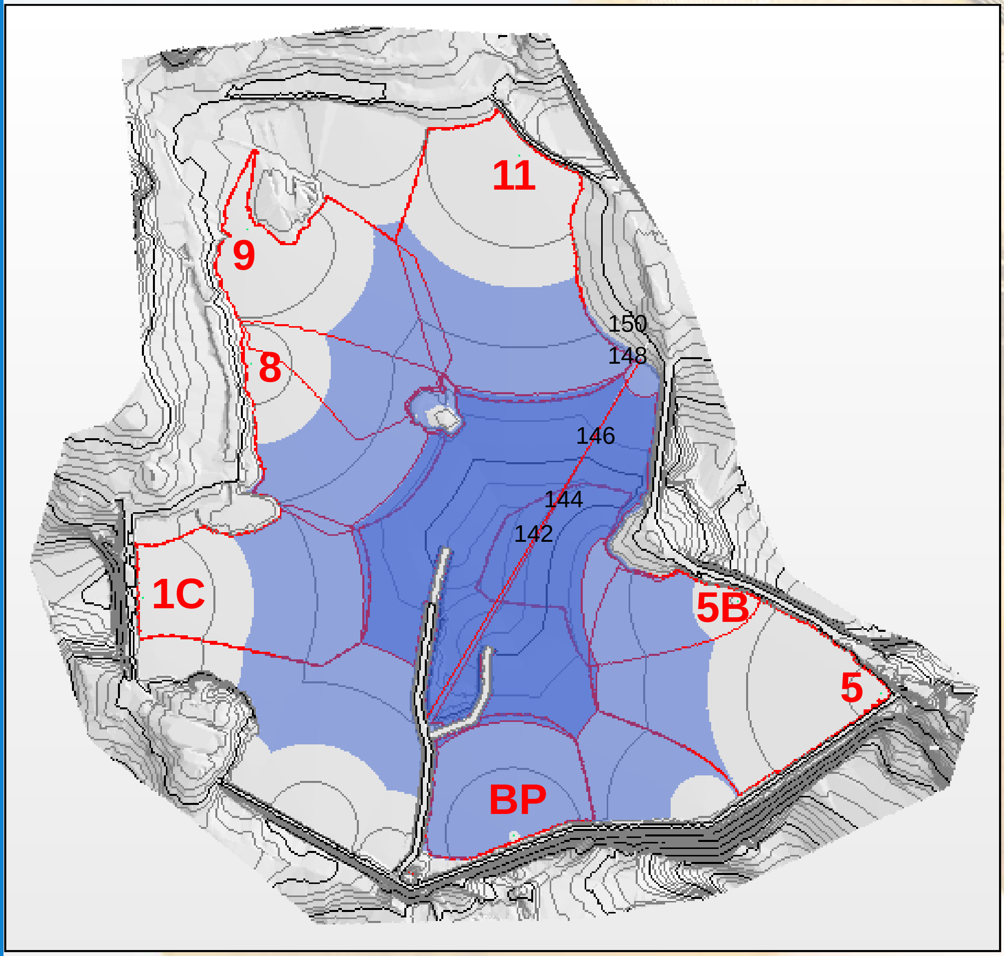
MODEL INPUT	
Water Balance Volume (m³)	1,054,214
Ice thickness (m)	1.80
Tonnes (t)	348,990

MODEL RESULTS	
Pond volume (m³)	1,054,214
Pond depth (m)	5.973
Pond elevation (m)	147.504
Min pond ele (m)	141.531
Ice thickness (m)	1.759
Unfrozen water elevation (m)	145.745
Ice volume (m³)	813,980
Ice ratio (%)	77%
Transfer to South Cell (m³)	0



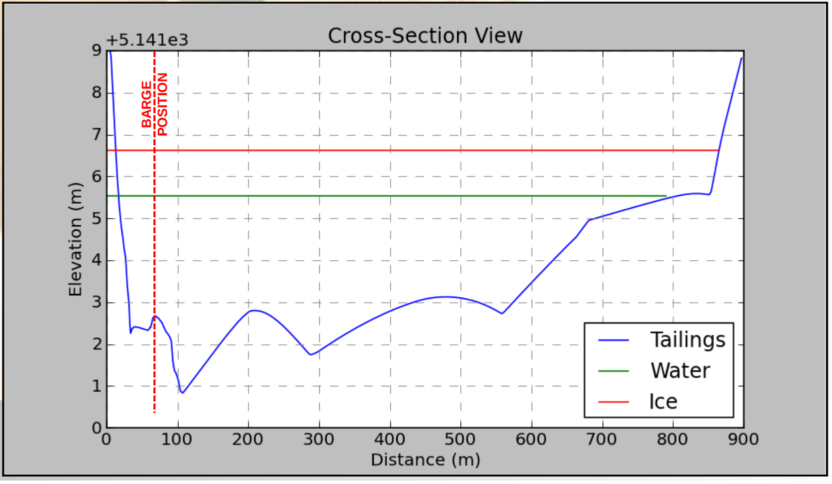
North Cell TSF deposition plan May 2014

Duration	Deposition Point	Tonnes
2	BP	21,011
6	9	62,982
6	5	62,965
6	8	62,911
3	5B	31,527
3	1C	31,496
5	11	52,453



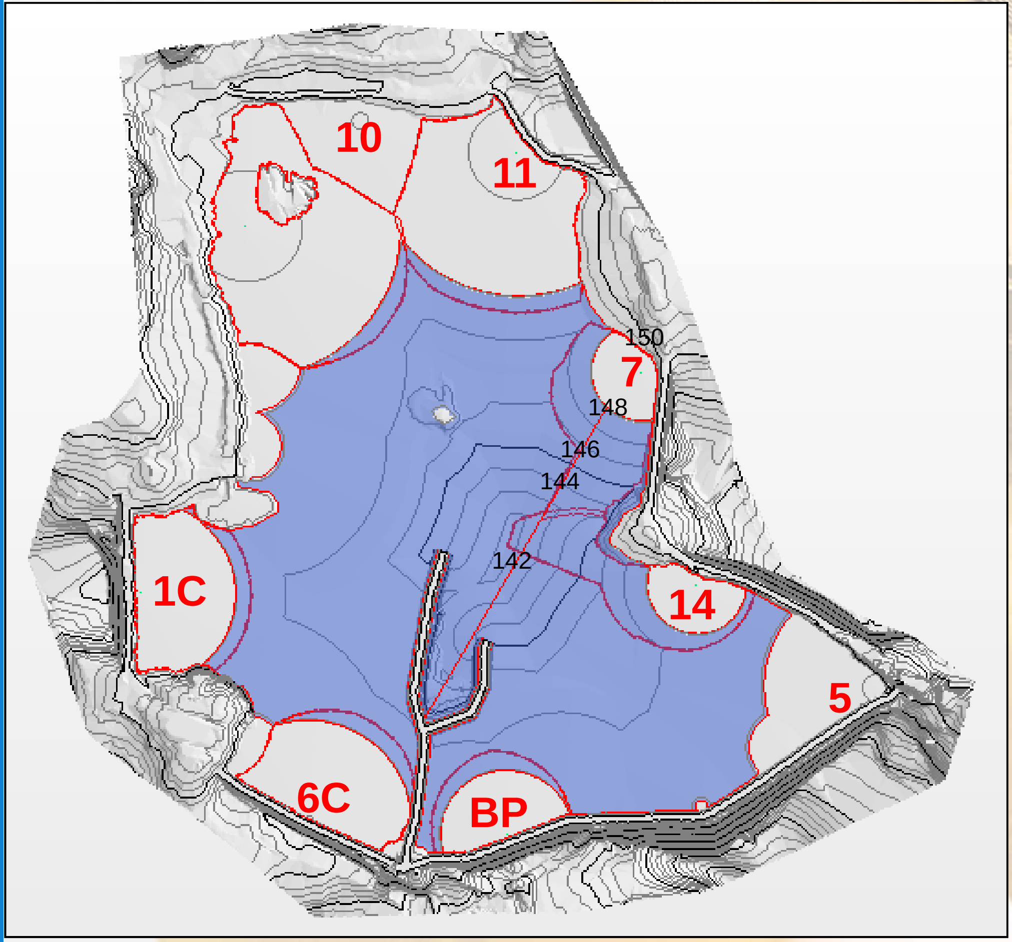
MODEL INPUT	
Water Balance Volume (m³)	1,188,048
Ice thickness (m)	1.10
Tonnes (t)	325,004

MODEL RESULTS	
Pond volume (m³)	1,185,840
Pond depth (m)	5.525
Pond elevation (m)	147.729
Min pond ele (m)	141.163
Ice thickness (m)	1.122
Unfrozen water elevation (m)	145.953
Ice volume (m³)	946,040
Ice ratio (%)	75%
Transfer to South Cell (m³)	0



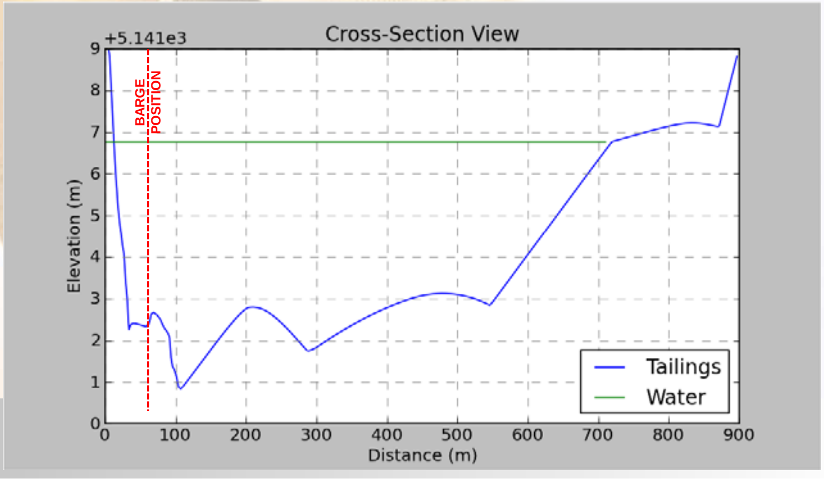
North Cell TSF deposition plan
June 2014

Duration	Deposition Point	Tonnes
2	BP	23,477
6	11	11,808
3	6A	35,365
6	12	70,440
6	8	70,768
6	7	70,871
1	9	70,881



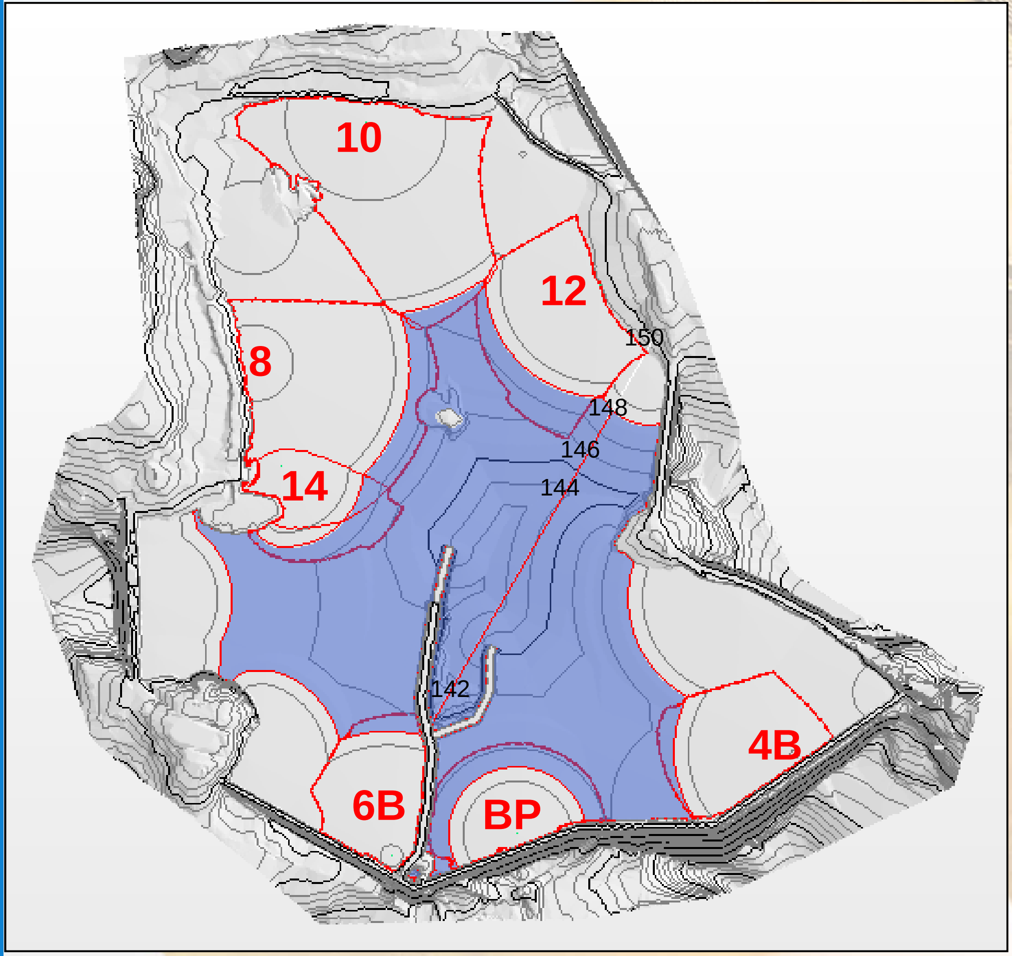
MODEL INPUT	
Water Balance Volume (m³)	1,197,430
Ice thickness (m)	0
Tonnes (t)	354 234

