

Appendix 15

Meadowbank and Whale Tail IRB Report No 32

January 30th, 2025

Mr. Eric Steinmetzer
General Manager
Agnico–Eagle Mines, Meadowbank Division
Baker Lake Office

Email: eric.steinmetzer@agnicoeagle.com

Dear Mr. Steinmetzer,

Reference: Report No 32
Meadowbank Independent Review Board (MBK IRB)
Site visit August 21st to 23rd, 2024 and meeting, Montréal, December 10th and 11th, 2024.

1.0 INTRODUCTION

A site visit was made by the MBK IRB from August 21st to August 23rd, 2024. Subsequently, meetings were held in Montréal on December 10th and 11th, 2024, with the AEM Meadowbank team during which additional presentations were made and discussions held on a variety of subjects related to the performance of the water management and tailings management facilities.

The Board now comprises three members. Dr. Ron Nicholson has joined Kevin Hawton and Anthony Rattue on what is now identified as the Meadowbank Independent Review Board or MBK IRB. All three members participated in the August site visit and the December meetings in Montreal.

In addition to reviewing the current site conditions, the objective of the site visit was to receive some background data pertaining to Meadowbank and Amaruq sites as an introduction to the more in-depth discussions held at the in-person meeting in early December 2024. The material presented and discussed in August covered current operations, activities performed in response to previous Board recommendations, and critical infrastructure performance to provide context for the site visit, together with some discussion around a recent Dam Safety Review (DSR 2023). These discussions also served to provide some early feedback to assist with planning for the December meeting. On-ground visits were made at the sites, and a helicopter flyover was also carried out during the return from Amaruq to Meadowbank.

The December meetings in Montreal were intended to discuss the activities and performance of the infrastructure in more detail, including in depth discussions related to progressive reclamation activities.

The present report covers both Meadowbank and Amaruq operations as well as the Vault pit site. This final report covers both the August site visit/meetings and the December deliberations.

A list of persons having participated is included in Appendix A and a selection of photographs from the site visit is included in Appendix B.

A brief summary of the subject matter and comments are presented in the following sections. The Board's opinions and recommendations are presented in bold type face.

2.0 OPERATIONS

An overview of mine status, and current operations was provided to the Board for information. Life of Mine is currently envisaged as extending to mid 2028. At the December meeting, it was mentioned that the Extended Life of Mine (ELOM) could take this to 2035, but much work is required to justify the economics of such a change.

The organizational charts for the environmental department were presented for information to highlight updates. ***The Board continues to be impressed with the AEM team, and the organic approach to succession planning thereby maintaining a consistent core of staff with the required first-hand project experience.***

The Meadowbank environment and critical infrastructure department is currently working closely with their corporate counterparts to focus on the late operations and closure concepts.

3.0 PAST RECOMMENDATION FOLLOW-UPS

As usual, AEM has been responsive to the suggestions made in the reports prepared subsequent to previous Board visits. A presentation was made in August to indicate the following actions. MDRB report date is given in parentheses.

Thermal Berms at Whale Tail Dike (2021 and 2022)

Further improvements have been made to the Whale Tail Dike, with the addition of a thermal berm on the downstream side of the dike at the East abutment.

Improve winter drainage at East dike pump station (2022)

Further improvements to the drainage around the seepage pump station have been made thereby facilitating the comprehension of seepage water sources and the measurement thereof.

Capping material dumping (2023)

For the Tailings Storage Facility (TSF), the procedures for the progressive pre-closure capping have been improved by the use of better graded material and the avoidance of end dumping directly onto the advancing face.

Alert/Alarm levels and Inspection Frequencies (2023)

Alert/Alarm levels are being developed for the automated instrument readings, concentrating initially on the thermistor values. The use of alarm/alert levels will permit an optimization of the inspection frequency, but these will still be subject to adjustment according to observed behaviour.

Landscaping/profiling of the TSF surface, Spillway Location and progressive closure capping (2021, 2022 and 2023)

The planning for long term drainage at the TSF will likely include a surface spillway located in the area of quarry 23. The Board had encouraged identification of the layout and closure concepts in general so as to better orient ongoing operations and progressive closure work. The next iteration of the tailings deposition plan will incorporate these aspects.

Future breaching at closure of Bay-Goose and East Dikes (2022)

The Board had also observed previously that the eventual excavation of a breach in Bay-Goose dike to return to natural conditions may create a head difference across East Dike. AEM confirms that closure planning would consider this aspect.

The Board is content with all these follow-up actions.

4.0 GENERAL STRUCTURE PERFORMANCE AND THE SITE VISITS

Brief discussions were held prior to and during the various field visits to facilitate comprehension, but detailed presentations were deferred to the December meeting.

