Appendix B3

Annual Review of Portage and Goose Pit Slope Performance

REPORT FOR

2016 Annual Pit Slope Performance Review

Meadowbank Mine, Nunavut

DECEMBER 21, 2016

TETRA TECH

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EXECUTIVE SUMMARY

An annual site visit to inspect the performance of the pit walls of the open pits at Agnico Eagle Mines Ltd.'s (AEM) Meadowbank Mine was carried out by Tetra Tech EBA Inc. (Tetra Tech) during the period 29 September 2016 to 04 October 2016. The following summarises the key observations and associated recommended actions from the annual inspection. A detailed summary of recommendations is presented in Section 9.

PORTAGE PIT

The Portage Pit is subdivided into 5 pits, labelled A through E from north to south.

PIT A

Pit A was active at the time of the site visit with mining down of the pushback area between Pit A and Pit B along the west wall. A bench-scale failure on to the 5109 mRL bench on 26 September 2016 resulted in a rock fall of approximately 1,500 m^3. This was contained largely on the 5109 bench with some spillover on to benches below. Contributing factors to the failure are the presence of a fault behind the wall acting as a release plane for flexural toppling and rock mass failure of weak ultramafic rock. This is a similar mechanism to the failure which occurred on to the same bench in 2012. A radar system was placed to monitor the slope following the failure. The radar has subsequently been moved to Pit E3. This area of wall should continue to be monitored with observations recorded as part of regular site geotechnical inspections.

The northwest through northeast end walls and the east wall continue to perform well. A small wedge was noted above a stockpile located on the east wall ramp. It was recommended this be removed and that a bumper berm be placed to prevent personnel and equipment from entering under the wedge location.

PIT B

Mining of Pit B is complete and it continues to be backfilled. The east and west walls of the pit continue to perform well and there is no evidence of material buildup on the benches. The Pit B Dump crest elevation remains unchanged from the 2015 site inspection. There was no observable tension cracks or settlement at the time of the site visit.

PITS C AND D

Mining at Pits C and D is complete and they have been backfilled as waste dumps. Pit C Dump appears to be performing well with no observable tension cracks or settlement. Tension cracks were observed on the 5088 mRL platform of the Pit D Dump, at the eastern end of the platform and adjacent to the good quality rock benches of the east pit wall. Settlement in this area was also noted. This is likely differential settlement due to the difference in mechanical properties between the dump material, and the bedrock. No observable tension cracks were noted parallel to the platform crest. This area should continue to be monitored with observations recorded as part of regular site geotechnical inspections.

PIT E

At the time of the site visit the pit floor had been mined to 5004 mRL during mining out of the east ore zone, and a small pit lake had formed at the base of the pit.

The east pit wall continues to perform well, although near the base of the wall some out-dipping structures were noted, and these have resulted in local loss of bench crests. This is due to undercutting of the out-dipping bedding and foliation as it is folded around the hinge line of a synform structure which trends into the south wall. Mining of the east ore zone is complete, and so this local bench instability is not a concern unless mining activities begin again.

The crest of the south wall of Pit E3 has been unloaded to an elevation of 5109 mRL to improve the stability of the wall. Boreholes were drilled from the 5109 mRL bench area. Six grouted in piezometers were installed, along with open-hole piezometers in an effort to better understand the hydrogeological regime behind the wall. Several semi-quantitative pumping tests were carried out. The pump testing and exploration confirmed a relatively rapid response in some piezometers, while others were not observed to respond to induced hydrogeological changes. The observations indicated that the degree to which depressurization was achievable, and the rapid recovery times once pumping was stopped in some locations, suggested that maintaining a depressurized slope face to the degree required would be difficult. AEM are currently evaluating a pushback of this wall, which will include re-orientation of the wall facing direction, into more favourable structural and rock mass conditions. At the time of the site visit, planning was underway to carry out drilling of four geotechnical boreholes to confirm the structural and geological interpretation in the area of the pushback, as well as the hydrogeological conditions should depressurization be required.

The performance of the west wall of Pit E3 is generally satisfactory in the upper walls, although within the ultramafic rock of the lower slopes, and adjacent to the west dipping Bay Fault, some local instability is noted. Additional folding of stratigraphy may result in undercutting of out-dipping planes if this area of the wall is mined deeper, and regular geotechnical inspections should be carried out to monitor as mining progresses.

PIT E WEST WALL RAMP

Six areas of potential instability were noted during the 2015 inspection. These were visited during the 2016 inspection and no observable evidence of instability was noted. These areas should continue to be monitored as part of the regular geotechnical inspections.

A seventh area of potential instability was noted during the 2016 inspection, at the base of the ramp at the north end of the pit, and on the west wall. This is near the contact between the iron formation and ultramafic rock. The ultramafic rock is sheared in this area, and some of the shear planes are open, dipping out of the face. The geometry is similar in some degree to the Goose Pit west wall instability in 2014. It was recommended that AEM investigate widening of the ramp in this area and construction of a rock fall protection berm as a preventive measure against production delays if instability were to develop.

PIT E3 SLOT SOUTH AND EAST WALL

A relatively narrow slot is mined southward on the west side of the pit. The Bay Fault trends into the south wall and there is some reorientation of stratigraphy adjacent to the fault. There is currently no observable indication of instability, however, this area should continue to be monitored as part of regular geotechnical inspections.

GOOSE PIT

The north, south, east, and west walls of the inactive Goose Pit continue to perform adequately. There is no observable buildup of new material on the catch benches. The pit lake elevation at the time of the site visit was 5046.5 mRL, compared with 5031.18 mRL during the 2015 inspection.

The waste rock dump at the north end of the pit had been used up to June of 2016, after which dumping stopped. It is planned to begin dumping again in February 2017. During the 2015 inspection several large tension cracks were observed on the dump platform. Additional tension cracks were noted during the 2016 inspection. These reportedly developed following the introduction water to the north of the dump platform from pumping from Pit E3, The water line was relocated to discharge over the bedrock face of the north wall. The tension cracks should be marked and surveyed as a record of future movement. AEM should consider installing crack extensometers to monitor movement. The area should continue to be monitored, and observations recorded, as part of regular geotechnical inspections. Prior to reopening of the dump, a geotechnical inspection should be carried out and a risk assessment undertaken and documented.

SLOPE MONITORING INSTRUMENTATION

There have been no significant changes to the TDR or thermistor profiles since the last inspection in 2015. Piezometer tip PZ4c in GPIT-14 continues to give erratic readings suggesting it is damaged. There does not appear to be any indication by the instrumentation of any potential slope instability.

VAULT PIT

Mining of the Vault Pit has advanced significantly since the last inspection in 2015. The Phase 2 pit floor area has been deepened from its elevation of 5130 mRL, to an elevation of 5067 mRL. The slope design currently in practice are generally consistent with the design criteria, and the pit walls are performing well, as anticipated.

FOOTWALL (VAULT GRID WEST WALL)

The west wall of the pit is being mined as a footwall slope following the inclination of the ore. Seven metre high single benches are excavated with steep bench face angles (88 degrees) and wide catch benches (minimum 10.5 m). Some benches have lost considerable catchment and have raveled back to the orientation of the stratigraphy. This is in part due to bulk blasting methods. This was anticipated during the development of the slope design criteria for the pit with the expectation that the low bench heights and broad catch benches would accommodate this anticipated behaviour.

SOUTHWEST WALL (VAULT GRID SOUTH WALL)

The southwest wall transitions from the footwall to the highwall. The walls of the south transition wall are generally performing well with half barrels clearly visible in the final walls.

SOUTHEAST TO NORTHEAST HIGHWALL (VAULT GRID EAST WALL)

The southeast to northeast highwall (grid east) is being mined down from the final crest position. The wall is performing satisfactorily. The final wall benches are being mined using pre-shear blasting methods, and are being excavated to 75-degree bench face angles. Half barrels from the blast holes are clearly visible in the walls and there is very little deviation in the borehole traces. The benches are cleaned well, and there is no indication of significant raveling and no significant build-up of material on the benches. Catch bench widths are designed to 10.5 m. There is some over break of bench crests due to blasting but this is not significant. In general, the toe of the thermal capping material is 5 m to 10 m back from the pit crest.

SOUTHEAST HIGHWALL (GRID EAST) SEEPAGE

During the 2015 site inspection, an inflow of water to the 5130 bench occurred through the base of the ring road and till slope. It was concluded during the 2015 site inspection that the inflow through the ring road did not present an on-going stability or in-flow issue either for the ring road or for the pit slope stability, and could be managed by maintaining the lake at a lower level. It was also concluded that over time inflows would diminish due to the development of permafrost into the talik area.

During the 2016 site inspection, the wall was observed generally to be dry. Although seepage is noted in the general area of the wall adjacent to the previous inflow, this not significant. The ring road appeared to be stable, with some minor settlement around the 2015 inflow area. Some minor tension cracks were noted at the crest of the road, parallel with the road alignment, and these are interpreted to be related to minor settlement at the road margins. The water level in Vault Lake appears to be managed at a low level, helping to reduce any further inflows through the ring road itself.

VAULT GRID NORTH WALL

The Vault north wall (grid north) transitions from the highwall wall to the footwall. The north wall benches are performing satisfactorily although some crest loss is noted. There is seepage from the north wall through west footwall. There is a sump near the base of the wall at the northwest corner used to manage the seepage. It was recommended that a bumper berm be constructed along the toe of the north wall bench to retain material that may fall from the benches, and to prevent equipment and personnel from approaching this area. There is a hard toe at the northwest corner that must be removed so that catchment on the next bench to be developed is not compromised.

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APPENDICES

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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Limited and their agents. Tetra Tech EBA Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Agnico Eagle Mines Limited, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA Inc.'s Services Agreement. Tetra Tech's General Conditions are provided in Appendix C of this report.

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech) was retained by Agnico Eagle Mines Ltd (AEM) to complete an annual inspection of the pit slope performance at the Meadowbank Mine, as a requirement under the water licensing agreement for the project. The first annual inspection was completed for the Portage Pit in 2010. In 2012, the Goose Pit was added to the annual inspections, followed by the addition of the Vault Pit in 2014.

The site visit was completed during the period 29 September 2016 to 04 October 2016, and included the inspection of general bench and wall performance of Portage Pits A through E, the Goose Pit, and the Vault Pit. This report summarizes the inspection carried out for the pits and describes the performance of the various pit slopes through observations made during the site visit. Where possible the observations are related to the engineering geological model for the project. The observations also reference recommendations made during previous annual pit slope inspections. As part of the site visit, the available instrumentation data for the Goose Pit were reviewed, as were the data collected during the 2016 thermal exploration program at Vault. These data are presented in Appendices A and B, respectively.

Mining at Portage Pits B, C, and D has been completed; these pits are currently being backfilled as short-haul waste dumps. Mining at Goose Pit has also been completed and the north end of the pit has been used to dump waste rock to stabilize weak ultramafic rock exposed in the north pit wall during mining. The Goose Pit ramp is closed and the pit is no longer accessible. The Vault Pit has been advanced significantly since the last inspection in 2015.

2.0 CURRENT MINE STATUS

2.1 Portage Pit

The Portage Pit consists of five pits, identified as Pits A through E, from north to south. The general pit plan is shown on Figure 2-1.

Mining at Pit A was active at the time of the site visit, in the area of the Pit A pushback. Mining at Pit E3 was not active at the time of the site visit. Pits B, C, and D continue to be used as short-haul waste rock dumps. The current and planned dump crest elevations are shown in the following table.

Table 2-1: Pit dump platform elevations (Ref. AEM, September 2016)

Pit Dump	Platform Elevation During Inspection (mRL)	Planned Final Platform Elevation (mRL)
B	5145	5129*
C	5145	5129*
D	5127	5129*

*Reflects elevation at closure.

The extents of the Portage Pits at the time of the site visit are shown in the following Figure 2-1.

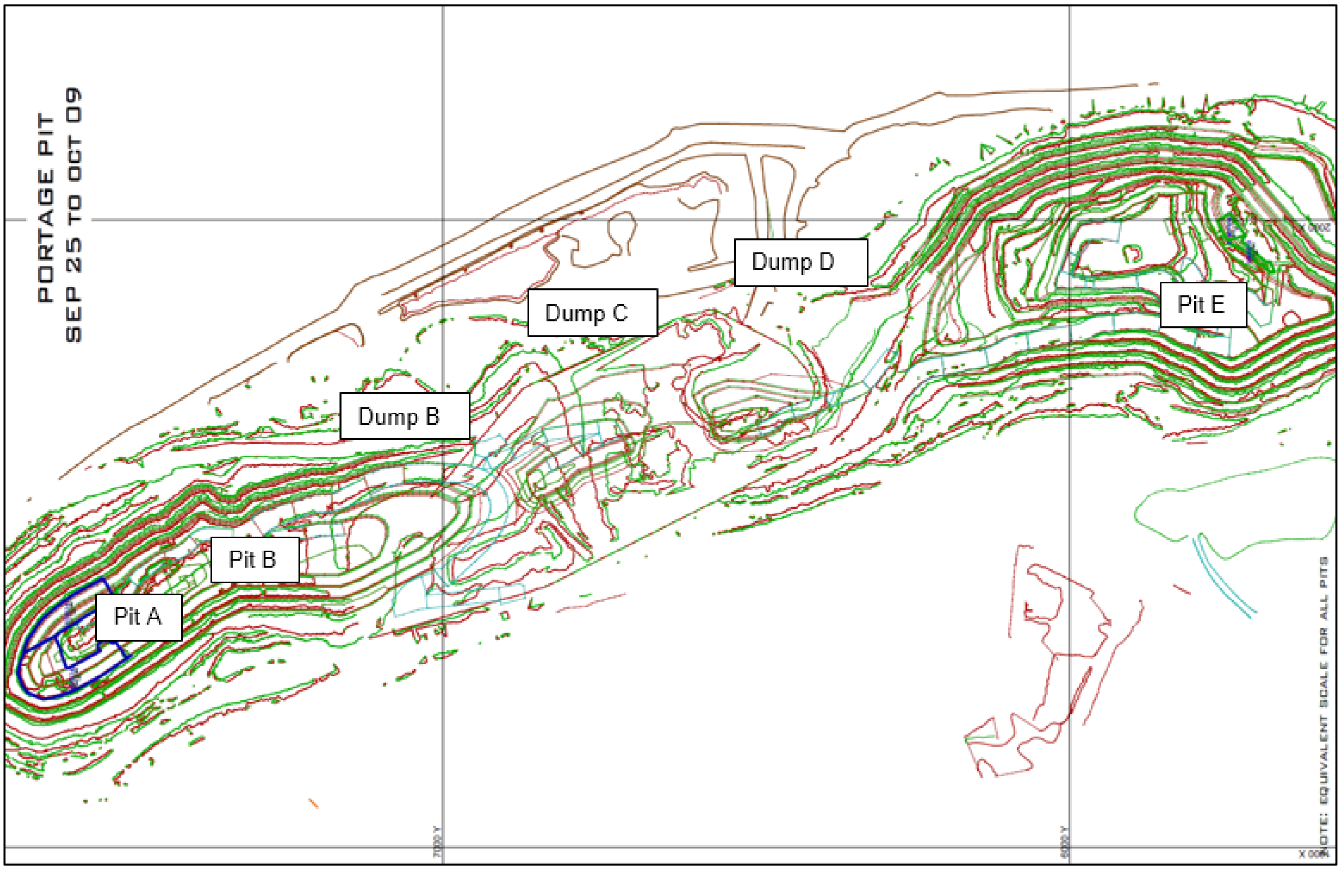


Figure 2-1: Portage pit at time of 2016 site visit

2.2 Goose Pit

The extent of the Goose Pit at the time of the site visit is shown in the following Figure 2-2.

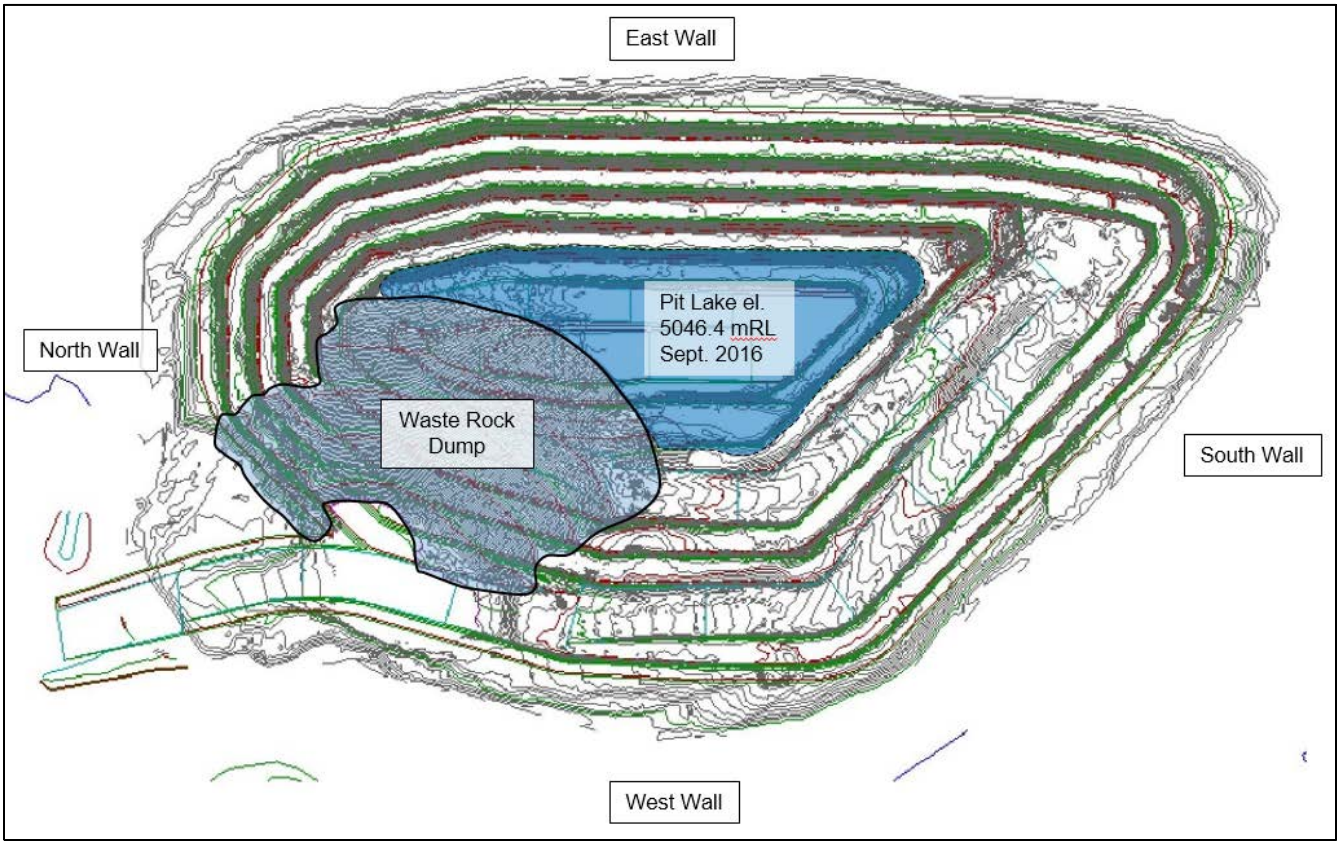


Figure 2-2: Goose pit at time of the 2016 site visit

2.3 Vault Pit

The extent of the Vault Pit at the time of the site visit is shown in the following Figure 2-3.

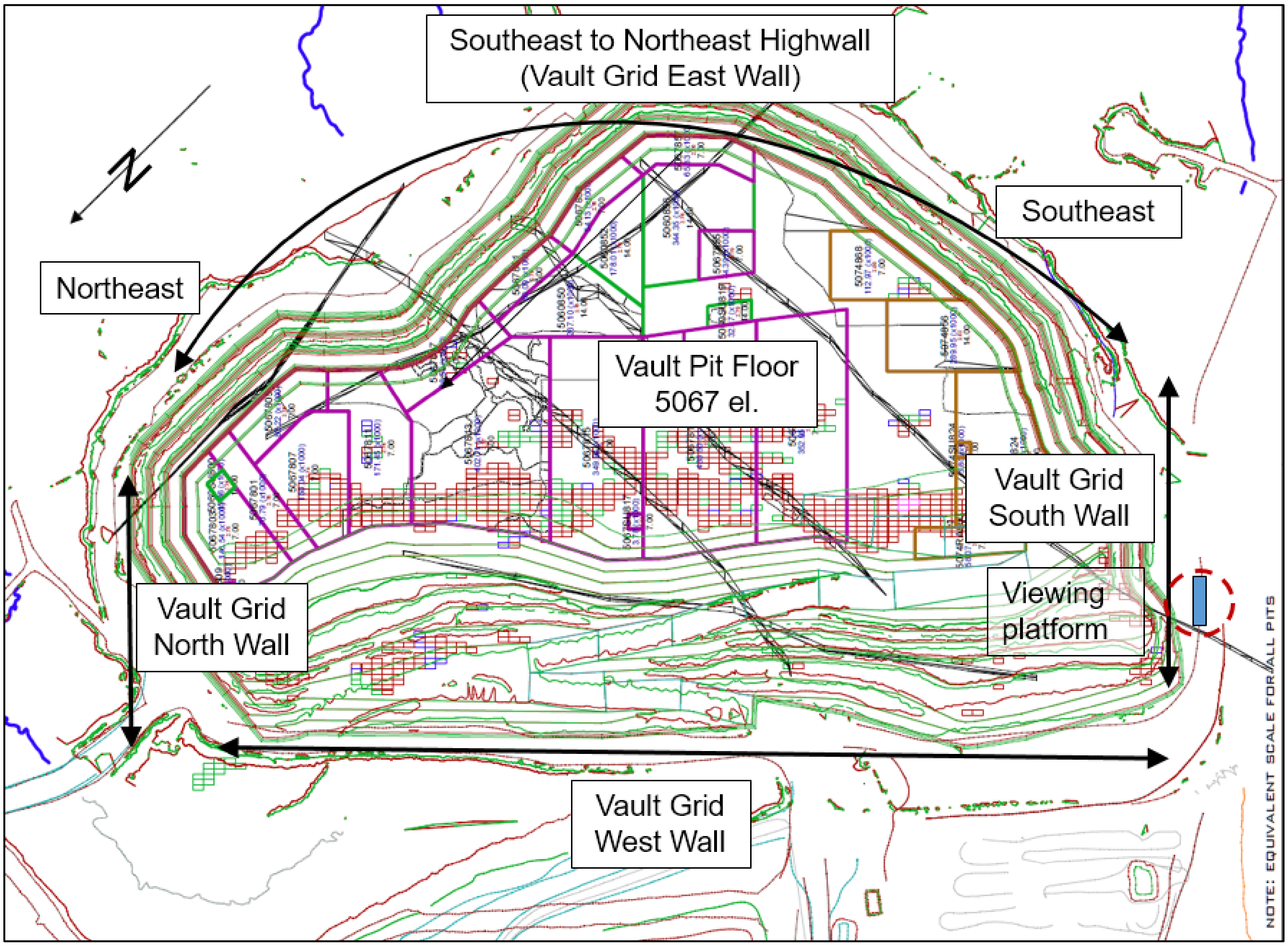


Figure 2-3: Vault pit at time of 2016 site visit

2.4 Life of Mine Schedule

The current Life of Mine schedule for the various pits at the site was provided by AEM, and is summarized in the following table.