MODEL RESULTS	
Pond volume (m³)	1,195,479
Pond depth (m)	6.431
Pond elevation (m)	148.033
Min pond ele (m)	141.602
Ice thickness (m)	0
Unfrozen water elevation (m)	148.033
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



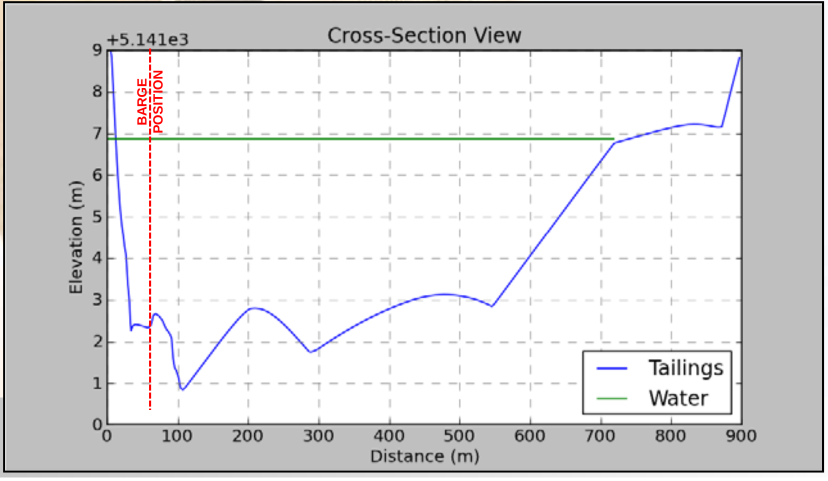
North Cell TSF deposition plan
July 2014

Duration	Deposition Point	Tonnes
2	BP	23,277
9	10	104,534
3	4B	34,850
6	8	69,832
3	6B	34,763
6	12	69,725
2	14	23,245



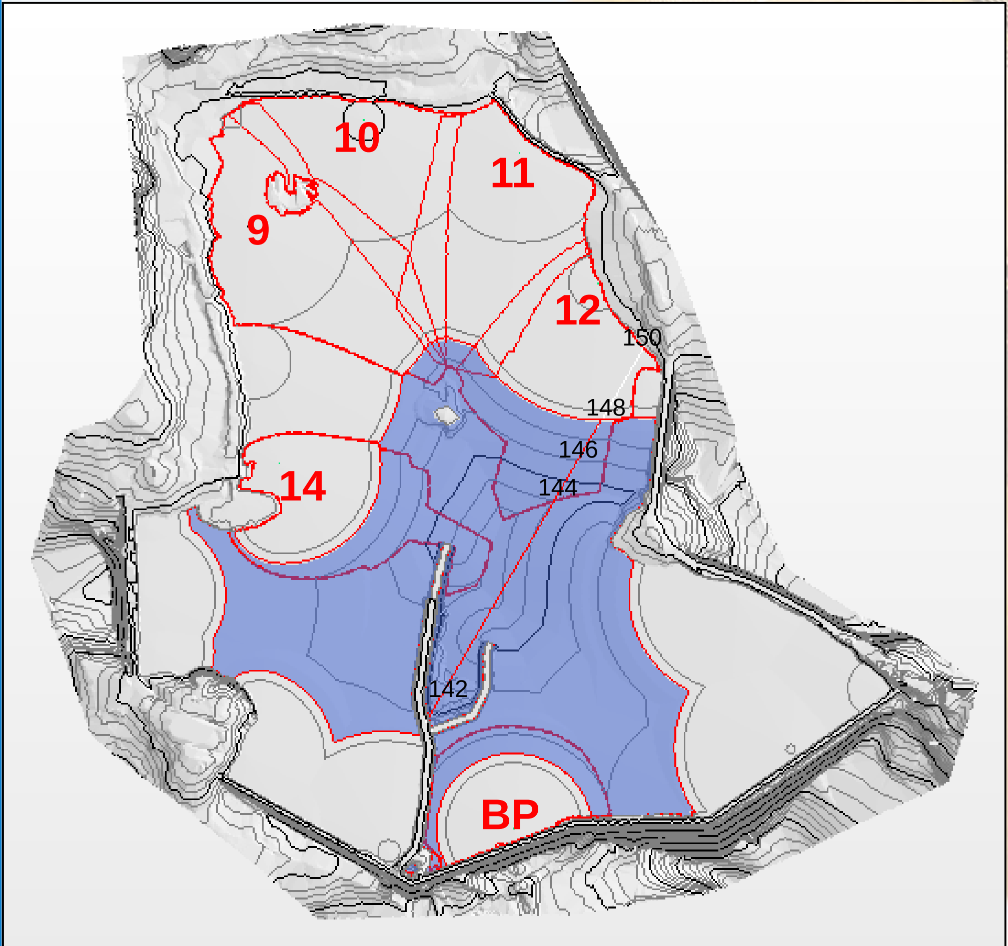
MODEL INPUT	
Water Balance Volume (m³)	1,197,430
Ice thickness (m)	0
Tonnes (t)	354,234

MODEL RESULTS	
Pond volume (m³)	911,888
Pond depth (m)	6.047
Pond elevation (m)	147.855
Min pond ele (m)	141.808
Ice thickness (m)	0
Unfrozen water elevation (m)	147.855
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



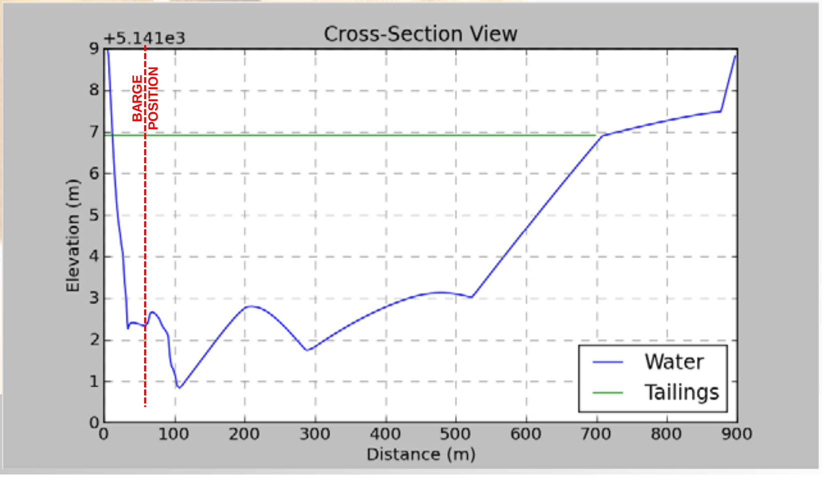
North Cell TSF deposition plan
August 2014

Duration	Deposition Point	Tonnes
2	BP	23,277
6	10	104,534
6	4B	34,850
6	8	69,832
3	6B	34,763
3	12	69,725
4	14	23,245



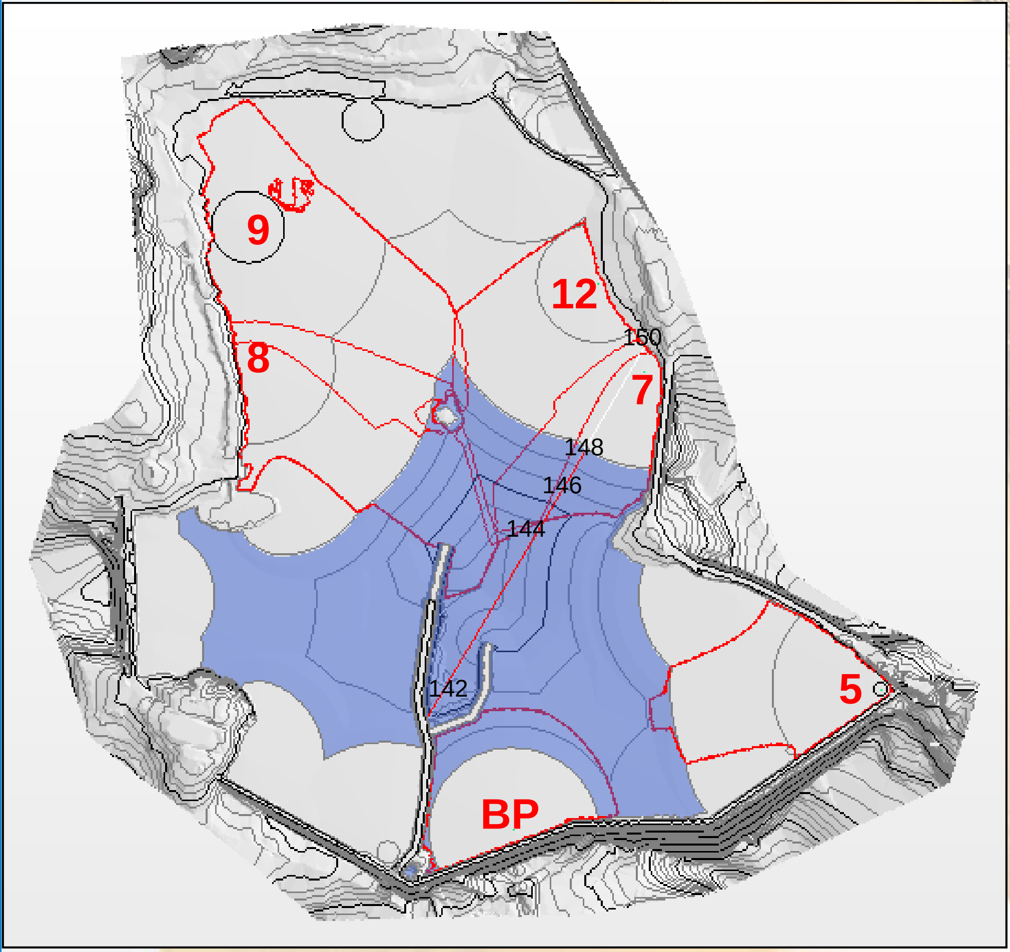
MODEL INPUT	
Water Balance Volume (m³)	1,197,430
Ice thickness (m)	0
Tonnes (t)	354,234

MODEL RESULTS	
Pond volume (m³)	911,888
Pond depth (m)	6.047
Pond elevation (m)	147.855
Min pond ele (m)	141.808
Ice thickness (m)	0
Unfrozen water elevation (m)	147.855
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	0



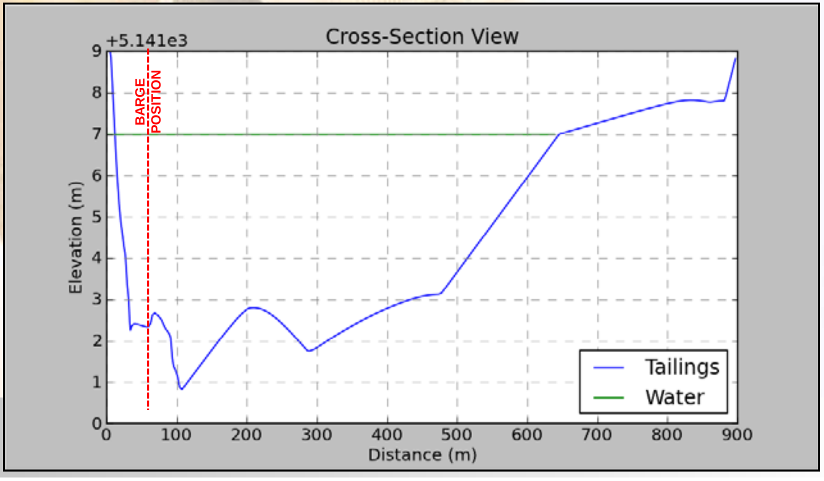
North Cell TSF deposition plan September 2014

Duration	Deposition Point	Tonnes
2	BP	23,267
6	7	69,489
6	9	69,689
6	12	69,777
6	8	69,702
4	5	46,477



MODEL INPUT	
Water Balance Volume (m³)	818,773
Ice thickness (m)	0.00
Tonnes (t)	348,990