On arrival at site, the Board transferred by road to the Amaruq site for an on-ground tour. The following structures were observed:

- The Whale Tail Dike is performing well, and no new deformation of the structure is reported. As previously mentioned, an additional thermal berm has been added on the downstream at the East abutment as can be seen in photo #3. The measuring weir (photo #5) collects most of the under-seepage water reporting at the dike toe and an additional weir is planned for the wet area to the East (photo #6).
- The IVR dike (photo #7) is also performing as intended. A drone survey of the crest had been performed, and the interpretation of the results was awaited before proceeding with any required crest top-up and leveling. The crest re-leveling will proceed in 2025.
- A visit was made to the South Whale Tail channel which is in excellent condition given the permafrost affected terrain in which it was constructed. Only minor local settlement of the invert has occurred as indicated by a few local water-filled depressions (Photos #8, 9 and 10).
- Mammoth Dike and the Waste Rock Storage Facility (WRSF) dike (photo #11) are both performing as intended.
- Annual maintenance is required at the Saline Ditch but otherwise no adverse observations are noted.

The return trip was made by helicopter which afforded an excellent visual appreciation of all the structures at Amaruq, Vault and Meadowbank.

The following day, Vault Dike and the Vault deposit open pits were visited. The low, wide rockfill structure that comprises Vault Dike was noted, as was the shallow depth of water at the upstream toe (Photos #12, 13, and 14). More discussion on this structure is to be found in the section on the 2023 DSR.

At Meadowbank, the following structures were included in the tour:

- At the TSF Saddle Dams, rockfill placement for protection of the liner at SD-1 was underway as a precursor to capping of the tailings (Photos #15 and 16). A similar operation will be carried out at the other containment structures of the TSF.
- At the TSF Stormwater Dike, additional capping has been accomplished in the vicinity of this dike but no tailings deposition for landscaping has been carried out this year (Photos #18 and 19).
- The TSF Central Dike is performing well, and the downstream pond (photos #20 and 21) is still being maintained at elevation 115 masl.

- The small runoff/seepage water capture and pumping system on the North side of the WRSF was also visited. No release of contaminated contact water has been reported in the last few years.
- Stops were made at the East Dike to observe features noted in the 2023 DSR. No change has been detected by the AEM team over the past year. The perceived uplift in the lakebed sediment is believed to date to the original rockfill placement period (Photo #22). The noted improvements to the seepage pump station were observed (Photo #23).
- At Bay-Goose dike (photo #24), extra fill has been placed and regrading carried out to facilitate more efficient visual observation of the condition of the dike crest (photo #25). It was observed that the material comprising the upstream face of the dike contains a significant proportion of finer material (photo #26) that could be either recently placed or due to progressive breakdown of the soapstone rock. However, little wave damage was noted, and the wide crest (80 m) would provide a large volume of sacrificial material in such an event.
- At South Camp dike, the small water pond, noted in the DSR was observed to be smaller than illustrated in that report. Prolonged presence of a significant water body could indeed have an influence on the frozen condition of the foundation. ***The crest road is kept clear of snow all winter and cold ingress is therefore facilitated but improved drainage or backfill of this area of ponding water may be beneficial.*** The amount of available freeboard can be appreciated from photo #28.

5.0 TAILINGS MANAGEMENT AND STRUCTURE PERFORMANCE

5.1 General

The following sections were developed primarily subsequent to the December meeting held in Montréal. AEM made the point that the particularities of 2023-2024 meteorological conditions should be considered when examining instrument results for this period. Temperatures have been above average and, though overall precipitation for the year has been lower than what is typically experienced at site, the months of September and October, which precede the latest measurements, were very wet of the average for those months.

5.2 Tailings Deposition

No tailings deposition has taken place in the TSF, with Pit E being the location for disposal this year. Water for mill operations is reclaimed through pit E mainly (primary reclaim system) and from pit A as a back-up option. Transfer had taken place from pit E to pit A until hydraulic connection was observed in the summer of 2024.

Progressive Reclamation activities on the periphery of the North Cell of the TSF have continued with regrading and capping adjacent to the upstream crest of the Saddle Dams and areas downstream of the North Cell Internal Structure (NCIS).

An instrumentation assessment and maintenance program has been completed. Surveillance as per the OMS manual is ongoing, and no change to observed seepage or TARP levels were noted.

Drone surveys are being completed but a change to InSAR is contemplated in order to reduce manpower requirements. ***The Board recommends that an overlap of about 12 months be instigated to ensure a reliable base case for future surveys.***

Deposition of tailings into Pit A is planned to start in 2025 and continue into 2026. This will require extension of the current pipeline network, for which construction is understood to be nearing completion, with commissioning planned prior to Q1-2025.

Bathymetry is available to indicate the underwater topography within the pits, and this has been used in the analysis of the post deposition conditions to date. In-situ average density is of the order of 1.57 t/m³. Submerged slopes are compound, varying beyond the deposition point from relatively flat for first 60 to 70 m (~0.4%), to steep for the next 70 to 100 m (~6.6%), and back to flat beyond 175 m (~0.7%). The Pit A and E tailings deposition plans have been developed and modeled for future planning, and these were presented to the board for information.

Deposition into the North and South Cells of the TSF will be completed during the summer months only, as required to:

- Minimize dust generation prior to closure
- Prevent undesired water ponding, and
- For landscaping purposes to aid with closure initiatives (i.e. reduce capping and facilitate long-term drainage).