Table 2-2: Life of Mine Schedule for Meadowbank Mine (Ref. AEM, September 2015)

Pit	Current Floor Elevation (mRL)	Final Floor Elevation (mRL)	Benches Remaining	Planned Completion Date
A Ultimate	5046	4997	7	Q3 2018
B	Backfilling			Complete
C	Backfilling			Complete
D	Backfilling			Complete
E Ultimate	5032	4976	7	Q3 2018
Goose	Backfilling			Complete
Vault Ultimate	5074	4955	24	Q3 2018

3.0 MINE SITE ENGINEERING GEOLOGY MODELS

The supracrustal stratigraphy of the mine area consists of ultramafic volcanic, felsic to intermediate volcaniclastic, and/or greywacke, interbedded magnetite-chert iron formations and associated pelitic schists, and quartzite. The bulk of the gold mineralization in the deposit is contained within the iron formations, except for the Vault Deposit where gold is associated with sericite schist.

3.1 Portage Deposit

The Portage Deposit area has undergone a series of regional deformation events resulting in typical 'dome and basin' fold structures. The dominant structural feature of the Portage Deposit is a gently to steeply inclined tightly folded north/south trending anticline which has resulted in the iron formation, interbedded volcaniclastic and metasedimentary rocks being folded around a core of ultramafic volcanic rock. Bedding-parallel foliation associated with the east-west deformational events is pervasive throughout the deposit area. This structural fabric has formed the basis for much of the pit slope design criteria. Foliation surfaces tend to be slightly altered with occasional coatings and can be associated with slickensiding and shearing. In general, the foliation and stratigraphy dip to the west at variable inclinations from horizontal to sub-vertical. Locally the foliation orientations can vary considerably, particularly adjacent to major fault zones.

AEM geologists report that up to four deformational events have been interpreted in the project area, resulting in very complex fold patterns and rock structure. This is particularly evident at the south end of the Portage Pit, in Pit E3, where superposition of fold events has imparted a complexity to the rock mass that has led to single and multi-bench scale instability.

3.2 Goose Deposit

The Goose Deposit is a steeply dipping, stratiform gold bearing iron formation that is part of a sequence of Archaean ultramafic and mafic flow sequences, volcaniclastic sediments, felsic to intermediate flows and tuffs, and sediments. The ultramafic rocks are variably altered and contain serpentine, chlorite, actinolite, and talc. Through the central core of the deposit, the stratigraphy trends northward and southward from Goose Island and dips at steep angles, generally greater than about 55 to 60 degrees to the west. Axial planar and bedding-parallel foliation, which is pervasive throughout the rock mass, occurs commonly as healed fractures rather than open fractures within the rock. Axial plane bedding-parallel ductile shearing are common due to intense regional deformation events. This shearing is most commonly associated with weaker lithologic units, such as the ultramafic rock.

3.3 Vault Deposit

The Vault Deposit area is underlain by a sequence of intermediate volcanic rock that has been altered by sericite, chlorite, and silica. The stratigraphy is consistently inclined south-southeast between approximately 20 and 30 degrees.

The pit area is generally underlain by permafrost, with the exceptions of the east pit wall where it is pushed back into the former Vault Lake, and sections of the north pit wall which also intersects an arm of Vault Lake. The Vault Pit footprint area included a smaller lake which was drained. Vault Lake and the smaller lake were underlain by talik (unfrozen ground) and water inflows can be expected where the pit wall intersects the talik.

The stratigraphy and foliation are the most significant structural characteristic at the Vault Deposit area. The foliation is continuous and closely spaced, whereas joint sets are generally discontinuous and terminate within the rock mass or at other intersecting joint sets.

3.4 Tectonic and Structural Features

3.4.1 Portage Pit

Historically, the main tectonic features within the Portage and Goose Pit areas are the Second Portage Lake Fault and the Bay Fault. More recent wall instability associated with the south wall of Pit E3 has been observed and appears to be related to shearing of the ultramafic rock exposed in this wall and subsequent folding of the weaker stratigraphy into adverse orientations relative to the wall.

The Second Portage Lake Fault is interpreted to trend northwest-southeast, parallel to the axis of Second Portage Lake, dipping at approximately 70 degrees to the southwest. The fault has been identified to intersect the east and west walls of the Portage Pit.

The Bay Fault trends south through the Portage Pit, and may be responsible for shearing of the ultramafic units at the south end of Pit E3, and beneath the Pit E3 ramp. Intense polyphase deformation at the south end of Pit E3 has resulted in folding and re-folding of sheared ultramafic rock, leading to instability of the south wall.

3.4.2 Goose Pit

The Bay Fault extends south to intersect the Goose Pit, and is visible in the north and south walls of the pit. The fault trends south from the pit to intersect the Bay-Goose Dike approximately at Chainage 31+625 along the centreline. Water in-flows to the pit along the Bay Fault in the south wall have been noted during previous site visits.

A shallow west dipping sheared stratigraphic contact intersects the upper west wall of the Goose Pit, and was the source of significant water inflows to the pit during mining. The contact is inclined at a shallow angle between about 20 and 30 degrees to the west, striking in a north-south direction. The contact extends south from the pit, passing beneath the dewatering dike approximately at Chainage 31+925. Water was observed to flow along this contact, and the feature is likely hydraulically connected to Third Portage Lake. At the downstream toe of the dewatering dike, along the projection of the contact trace, seepage has previously been observed. In the pit area, the contact is intersected by east-west steeply to vertically dipping faults and joints which provide a mechanism for east-west flow of water behind the south and west pit walls and into the pit. During winter an ice curtain forms on the west wall.

3.4.3 Vault Pit

Faulting in the Vault area generally takes the form of moderate to high angle, east and south dipping discrete fault structures. In general, the east dipping faults are inclined at approximately 70 degrees, while the south dipping faults are inclined at approximately 55 degrees. These faults either will intersect the pit walls at high angles, or will dip into the pit walls. Potential wedges formed by the intersection of these through-going continuous features will plunge into the south and southeast pit wall at angles of about 50 degrees. Planar failures will be a factor for south and southwest facing walls where the south dipping faults intersect the wall. Major fault structures in the area are considered continuous, and may therefore influence pit slope stability at both an overall slope and bench scale. However, these faults are very widely spaced, about 30 m to 100 m based on previous surface mapping interpretation and as such the risk of a kinematically feasible planar failure is reduced.

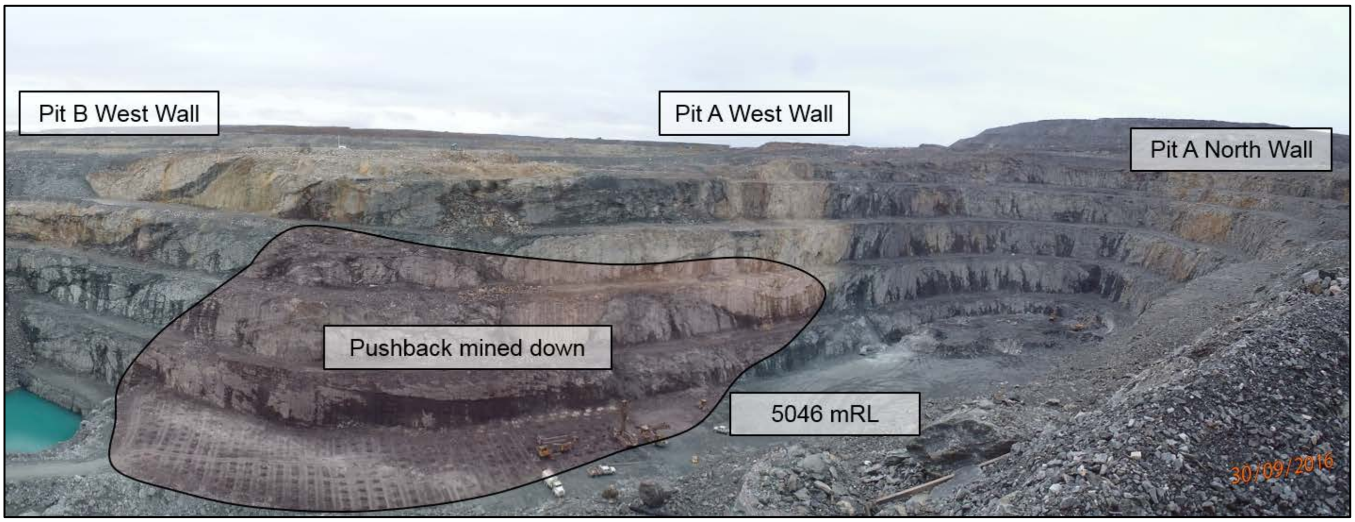
4.0 PORTAGE PITS A AND B INSPECTION

Mining of the pushback area in Pit A was active at the time of the site visit. The pushback extends northward from the boundary between Pit A and Pit B. Since the 2015 inspection the area has been mined down to the 5046 mRL platform. The access ramp on the west wall has been mined out, and access to the pit is by ramps on the east wall and from the south (Pit B dump) areas.

The inspection consisted primarily of observations made from the crest areas, and from the base of the pit.

4.1 Pits A and B Overview

A view of Pits A and B at the time of the site visit is shown in the following photographs.



Photograph 4-1: Pits A and B looking west to north, from east crest (2016)

Photograph 4-2: Pits A and B looking north from west crest (2016)

Mining of Pit B has been completed and it continues to be backfilled as a waste rock dump.

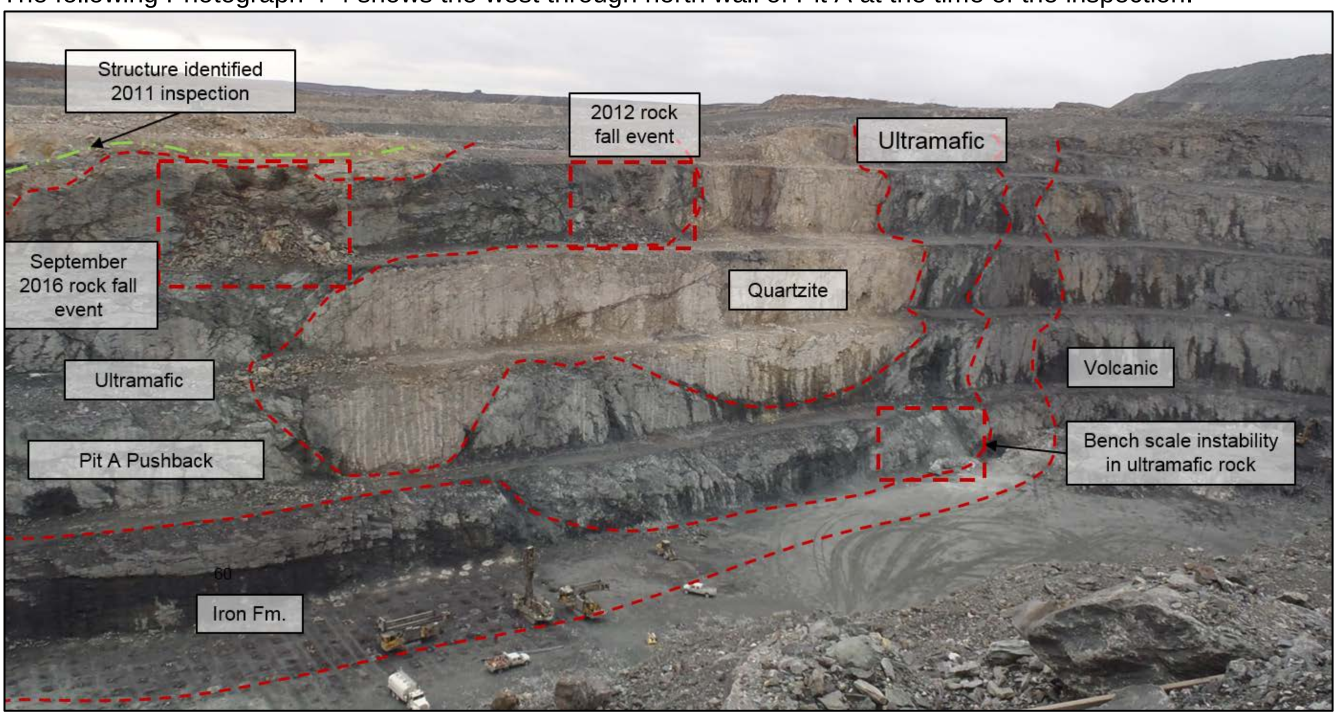
4.2 Pit A Inspection

Pit A is at the north end of the Portage Pit, and includes the northwest through northeast end walls of the pit. There are 7 benches remaining to be mined in Pit A to a final floor elevation of 4997 mRL, planned for Q3 2018. Since the 2015 site inspection a portion of the west pit wall of Pit A has been mined down as a pushback. The pit floor elevation at the time of the site visit was 5046 mRL. The pit lake at the floor of Pit A that was observed during the 2015 inspection has been pumped out, and the floor area is relatively dry.

In general, the walls of Pit A continue to perform satisfactorily except for the 5109 bench of the west pit wall which experienced a rock fall on 26 September 2016, and also in 2012. The volume of failed material is estimated by AEM to be 1,500 m^3. In addition, some localized bench raveling of material continues in an area at the northwest end of the pit where ultramafic rock is tightly sheared between the strong quartzite and iron formation.

4.2.1 Pit A West Wall

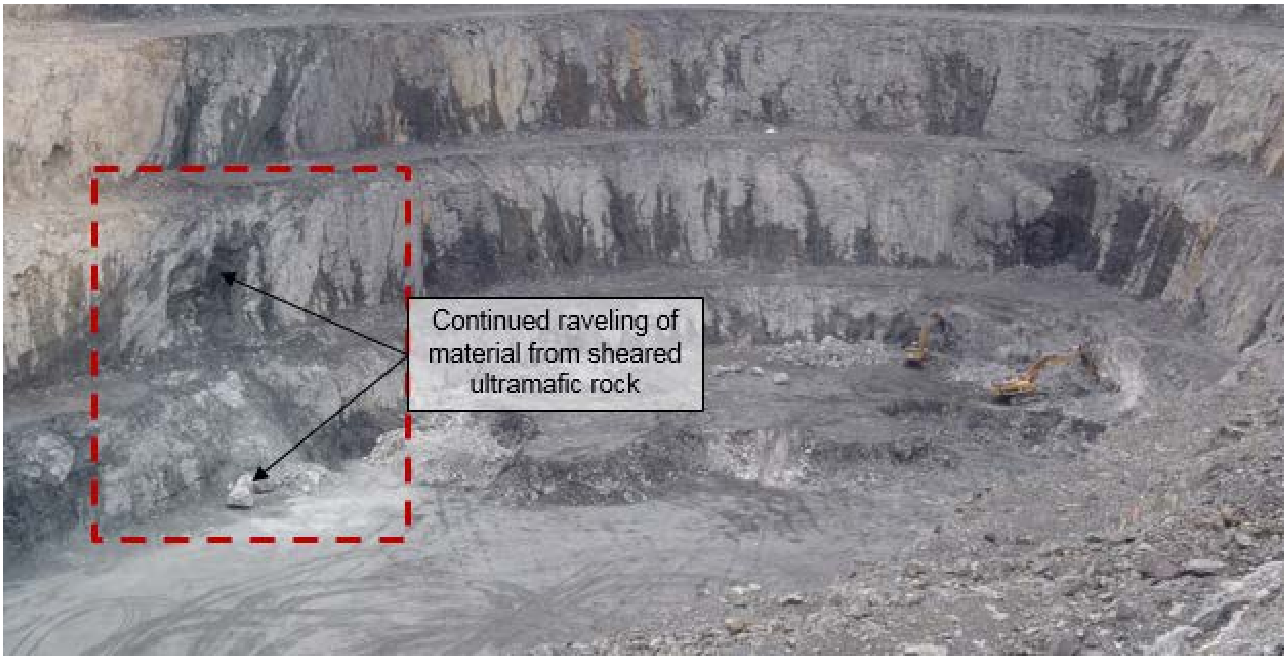
The following Photograph 4-4 shows the west through north wall of Pit A at the time of the inspection.



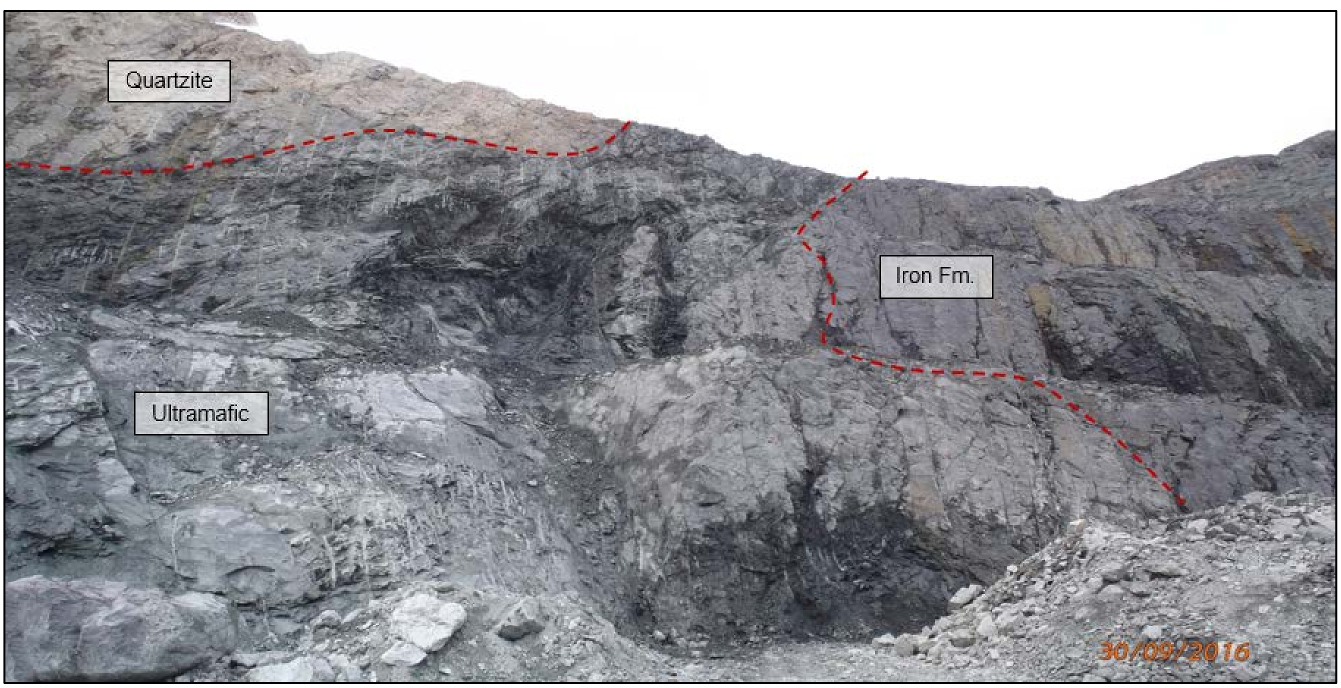
Photograph 4-3: Pit A west wall (2016)

An area of instability of the lower west wall observed during the 2014 inspection continues to ravel, and some new material has accumulated at the toe of the slope (shown in Photograph 4-3, Photograph 4-4, and Photograph 4-5). A hard toe in iron formation remains at the base of the slope, undercutting out-dipping planes. Poor quality and strongly sheared ultramafic rock between quartzite and iron formation continues to ravel. More ultramafic rock has been exposed along the lowermost bench because of mining down of the pushback area. This has resulted in loss of catchment locally.

These are bench scale occurrences and not indicative of larger scale instability, hence can be managed through mucking as necessary. However, due to the poor quality of the ultramafic rock a bumper berm should be constructed at the toe of the slope beneath the ultramafic rock to restrict runout of any additional material that might ravel from this area, and to restrict access by personnel or equipment in this area.



Photograph 4-4: Pit A lower west wall raveling



Photograph 4-5: Pit A west wall lower bench exposing poor quality sheared ultramafic rock

Photograph 4-6: Ultramafic rock exposed at toe of Pit A west wall

The following actions are recommended:

- Remove boulder, then construct bumper berm adjacent to toe of slope to restrict access and to collect any additional material that might ravel.
- Continue visual monitoring and recording observations as part of regular site geotechnical inspections.