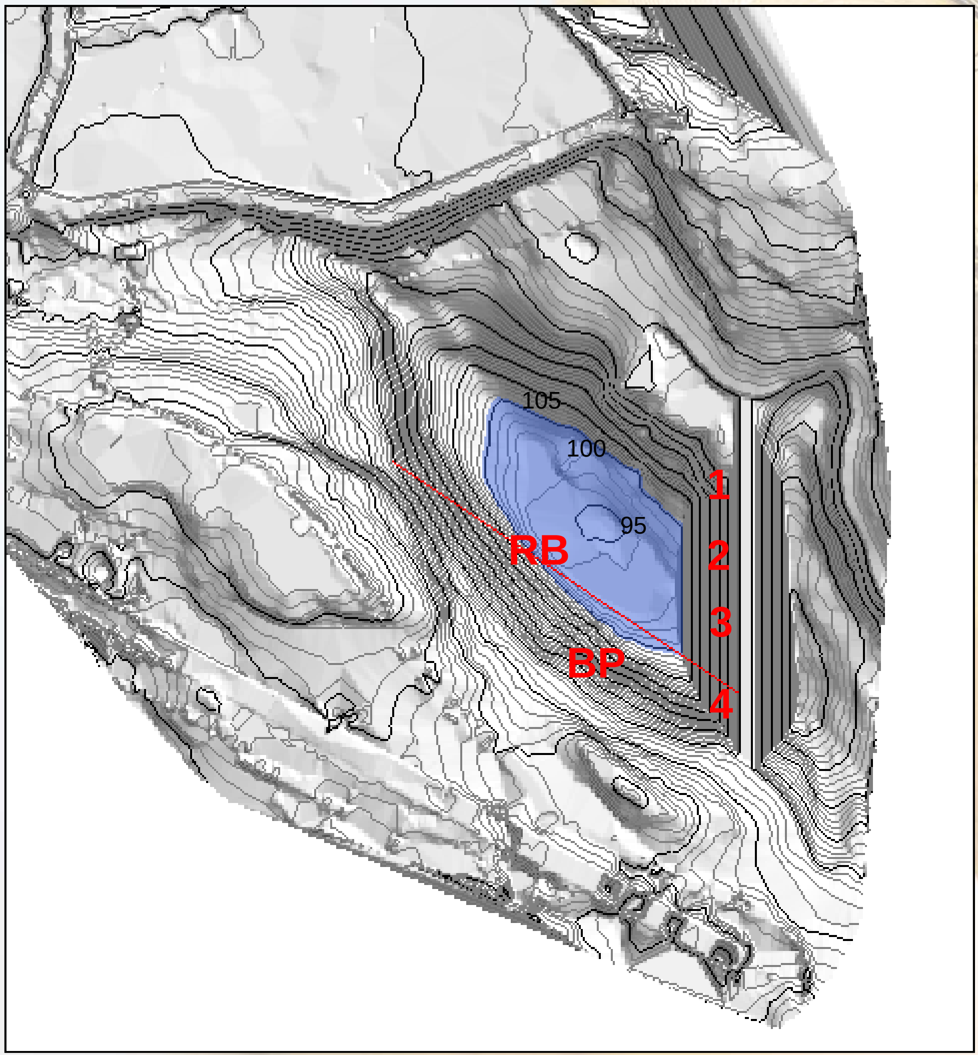
MODEL RESULTS	
Pond volume (m³)	770,252
Pond depth (m)	6.363
Pond elevation (m)	148.000
Min pond ele (m)	141.637
Ice thickness (m)	0
Unfrozen water elevation (m)	148.000
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	48,521



SOUTH CELL DEPOSITION PLAN
PHASE 1

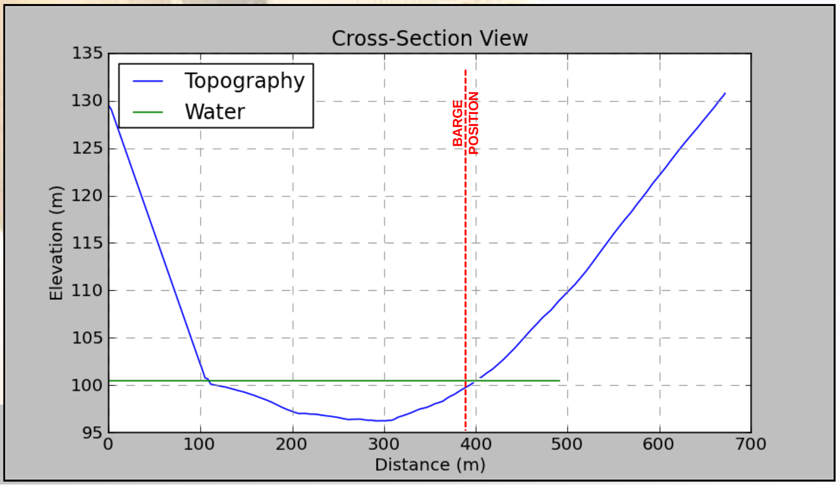
OCTOBER 2014 TO JUNE 2014

South Cell TSF deposition plan September 2014 (Start-up Status)



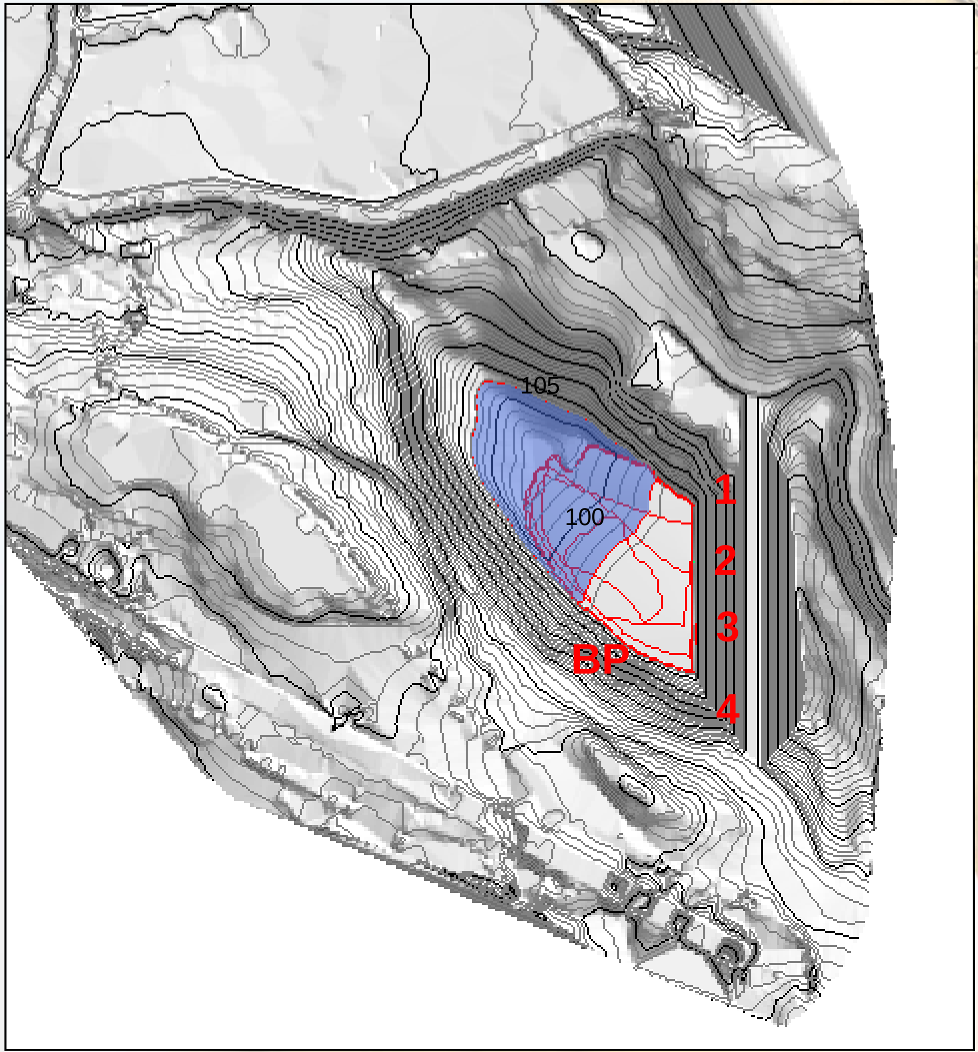
SPECIFICATIONS	
Water Balance Volume (m^3)	262,528
Pond elevation (m)	100.500
Min pond ele (m)	94.000
Pond depth (m)	6.500

Below we have a section view along the alignment shown on the diagram which will be included for each month. Left limit of the chart represents the central dike and as you look to the right on the graph you are going towards the reclaim barge area.



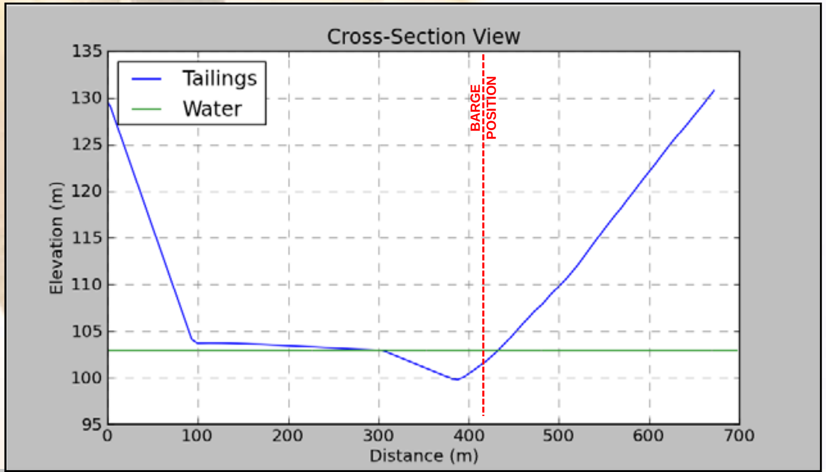
South Cell TSF deposition plan October 2014

Duration	Deposition Point	Tonnes
2	BP	23,290
15	1	174,675
9	2	104,805
5	3	58,225



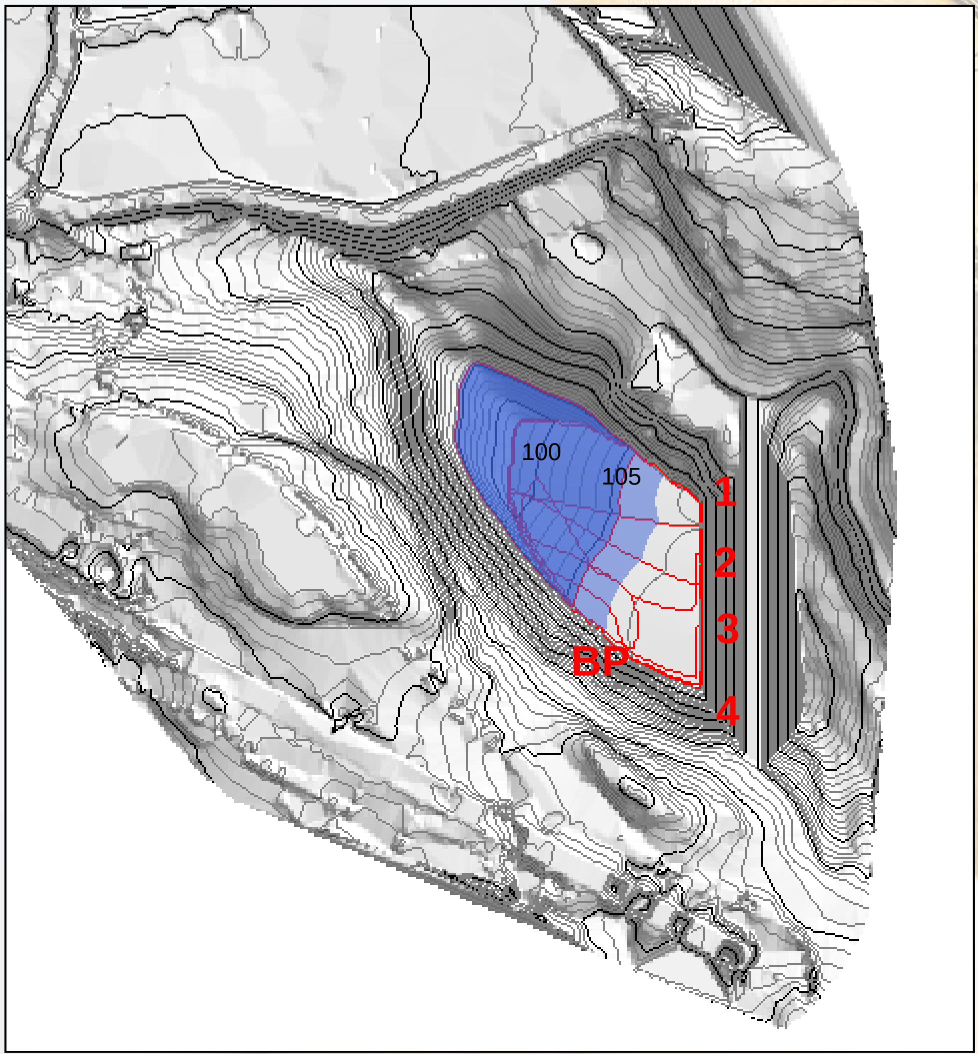
MODEL INPUT	
Water Balance Volume (m³)	190,255
Ice thickness (m)	0.00
Tonnes (t)	360,995

MODEL RESULTS	
Pond volume (m³)	191,123
Pond depth (m)	6.903
Pond elevation (m)	102.909
Min pond ele (m)	96.006
Ice thickness (m)	0
Unfrozen water elevation (m)	102.909
Ice volume (m³)	0
Ice ratio (%)	0%
Transfer from South Cell (m³)	0



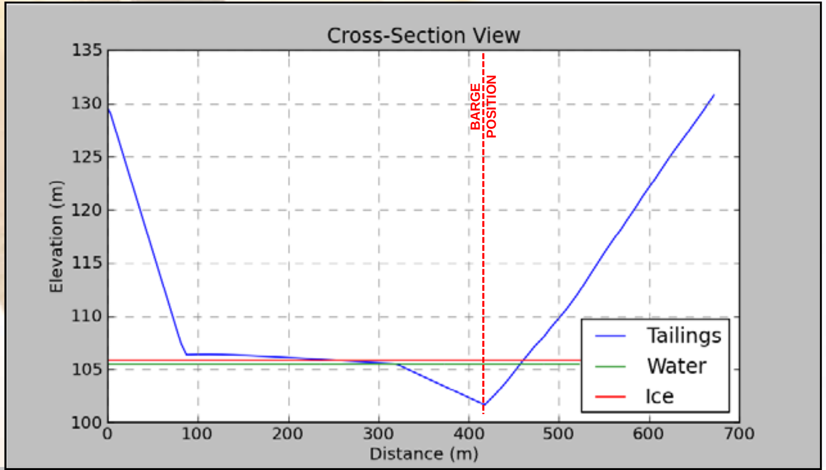
South Cell TSF deposition plan November 2014