It is currently envisaged that up to 875,000 m³ may be deposited in the South Cell in 2025 and 1,130,000 m³ in the North Cell in 2026.

The balance between infiltration and run-off from the surface of the TSF North and South Cells will depend on the long-term maintenance of a positive gradient towards the spillway outlet. To assist with the planning and execution of the landscaping and capping, the Board suggests the installation of a nest of piezometers in the unfrozen tailings in the central part of each cell, in order to follow the evolution of the consolidation process and better predict long term settlement.

5.3 In-Pit Water Management

Fresh water for mill operations is taken from Third Portage Lake and the YTD quantity, expressed as volume of water per ton of processed ore, has surpassed the target by 16% (0.24 m³/ton vs 0.2 m³/ton). The primary reasons for this are understood to be related to quality of reclaim water available, technical issues with the system operations (i.e. winter pump moves), and reclaim pump performance (i.e. capacity 460 m³/hr vs demand 550 m³/hr).

Of note also, is the observation of a hydraulic connection between Pits E and A at around El. 85 m that affects the net water transfer between these water bodies. A manifestation of the presence of free water in the rock dump includes the observation of settlement and cracking on the surface of the dumps. The apparent connection will reduce effectiveness and flexibility previously afforded by the ability to transfer water between Pit E and Pit A, and as such, future water balance evaluations will need to assume similar water elevations within these pits. New instrumentation was installed in June 2024 below the Central dump to monitor the connection.

The Board appreciates the issues but urges AEM to continue to search for ways to reduce the introduction of fresh water to the system.

5.4 TSF Dam and Dike Performance

At the North Cell, all structures are performing as intended with Trigger Action Response Plan (TARP) level green maintained for all. Progressive closure related activities (and improvements) were carried out at SD1, SD2, RF1/2, and downstream of NCIS.

The Stormwater Dike is performing as intended however, the foundation remains unfrozen and the seepage beneath the dike is assumed to continue and report through the underlying talik to the Central Dike downstream pond. Liner weld repairs and protection, in addition to some capping were carried out upstream of the Stormwater Dike in 2024.

At the South Cell all structures are performing as intended and TARP levels are Green, with the exception of Central Dike which is in good condition but with a TARP level Yellow. Some progressive closure activities were performed at SD3. At SD5, it was noted that some mud was pushed over downstream crest but subsequently cleaned up.

The Central Dike is also generally performing as intended and the observed seepage is consistent with 2023, and despite precipitation related peaks, the winter base flow remains low at around 25 m³/hr. The Central Dike instrumentation is performing well (82% functioning) and generally consistent with past readings, however a rapid increase in the water head of 25 m was recorded in 0+580-P1R in January 2024. The instrument is not frozen, but the readings do not concord with the two other vibrating wire units installed in the same borehole. A hypothesis related to thick grout mix has been put forward. The majority of thermistors are showing a cooling trend, except 0+700-P1 which is stable and unfrozen.

5.5 Mill Trench Seepage

A leak from the pad on which the leach tanks are located was observed in May 2024. The leakage was contained in the operations perimeter and a temporary patch was implemented. A sprayed liner will be installed when weather conditions permit.

5.6 Tailings Spill

AEM reported a leak in the main tailings line adjacent to the process plant on May 20, 2024. It is understood that approximately 10 m³ of tailings were released from the line, however a temporary containment berm was constructed adjacent to the road to prevent material spread from the area. The leak was repaired, and a second redundant line is being installed so as to prevent a mill shutdown in future.

The Board is pleased to note the rapid response to such incidents that otherwise could have potential environmental impacts. However, the Board suggests that AEM evaluate the monitoring (visual observation and instrument) and response protocols to ensure that these would be adequate under winter conditions.

6.0 CENTRAL DIKE DOWNSTREAM POND ELEVATION

Subsequent to a suggestion from the Board that the pond level could be allowed to rise thus reducing the hydraulic gradient beneath the South Cell of the TSF, a stability analysis study was commissioned. The analyses conducted by WSP (formerly Golder) were introduced to the Board in August. The analyses examined the stability of the dike and slope of the West Road

embankment under water levels up to the final closure elevation. As far as the dike is concerned, the short/medium term Factor of Safety exceeds 1.3 and in the long term exceeds 1.5. ***The Board comments that the short-term condition still implies the retention of the tailings, and the target value should be 1.5 and not 1.3.***

The analyses for the West Road demonstrate the sensitivity to the hypotheses of material strength and pore pressure coefficient. The slope of the embankment forming the West Road is likely to be at the angle of repose (photo #21) and low values for the FoS are not surprising. Nevertheless, the analyses are valuable in that they inform the selection of instrumentation and surveillance requirements. ***The values adopted for the pore pressure coefficient r_u (0.5 or 1) may be conservative as thaw and pressure dissipation may occur simultaneously and relatively slowly. What would be of interest is the depth of fill (load) added to the road embankment since the ingress of freezing into the foundation. The situation is somewhat analogous to Stormwater dike, where deformation was noted as the supernatant pond approached the frozen downstream toe area. Existing piezometers in frozen ground may be damaged and not register accurate pressures after thaw.***