4.2.2 5109 Bench Instability and September 2016 Rock Fall Event

A rock fall event from 2012 along the west wall of Pit A continues to be monitored. The location is shown on the following photograph. The geological structure and rock mass quality that contributed to the 2012 rock fall event has also contributed to the rock fall event in September 2016.

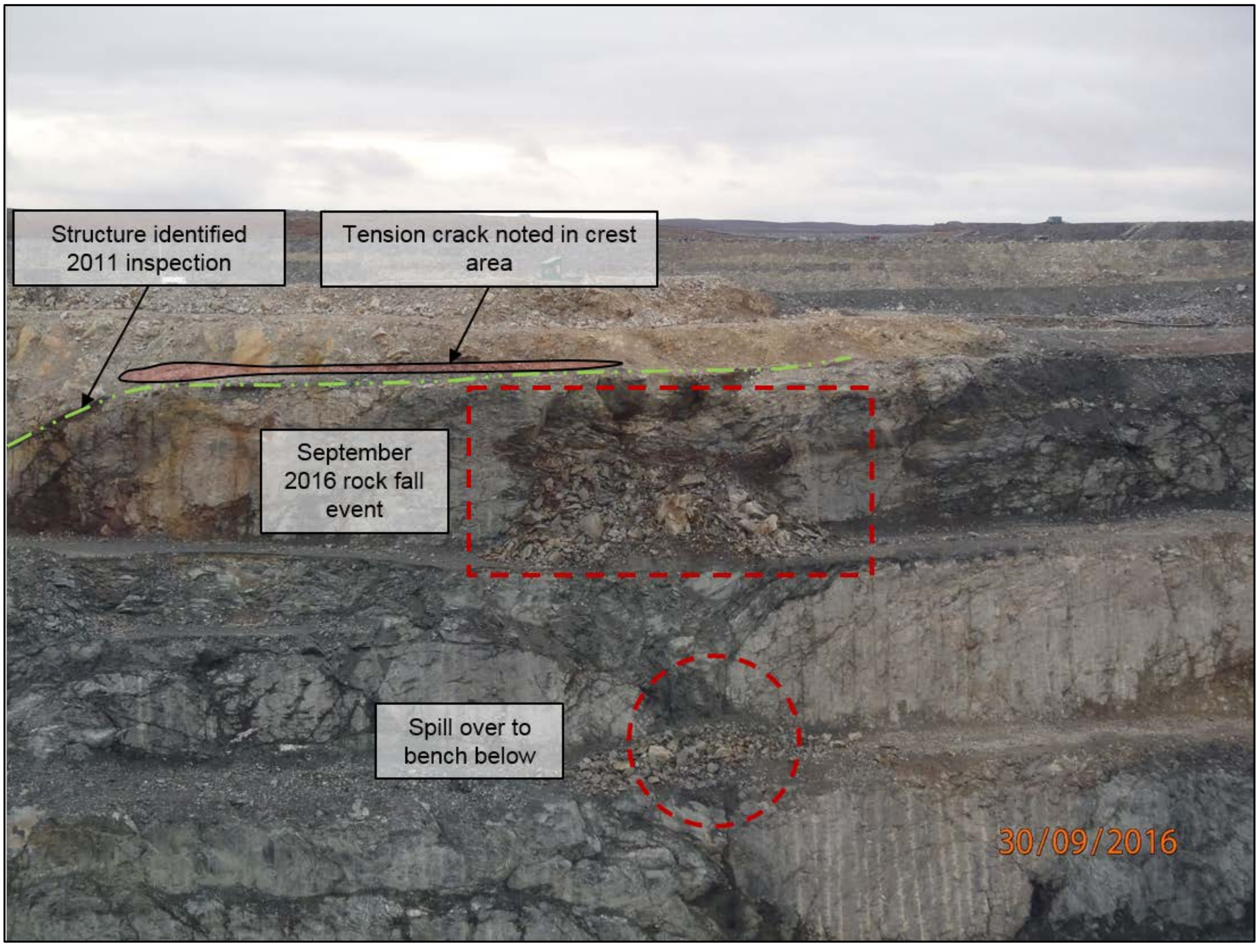
Photograph 4-7: Pit A 5109 bench instability 2012 and 2016

The 2012 bench-scale instability is a result of complex folding and shearing of the stratigraphy in this area. Contributing to the raveling of material is a structure behind the wall dipping at a relatively steep angle to the west. This provides a back-release surface to allow toppling and raveling of the poor-quality rock. Previously the ramp access to Pit A traversed beneath this area and the area was monitored on an on-going basis with restricted access to the area through the use of berms to prevent bench access.

A rock fall event occurred on 26 September 2016 on the 5109 bench of the west wall of Pit A. The area is shown in Photograph 4-6 above. The volume of failed material is estimated by AEM at 1,500 m^3. The rock fall occurred following a pit blast, and some material spilled over on to the 2 benches below. The contributing factors appear to be the following:

- A structure identified during the 2011 site inspection trends behind the uppermost bench, dipping into the wall at around 60 degrees, and adjacent to the contact between ultramafic and quartzite rock. It was observed that the orientation of the structure was such that it could lead to bench scale toppling, but was unlikely to result in large scale overall slope failure. The structure is infilled by loose silt and sand material.
- Parallel sheared structures trend parallel to the wall.
- The footwall rock type is ultramafic, serpentinized, strongly sheared, and poor quality.

The event appears to be associated with toppling failure related to the west-dipping sheared structures acting as back-release surfaces for the poor quality ultramafic rock. The poor quality of the ultramafic rock is contributed to by intense folding of the stratigraphy in this area, and by faulting.



Photograph 4-8: Rock fall event September (2016)

The crest of the bench was visited, and a tension crack was observed along the crest of the bench, associated with the structure identified in 2011.

Photograph 4-9: Bench above Pit A 2016 rock fall showing formation of tension crack

At the time of the inspection, AEM had set up a GroundProbe radar system on the east wall opposite the failure to monitor ground movement. The radar will be moved back to Pit E3/E4 once mining begins in that pit again.

Photograph 4-10: GroundProbe radar monitoring the west wall of Pit A, from the east wall crest

Raveling of the upper west pit wall benches adjacent to the sheared structure may continue and so monitoring of this area should be part of the ongoing geotechnical inspections. Areas where raveling of material could continue along the upper benches are identified in the following Photograph 4-11. As with the previous failures any material that would ravel is expected will be retained on the catchment benches.

Photograph 4-11: Areas of potential bench-scale instability along the Pit A west wall

AEM have developed specific work procedures for working close to pit walls. The objective of the procedure is to ensure safe working conditions related to work close pit walls, where this is defined as work within 10 m of a pit wall or talus slope.

The following actions are recommended:

- Mark the tension crack location and extents with paint, survey these in, and plot on map.
- Continue monitoring the wall using the GroundProbe radar until it is moved back to Pit E3.
- Install simple crack extensometers to monitor possible lateral ground movement of the crest area.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.
- Minimize exposure time at the toe of the slope.
- Maintain a safe working distance in accordance with the internal AEM safe work procedure for work close to pit walls.

4.2.3 Pit A West Wall Voids

The quartzite stratigraphy observed in the Pit A west wall contains several large voids identified during previous inspections. These have been the source of local raveling, and previously the ramp access to the pit passed beneath these. The ramp access has since been removed, and raveling of rock from these areas no longer presents a hazard as material will be retained on the catch benches.

Photograph 4-12: Voids in quartzite above Pit A west ramp (2016)

There are currently no geotechnical concerns associated with the voids.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

4.2.4 Pit A North to Northeast Wall

The north through northeast walls of Pit A continue to perform adequately. Very little accumulation of loose or raveling material on the catch benches was noted during the site visit.

Photograph 4-13: Pit A north to northeast wall (2016)

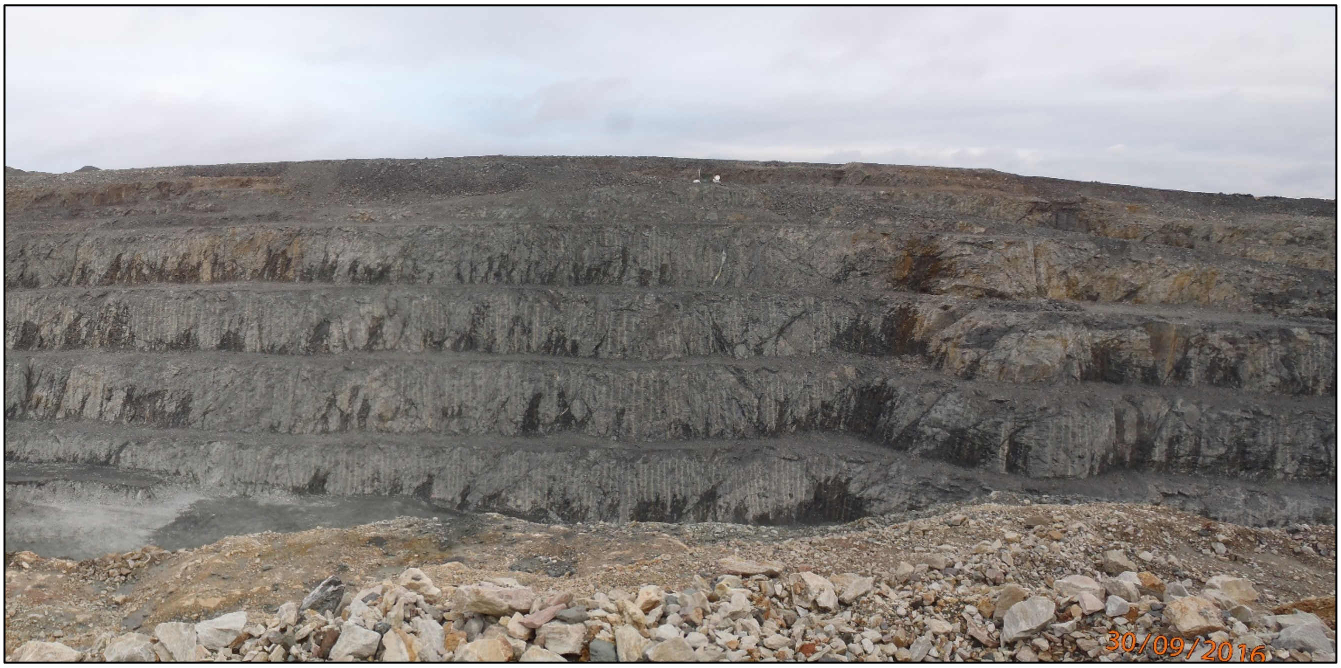
There are no significant geotechnical concerns for this wall.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

4.2.5 Pit A East Wall

The east wall of Pit A continues to perform adequately. It is well scaled, with steep bench face angles, and minimal accumulations of material on the catch benches.



Photograph 4-14: Pit A east wall performance (2016)

During the site visit, a small wedge was observed in the transition from the Pit A east wall to Pit B east wall. The location is shown in the following figure.

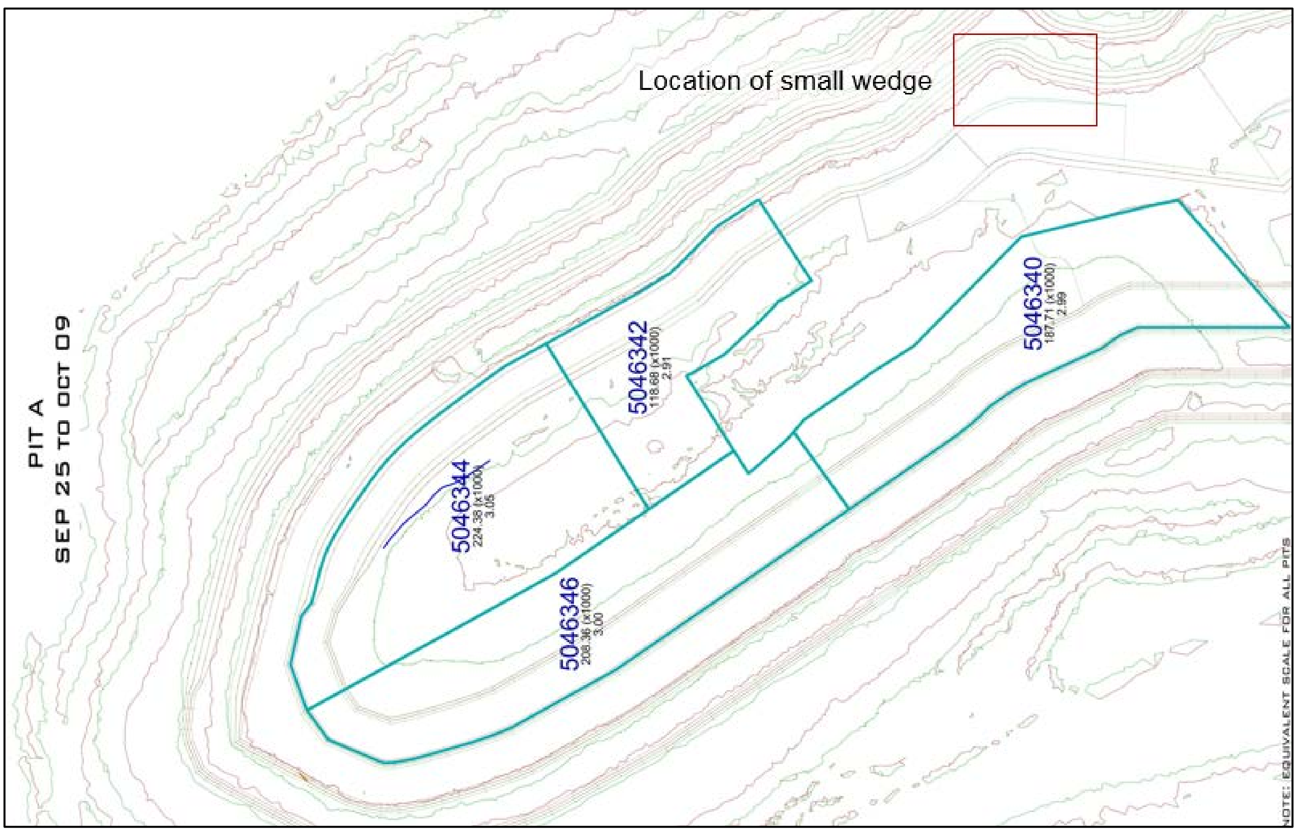


Figure 4-1: Small wedge above stockpiled material

The wedge is outlined in the following photograph.

Photograph 4-15: Wedge above stockpiled material

While the size and volume of the wedge are not substantial, the stockpiled materials at the toe of the bench directly beneath the wedge suggest personnel and equipment could be at risk if working in this area. This was indicated to AEM during the site visit as an immediate concern. It was recommended that this stockpiled material be removed, and the area bermed off to prevent future stockpiling in this area, or other trafficking such as parking of light vehicles beneath this wedge.

There are no significant geotechnical concerns for this wall.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

4.2.6 Portage Pit B Inspection

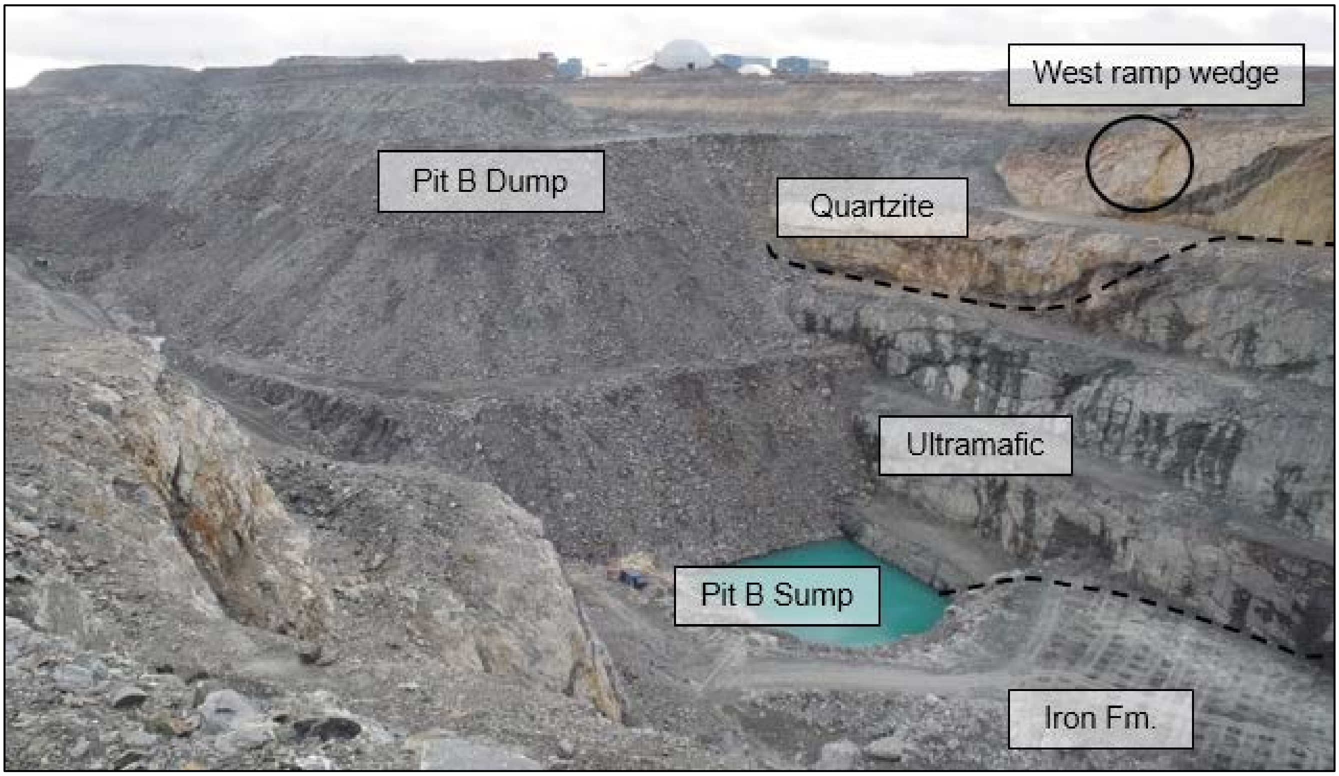
Pit B extends south from Pit A. Mining of Pit B is complete, and it is being backfilled as a waste rock dump. There have been no changes to the platform elevation of the Pit B dump since the 2015 site visit. At the time of the inspection the Pit B Dump crest was at elevation 5126.5 mRL, and the Pit C dump crest at 5127 mRL.

Photograph 4-16: Looking south at Pit B dump in foreground and Pit C dump in background (2016)

4.2.7 Pit B West Wall

The remaining portion of west wall of Pit B that has not been backfilled with waste rock continues to perform adequately. Quartzite is exposed in the upper benches overlying ultramafic rock, and iron formation. There is no access to the west wall of the pit, and access to the base of the pit is gained by the east ramp which also provides access to Pit A.

The wall performance is shown in the following photograph.



Photograph 4-17: Pit B west wall performance (2016)

There is no evidence of large-scale instability for the west wall of Pit B.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

4.2.8 Pit B West Ramp Wedge

The west wall of Pit B is no longer accessible, and ramp access to the pit is by the east wall and from the south from Pit B Dump. The west ramp wedge identified during the 2014 inspection presents only a minor risk in terms of bench scale failure as there is no longer any traffic below this feature. If traffic is permitted in this area again an additional risk assessment should be undertaken.

4.2.9 Pit B East Wall

The east wall of Pit B was inspected from several viewpoints as well as from within the pit. The wall continues to perform satisfactorily. Benches are generally clean with little accumulation of material.

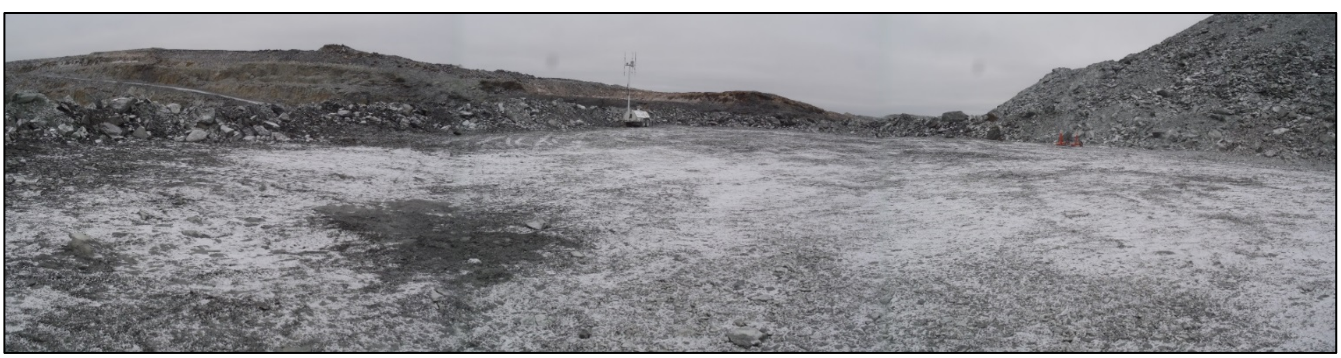
Photograph 4-18: Pit B east wall performance, looking south from viewpoint (2016)

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

4.2.10 Pit B Dump

The crest elevation of the Pit B dump had not changed since the 2015 site visit, and was at 5126.5 mRL. The planned final crest elevation will be 5145 mRL. The dump is being constructed as a dump and doze operation. The following photographs show the performance of the dump platform and dump face.