Duration	Deposition Point	Tonnes
3	BP	34,898
19	1	221,018
6	2	69,795
3	3	34,898



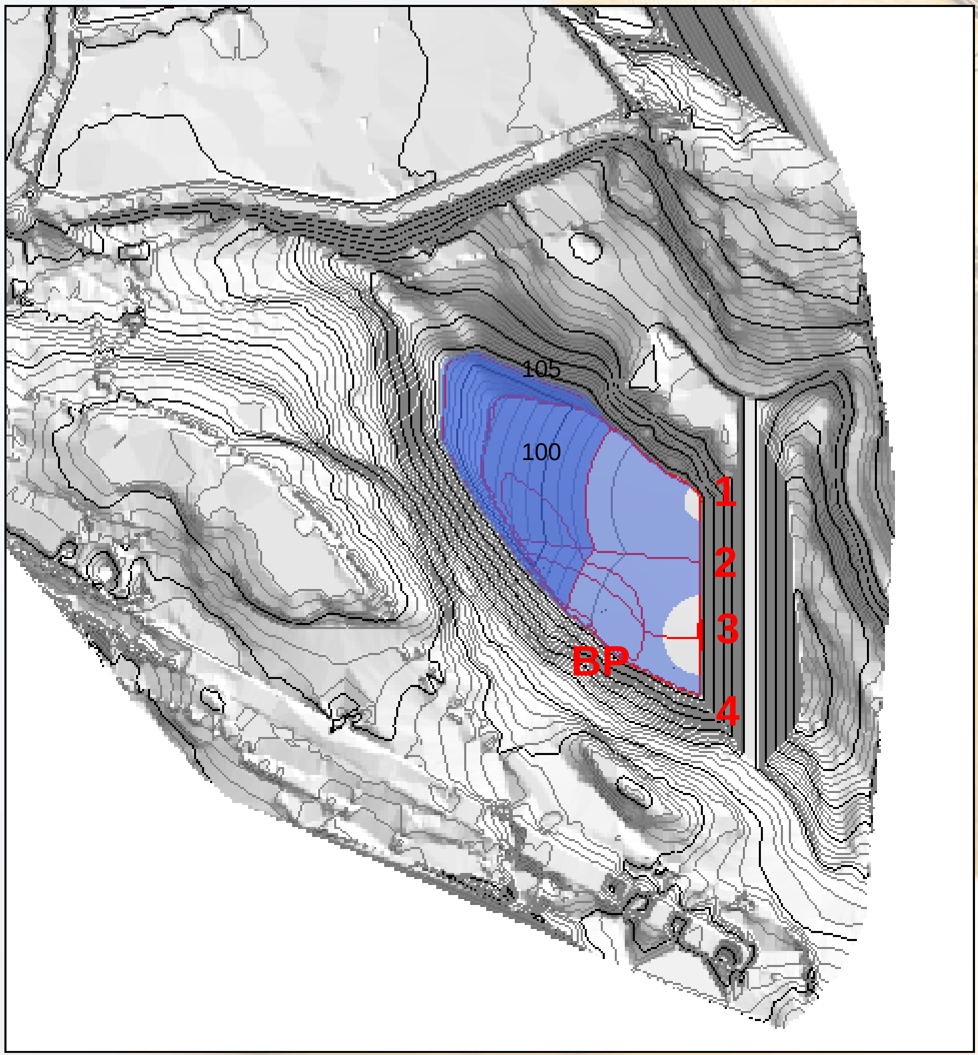
MODEL INPUT	
Water Balance Volume (m³)	235,021
Ice thickness (m)	0.30
Tonnes (t)	316,390

MODEL RESULTS	
Pond volume (m³)	235,021
Pond depth (m)	7.832
Pond elevation (m)	105.814
Min pond ele (m)	97.982
Ice thickness (m)	0.299
Unfrozen water elevation (m)	105.515
Ice volume (m³)	22,340
Ice ratio (%)	10%
Transfer from South Cell (m³)	0



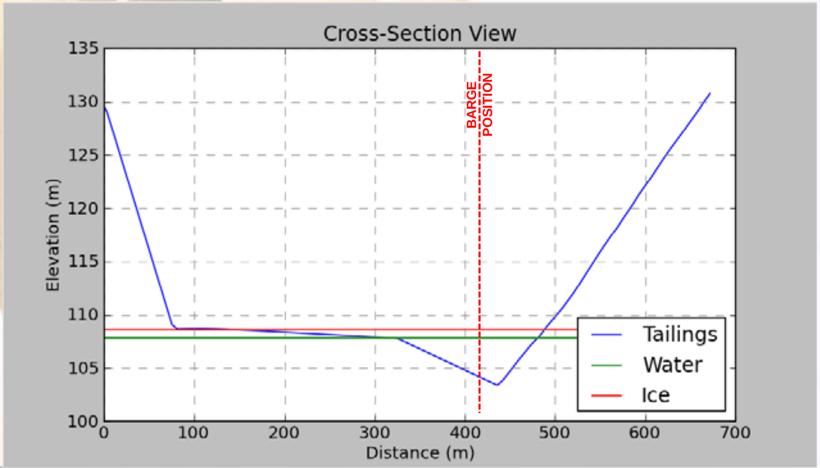
South Cell TSF deposition plan December 2014

Duration	Deposition Point	Tonnes
3	BP	34,743
24	1	277,944
4	3	46,324



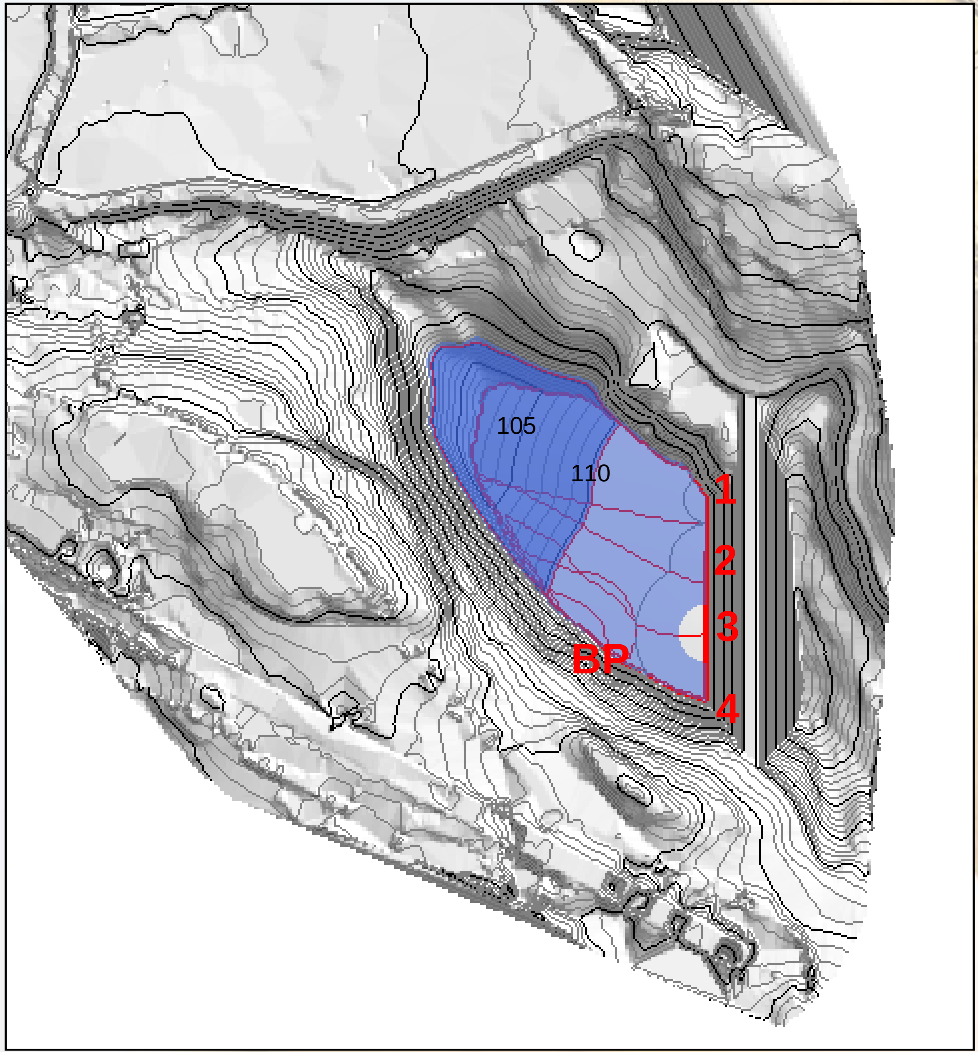
MODEL INPUT	
Water Balance Volume (m³)	277,628
Ice thickness (m)	0.8
Tonnes (t)	359,011

MODEL RESULTS	
Pond volume (m³)	277,628
Pond depth (m)	8.005
Pond elevation (m)	108.586
Min pond ele (m)	100.581
Ice thickness (m)	0.802
Unfrozen water elevation (m)	107.784
Ice volume (m³)	74,408
Ice ratio (%)	27%
Transfer from South Cell (m³)	0



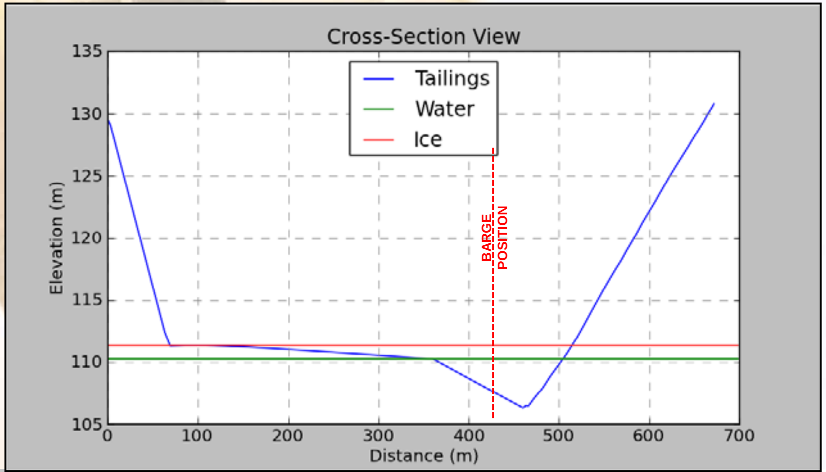
South Cell TSF deposition plan January 2015

Duration	Deposition Point	Tonnes
2	BP	22,818
20	1	228,176
6	2	68,453
3	3	34,226



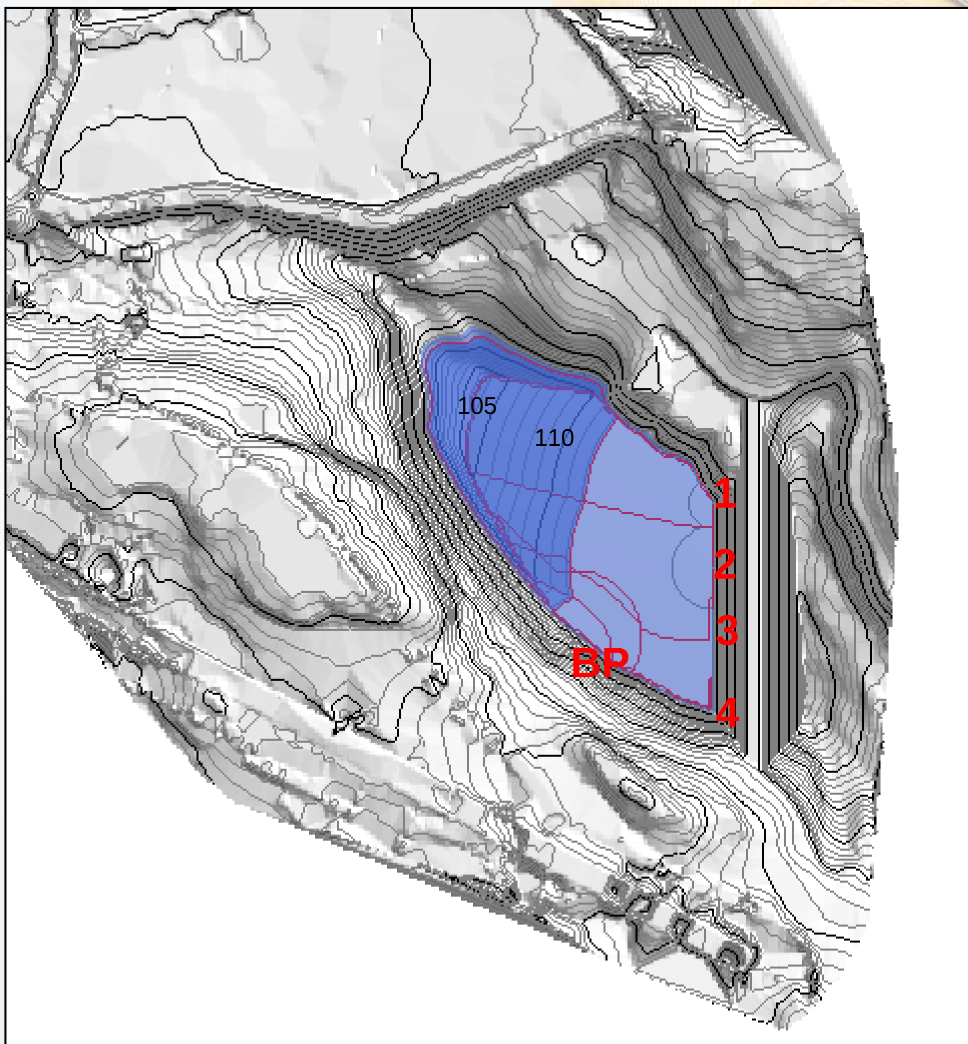
MODEL INPUT	
Water Balance Volume (m³)	381,243
Ice thickness (m)	1.10
Tonnes (t)	353,673