A raise rate of 0.5 m per month has been suggested for the Central Dike D/S pond. ***The Board suggested that backfilling of the pond with coarse rockfill may alleviate the stability concerns and still allow pore pressures to dissipate. Backfilling to elevation 120 m would allow continued access to the instruments on the existing toe berm.***

The discussion continued in December. There is a potential for thawing and pore water pressure buildup in fine grained soils beneath the West Road with a water level raise of the Central Dike downstream pond. New piezometers and thermistors were installed in 2024 at two locations in the till deposit with a view to providing the necessary information to monitor this situation. AEM plans to raise the water level in the seepage collection pond by 0.5 m/month to a max El. 124 m over the winter. This approach should help understand the impact on the seepage rate from a higher water level (hydraulic gradient reduction beneath Central Dike). Backfilling of the seepage pond as suggested by the Board is being evaluated and AEM is developing a plan (i.e. drawdown or construct in wet) to be assessed. According to stability analyses, it is not absolutely required to buttress the dike, and the road meets minimum FOS requirements. Backfilling the pond may make for more complex water management but may reduce design requirements for eventual raising of the West Road. If backfilling is deemed to be the preferred solution, the work will be completed in the summer of 2025.

Use of the West Road is necessary for continuation of operations including ore transport from Amaruq. The current low point in the profile is below the future pit water level and thus raising the road is required. The Board encourages further evaluation of the best way to raise the West Road safely.

7.0 WATER MANAGEMENT STRUCTURE PERFORMANCE (MEADOWBANK)

At the December meeting of the MBK IRB, information was provided on the performance monitoring carried out based on the results from the instrumentation set-up at each of the structures. AEM included interpretation of these results.

7.1 Vault Dike

As mentioned earlier, warming trends have been observed in the thermistors located in the key trench. Heat flux from Wally Lake water and/or precipitation on the dike platform, combined with increased ambient temperatures in 2024 could explain this trend. However, it is to be noted that the toe of the liner is encapsulated in lower permeability material and frozen conditions at this location are maintained year-round. The dike is understood to be performing as intended.

7.2 South Camp Dike

Readings of the thermistor string below the dike show frozen conditions year-round. The dike is understood to be performing as intended.

7.3 East Dike

A combination of freezing ingress at depth and minor warming at instruments nearer surface is reflected in some piezometer readings but no significant change has been observed. No movement of inclinometers have been observed. Conditions are judged to be essentially stable, and the dike is performing as intended.

Improvements to the seepage drainage and monitoring system seem to have been effective, in that no road flooding was observed over the winter 2023/24 and all seepage appears to be reporting directly to the pump well, where it is measured with improved flow monitoring equipment prior to being transferred to Pits A and E (discharge point at waste rock dump between these pits) or directly to Second Portage Lake whenever water quality permits.

7.4 Bay-Goose Dike

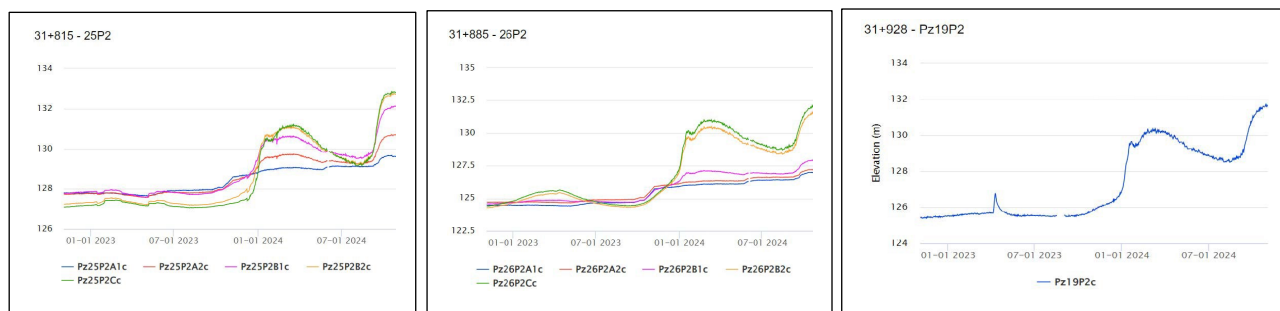
The Board had previously been advised (Memorandum, February 27, 2024) of a change in the TARP level initiated by the observation of increased temperature and piezometer readings in January 2024 in the region of channels 1 and 2. The readings declined but not to previous levels and the TARP level has been maintained at Yellow.

The data, presented in the memorandum, shows two likely mechanisms at work in this area. As the AEM team has observed, the bedrock and overburden piezometric levels are being influenced by the backwater effect of the rising water level in the Pit E pond. This phenomenon occurred primarily in October and November 2023.

The second mechanism is related to top down thermal conduction. The temperature and piezometric level rise in January/February 2024 occurred within the embankment at around El. 130.5 m. ***The Board surmises that an ice lense could have been formed in the Cement-Soil-Bentonite (CSB) cut-off at the downward freezing front. At depth, the annual temperature cycle is the opposite of ambient air temperatures with the warmest being in December-January and this could have led to thaw.***

Data presented in December shows further increases in piezometric readings which are more related to the precipitation that occurred in September and October of 2024. Seepage was observed in September at Stn. 31+975, but by mid-October this had dried out, which is an encouraging sign.