Photograph 4-19: Pit B dump platform (2016)

Photograph 4-20: PIt B Dump looking southwest (2016)

The crest of the dump was traversed, and no evidence of tension cracks or settlement were observed: no bulging of the dump toe or dump face was observed.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

5.0 PORTAGE PITS C AND D INSPECTION

Pits C and D extend south from Pit B to form the central dump of the Portage Pit. Mining is complete at both pits and they continue to be backfilled as waste rock dumps. At the time of the site visit the Pit C main platform elevation remained the same as for the 2015 inspection, at 5127 mRL, with a planned final elevation of 5145 mRL. The Pit D main platform elevation also remained at 5127 mRL, with a planned final platform elevation of 5142 mRL. It is understood that portions of Dumps B, C, and D will remain at 5127 mRL, while specific areas will be raised to the final elevations.

5.1 Pit C Dump

A photograph looking south at the waste rock dump in Pit C is shown below.

Photograph 5-1: Pit C waste rock dumps looking south (2016)

The west and east pit walls of Pit C are buttressed by waste rock and no longer present any geotechnical hazard. The main dump platform for Pit C is used for storing stockpiles of stemming material. The Pit C dump is performing adequately. There were no tension cracks observed in the crest area, and no bulging of the face or toe areas was noted at the time of the inspection.

5.2 Pit D Dump

Since the 2015 inspection, the toe of the Pit D dump has advanced further south with the development of two additional dump platforms in the transition from Pit D/Pit E. These are shown in Photograph 5-2.

Photograph 5-2: Pit D dump, viewing north from crest of Pit E3 (2016)

During the inspection, a traverse along 5088 mRL bench was carried out. To access the bench, it was necessary to walk across the lower platform below the main Pit D Dump. Some settlement and tension cracks were noted at the east side of the platform, at the margin with the east pit wall. These are shown in Photograph 5-3. This is interpreted as differential settlement at the boundary between materials of differing strength properties (the waste rock dump material and the strong rock benches along the east wall of the pit). Nevertheless, these should be monitored for any indication of increasing settlement or movement. There are no signs of distress in the dump face, and no observed tension cracks noted along the dump crest through the central portion of the dump area.

Photograph 5-3: Tension crack and settlement at eastern margin of lower platform, PIt D Dump (2016)

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.0 PORTAGE PIT E3 INSPECTION

At the time of the site visit the Pit E3 floor was approximately at elevation 5004 mRL. A shallow pit lake had formed on the pit floor, with a surface elevation of approximately 5004.26 mRL.

Photograph 6-1: Pit E3 viewing south (2016)

Approximately seven benches remain to be mined, to a projected final floor elevation of 4976 mRL. The target completion of mining of Pit E3 is Q3 2018.

The Pit E3 east wall continues to perform well. The west wall has localized bench-scale instability associated with the weaker ultramafic rock exposed at the base of the wall, and adverse structure (shearing in the ultramafic rock) inclined into the walls and resulting in overhangs.

The Pit E3 south wall experienced multi-bench failures of the ultramafic rock in September 2015. Since then, no large-scale failures have occurred. Mining in the pit during 2016 has been restricted to the eastern ore zone at the base of the east pit wall. AEM have undertaken additional geotechnical and hydrogeological field investigations, numerical modeling, and engineering design studies to evaluate different options to allow mining beneath this area of the pit. One option currently under consideration is a push-back of the wall into more favourable structural and rock mass conditions.

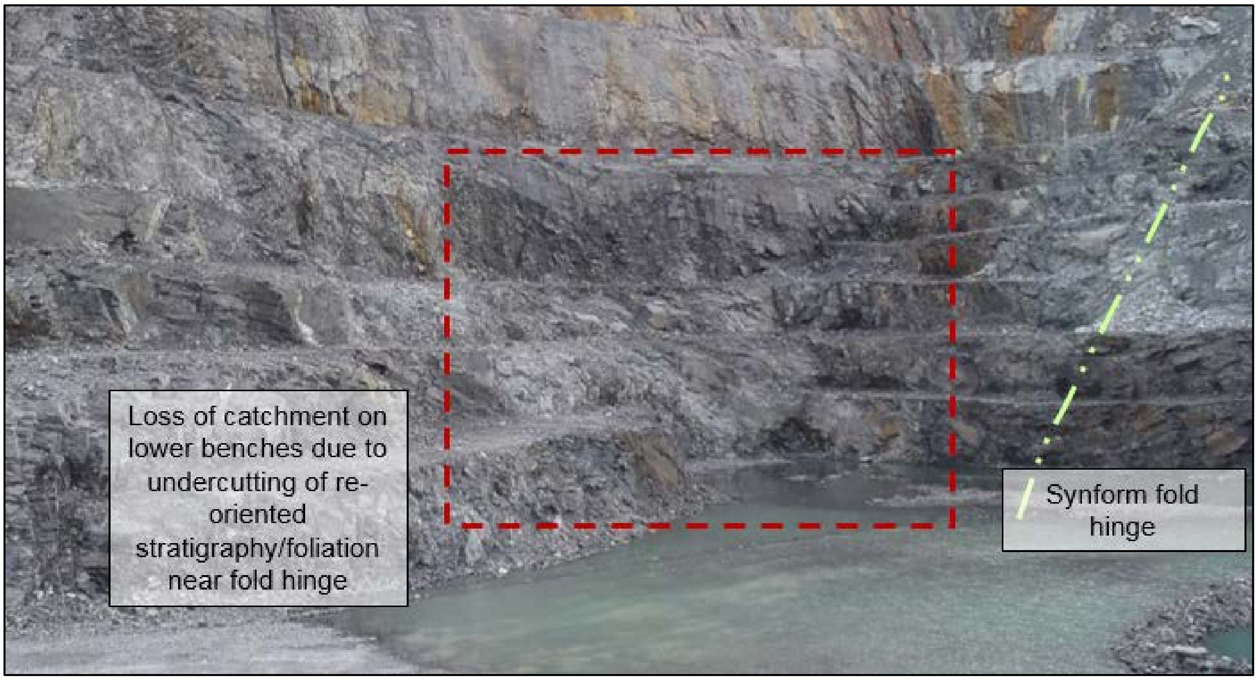
6.1 Pit E3 East Wall

The Pit E3 east wall is excavated in good quality intermediate volcanic rock. The main structural control for the east wall is the steeply west dipping stratigraphy and sub-parallel foliation. Bench face angles have been excavated generally parallel to the dominant structural orientation, and the bench and overall wall performance continues to be satisfactory. Final benches have been cleaned and scaled appropriately. Occasional bench-scale rock falls have occurred in association with local undercutting of wedge and plane geometries; the material from these local failures has been retained on the catchment benches.

Figure 6-1: East wall showing good bench and wall performance (2016)

Local areas of out-dipping planes were observed on the lower benches. During mining, these were identified and were scaled back to remove unstable material. This results in some crest loss and associated loss of catchment however results in a more stable configuration as the unstable material has been removed.

This shallower orientation of the stratigraphy and foliation as exposed in the lower benches is related to folding about a synformal structure trending into the south wall of the pit.



Photograph 6-2: Loss of catchment on lower benches in Pit E3 (2016)

This loss of catchment, while locally problematic, is not indicative of a larger scale potential failure mechanism. This is due the rapid change in the orientation of the foliation and stratigraphy as it is tightly folded about the synform hinge line.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.
- Continue to scale and clean final benches.

6.2 Pit E3 South Wall

Pit E3 south wall exposes primarily ultramafic rock, with iron formation and volcanic rock on its eastern edge. The ultramafic rock is poor quality. From approximately June to September of 2015 the wall experienced considerable instability, resulting in several single and multi-bench failures within the ultramafic rock exposed in the south wall. The ultramafic rock to the east and west of the failure area is in permafrost, is absent of groundwater, and is performing adequately. Additional stability analyses were carried out in 2016 to evaluate the stability of the south wall. The stability analyses concluded that there is a 'core' of potentially unstable ground through the middle of the south wall associated with increased structural complexity including folding, faulting, and hydraulic connection to the Third Portage Lake. Since the last failure in September of 2015, no failures have occurred.

The crest of the south wall of Pit E3 has been unloaded to an elevation of 5109 mRL to improve the stability of the wall, and following recommendations made by Tetra Tech (2016). Boreholes were drilled from the 5109 mRL bench area. Six grouted in piezometers were installed, along with open-hole piezometers in an effort to better understand the hydrogeological regime behind the wall. Several semi-quantitative pumping tests were carried out. The pump testing and exploration confirmed a relatively rapid response in some piezometers, while others were not observed to respond to induced hydrogeological changes. The observations indicated that the degree to which depressurization was achievable, and the rapid recovery times once pumping was stopped in some locations, suggested that maintaining a depressurized slope face to the degree required would be difficult. AEM are currently evaluating a pushback of this wall, which will include re-orientation of the wall facing direction, into more favourable structural and rock mass conditions. At the time of the site visit, planning was underway to carry out drilling of four geotechnical boreholes to confirm the structural and geological interpretation in the area of the pushback, as well as the hydrogeological conditions should depressurization be required.

Mining of the east ore zone to the east of the toe of the failed area has continued with single benching to the current floor elevation of 5004 mRL. AEM are currently evaluating a push-back of the wall into more stable rock and more favourable structure.

The following photograph shows the south wall at the time of the site visit.

Photograph 6-3: Pit E3 south wall (2016)

Photograph 6-4: Approximate location of the A-series and B-series of drain holes (2016)

The potential for the failure to extend back to the dewatering dike and affect the integrity of the dike has been investigated. The engineering geology model and stability analyses indicate that failure behind the crest will be limited to the depth of the ultramafic contact with the iron formation, and will not extend back to the dewatering dike.

The following actions are recommended:

- Continue to restrict access to the runout platform immediately below the slope instability.
- Complete the evaluation of a pushback of this wall into more favourable conditions.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

Prior to recommencement of mining below this wall, and following the efforts to depressurize and unload the slope, a re-evaluation of the slope stability based on the achieved results of the mitigation should be undertaken.

6.3 Pit E3 West Wall

The Pit E3 west wall exposes predominantly quartzite, iron formation and intermediate volcanic rock in the upper benches of the wall, overlying ultramafic rock in the lower benches. Ultramafic rock is exposed along a substantial portion of the ramp as it descends into the pit. The west wall has been advanced to the south to form a narrow slot at the southwest end of the pit.

Currently the performance of the west wall benches is generally satisfactory, particularly in the upper benches excavated in the stronger rock types, although some crest loss is noted. The bench face angles are steep, with wide catch benches, and these are adequate for retaining the material that has failed.


Photograph 6-5: Pit E3 west wall upper benches (2016)

Seepage forces are observed along fracture planes exposed in the bench faces, particularly near the south end of the west wall as this area was originally talik, beneath the previously existing Third Portage Lake. Seepage faces can be expected to contribute to instability of the ultramafic and other rock types during cyclic freeze-thaw. While stable through the winter, these areas may be prone to increased raveling and bench scale failure during the spring thaw. Additional care should be taken during spring thaw to identify potentially unstable areas of the pit wall and address if required.

At the south end of the west wall, the contact of the ultramafic rock and overlying intermediate volcanic rock is inclined into the wall, which is beneficial for overall slope stability, but results in bench-scale instability of the underlying ultramafic rock. Local rock falls have occurred as the ultramafic rock separates from the overlying volcanic contact, followed by sliding along the steeply east dipping orthogonal joint set.

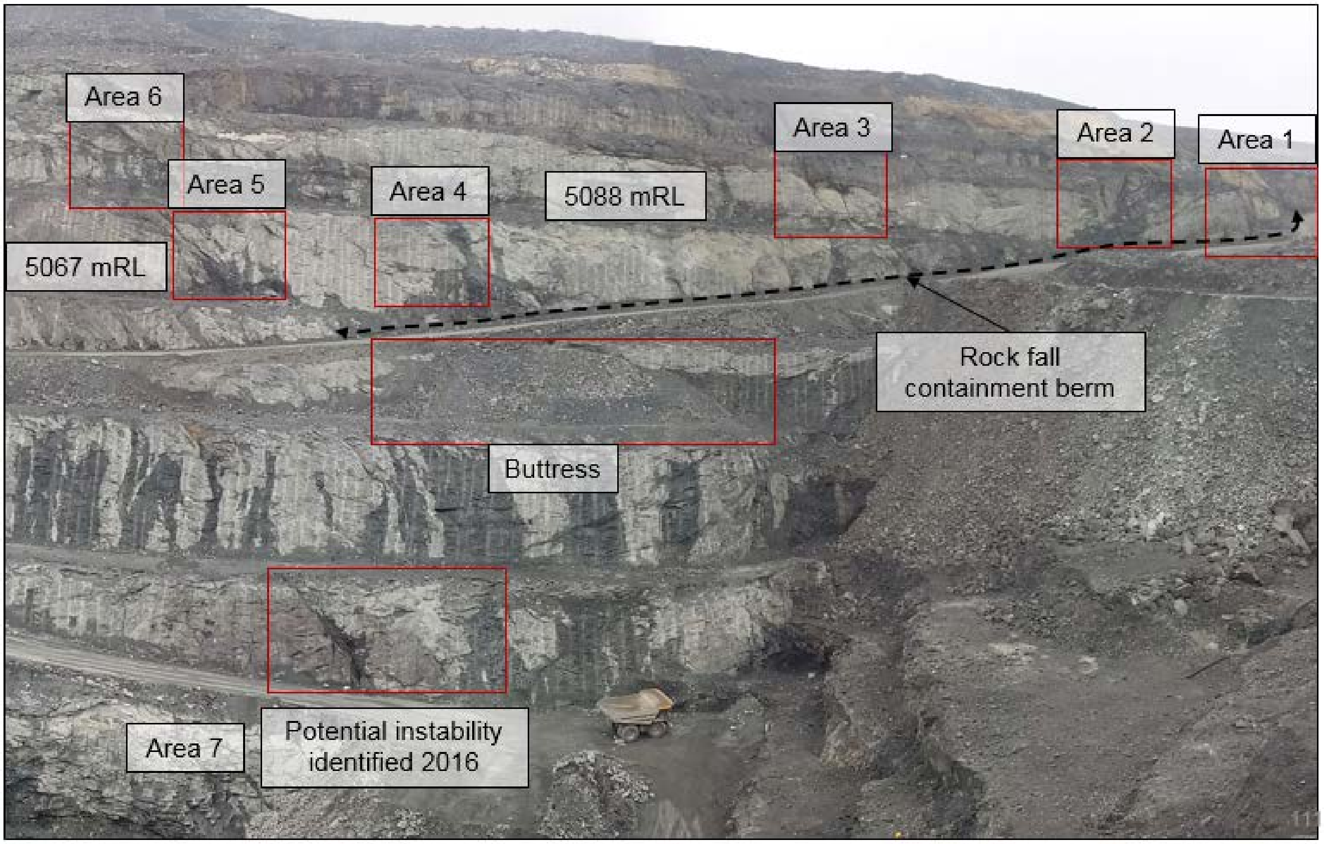
This instability is exacerbated by the presence of shear zones and the Bay Fault within the ultramafic rock, which are inclined steeply into the west wall. The area of the overhang has been cleaned well, as has the bench beneath it. As this area of the pit continues to be mined down, continuing raveling of ultramafic rock can be expected. However, this material is expected to collect on the catch benches.

On the lowest bench, stratigraphy may be re-oriented due to folding adjacent to the fault, resulting in some out-dipping planes. This re-orientation of stratigraphy is visible in the south wall.

Photograph 6-6: South end of Pit E3 west wall lower benches (2016)

6.4 Pit E3 West Wall Ramp

The Pit E3 ramp is situated on the west wall of the pit, and descends to the south into the pit. Six areas of potential instability identified during the 2015 inspection were visited in 2016, and are shown below. A seventh potential area of instability was identified during the 2016 inspection. These are shown in the following photograph.



Photograph 6-7: Pit E3 west wall ramp areas of potential instability (2016)

The rock fall containment berm constructed along the west edge of the ramp continues to provide adequate catchment for rock falls that have occurred along the west wall above the ramp. As the ramp descends south along the west wall into the base of Pit E3, it becomes single lane to accommodate the width of the containment berm adjacent to the bench. A buttress constructed down slope of the ramp provides additional support to the ramp.

6.4.1 Ramp Areas 1 and 2

The ramp passes beneath an area of wall that was problematic during the 2014 site visit (Area 1 and Area 2). The area of wall is associated with a fault zone – possibly the Bay Fault or a splay off that fault trend - trending through this area of the pit. This fault, or shear, is several metres wide, and steeply dipping to the west.

Photograph 6-8: Pit E3 Ramp Area 1 above ramp - Bay Fault or splay (2016)

Photograph 6-9: Pit E3 Ramp Areas 1 and 2 - Bay Fault or splay (from 2015 inspection)

The following actions are recommended:

- Maintain the rock fall containment berm on the ramp.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.4.2 Ramp Area 3

Area 3 is defined by the contact between ultramafic rock and overlying volcanic rock inclined into the slope which forms a top release surface for a wedge formed within the ultramafic rock. No increase in the amount of raveled material accumulating at the toe was noted during the 2016 inspection. The combination of the 5088 mRL bench, and the containment berm on the ramp is adequately managing the potential for rock fall in this area.

Photograph 6-10: Pit E3 Ramp Area 3 wedge (2016)

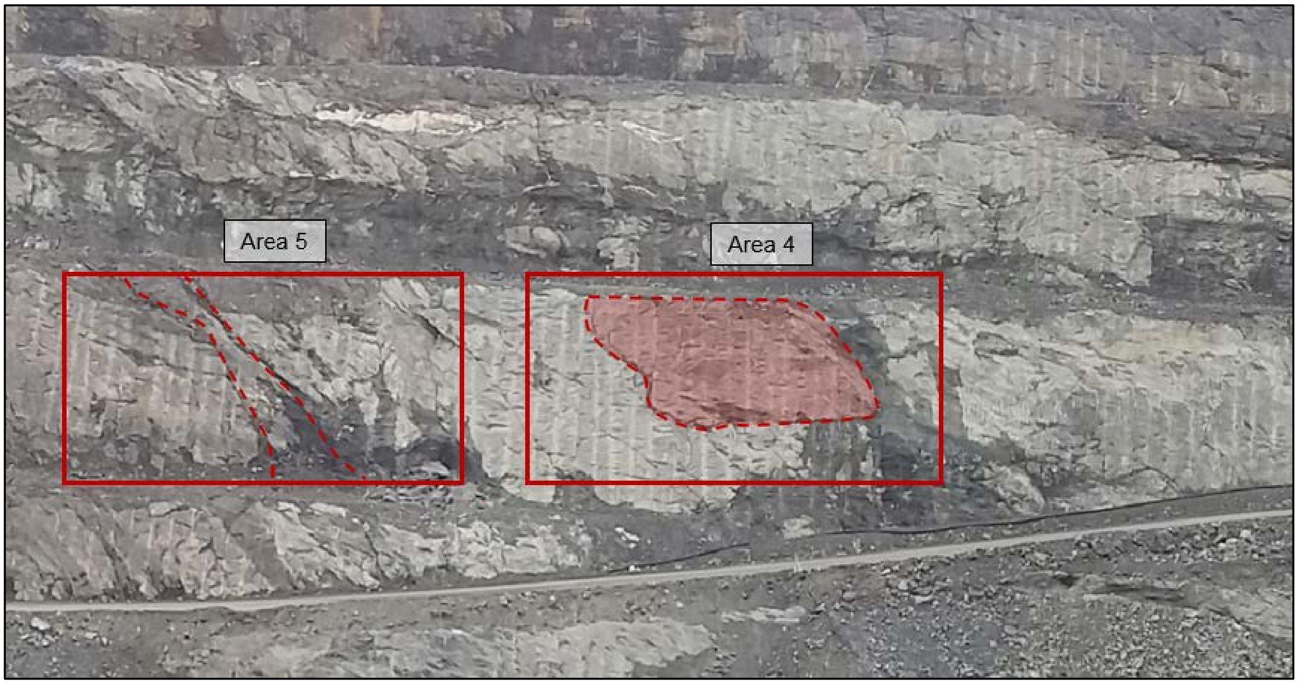
The following actions are recommended:

- Maintain the rock fall containment berm on the ramp.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

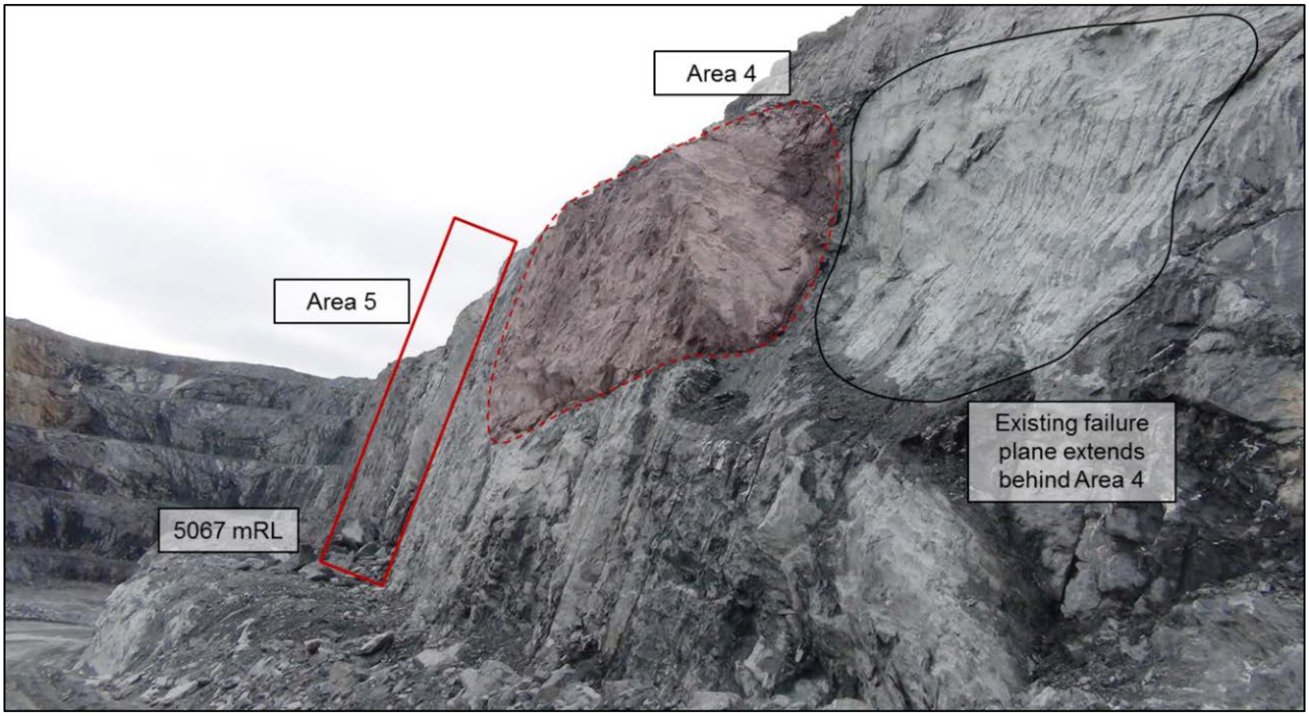
6.4.3 Ramp Areas 4 and 5

Area 4 is a potential planar failure formed by a steep east dipping sliding plane undercut by the bench face. The sliding plane is exposed adjacent to Area 4 on a portion of wall that was removed through scaling. The plane extends behind the Area 4 block, and daylights in the bench face. The rock fall containment berm on the west ramp extends beneath the rock block to manage the risk associated with the potential failure of this material.