MODEL RESULTS	
Pond volume (m³)	381,243
Pond depth (m)	9.497
Pond elevation (m)	111.353
Min pond ele (m)	101.856
Ice thickness (m)	1.102
Unfrozen water elevation (m)	110.251
Ice volume (m³)	123,504
Ice ratio (%)	32%
Transfer from South Cell (m³)	0



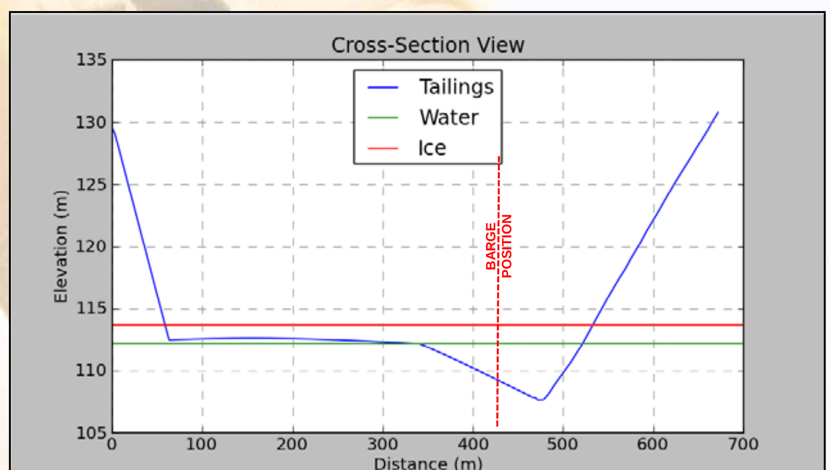
South Cell TSF deposition plan February 2015

Duration	Deposition Point	Tonnes
2	BP	22,507
21	1	236,322
5	2	56,267



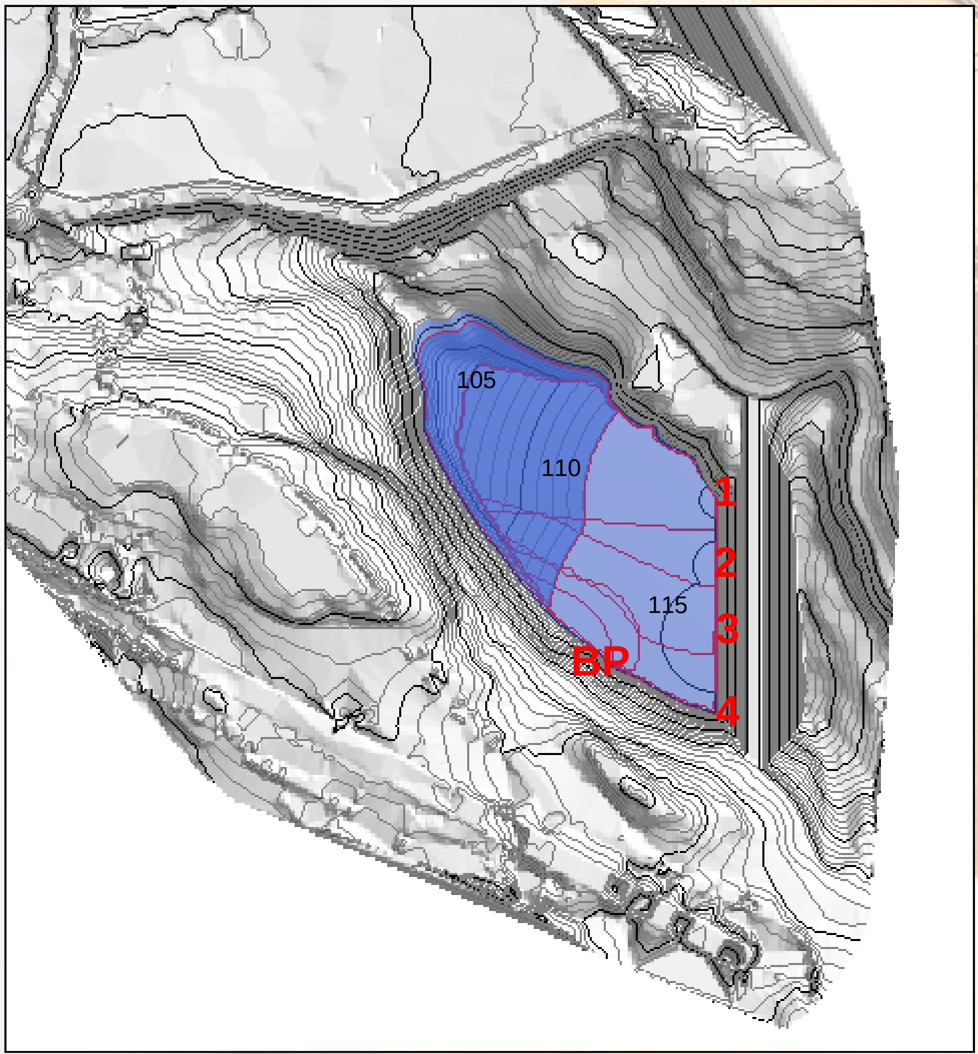
MODEL INPUT	
Water Balance Volume (m³)	491,338
Ice thickness (m)	1.50
Tonnes (t)	315,096

MODEL RESULTS	
Pond volume (m³)	491,338
Pond depth (m)	10.094
Pond elevation (m)	113.652
Min pond ele (m)	103.558
Ice thickness (m)	1.488
Unfrozen water elevation (m)	112.164
Ice volume (m³)	208,342
Ice ratio (%)	42%
Transfer from South Cell (m³)	0



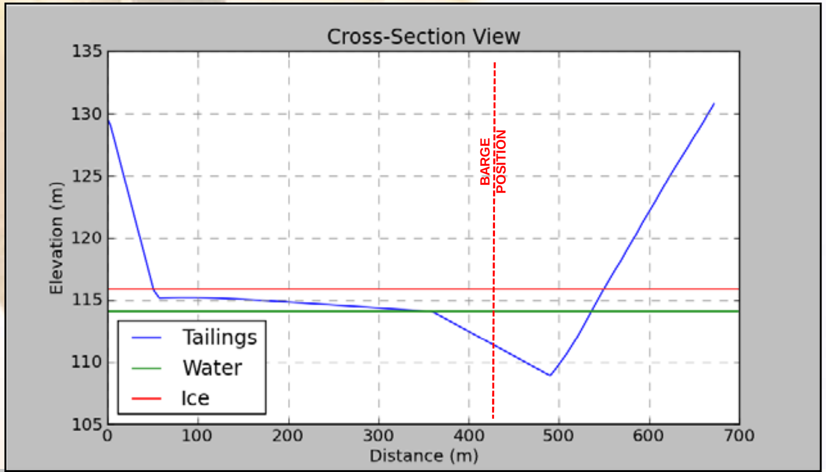
South Cell TSF deposition plan March 2015

Duration	Deposition Point	Tonnes
2	BP	22,716
21	1	238,513
5	2	56,789
3	3	34,073



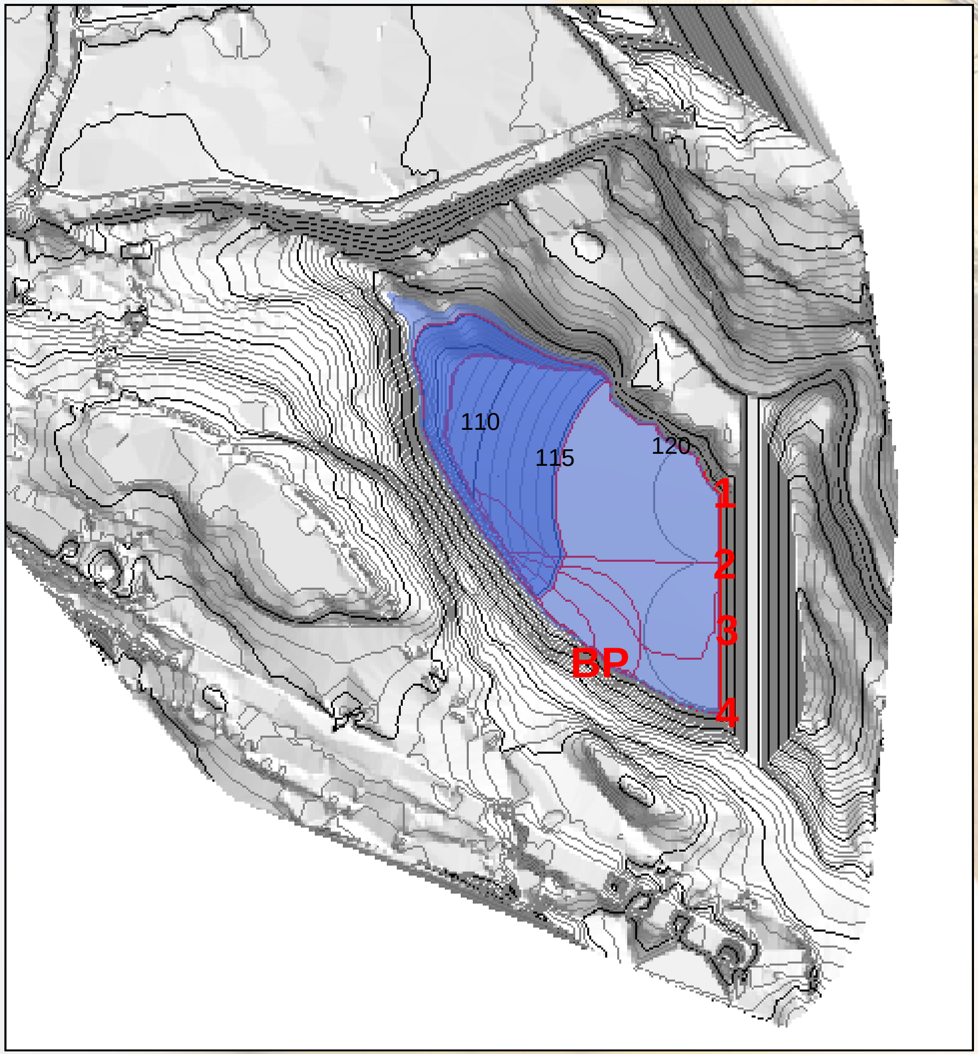
MODEL INPUT	
Water Balance Volume (m³)	594,953
Ice thickness (m)	1.80
Tonnes (t)	352,091

MODEL RESULTS	
Pond volume (m³)	594,953
Pond depth (m)	10.955
Pond elevation (m)	115.871
Min pond ele (m)	104.916
Ice thickness (m)	1.804
Unfrozen water elevation (m)	114.067
Ice volume (m³)	271,133
Ice ratio (%)	46%
Transfer from South Cell (m³)	0



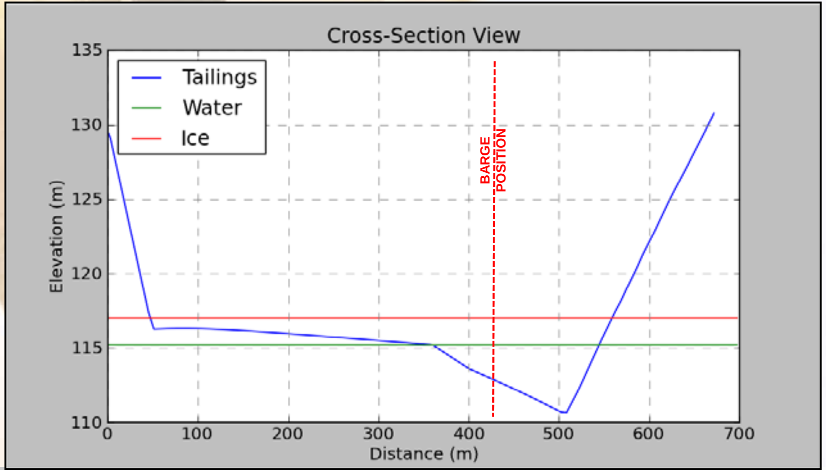
South Cell TSF deposition plan April 2015