The comparison made on page 38 of part 3 of the December PowerPoint between piezometers at Stns. 31+815, 31+885 and 31+928 (copied below), indicates that piezometric pressures are highest at the former and decline towards the latter. Thus, the source of the seepage may be closer to the instrument at 31+815. All three instruments were installed in the fine filter material on the downstream side of the CSB cut-off. ***It is to be noted that soil-bentonite (SB) was used up to Stn. 31+790 and CSB in the deeper valley as far as Stn. 32+040. The SB is potentially more erodible, but the CSB could more easily hold open an ice generated fissure. The rate of seepage through a fissure would be controlled by the permeability of the fine filter. The migration of fine particles could lead to clogging of a fissure and stabilize the condition albeit with a non-zero residual flow.***



Test pits were excavated through the snow in February 2024 to inspect for visible seepage and none was detected, but these were located around Stn. 31+885. ***Attention will be warranted during the up-coming winter season to monitor for seepage at the low point, presumably at Stn. 31+975, to ensure timely detection of any flow originating from Third Portage Lake and passing through the cut-off. Observations at the time of freshet may be more indicative of infiltration through the downstream rockfill of the dike platform.***

Readings of the thermistors and piezometers are likely to be informative, but the inclinometers may provide only a delayed response and to movement only in the vicinity of a given installation. Again, in theory, the fine filter material should protect the cut-off from particle migration and erosion. Temperature spikes and piezometers readings are indeed indicative of a change but do not necessarily denote high seepage rates. Inclusion of the temperature readings at T21, located at Stn. 3+750±, may help to identify the location of a potential connection with Third Portage Lake.

Inspection of the crest of the Bay-Goose dike has revealed cracking and localised settlement in the recently placed and graded topping material but this may be related to heavy rain that occurred in the fall. It was also mentioned in the presentation that the sinkholes were not situated in the same area as the piezometric pressure rise.

Fluctuations in temperature and piezometric pressure have been recorded in other areas along the Bay-Goose dike. Shallow thermistors reacted to warmer ambient temperatures while deeper ones show continuing aggradation of permafrost. A similar backwater effect of pit filling is noted as in channels 1 and 2.

7.5 Upcoming projects and studies

The Board was advised of studies to update the stability analyses of East Dike and Bay-Goose Dike as these structures will continue to form part of the critical infrastructure until closure, well beyond their intended design life.

The water transfer pipeline from Meadowbank to the Vault pit will be required as part of the infrastructure for a Life of Mine to 2028.

The Board looks forward to receiving information in due course on these projects.

8.0 WATER MANAGEMENT INFRASTRUCTURE PERFORMANCE (AMARUQ)

8.1 General

Meteorological conditions at Amaruq have also been characterized by above average temperatures. It was noted that annual rainfall has been average, however September was significantly wetter than the period from June to August.

OMS activities have revealed no adverse conditions with the water management structures, although the TARP level at Whale Tail Dike has been maintained at Yellow.

8.2 WRSF Dike

The TARP level is Green, and the dike is performing well. No seepage is noted, and no ponded water touches the upstream toe. The foundations remain frozen and stable. Water Management is therefore considered to have been effective.

8.3 Mammoth Dike

The TARP level is Green, and the dike is in good condition. No significant temperature changes other than seasonal have been noted.

8.4 IVR Dike

The TARP level is Green and the foundations remain frozen with no further progression of the previously observed cracks. The drone data indicates no further recent movements and therefore the dike crest will be regraded next year (2025). Water management has kept the operational pond levels within acceptable range.

8.5 South Whale Tail Channel

The TARP level is Green, and channel is performing as per design intent. No further settlement of the invert has been noted. Ice was removed from channel outlet at Kangislulik (Mammoth) Lake in October as part of the maintenance activities to ensure flow.

8.6 IVR Diversion Ditch

The TARP level is Green, and the ditch is performing as per design intent. There has been no significant progression of settlement of the invert.

8.7 UG-WRSF Saline Ditch and UG Ore Stockpile Saline Ditch

Here also, the TARP level is Green, and the ditches are performing well. Preventative measures have been added to preclude dumping of snow and debris during the coming winter season.

8.8 Whale Tail Dike

The TARP level has been at Yellow since September 2022 due to unfrozen conditions in the foundation and thawing at the abutments, but performance is judged to be satisfactory.

A downstream thermal berm was constructed on the right abutment in February 2024. The cracks previously observed in this area have now stabilized. The dike crest surface has been regraded.

The seepage reporting to the dike toe is stable. Further upgrades to the collection systems are planned as not all seepage is captured by the V notch weir. It was noted that 80 m³/hr. is measured at the weir, plus an additional 25 m³/hr. is estimated to occur downstream for a total flow rate of 100 to 125 m³/hr. in 2024. This is significantly lower than the 600 m³/hr. measured in 2019 prior to the remedial grouting program.