Area 5 is defined by a series of closely spaced bench-scale joints trending into the wall, and forming steeply plunging wedges.



Photograph 6-11: Pit E3 Ramp Areas 4 and 5 (2016)



Photograph 6-12: Pit E3 Ramp Areas 4 and 5 viewed from the ramp (from 2015 inspection)

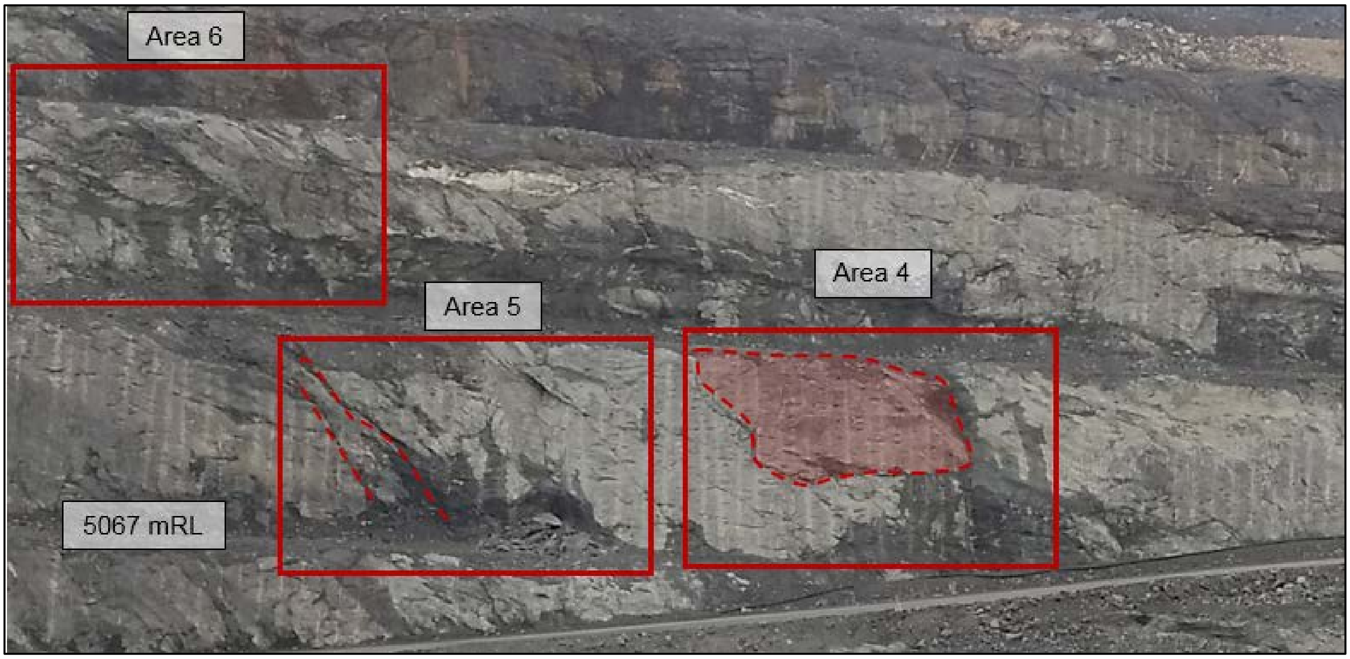
No new material was observed to have failed on to the 5067 bench since the 2015 inspection. However, it is possible that some opening of the plane behind the Area 4 block has occurred; this block should continue to be monitored as part of the regular site geotechnical inspections.

The following actions are recommended:

- Maintain the rock fall containment berm on the ramp.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.4.4 Ramp Area 6

Area 6 is located above the 5088 mRL bench, and is a vertical extension of the closely spaced jointing of Area 5. These are steeply north dipping shear joints, which intersect the volcanic rock. The close spacing and continuous nature of these joints may result in increased raveling of material particularly during freshet and spring thaw.



Photograph 6-13: Pit E3 Ramp Area 6 (2016)

No additional accumulation of material was noted on bench 5088 mRL since the 2015 inspection.

The following actions are recommended:

- Maintain the rock fall containment berm on the ramp.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.4.5 Ramp Area 7

A seventh area of potential instability was identified during the 2016 inspection. The area is at the base of the ramp, on the north side of the pit, and near the contact between iron formation and ultramafic rock. The location is shown on the following figure.

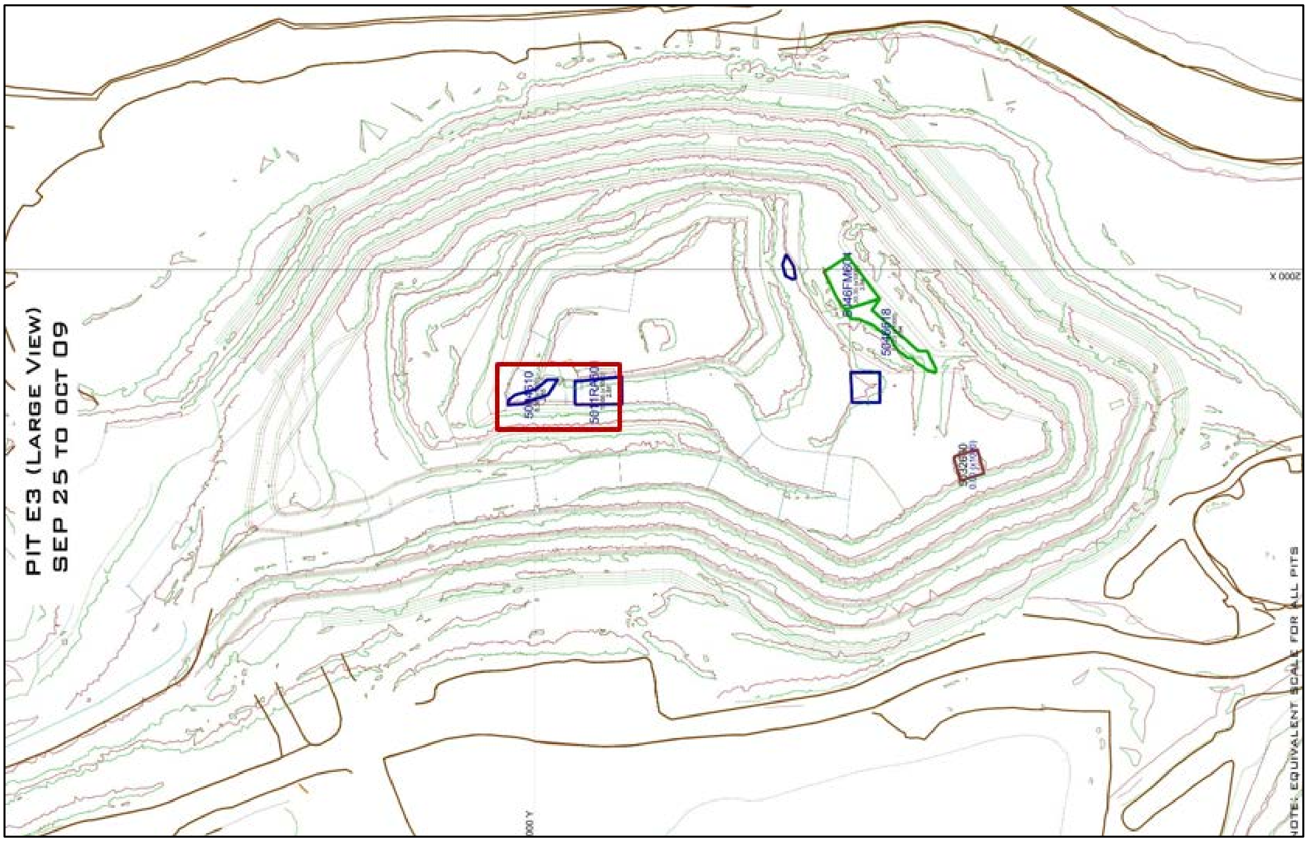


Figure 6-2: Area 7 instability at base of Pit E3 ramp

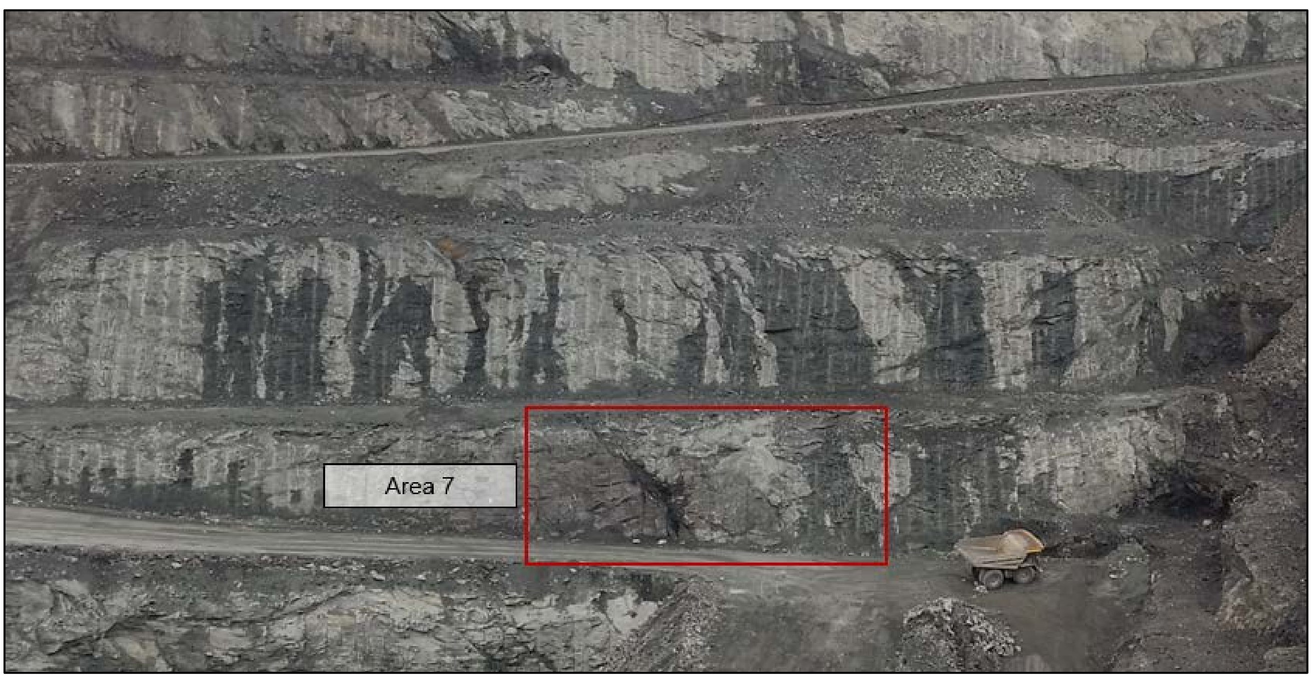


Figure 6-3: Area 7 instability (2016)

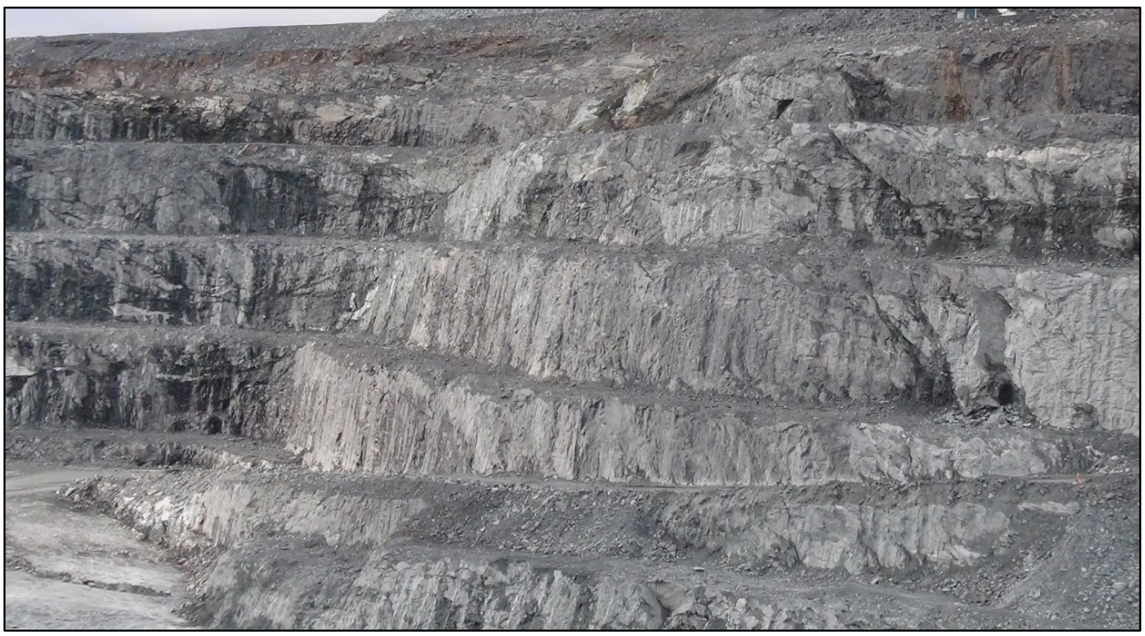
The potential instability is characterized by strongly sheared ultramafic rock in contact with iron formation, with associated shear planes dipping out of the bench face. Some of the sheared planes are open. The geometry is to some degree like the instability that was encountered adjacent to the ramp in the Goose Pit in 2014. As a preventive measure it was recommended to AEM to investigate widening the ramp in this area to avoid production delays that could result from local instability of the ultramafic rock on this bench, A safety berm should be constructed along this section of ramp to prevent personnel and equipment from stopping beneath this face.

The following actions are recommended:

- Widen ramp in this area to allow haul maintenance in the event of a failure.
- Construct a rock fall protection berm along the bench toe of this section.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.4.6 West Wall Ramp – South End

As the West Wall Ramp continues to descend into the pit to the south past Areas 5 and 6, the quality of the ultramafic rock improves as does the bench performance. This is seen in the following photograph.



Photograph 6-14: Pit E3 west wall ramp south end (2016)

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

6.4.7 West Wall Ramp –Ramp Buttress

The ramp instability identified in 2015 by AEM and associated with the lower wall ultramafic rock in the benches below the ramp was mitigated with the construction of a counter-balancing rock fill berm to support the ramp. This was documented during the 2015 inspection. The berm continues to be effective at stabilizing the ramp.

Photograph 6-15: Pit E3 west wall ramp buttress and step-in (2016)

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

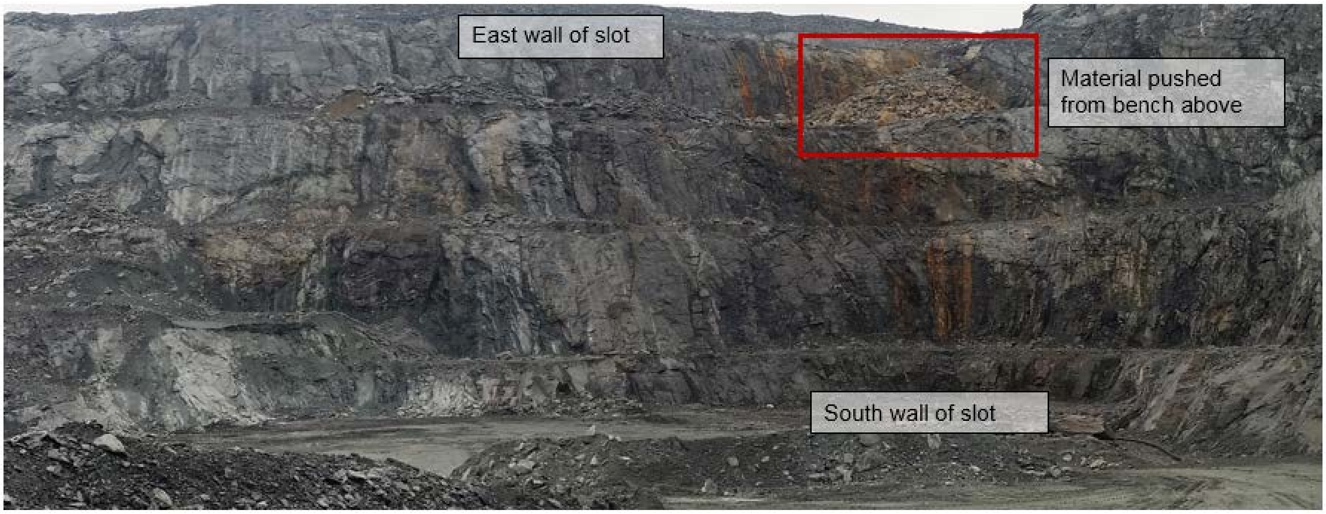
6.4.8 Pit E3 Slot South and East Wall

Mining southward of the west wall has continued, exposing the south trending stratigraphy of quartzite, iron formation, intermediate volcanic and ultramafic rock. The south wall has a small radius and transitions rapidly into an east wall which not very long in length. The upper benches of the south wall are comprised of ultramafic, intermediate volcanic and quartzite, transitioning down into iron formation. The east wall is comprised of iron formation, transitioning into ultramafic rock to the east as the wall orientation change back to the north dipping south wall. The floor of the pushback is primarily within permafrost.

The slot area as exposed during the 2016 inspection is structurally complex. The Bay Fault trends into the south wall, and some reorientation of the stratigraphy can be seen near the fault. While the benches and walls look blocky

Several talus cones of material were observed on the upper bench; however, these are formed by material that has been pushed over from the top platform.

The topmost bench of the south wall of the slot reveals an adversely oriented, continuous planar structure dipping to the northeast at a moderate angle which was scaled out during mining. As the east wall of the pushback transitions into the Pit E3 south wall, continuous north dipping joint planes result in catchment loss where these have been undercut by bench face angles.



Photograph 6-16: Pit E3 south slot pushback looking south (2016)

The following actions are recommended:

- Continue careful scaling and bench cleaning as the pushback is deepened.
- Ensure foliation is not undercut by bench face angles.
- Instruct operators not to over-excavate.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

7.0 GOOSE PIT INSPECTION

Mining has been completed at Goose Pit to a final floor elevation of 4997 mRL. Waste rock has been end-dumped into the northwest corner of the pit near the access ramp entry, using the pit as a short-haul dump. Dumping into the Goose Pit stopped in June of 2016; per information provided during the site visit it is planned to recommence dumping into the pit beginning in February 2017.

On the day of the inspection, the elevation of the pit lake was of 5046.4 mRL (September 2016). The pit lake is formed by water inflow through bedrock, and water that is pumped from Pit E3.

The inspection of the Goose Pit comprised a series of stops around the crest of the pit for an overview of the current conditions. The pit is closed, and the access ramp has been blocked. In addition to the observations made during the site visit, data from thermistor and TDR instrumentation were reviewed.

7.1 Goose Pit East Wall

The east wall of the Goose Pit was excavated predominantly in intermediate volcanic rock and iron formation. The stratigraphy is inclined steeply at a consistent angle to the west. Steep bench faces were achieved with the use of careful pre-shear blasting. There has been very little loss of catchment, and very little accumulation of material on the benches.

The following photograph shows the east pit wall looking north.

Photograph 7-1: Goose Pit east wall performance looking north (2016)

The east wall continues to perform satisfactorily and there are no immediate geotechnical concerns.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

7.1.1 Time Domain Reflectometry Cables, Thermistors, and Piezometers

As part of the site inspection, the instrumentation data from Time Domain Reflectometry (TDR) cables, thermistors, and piezometers installed in the east pit wall were reviewed. A location plan for the instrumentation is shown in the following figure, and the data are presented in Appendix A.