Duration	Deposition Point	Tonnes
2	BP	22,688
25	1	283,597
3	3	34,032



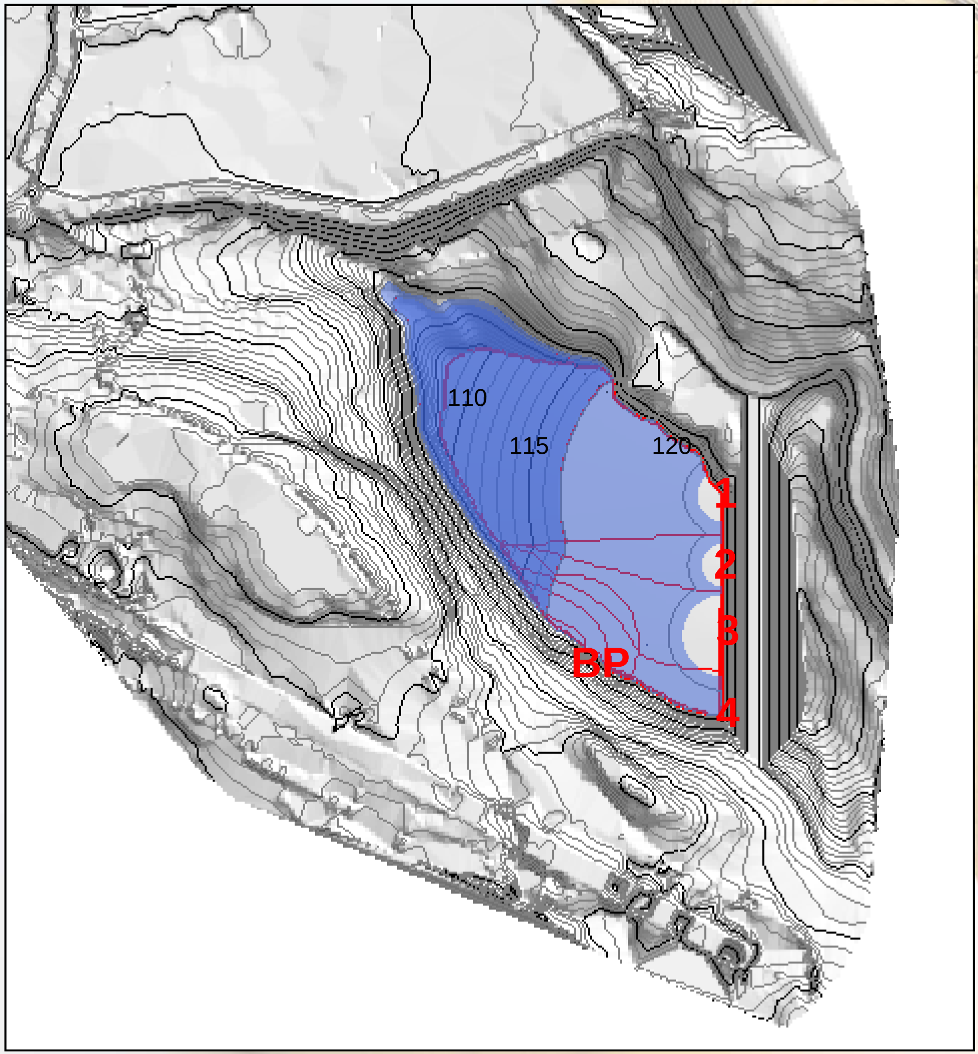
MODEL INPUT	
Water Balance Volume (m³)	530,153
Ice thickness (m)	1.80
Tonnes (t)	340,316

MODEL RESULTS	
Pond volume (m³)	530,153
Pond depth (m)	10.031
Pond elevation (m)	117.001
Min pond ele (m)	106.970
Ice thickness (m)	1.797
Unfrozen water elevation (m)	115.204
Ice volume (m³)	273,313
Ice ratio (%)	52%
Transfer from South Cell (m³)	0



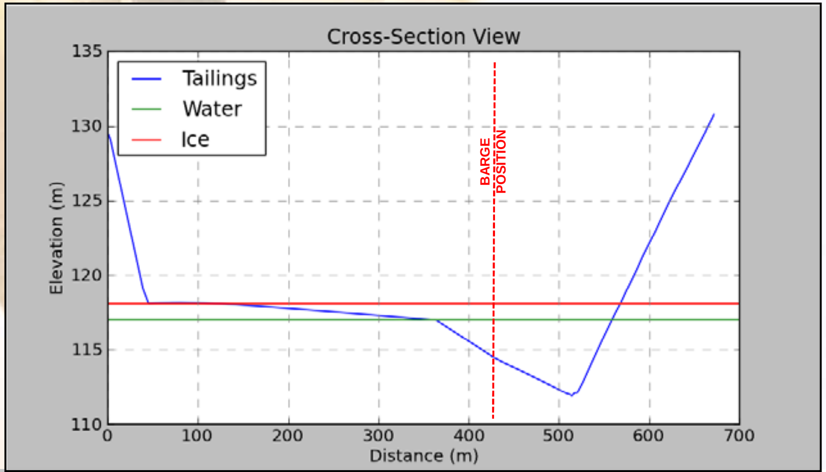
South Cell TSF deposition plan May 2015

Duration	Deposition Point	Tonnes
2	BP	22,694
24	1	272,326
3	2	34,041
2	3	22,694



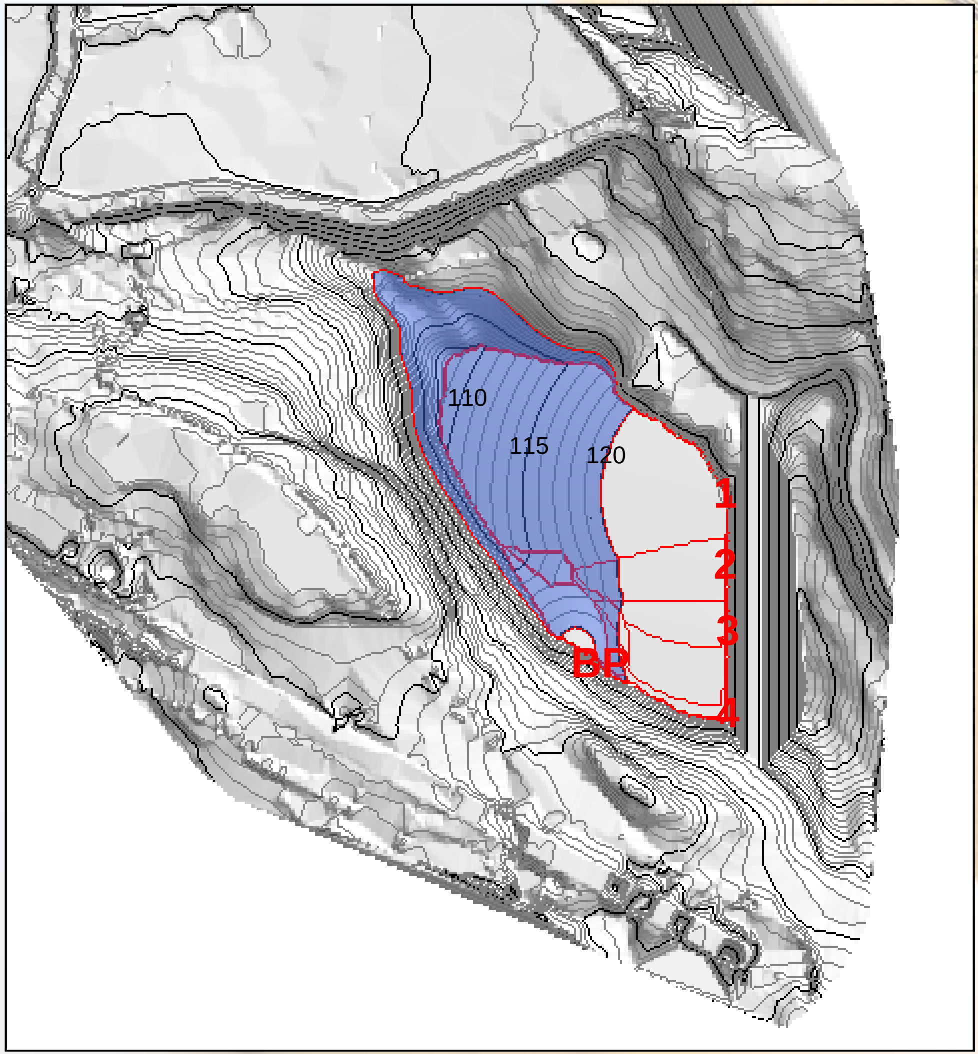
MODEL INPUT	
Water Balance Volume (m³)	463,193
Ice thickness (m)	1.10
Tonnes (t)	351,754

MODEL RESULTS	
Pond volume (m³)	463,193
Pond depth (m)	10.115
Pond elevation (m)	118.112
Min pond ele (m)	107.997
Ice thickness (m)	1.122
Unfrozen water elevation (m)	116.990
Ice volume (m³)	155,907
Ice ratio (%)	34%
Transfer from South Cell (m³)	0



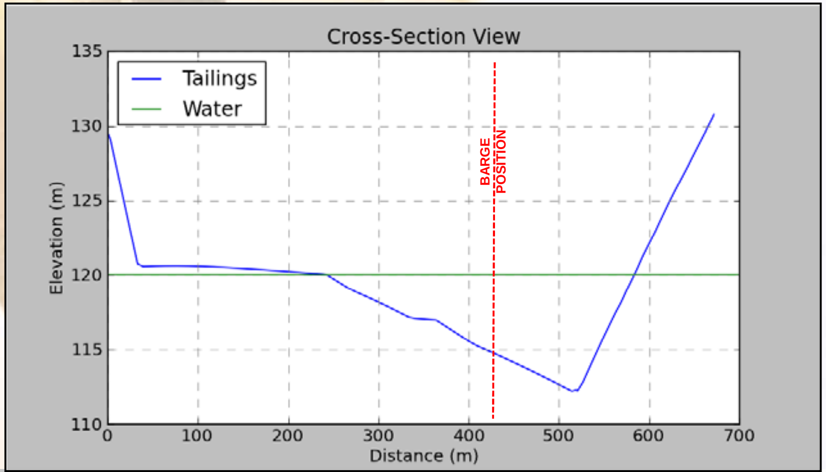
South Cell TSF deposition plan June 2015

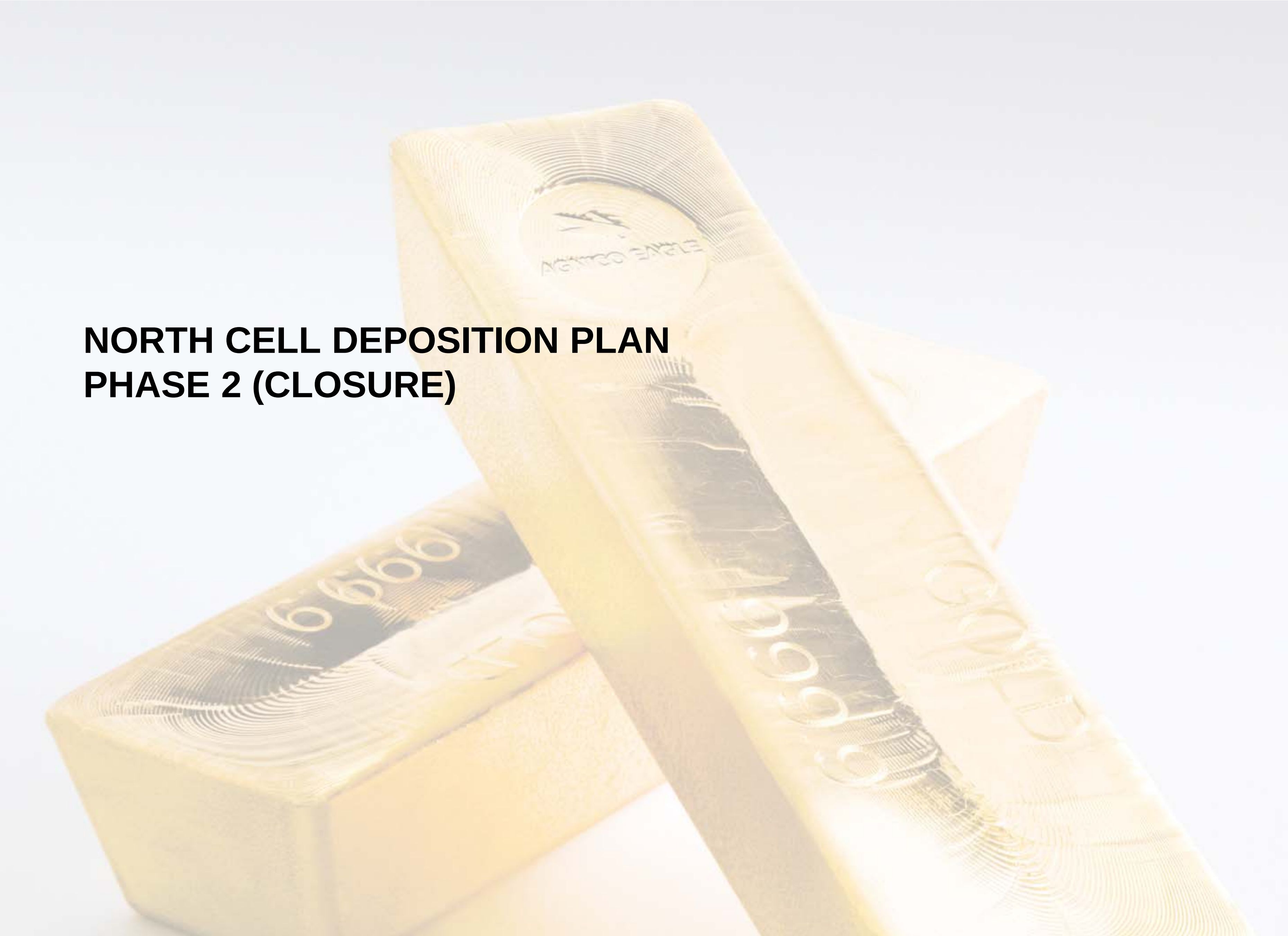
Duration	Deposition Point	Tonnes
2	BP	22,694
24	1	272,326
3	2	34,041
2	3	22,694



MODEL INPUT	
Water Balance Volume (m³)	623,819
Ice thickness (m)	0.00
Tonnes (t)	340,012