Water quality is noted to be consistent, with seasonal trends being the same as previous years. Clear water, as currently indicated, is acceptable for discharge to the environment.

The four inclinometer installations (Shape Arrays) indicate no significant movement for the structure.

The thermistors, installed below the US thermal berms, have not shown the expected re-freezing of the foundation, possibly due to higher ambient and water temperatures over the last two years. The instruments along the dike centreline, at the abutments and in the identified flow paths B and C, indicate a warming trend which is not surprising given the heat flux provided by the water flow. However, as mentioned above, there has been no overall increase in flow rates. ***The planned additional weir will be valuable for the validation of this situation.***

9.0 2023 DAM SAFETY REVIEW

A Dam Safety Review (DSR) was performed by TetraTech in 2023, for the Meadowbank water retention dikes. A copy of the preliminary report was forwarded to the Board for comments.

The review is rigorous and, as intended, provides an in-depth fresh eyes re-visit of the design, construction and operation of these structures. The “by-the-book” approach may be conservative, but the points raised merit responses and clarification. The followings aspects were highlighted and discussed by the Board.

The Consequence Classification of “low” assigned by the designer to Vault Dike may not be strictly speaking correct if the CDA guidelines are followed. A loss-of-life (LOL) potential of 0-10 had been used that would automatically place the structure in the “Significant” class. However, any risk of failure of this low structure (photos #13 and 14)

would be under readily observable storm conditions that would permit evacuation of temporary workers. The LOL potential would be essentially zero. Environmental damage would be minimal, and no economic loss would be incurred by a third party. AEM could therefore accept the “Low” risk status. It could also, for reasons of corporate policy, adopt the “Significant” classification. However, the question is now somewhat mute as exploitation of the mine pit at Vault has ceased.

More recent seismic hazard data may require a distinction to be made between dense soil foundations and stiff soil in the establishment of criteria to update the design studies. However, given the generally low seismicity of the Canadian Shield and the wide rockfill embankments, it is quite possible that no adverse condition will be deemed to potentially influence the behaviour of the water retention dikes.

The DSR consultant has carried out independent calculations of wave run-up to verify design crest elevations. A conservative approach ignoring surface roughness was used which indicates that the actual freeboard may be deficient. However, given the wide embankments (43 m at Vault and up to 80 m at Bay-Goose) and ample sacrificial materials, crest overtopping and risk for the integrity of the structures is unlikely. Note that typical crest widths for water dams vary from 6 m to 10 m.

10.0 SUMMARY

In summary, the main points of the Board's deliberations are:

AEM has been responsive to previous Board recommendations.

Some particularities of 2023-2024 meteorological conditions need to be considered when examining structure monitoring data and performance for this period. Temperatures have been above average and although overall precipitation for the year has been lower, the months of September and October 2024 were very wet. These factors are noted in review of some of the instrumentation data collected. Regardless of the climatic differences, all structures are performing as intended.

Due to various factors, AEM continues to use more freshwater in the mill process than planned thus introducing greater than desired water volume to the tailings water balance. This will increase the operational water management for the site and the eventual water treatment requirements for closure. AEM should continue to search for ways to reduce the introduction of fresh water to the system.

The pond downstream of Central Dike may be raised independently but will eventually rise in concert with the mine pit refilling. Any potential adverse effect on the West Road could be alleviated by backfilling the said pond with rockfill. At the December meeting, additional details of AEM's assessment of the situation were discussed and a trial raising of the pond level is planned in order to provide additional information as to ground response.

The Bay-Goose Dike TARP level has been maintained at Yellow, due to piezometric level changes observed in the Fall. These were possibly related to high precipitation, but attention is merited over the upcoming winter period to monitor ongoing trends.

The 2023 DSR was rigorously executed and provides a fresh-eye examination of the structures. The findings merit responses and clarifications of some issues, however the results are unlikely to affect operations.

The new member of the Board (Ron Nicholson) was introduced to the site and provided with an overview of the monitoring, closure planning and water treatment initiatives at the site. The Board's preliminary review of the geochemistry, water quality, and closure planning suggests that thoughtful operation and planning is in progress. The Board looks forward to learning more details related to closure planning for the operation.

11.0 NEXT MEETINGS

The next meeting will likely be in August 2025 with a follow-up in December as was the case this year. Any other participation will be through further ad-hoc conference calls.

12.0 ACKNOWLEDGMENTS

The MBK IRB (Board) wishes to thank the AEM personnel for organizing the site visit which was highly successful and greatly appreciated. Thanks are also due to the team for the preparation of material, the presentations, and discussions at the December meeting. And specifically, Ron Nicholson would like to say a special thank you for the warm and inviting welcome he received as the new member of the Board.

Signed:



Kevin Hawton, P. Eng R.V. (Ron) Nicholson, P.Geo. (ON) D. Anthony Rattue, P. Eng.