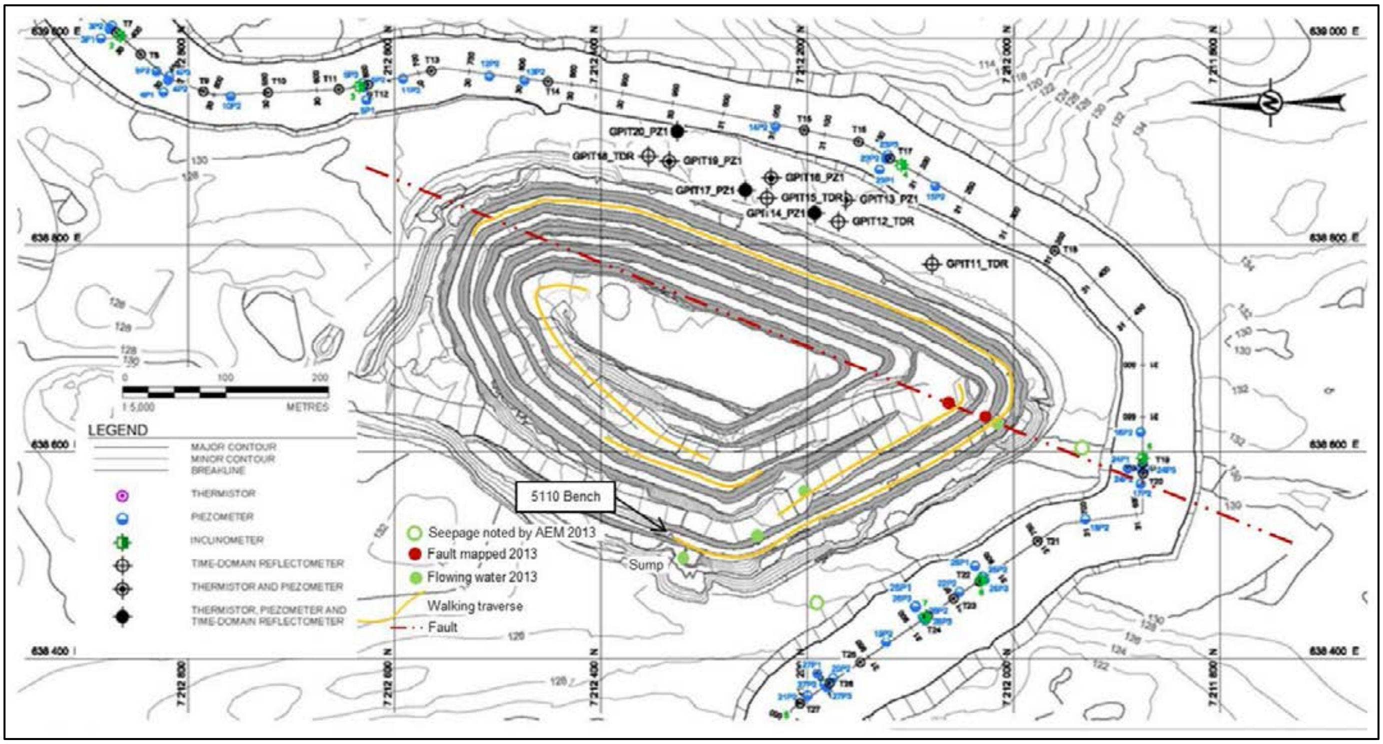


Figure 7-1: Goose Pit location of instrumentation

7.1.2 TDR Cables

Seven TDR cables were installed in geotechnical boreholes drilled behind the east wall of the Goose pit in 2013 to monitor slope movement. A review of the data indicates no slope displacement. There is no noticeable change in the TDR cable signatures from 2015. The response for TDR GPIT-14 is erratic, suggesting it is damaged. There are no other indicators in the area to suggest slope movement.

7.1.3 Thermistors

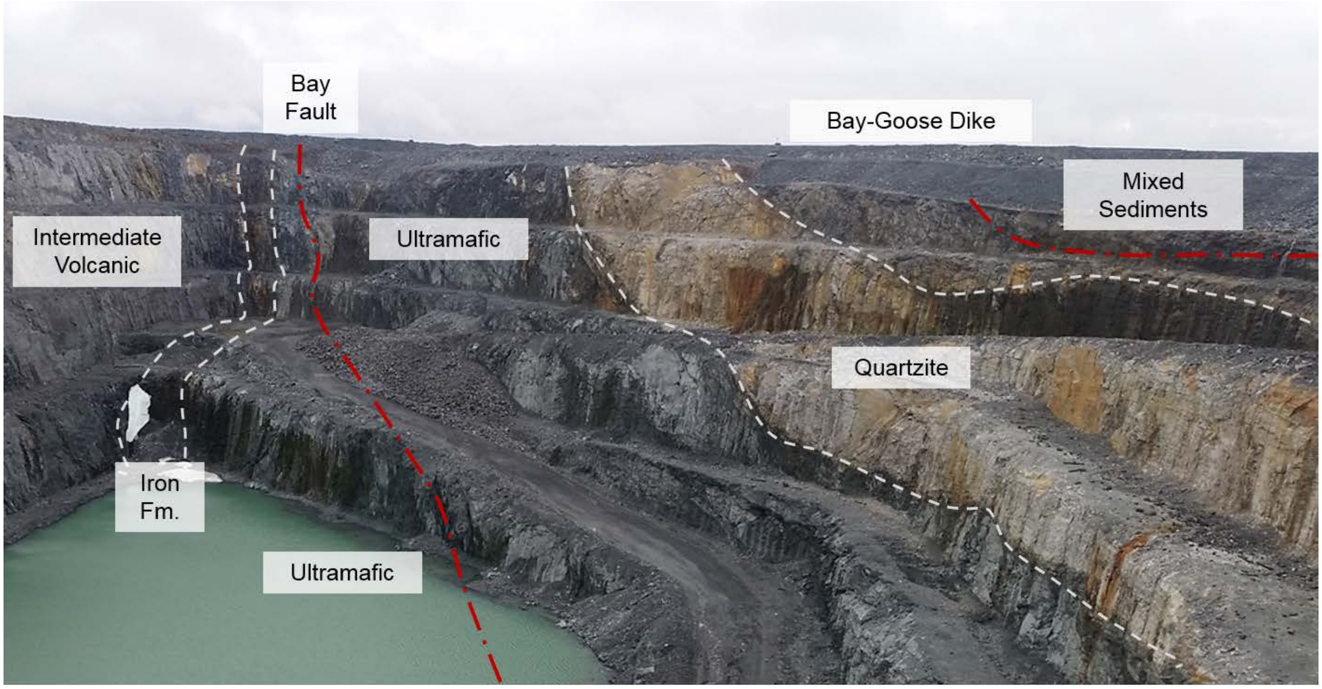
Thermistors were installed in 6 geotechnical boreholes drilled behind the east wall in 2013. A review of the data indicates no significant change from 2015. The data indicate generally steady-state conditions have been reached.

7.1.4 Piezometers

Piezometers were installed in 6 geotechnical boreholes drilled behind the east wall in 2013. A review of the data indicates constant hydraulic heads, and no significant change from 2015. The exception is piezometer tip PZ4c in GPIT-14 which showed a decrease in hydraulic head from about 5043 m to about 4980 m from January to November 2016. This is similar to responses noted in 2015 and suggests this piezometer tip is damaged.

7.2 Goose Pit South Wall

The south wall of the Goose pit is comprises iron formation and intermediate volcanic rock in the east, transitioning through a sequence of ultramafic rock, quartzite, and iron formation. The most prominent structural feature is the Bay Fault which intersects the south wall of the pit, within the ultramafic rock. The various lithological units are shown in the following photograph.



Photograph 7-2: Goose Pit south wall performance (September 2016)

The performance of the bench overall south wall continues to be satisfactory. There is no evidence of instability; no accumulations of material on the benches since 2015 are observed. There are no significant geotechnical concerns for the Goose Pit south wall.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

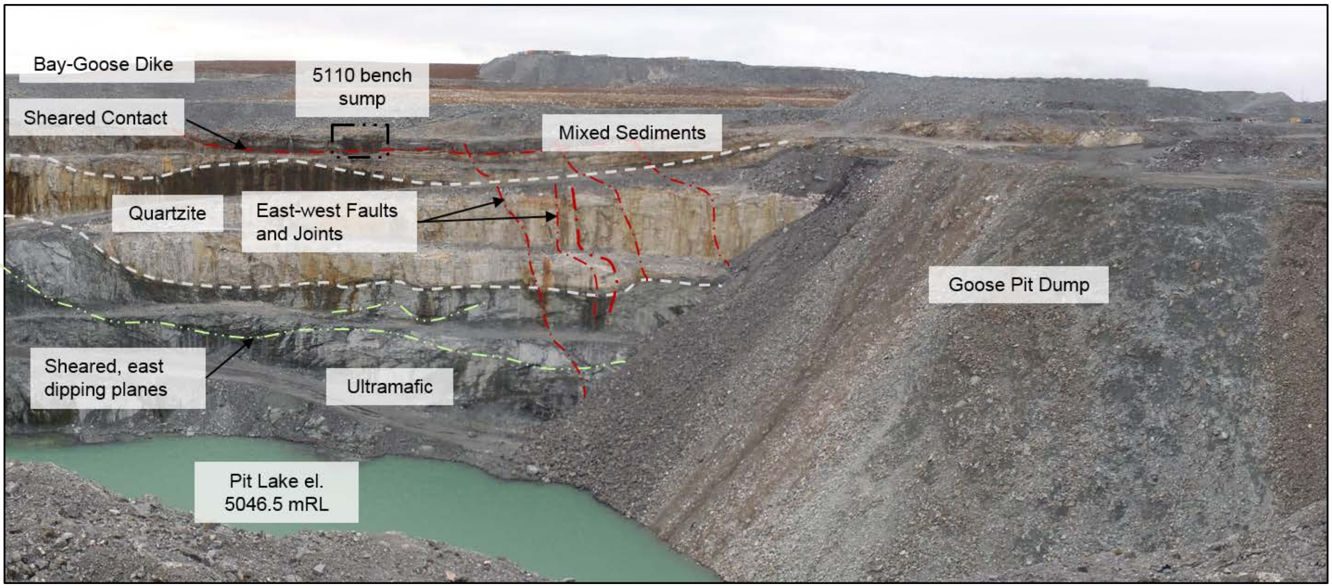
7.3 Goose Pit West Wall

The upper west wall of the Goose Pit is comprised of mixed sedimentary and volcaniclastic rocks at the crest, overlying quartzite. The lower benches of the pit expose poor quality ultramafic rock. The stratigraphic contacts dip at moderate angles into the pit wall to the west. . The ultramafic rock is characterized by relatively closely spaced sheared joints or foliation, dipping at steep angles to the east. Localized failures occur where these are undercut by bench face angles. The quality of the ultramafic rock degrades over time with exposure to air and water.

Steeply dipping east-west trending faults and joints connect to a north-south sheared contact within the mixed sediment units, providing a hydraulic connection to Third Portage Lake, and allowing water to flow towards the pit. Water reports to a sump on the 5110 bench.

There are no observable changes to the hydrogeological regime. The rock immediately below the sheared contact remains saturated, and water continues to seep from the face above the ramp, as well as from the bench faces below the ramp.

Much of the west wall of the pit is now covered by a waste rock dump which conceals or partially conceals many of the instabilities noted during previous inspections, and now acts to buttress those instabilities.



Photograph 7-3: Goose Pit west wall performance (September 2016)

There are no significant geotechnical concerns noted with the performance of the west pit wall of the Goose Pit, and no evidence of large scale (overall slope) instability for the west wall of the closed pit.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

7.3.1 Goose Pit Waste Rock Dump

Dumping into the Goose Pit stopped in June of 2016; per information provided during the site visit it is planned to recommence dumping into the pit beginning in February 2017.

The Goose Pit has been used as a short-haul waste rock dump. Waste rock has been dumped from the crest area and ramp entry at the northwest end of the pit. The dump platform is currently at elevation 5120 mRL; the dump toe extends into the pit lake, and across the pit floor to the east wall, at the north end of the pit. Currently, there is no active dumping.

Photograph 7-4: Goose Pit waste rock dump (September 2016)

A no-entry berm has been constructed to prevent vehicles and personnel from accessing the dump platform.

Several large tension cracks were noted during the 2015 inspection on the dump platform, between 10 m and 20 m back from the dump crest. The tension cracks are curvilinear and extend the full width of the dump platform. It was noted during the 2015 inspection that approximately 30 cm of vertical displacement across the cracks and lateral separation (opening) had occurred. During the 2016 inspection, it was observed that the vertical displacement across the cracks has increased due to dump crest settlement. Additional tension cracks were also observed.

Photograph 7-5: Goose Pit dump crest and tension cracks, September 2016

Photograph 7-6: Opening of tension cracks on dump platform (September 2016)

Based on discussions with AEM, much of the dump platform settlement occurred following the introduction of water to the north end of the dump platform area from pumping from Pit E3. The water line was relocated to discharge over the bedrock face of the north wall of the pit, rather than on to the dump platform.

Figure 7-2: Location of tension cracks in Goose Pit dump platform (September 2016)

Prior to any continuance of active dumping in this area a detailed dump inspection should be carried out, and an action plan developed that might include frequent inspections of the crest area, and the installation of instrumentation.

The following actions are recommended:

- Continue to restrict active dumping from the dump crest for the current conditions.
- If the dump is to be reactivated, carry out a dump inspection and develop an action plan for inspections and monitoring.
- Maintain the rock fill berm to restrict access to the dump crest.
- Mark the position and extents of the existing tension cracks with paint, and have these surveyed and marked on a dump plan for on-going monitoring purposes.
- Measure the vertical displacement across the tension cracks as a record of settlement.
- Install some crack extensometers to measure future movement.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

7.4 Goose Pit Northwest through Northeast Walls (North End-Wall)

The northwest through northeast (north end-wall) walls of the Goose Pit exposes the stratigraphic sequence of the deposit, from ultramafic rock in the west, through intermediate volcanic, and then iron formation in the east. The stratigraphy and major structural features (faults and dominant foliation) strike approximately perpendicular to the wall, and dip at about 60 degrees to the west. The wall also exposes the Bay Fault, and associated splays.

The dump developed at the northwest end of the pit covers many of the previous areas of instability, and buttresses much of the wall. Seepage is still noted on the north end-wall in association with the main structural features intersecting the wall, and the seepage face is at approximately the same elevation as observed during the 2015 inspection.

The following photograph presents the geology and seepage daylighting in the north end-wall face.

Photograph 7-7: Goose Pit north end wall (September 2016)

There are no significant geotechnical concerns noted, and no evidence of large scale (overall slope) instability for the north end-wall of the closed pit.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.0 VAULT PIT INSPECTION

Mining of the Vault Pit has advanced significantly since the 2015 inspection. At the time of the site visit, the Phase 2 pit had been excavated to 5067 mRL. Figure 8-1 shows the extents of the Vault Pit at the time of the site visit.

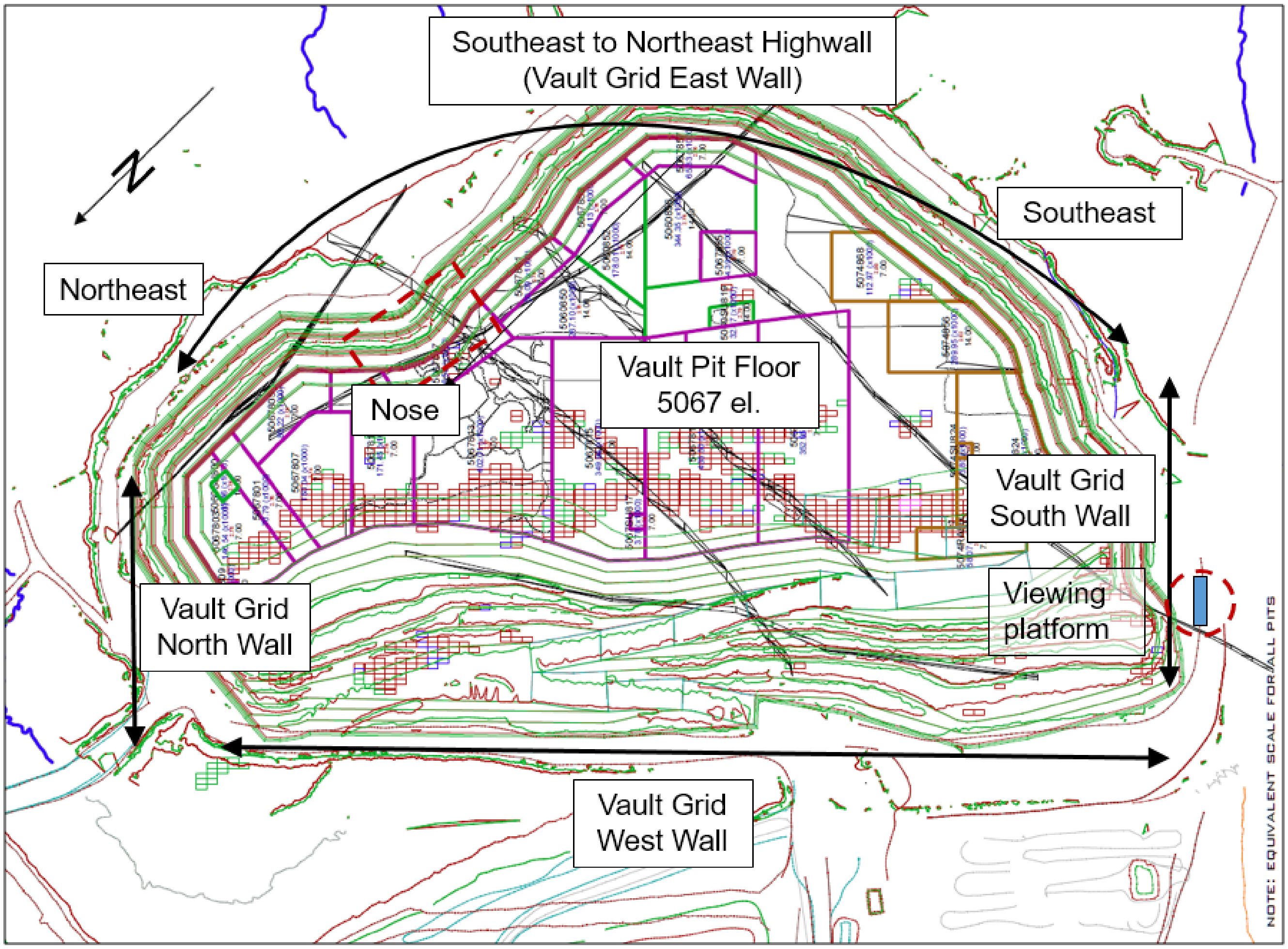


Figure 8-1: Extents of Vault Pit at time of inspection

8.1 General Observations

The slope design criteria currently in practice at the Vault Pit are generally consistent with the design criteria recommended in the slope optimization study (Golder, 2013b). Catch benches are designed slightly wider than recommended by Golder (2013b) resulting in slightly shallower inter-ramp angles. AEM are investigating the opportunity to reduce bench width from 10.5 m to 10 m for the north, east, and south wall. A study carried out by AEM showed break back of the benches to be, on average, 1.6 m. The effective catch bench width with this change would still be compliant with the minimum width of 8 m specified in Section 1.137 the Mine Health and Safety Act and Regulations for Nunavut. This would be consistent with the optimized bench design configurations for Vault presented in Golder (2013b).

Access to all areas of the pit was possible during the site visit. The following Figure 8-2 shows areas of the pit that were visited directly.

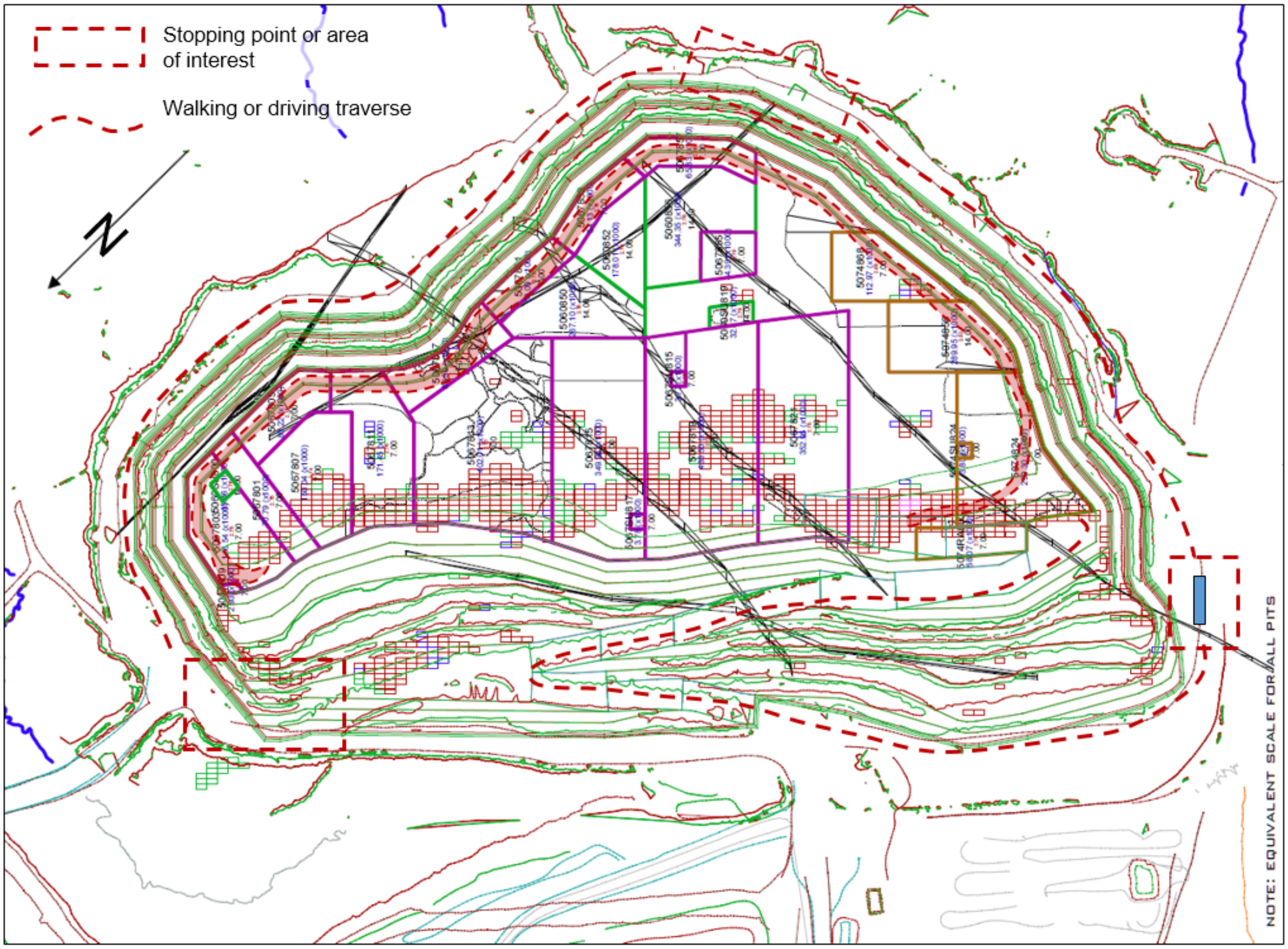


Figure 8-2: Vault Pit areas visited during inspection

The pit walls of the Vault Pit continue to perform well. The development of the pit since 2015 allows good observation of the final pit walls, and how these are performing. Final walls are pre-sheared to bench face angles of 75 degrees on the north, east, and south walls, and to 88 degrees on the west wall. Catch benches are 10.5 m wide.