MODEL RESULTS	
Pond volume (m³)	623,782
Pond depth (m)	11.702
Pond elevation (m)	120.042
Min pond ele (m)	108.340
Ice thickness (m)	0.00
Unfrozen water elevation (m)	120.042
Ice volume (m³)	0
Ice ratio (%)	0%
Transfer from South Cell (m³)	0

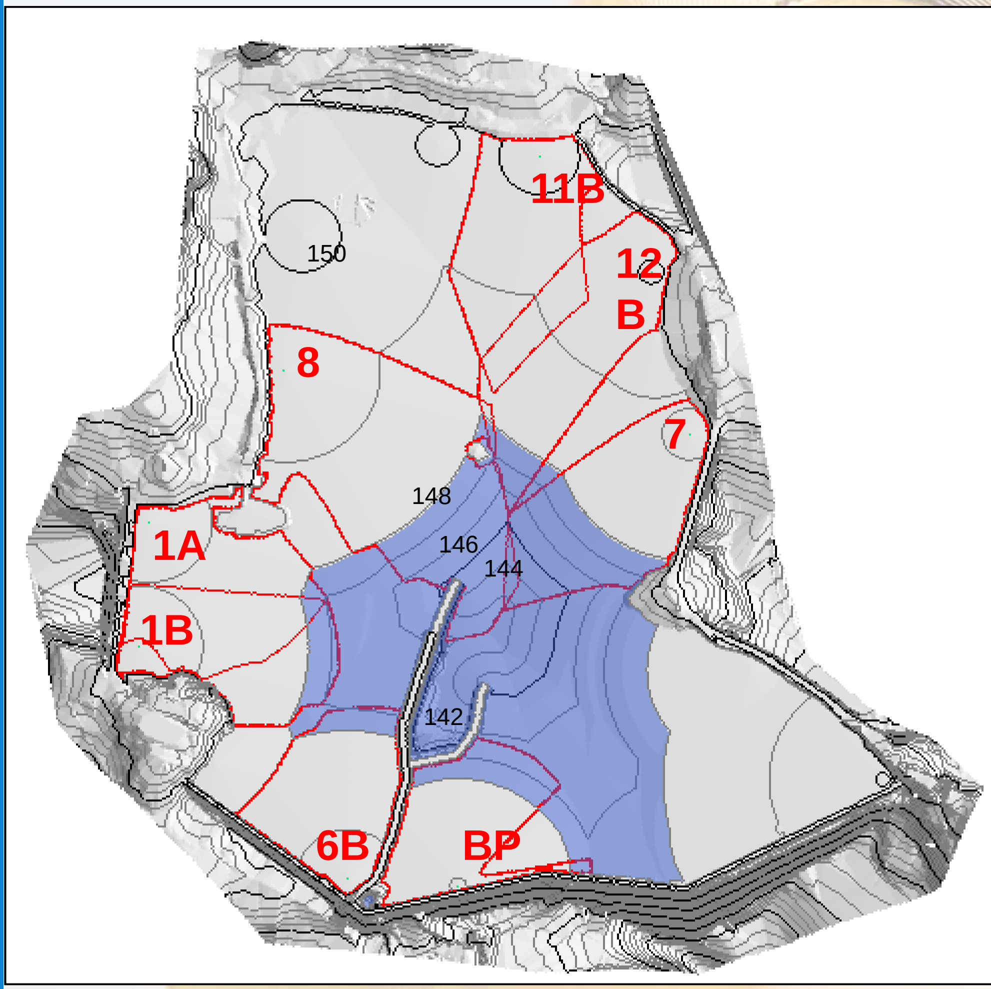




NORTH CELL DEPOSITION PLAN
PHASE 2 (CLOSURE)

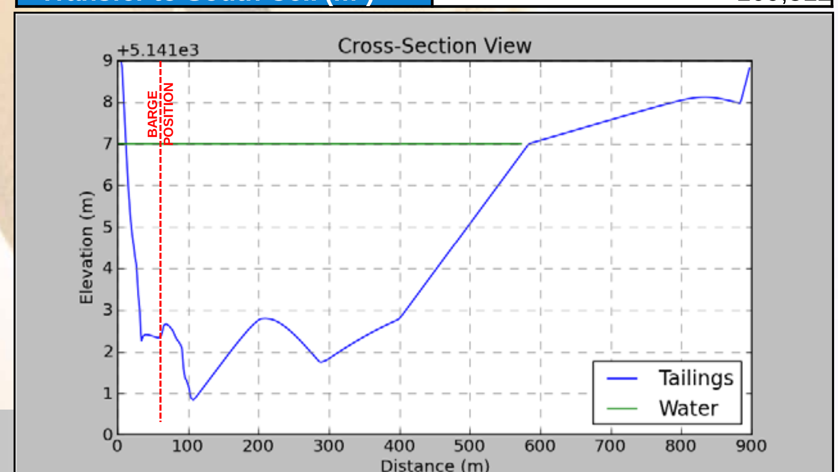
North Cell TSF deposition plan July 2015

Duration	Deposition Point	Tonnes
2	BP	22,680
3	6B	34,020
3	11B	34,020
3	8	34,020
3	12B	34,020
6	1A	68,040
6	7	68,040
5	1B	56,700



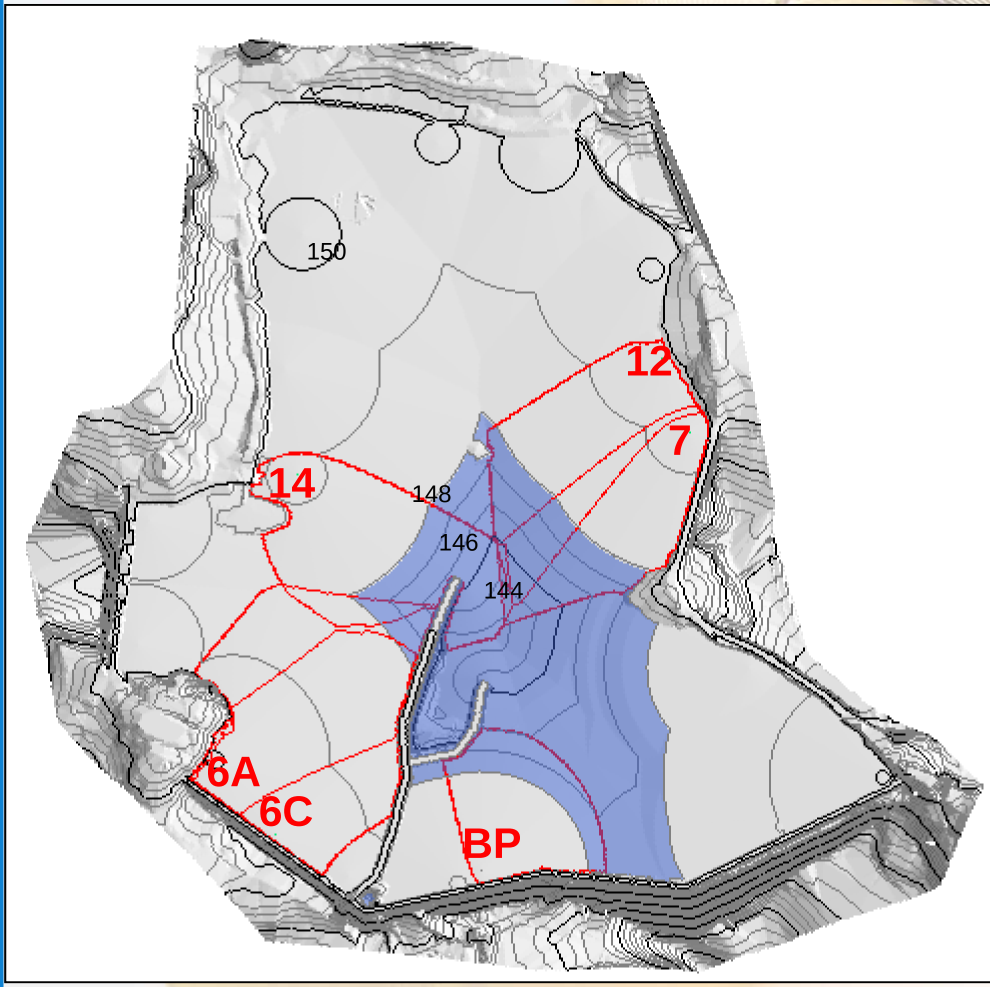
MODEL INPUT	
Water Balance Volume (m³)	770,252
Ice thickness (m)	0
Tonnes (t)	351,540

MODEL RESULTS	
Pond volume (m³)	660,740
Pond depth (m)	6.197
Pond elevation (m)	148.000
Min pond ele (m)	141.803
Ice thickness (m)	0
Unfrozen water elevation (m)	148.000
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	109,512



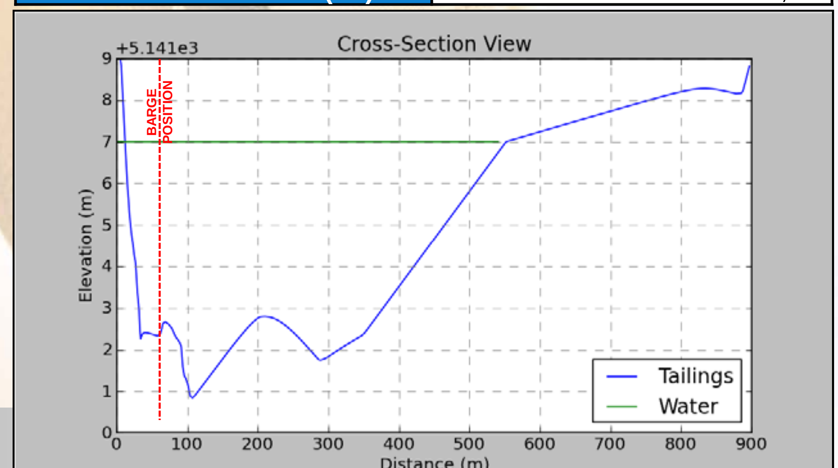
North Cell TSF deposition plan
August 2015

Duration	Deposition Point	Tonnes
2	BP	22,741
6	14	68,222
3	12	34,111
9	6C	102,333
3	7	34,111
8	6A	90,962



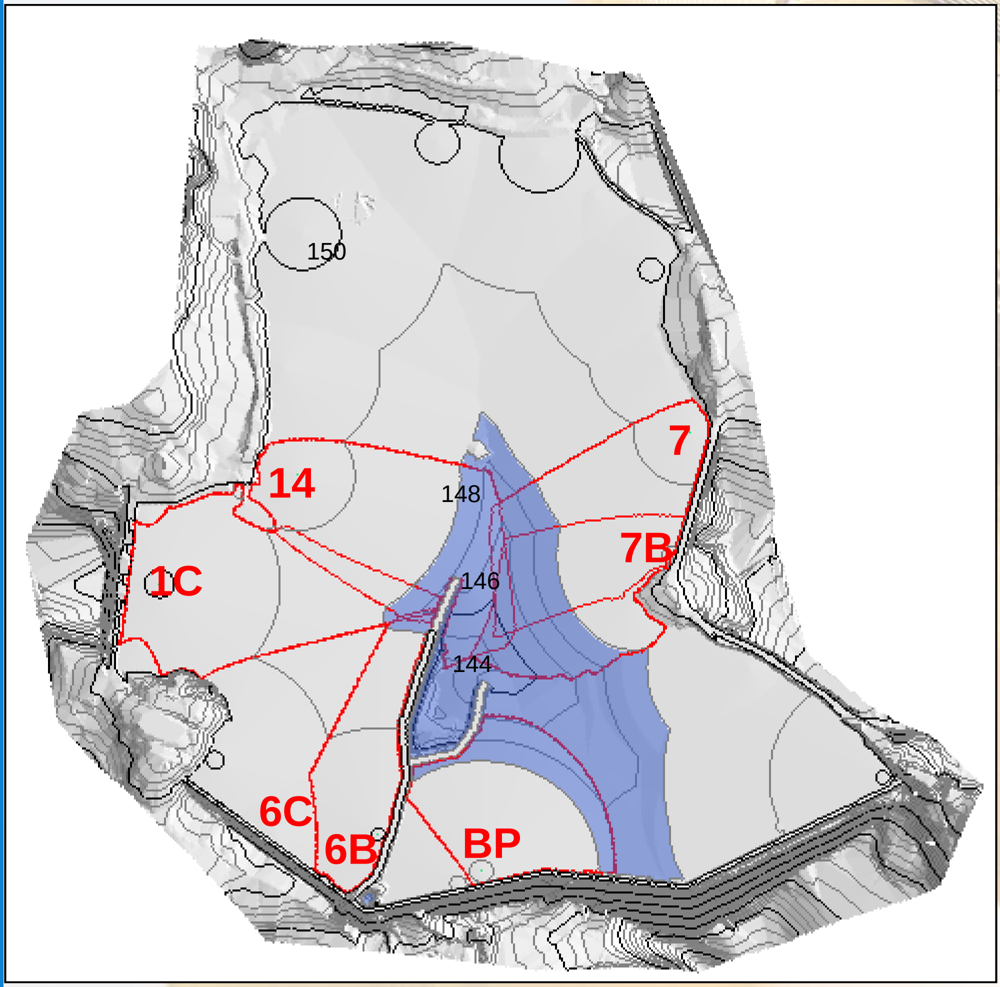
MODEL INPUT	
Water Balance Volume (m³)	595,065
Ice thickness (m)	0
Tonnes (t)	352,479