ATTACHMENT A

ATTENDANCE AT AUGUST 2024 SITE VISIT

Attendance		
Luc Chouinard	AEM	Project Manager, Meadowbank Closure (on-line)
Patrice Gagnon	AEM	Water Management and Geotechnical Coordinator
Eric Haley	AEM	Superintendent Enviro and Critical Infrastructure
Michel Julien	AEM	V.P. Environment
Thomas Lepine	AEM	EoR – Technical Specialist, Env. Management (on-line)
Pierre McMullen	AEM	General Superintendent (on-line)
Camille Pelletier	AEM	Water and Tailings Engineer
Behzad Soltani	AEM	Water and Tailings Engineer
Erika Voyer	AEM	Mine Closure and Reclamation Lead Engineer (on-line)
Vanessa Wanie	AEM	Senior Water Management Specialist (on-line)
Michelle Wesolowski	AEM	Geotechnical Engineer
Kevin Hawton		Review Board
Ron Nicholson		Review Board
Anthony Rattue		Review Board

ATTENDANCE AT DECEMBER 2024 MEETING IN MONTRÉAL

Attendance		
Luc Chouinard	AEM	Project Manager, Meadowbank Closure
Laurier Allard	AEM	Water Management and Geotechnical Coordinator
Rebecca Cousineau	AEM	Closure Engineer
Olaitan Edu	AEM	Water and Geotechnical Technician
Patrice Gagnon	AEM	Water Management and Geotechnical Coordinator
Matt Gillman	AEM	
Eric Haley	AEM	Superintendent Enviro and Critical Infrastructure
Jessica Huza	AEM	
Michel Julien	AEM	V.P. Environment (On-line at de-brief)
Thomas Lepine	AEM	EoR – Technical Specialist, Env. Management (on-line)
Pier-Eric McDonald	AEM	Coordinator Reclamation
Pierre McMullen	AEM	General Superintendent
Pablo Oliveira	AEM	Geotechnical Engineer
Camille Pelletier	AEM	Water and Tailings Engineer
Jamie Quesnel	AEM	Permitting and Regulatory
Erika Voyer	AEM	Mine Closure and Reclamation Lead Engineer
Vanessa Wanie	AEM	Senior Water Management Specialist
Michelle Wesolowski	AEM	Geotechnical Engineer
Gillian Allen	O’Kane	
Scott Jackson	Lorax	
John Dockrey	Lorax	
Kevin Hawton		Review Board
Ron Nicholson		Review Board
Anthony Rattue		Review Board

ATTACHMENT B

SELECTED PHOTOGRAPHS



Photo #1 Whale Tail Dike



Photo #2 Whale Tail Dike, East abutment upstream thermal berm



Photo #3 Whale Tail Dike, East abutment downstream thermal berm



Photo #4 Whale Tail Dike, upstream face. Little if any wave damage.



Photo #5 Whale Tail Dike, seepage measuring weir



Photo #6 Whale Tail Dike, locations of existing and planned weir



Photo #7 IVR Dike and pond



Photo #8 South Whale Tail Channel



Photo #9 South Whale Tail Channel, minor flow only



Photo #10 South Whale Tail Channel. Flow daylights in depressions



Photo #11 WRSF Dike and rock dump



Photo #12 Vault Dike and Vault Lake



Photo #13 Vault Dike. Vault Lake at left, Wally Lake at right



Photo #14 Vault Dike upstream face. Wally Lake at left



Photo #15 Saddle Dam 1



Photo #16 SD 1, new rockfill cover over liner



Photo #17 SD 2



Photo #18 Stormwater Dike and capping of TSF North Cell



Photo #19 Stormwater Dike, TSF south cell tailings at downstream toe



Photo #20 Central Dike, downstream pond and West Road



Photo #21 Pond at Central Dike. West Road in background. Pond at el. 115 m. Berm in foreground at el. 120 m



Photo #22 East Dike. Seepage and uplift? area noted in DSR



Photo #23 East Dike pump system



Photo #24 Bay-Goose Dike south and south-west. Channels 1 and 2



Photo #25 Bay-Goose Dike. Crest in SW segment



Photo #26 Bay-Goose Dike. Upstream face in SW segment.



Photo#27 South Camp Dike. Downstream pool retained by waste rock pile



Photo #28 South Camp Dike. Upstream face



AGNICO EAGLE

To: D. Anthony Rattue, Ron Nicholson and K. Hawton
From: Agnico Eagle Mines, Meadowbank, Nunavut Division
Date: March 10th, 2025

RESPONSE TO MEADOWBANK INDEPENDANT REVIEW BOARD – REPORT N° 32

The thirty-second meeting between the Meadowbank Independant Review Board (the Board) and Agnico Eagle Mines Limited (AEM) was held December 10th and 11th, 2024, in Montreal. The objective of the meeting was to present and discuss the status of the operations and construction of Meadowbank Complex Critical Infrastructures for water and tailings management. The meeting covers all Meadowbank Complex sites including Vault and Amaruq and is conducted yearly. On-ground site visits and helicopter flyovers were also conducted for each site during a visit on August 21st to 23rd, 2024.

On January 30th, 2025, the Board provided their report (MDRB Meeting Report 32), with recommendations. The present letter provides the response from AEM to the Board recommendations. All recommendations are detailed in the following table along with their associated location, AEM action plan, the recommendation status, and the anticipated action completion date. This table will be used by AEM to follow-up on each action throughout the year and to update the Board when the next MDRB meeting is held.