There are some areas of over-break of catch benches noted on the north through northeast wall, and this predominantly associated with crest loss on inclined planes dipping obliquely to the strike of the pit wall.

The west wall is being mined on single benches and parallel to the dip of the stratigraphy. There are areas of notable bench crest and catchment loss, but this was expected because of the orientation of the stratigraphy. The thinly foliated and sericitic rock, and is susceptible to fracturing when blasted. Pre-shear blasting is not used for this wall, and it is likely this contributes the increased fragmentation as other walls where pre-shearing is used perform well.

The foliation and general stratigraphy dip at relatively shallow angles averaging 22 degrees, but varying from about 10 degrees to as high as 40 degrees. The design criteria for the wall was specified as single bench to accommodate the expected loss of some benches, and therefore minimize the volume of failed material.

8.1.1 Water Inflows and Seepage

The locations for water inflows and seepage noted during the 2016 inspection remain the same as for the 2015 inspection. There are three main areas of the pit where water inflow or seepage are noted. These are shown on the figure below. These are generally related to the dewatering of Vault Lake, to the current lake level, and to release of water stored in the talik beneath the former lakes. These are discussed in relevant sections below.

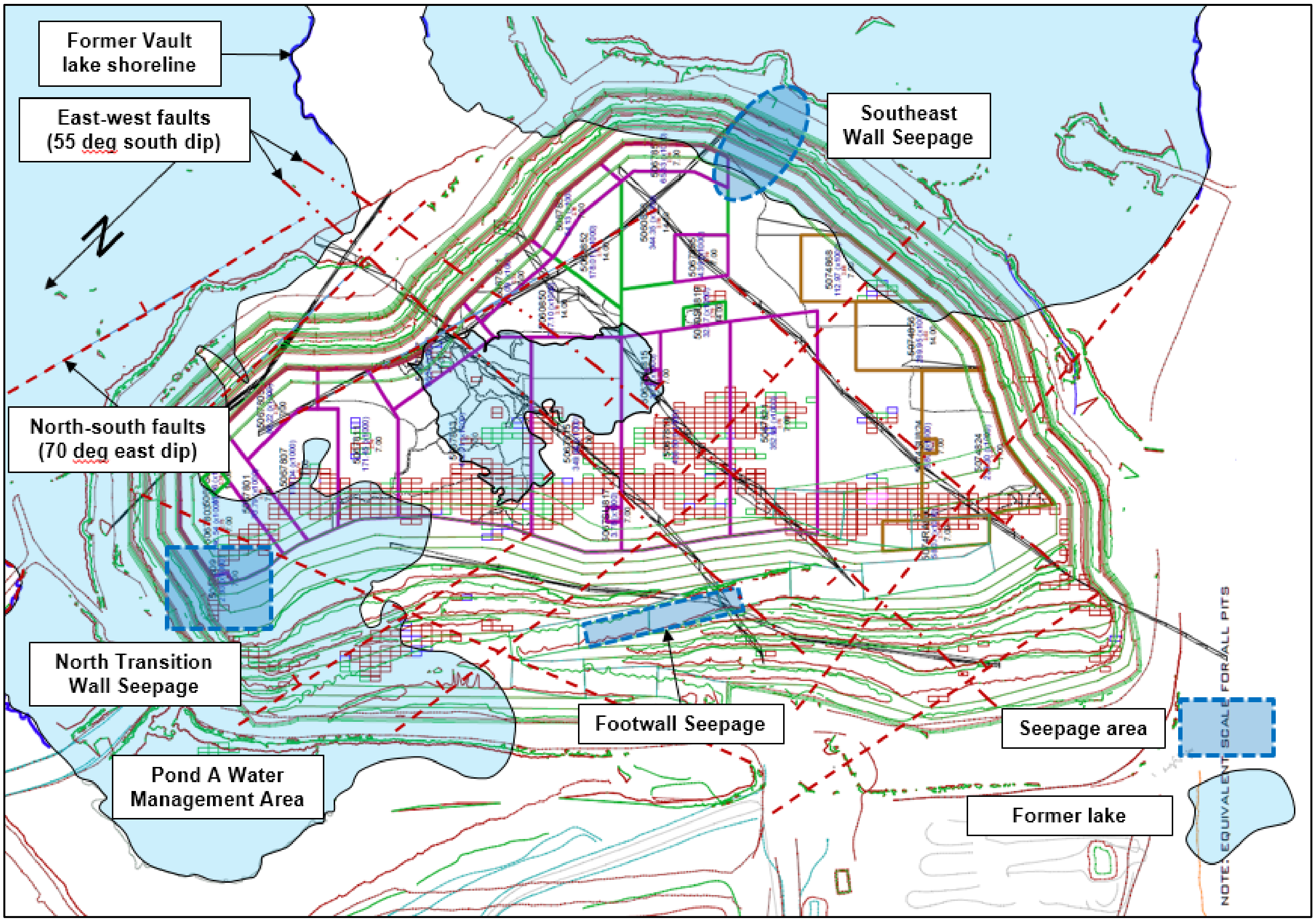


Figure 8-3: Vault Pit seepage and pit inflow locations

8.2 Footwall (Vault Grid West Wall)

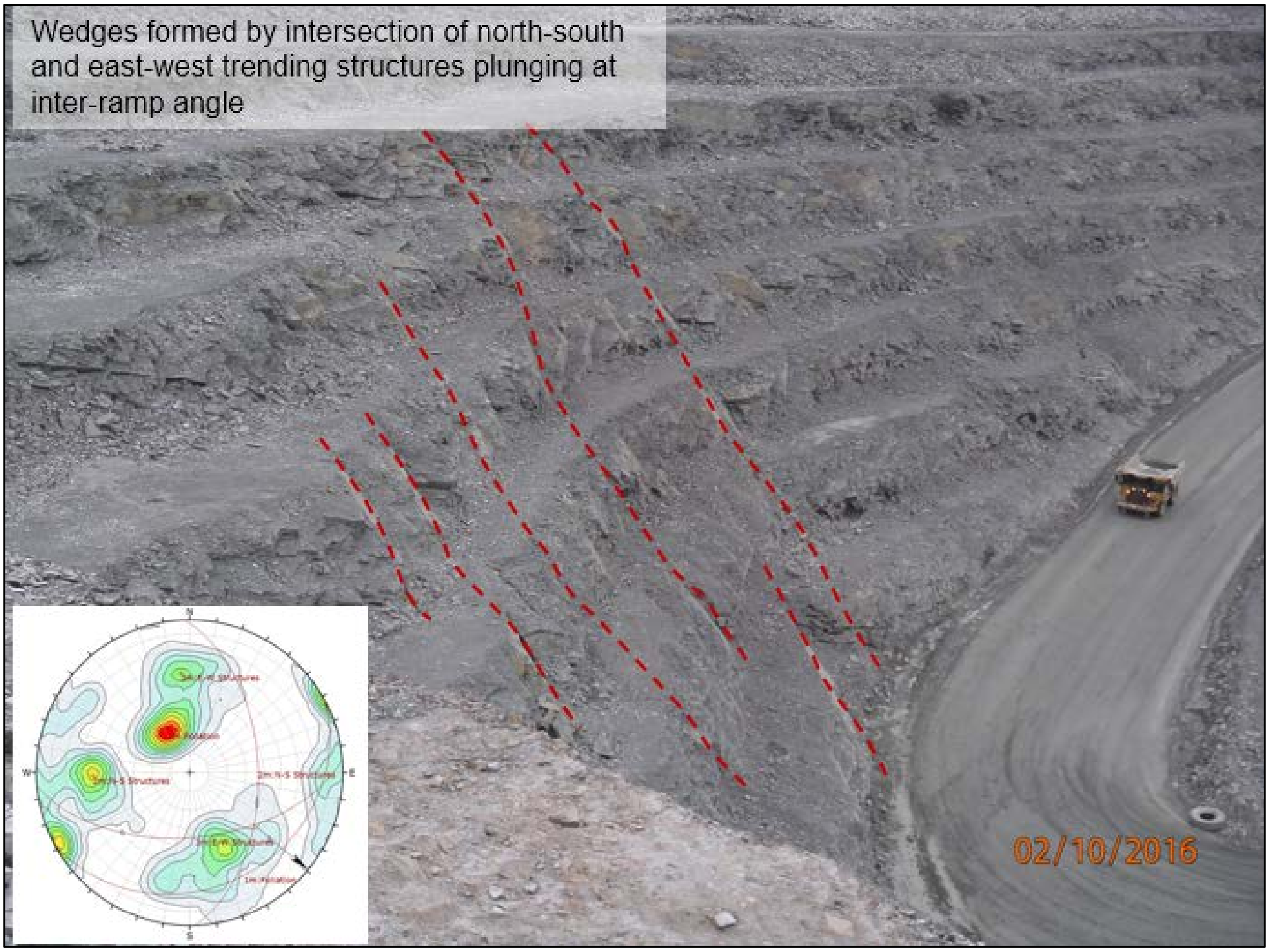
The west wall (grid west) of the Vault is being mined as a series of single-benches (7m high) to create a footwall slope. The deposit dips at relatively shallow angles to the east (grid east), parallel to the foliation and stratigraphy. The average inclination is 22 degrees, but ranges from as shallow as 10 degrees to as steep as 40 degrees. Bench faces are not pre-sheared but are bulk blasted at steep angles, and generally break back, or are scaled back, to the orientation of the foliation. Consequently, there are some benches with considerable loss of catchment. This was anticipated during the design process, and benches were restricted to single-height to minimize failure volumes and allow for this catchment loss. Within the West Wall Design Sector, average back break was estimated in the optimization study to be 1.3 m, with maximum back break of approximately 3 m (Golder, 2013b). Observations of current performance are consistent with the predicted back break distances.

Photograph 8-1: Vault pit grid west footwall slope, south end of pit, looking north

Photograph 8-2: Vault Pit grid west footwall slope, north end of pit looking south

The inter-ramp slope angle is shallow at 33 degrees, and so the likelihood of larger scale multiple bench failures of significant volume is low.

At the south end of the wall a series of closely spaced continuous fault structures trend into the wall at high angles. These are part of the east-west trending family of faults and sub-parallel joints which dip to the south at about 55 degrees. These features form narrow wedges with north-south trending faults and sub-parallel joints. The plunge of these wedges ranges from about 30 degrees to about 60 degrees, and where undercut by the inter-ramp angle have formed multiple bench features. These features are narrow and widely spaced, and because of the shallow inter-ramp angle result in only raveling of limited extent is observed.



Photograph 8-3: Vault Pit grid west footwall slope south end wedges

There are no significant geotechnical concerns noted, and no evidence of large scale (overall slope) instability for the footwall slope.

- Continue to clean benches as mining deepens the pit.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.2.1 Footwall Seepage Area

An area of seepage adjacent to the ramp identified during the 2015 inspection continues to produce small volumes of water. At the time of the 2016 inspection water was observed seeping along the foliation fabric. The seepage is concordant with the foliation, and may be derived from hydraulic connection by the major east-west and north-south structures to talik beneath the dewatered Vault Lake. The seepage flow is low and does not appear to be affecting the bench-scale stability of the rock above the ramp. It is possible that with time some increased raveling of material will occur. This area should continue to be monitored as part of regularly scheduled geotechnical inspections, and a bumper berm developed if necessary. It is possible that over time this area will fully drain once the storativity of the talik is depleted.

Photograph 8-4: Vault Pit footwall seepage

The presence of water will increase the susceptibility of this area above the ramp to continue to ravel over time. However the volume of material that may be dislodged is expected to be relatively small, and the use of bumper berms at the toe of the slope to redirect traffic and to prevent vehicles stopping in this area will be effective.

- Use bumper berms on ramp to manage material raveling from slope as required.

8.3 Southwest Wall (Vault Grid South Wall)

The southwest wall (grid south) intersects the stratigraphy and foliation perpendicular to their trend. The gently dipping structure can be seen clearly in the wall, as shown in the following photographs. A continuous northeast dipping joint is visible at the southwest transition from the grid west wall to the grid south wall. This joint set was recognized during feasibility level design studies and described as a very widely spaced feature. This is consistent with few observations of this set in the active pit walls.

Photograph 8-5: Vault Pit grid south wall transition

The walls in the west to southwest transition area are performing well, with half barrels clearly visible in the final walls. There is very little deviation noted for the blast holes.

A small sump is in the southwest corner of the pit and manages water in this area.

Photograph 8-6: Sump at southwest corner of Vault pit

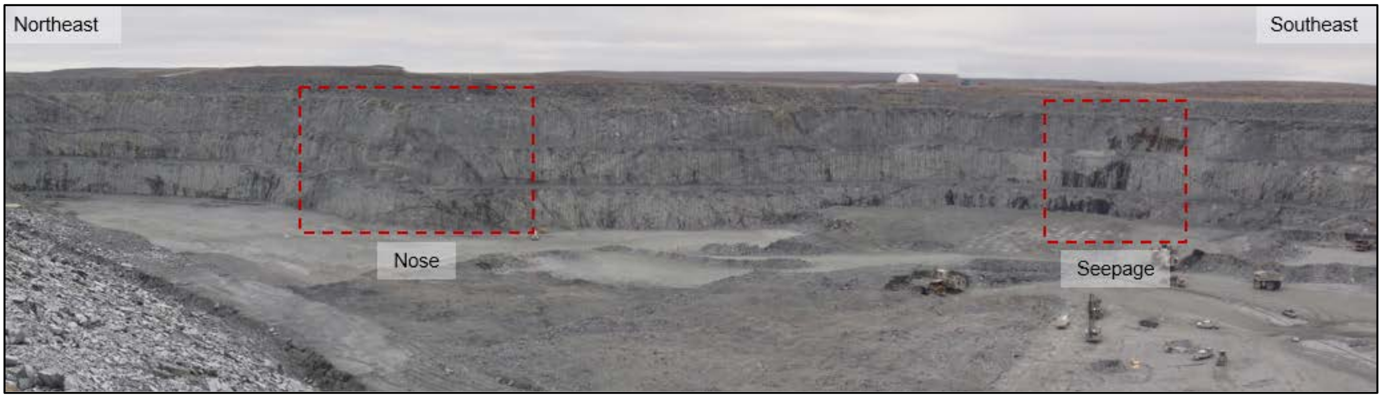
There are no significant bench-scale geotechnical concerns noted for the grid south wall, and no evidence of large scale (overall slope) instability.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.4 Southeast to Northeast Highwall (Vault Grid East Wall)

The southeast to northeast highwall (grid east) is being mined down from the final crest position. The wall is performing satisfactorily.



Photograph 8-7: Panaromic of highwall

The final wall benches are being mined using pre-shear blasting methods, and are being excavated to 75-degree bench face angles. Half barrels from the blast holes are clearly visible in the walls and there is very little deviation in the borehole traces. The benches are cleaned well, and there is no indication of significant raveling and no significant build-up of material on the benches. Catch bench widths are designed to 10.5 m. There is some over break of bench crests due to blasting but this is not significant. In general, the toe of the thermal capping material is 5 m to 10 m back from the pit crest.

Photograph 8-8: Typical bench crests along highwall

Photograph 8-9: Bench performance and visible half barrels on highwall

An area of seepage is noted in the southeast wall, and this corresponds approximately with the area of inflow that was observed during the 2015 inspection. The seepage is not substantial.

Photograph 8-10: Seepage from the southeast highwall near 2015 inflow

8.4.1 Highwall Nose Area

A minor change in wall orientation results in the formation of a 'nose' in the highwall partway between the southeast and northeast ends of the wall. The area is shown in the following photograph.

Photograph 8-11: Nose area of highwall

A series of widely spaced faults and open continuous joints dip into the nose area at high angles. The orientation of these structures could conceivably result in flexural toppling type failure mechanisms; however the competency of the intermediate volcanic rock at the Vault deposit, and the wide spacing of these features suggests these types of mechanisms are unlikely to develop.

Photograph 8-12: Faults and widely spaced open joints dipping into nose of highwall

There are no significant bench-scale geotechnical concerns noted for the nose area, and no evidence of large scale (overall slope) instability.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.4.2 Northeast Wall

The benches of the northeast end of the highwall are performing adequately. The final bench faces show clearly visible half barrels of the pre-shear holes, and there is very little deviation. There is some over break of bench crests from blasting but this does not significantly decrease the catch bench widths. A small sump is excavated adjacent to the wall to manage water. The wall is generally dry, but with some minor localized areas of seepage from existing fractures.

Photograph 8-13: Performance of northeast section of highwall

Photograph 8-14: Sump in northeast floor

There are no significant bench-scale geotechnical concerns noted for the northeast section of the highwall, and no evidence of large scale (overall slope) instability.

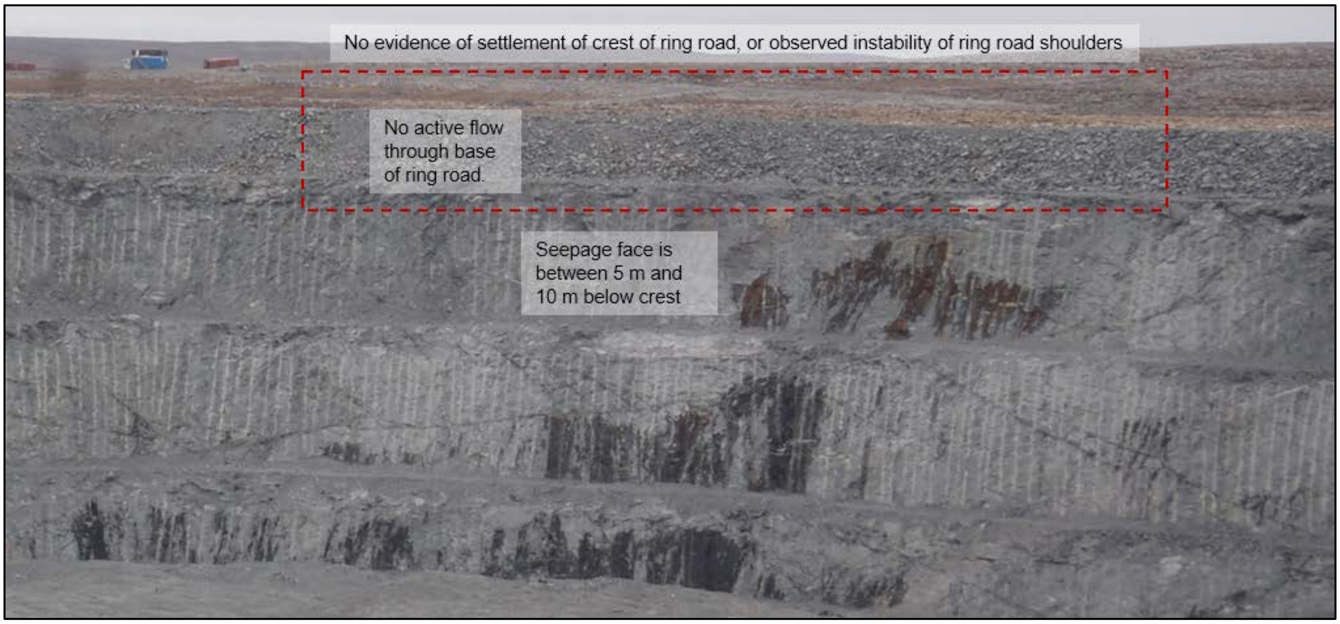
The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.4.3 2015 Seepage Southeast Highwall (Grid East)

During the 2015 site inspection, an inflow of water to the 5130 bench occurred through the base of the ring road and till slope. At the time, the level of water in the partially dewatered Vault Lake on the upstream side of the ring road was at 5134 mRL, resulting in a 4m head differential between the upstream and downstream side of the ring road. Some minor settlement of the ring road was noted at the time, but it was concluded during the site inspection that the inflow through the ring road could be managed by maintaining the lake at a lower level. It was also concluded that the thermal modeling carried out during the 2013 optimization study indicated if this part of the pit intersected the talik beneath Vault Lake, then inflows to the pit were to be expected (Golder 2013b). Finally, it was concluded that over time inflows would diminish due to the development of permafrost into the talik area.

During the 2016 site inspection, the wall was observed generally to be dry. Although seepage is noted in the general area of the wall adjacent to the previous inflow, this not significant. The ring road was observed to be stable, with some minor settlement around the 2015 inflow. Some minor tension cracks were noted at the crest of the road, parallel with the road alignment, and these are interpreted to be related to minor settlement at the road margins. The water level in Vault Lake appears to be managed at a low level, helping to reduce any further inflows through the ring road itself.