MODEL RESULTS	
Pond volume (m³)	514,805
Pond depth (m)	5.760
Pond elevation (m)	148.000
Min pond ele (m)	142.240
Ice thickness (m)	0
Unfrozen water elevation (m)	148.000
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	80,260



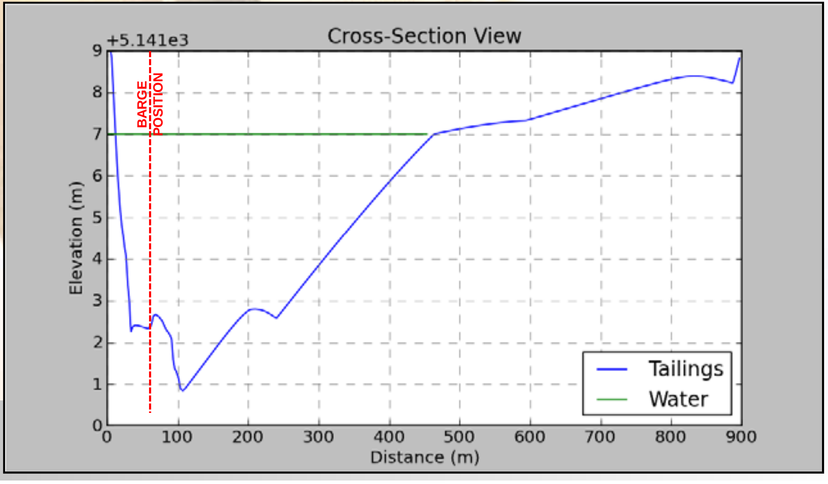
North Cell TSF deposition plan September 2015

Duration	Deposition Point	Tonnes
2	BP	22,733
6	1C	68,199
3	7	34,100
7	14	79,566
9	7B	102,299
3	6B	34,100



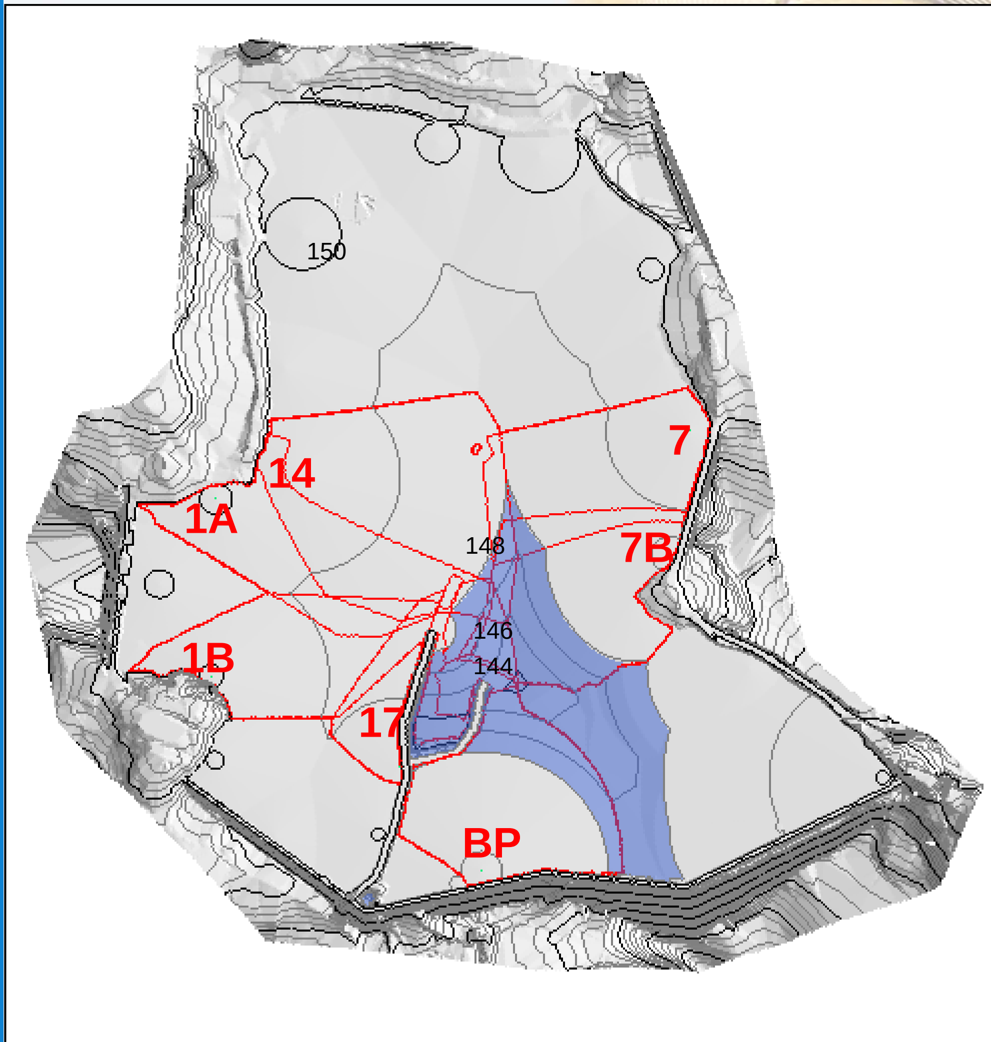
MODEL INPUT	
Water Balance Volume (m³)	478,127
Ice thickness (m)	0
Tonnes (t)	340,995

MODEL RESULTS	
Pond volume (m³)	354,289
Pond depth (m)	5.465
Pond elevation (m)	148.000
Min pond ele (m)	142.535
Ice thickness (m)	0
Unfrozen water elevation (m)	148.000
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	123,838



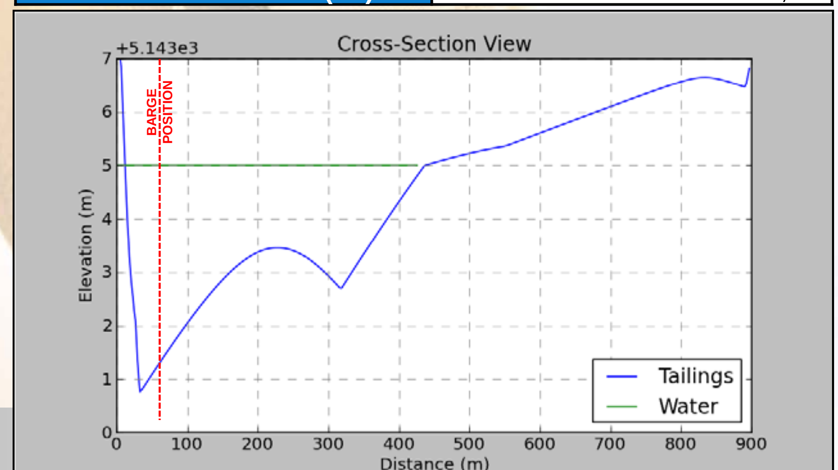
North Cell TSF deposition plan October 2015

Duration	Deposition Point	Tonnes
2	BP	22,714
3	1A	34,071
3	7B	34,071
3	1B	34,071
3	7	34,071
9	17	102,213
8	14	90,856



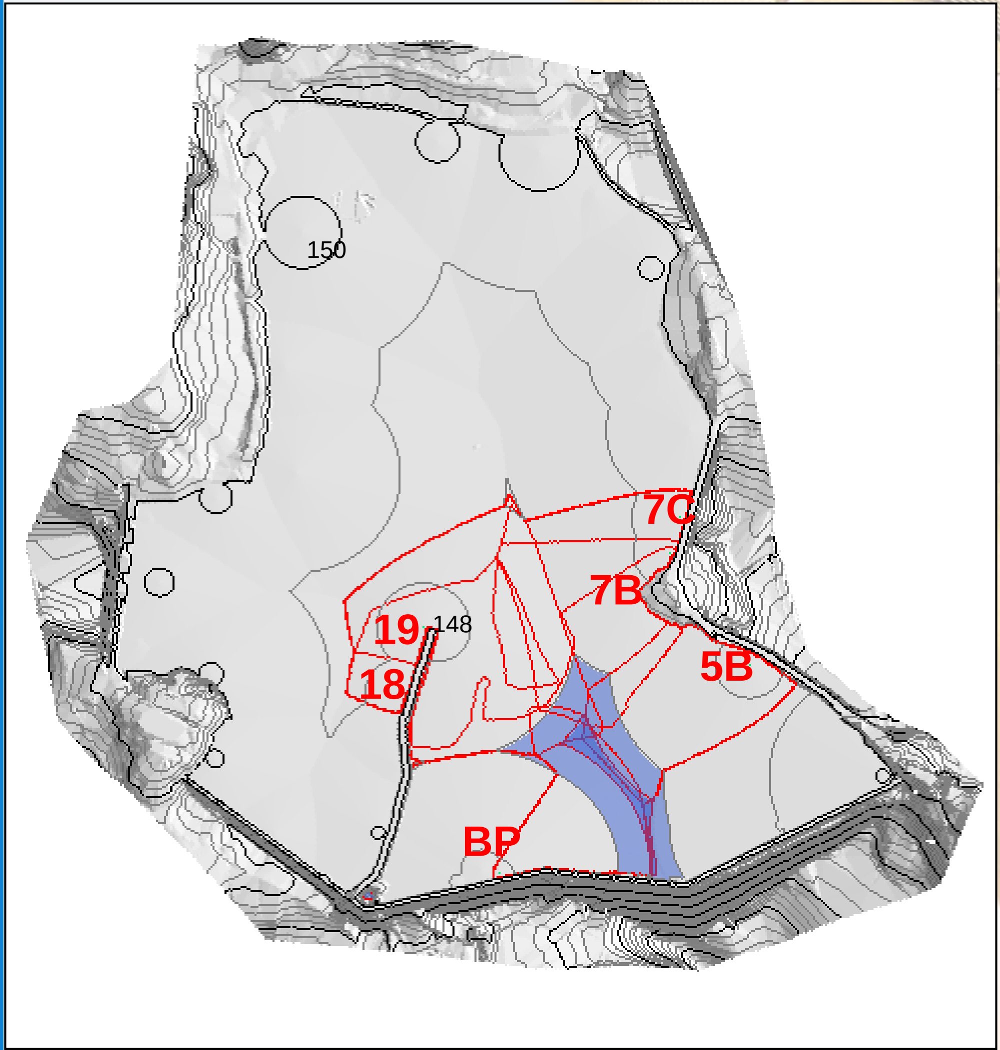
MODEL INPUT	
Water Balance Volume (m³)	478,127
Ice thickness (m)	0
Tonnes (t)	340,995

MODEL RESULTS	
Pond volume (m³)	194,962
Pond depth (m)	4.253
Pond elevation (m)	148.000
Min pond ele (m)	143.747
Ice thickness (m)	0
Unfrozen water elevation (m)	148.000
Ice volume (m³)	0
Ice ratio (%)	0
Transfer to South Cell (m³)	77,487



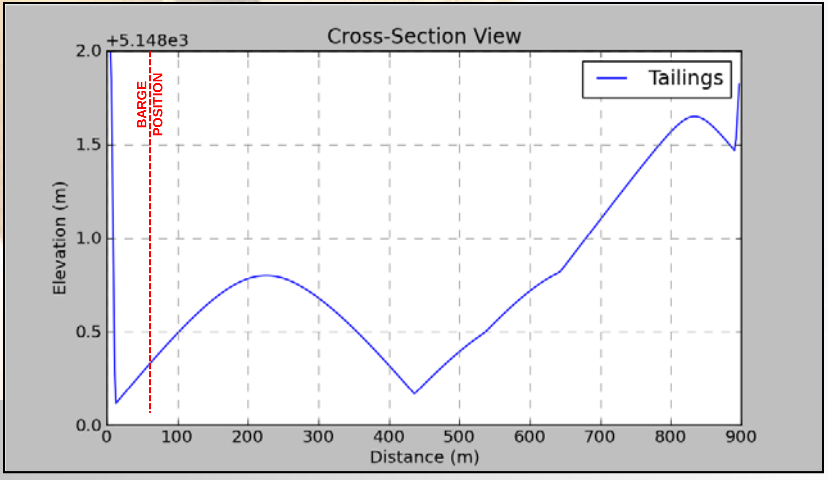
North Cell TSF deposition plan November 2015

Duration	Deposition Point	Tonnes
2	BP	22,699
3	7C	34,049
9	18	102,146
3	7B	34,049
10	19	113,495
3	5B	34,049



MODEL INPUT	
Water Balance Volume (m³)	194,962
Ice thickness (m)	0.3
Tonnes (t)	340,485

MODEL RESULTS	
Pond volume (m³)	11,041
Pond depth (m)	0.836
Pond elevation (m)	148.000
Min pond ele (m)	147.164
Ice thickness (m)	0.300
Unfrozen water elevation (m)	147.700
Ice volume (m³)	9,675
Ice ratio (%)	88%
Transfer to South Cell (m³)	183,921



North Cell TSF Final Closure

- As per the previous slide, the NC can no longer take tailings utilizing the current deposition points without pushing the pond North
- The NC will still have a certain capacity of tailings which could be explored and utilized during the final closure of the cell
  - An option would be to start capping from the North working our way South
  - A mobile deposition point could be used to fill the ‘low’ areas of the cell
  - Maintaining water reclaimation from the Stormwater dike (South portion of the cell)
  - Opportunity to store roughly 700,000t of production (2 months)
- This needs to be further investigated and scheduled with the waste management plan
- Some risks presents itself with this method such as:
  - Instability due to deposition activity near the capping
  - Low settlement of the tailings causing ‘dirty’ water to be pumped

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