Best Regards,

Eric Haley
Environmental & Critical Infrastructure Superintendent
Meadowbank, Nunavut Division
Agnico Eagle Mines

MBK IRB# 32 Recommendations and Action Plan

Recommendation Number	Priority Level	Location	Year	Recommendation	Action Plan/Follow-up	Status	Responsible	Completion Date
MBK IRB#32-01		South Camp Dike	2024	At South Camp dike, the small water pond, noted in the DSR was observed to be smaller than illustrated in that report. Prolonged presence of a significant water body could indeed have an influence on the frozen condition of the foundation. The crest road is kept clear of snow all winter and cold ingress is therefore facilitated but improved drainage or backfill of this area of ponding water may be beneficial.	To be discussed with EoR to implement potential improvements in Summer 2025.	Open	Geotech	
MBK IRB#32-02		General - Surveillance	2024	Drone surveys are being completed but a change to InSAR is contemplated in order to reduce manpower requirements. The Board recommends that an overlap of about 12 months be instigated to ensure a reliable base case for future surveys.	Jan 2025 Update: Discussions about the implementation of InSAR will continue in 2025, and AEM will consider the board's recommendation in the event of a transition from drone surveys to InSAR.	Open	Geotech	
MBK IRB#32-03		NC & SC	2024	The balance between infiltration and run-off from the surface of the TSF North and South Cells will depend on the long-term maintenance of a positive gradient towards the spillway outlet. To assist with the planning and execution of the landscaping and capping, the Board suggests the installation of a nest of piezometers in the unfrozen tailings in the central part of each cell, in order to follow the evolution of the consolidation process and better predict long term settlement.	Jan 2025 Update: The planning of new instrumentation within the cells shall be coordinated with Closure and EoR. Instrumentation will only be drilled and installed in winter to ensure safe working conditions on the tailings. In addition, instrumentation in South Cell will occur to after tailings deposition to improve the viability of the instrument and data logger.	Open	Geotech and Closure	
MBK IRB#32-04		In-Pit Water Management	2024	The Board appreciates the In-Pit water issues but urges AEM to continue to search for ways to reduce the introduction of fresh water to the system.	Jan 2025 Update: As an initial step, the Geotech team in collaboration with the Mill is analyzing the data to identify and list the reasons behind events of excessive freshwater consumption (i.e., operational issues, equipment performance, and reclaim water quality). Following this analysis, specific action plans were developed to mitigate the impact of the identified issues. So far, initiatives identified could represent a reduction of 50% of the fresh water consumption at site.	Ongoing	Geotech & Water Management	
MBK IRB#32-05		Tailings Line	2024	The Board is pleased to note the rapid response to such incidents [tailings spill and seepage from the mill] that otherwise could have potential environmental impacts. However, the Board suggests that AEM evaluate the monitoring (visual observation and instrument) and response protocols to ensure that these would be adequate under winter conditions.	Jan 2025 Update: A written procedure for visual inspection of the tailings line was initiated in January 2025. Two Sonartrac flowmeters were installed upon Designer recommendation to monitor differential flow at both end of the pipe. AEM has experienced issues with fluctuations in the SONARTrac flowmeter data installed near the tailings discharge point, which impacts the ability to identify leaks in the system. AEM will also inspect the tailings line with cameras and other instrumented tools in April 2025.	Ongoing	Geotech & Water Management	
MBK IRB#32-06		Central Dike D/S pond	2024	A raise rate of 0.5 m per month has been suggested for the Central Dike D/S pond. The Board suggested that backfilling of the pond with coarse rockfill may alleviate the stability concerns and still allow pore pressures to dissipate. Backfilling to elevation 120 m would allow continued access to the instruments on the existing toe berm.	Jan 2025 Update: AEM acknowledges the benefits of backfilling the downstream seepage pond, even though it is not strictly necessary to buttress the dike, as noted by the board. The combination of backfilling the pond, raising the water level, and raising the West Road introduces additional variables in the interpretation of instrumentation trends and adds complexity to water management. AEM will continue to evaluate the possibility for backfilling of the seepage pond and determine the most favorable timeline for the project. The EoR's opinion will be taken in consideration for this decision.	Open	Geotech	
MBK IRB#32-07		West Road	2024	Use of the West Road is necessary for continuation of operations including ore transport from Amaruq. The current low point in the profile is below the future pit water level and thus raising the road is required. The Board encourages further evaluation of the best way to raise the West Road safely.	Jan 2025 update: An updated stability analysis was completed by WSP. Additional instrumentation was installed along the West Road to monitor pore water pressure buildup in the frozen fine-grained soils beneath the road, which may lead to instability, as concluded by the WSP study. Additionally, the observational method will be implemented through increased visual inspections as the water level of the CD is raised and during the raising of the West Road structure. The low areas of the West Road will be raised in Q1 2025 with the material coming from the implementation of the Quarry 23 water management sump.	Ongoing	Geotech	