Photograph 8-15: Seepage in southeast wall of Vault Pit

Photograph 8-16: Minor tension cracks noted in ring road near 2015 inflow

Photograph 8-17: Minor swale observed in ring road near 2015 inflow

Photograph 8-18: Vault lake level at time of site visit

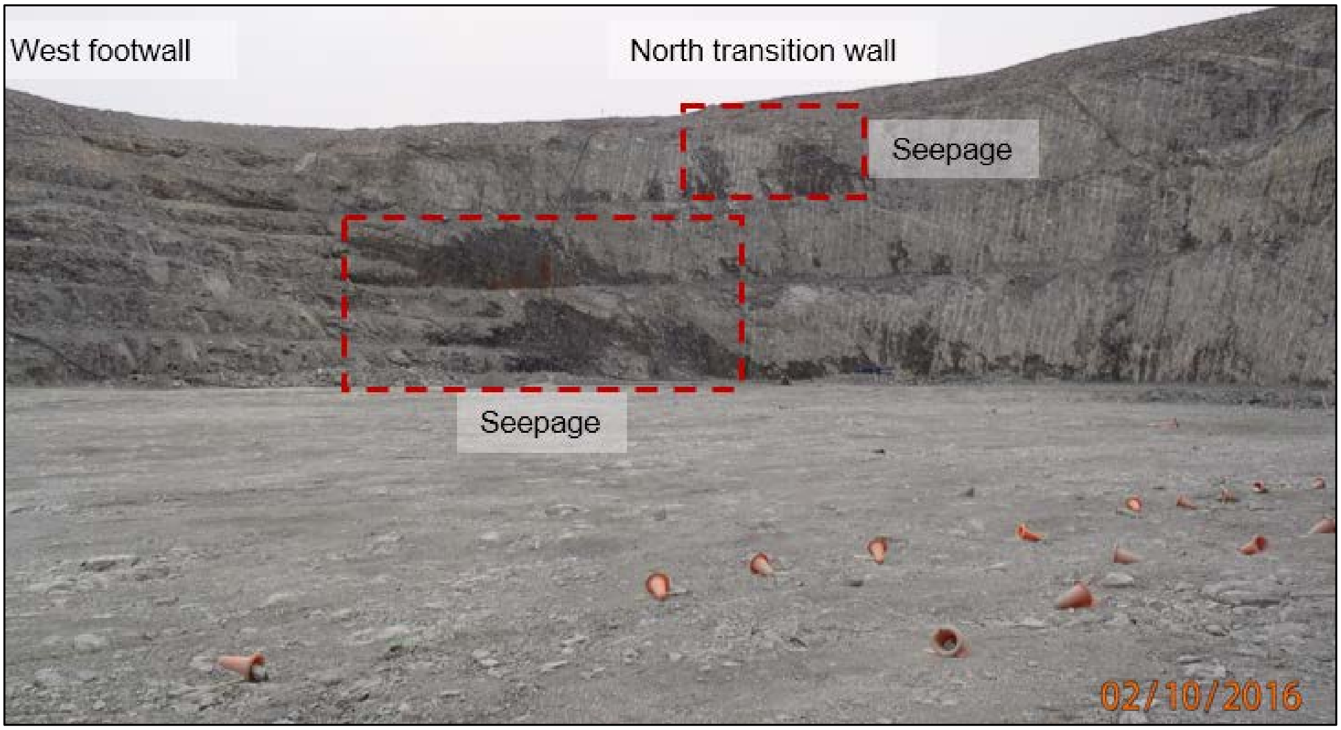
Some seepage through the rock and in to the pit should be expected but it is anticipated this will continue to diminish over time. An ice curtain may form in this area during winter, and this may contribute to local raveling of material from the wall during spring freshet.

The following actions should continue to be implemented.

- Continue to manage the level of Vault Lake below the bedrock/till contact elevation to restrict any flow through the ring road or overburden materials.
- Continue to monitor the ring road as part of regular site geotechnical inspections for any further settlement or development of tension cracks.
- Continue visual monitoring of the inflows on the pit wall as part of regular site geotechnical inspections.
- Monitor potential local raveling of material from the wall during spring freshet.

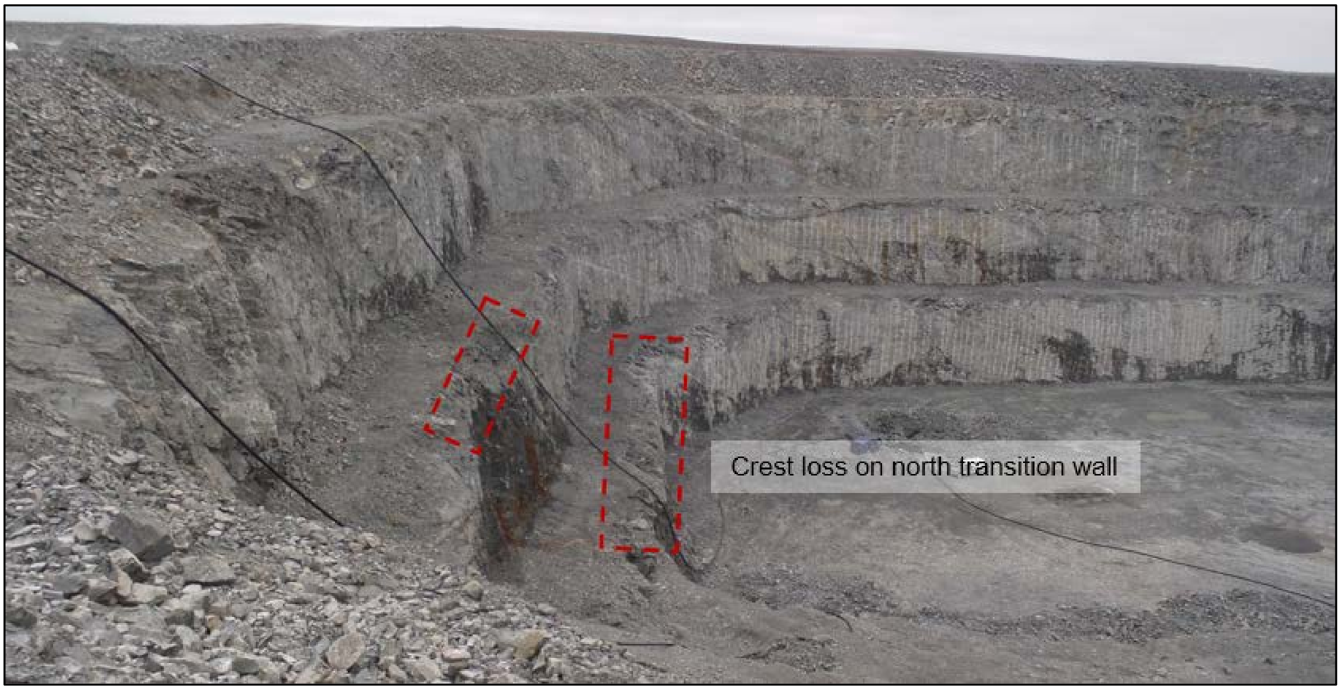
8.5 Vault Grid North Wall

The Vault north wall (grid north) transitions from the highwall wall to the footwall. The north wall benches are performing satisfactorily although some crest loss is noted. There is seepage from the north wall through west footwall. There is a sump near the base of the wall at the northwest corner used to manage the seepage.



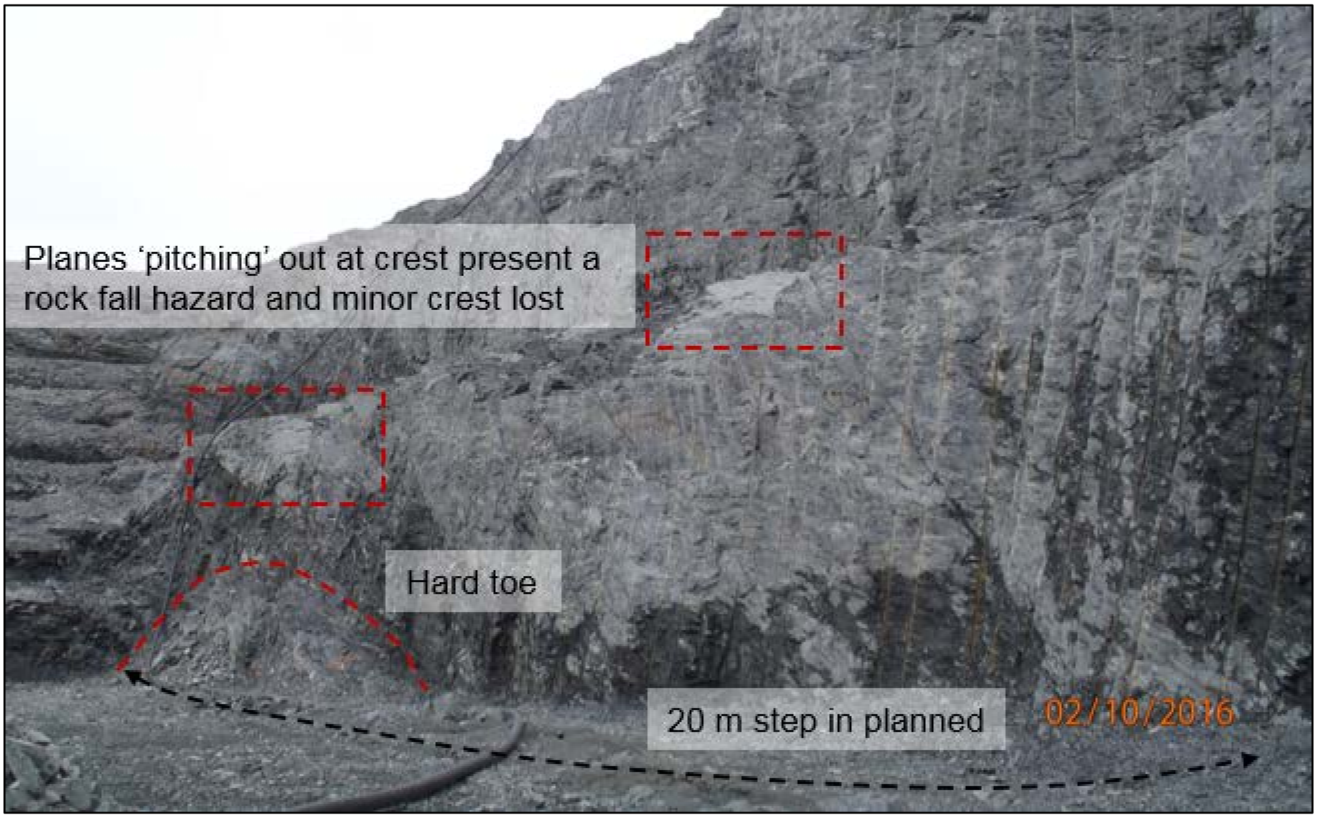
Photograph 8-19: Vault Pit north transition wall

The local crest loss along the north transition wall is related to the change of wall orientation relative to the southeast dipping foliation, and its intersection with steeply northeast dipping joint planes. The joint planes provide a release surface for block sliding along the foliation.



Photograph 8-20: Crest loss on north transition wall

The crest loss and block instability along the north wall was discussed with AEM during the site inspection, and it was recommended that a bumper berm be placed along the toe of the north wall to retain any material raveling from the benches, and to prevent equipment and personnel from approaching this area. The hard toe at the northwest corner will remain in place as there is a 20 m step-in catch bench planned at this level.



Photograph 8-21: North wall transition

8.5.1 North Transition Wall Seepage

Seepage at the northwest corner of the pit was observed during the 2015 inspection. Observations during 2016 indicate that seepage is predominantly confined along the southeast dipping foliation planes.

Photograph 8-22: Vault Pit north transition wall seepage along southeast dipping foliation planes

The northwest end of the pit is developed in the former lake bed of the dewatered Vault Lake. Furthermore, a water management pond – Pond A – is located to the north of the haul road which separates Pond A from the seepage area. Pond A is shown in the following photograph.

Photograph 8-23: Vault Pit Pond A water management pond

The seepage source is likely the release of water stored in the talik beneath Vault Lake. Flows are low and are not likely to result in the formation of significant ice.

8.5.2 Northwest Wedge

A wedge observed during the 2015 inspection around the north wall transition and seepage area was inspected as part of the 2016 site visit. The wedge is formed by a joint plane along which seepage is occurring, and other joint planes trending into the rock face. The proximity of the haul road to the bench crest in this area, and the geometry of the potential back-release plane is such that if this wedge were to fail a section of the haul road could be affected. The wedge appears stable, and there is no sign of relative movement since the first observations made during the 2015 inspection.

Photograph 8-24: Vault Pit north transition wall wedge

The geometry of the pit has developed such that if the wedge were to fail, the material would be retained on the single benches of the west footwall. Nevertheless, the base sliding plane should be surveyed, and the location of the wedge added into geotechnical hazard plans. The three-dimensional aspect of the base plane should be investigated to determine if failure were to occur what impact this would have on the haul road. Water lines from the sump should be moved so that if failure were to occur it would not compromise the effectiveness of the water management system.

The following actions are recommended:

- Light vehicle traffic and personnel should maintain a safe setback distance from the temporary bench faces.
- Relocate water lines away from wedge area.
- Survey plane and wedge geometry and investigate what impact a failure would have on the crest haul road.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

8.6 Vault Thermal Exploration Study

During 2016 AEM carried out a field thermal exploration study to assist in characterizing the local permafrost regime around the Vault pit. The investigation involved the drilling of six vertical boreholes to investigate the ground temperature regime around the pit. The holes which were cased and then had temporary thermistor strings installed. The thermistors equilibrated over three days and were then removed.

The approximate locations for the exploration study are shown in the following figure.

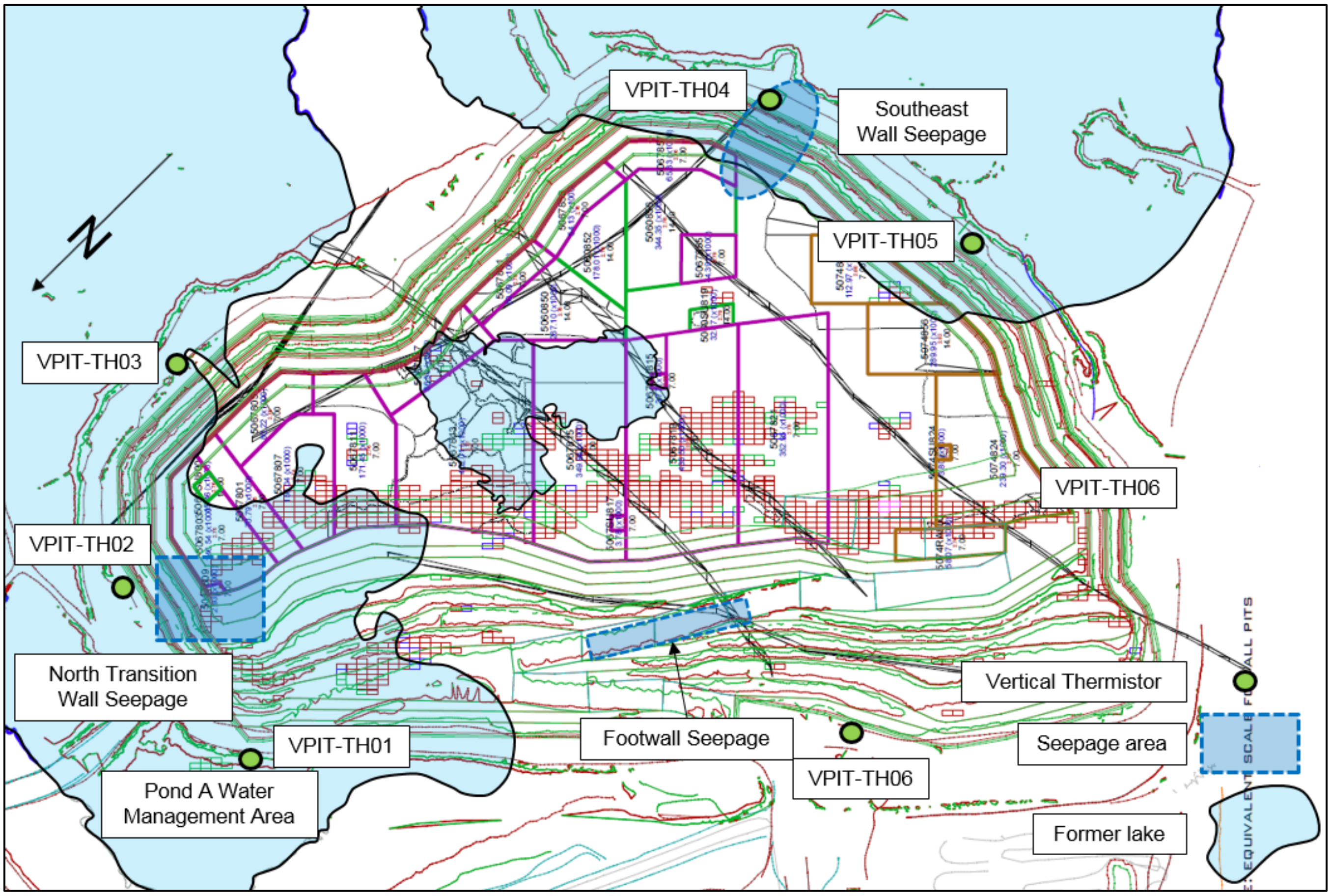


Figure 8-4: Location plan for thermal exploration study

An example of the data collected from thermistor VPIT-TH04 near the southeast wall seepage area is shown in the following chart. The data collected from the remaining thermistors are presented in Appendix B.

The data collected from the exploration program are generally consistent with previous interpretation of the general thermal regime of the area. It is understood that the data will be used to plan the installation of piezometers to monitor pore pressures behind the pit walls in areas where talik conditions may be present. A detailed assessment of the thermistor data is not part of this scope of work.

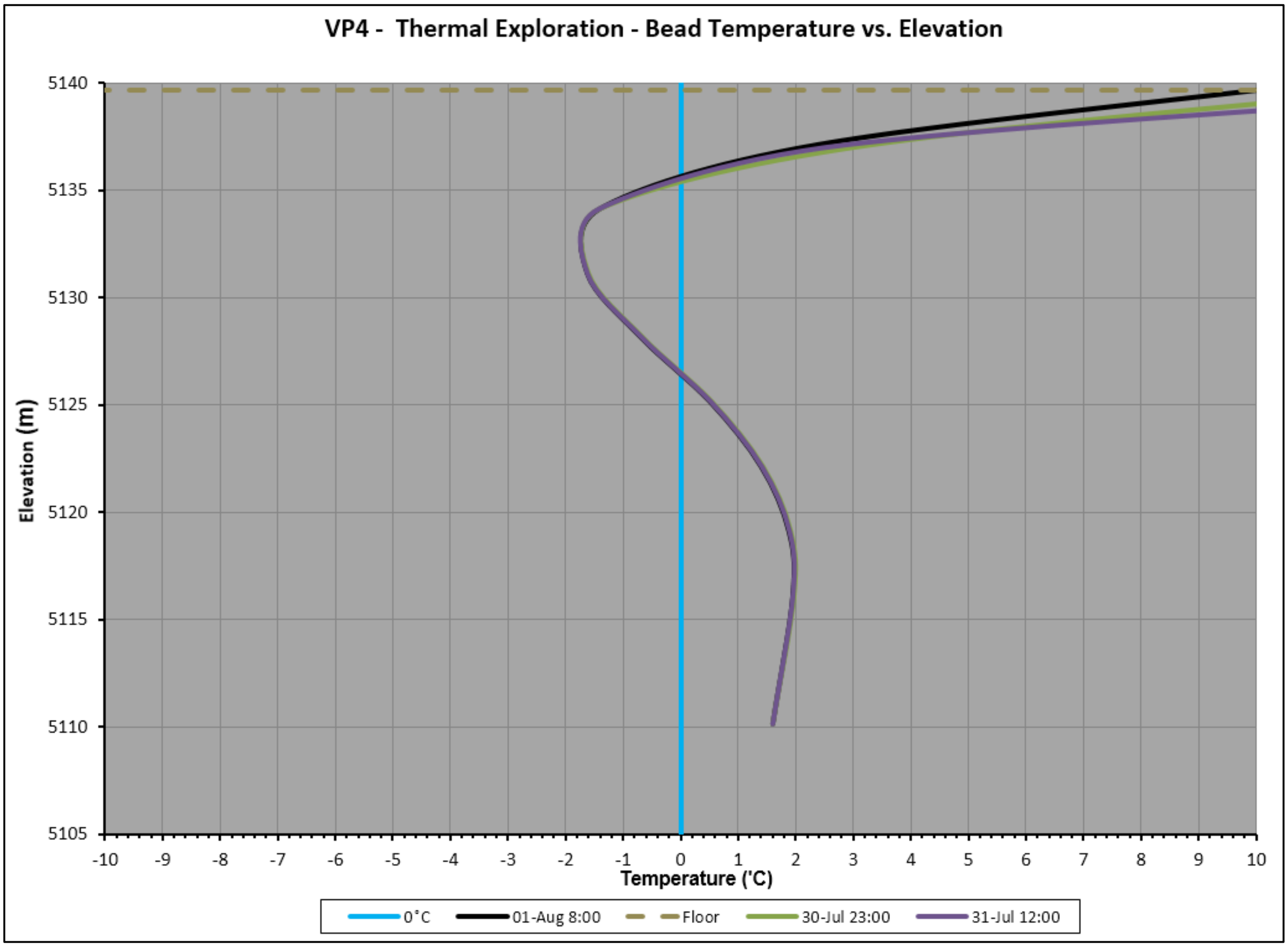


Chart 8-1: Example of data from VPIT-TH04 thermistor

9.0 SUMMARY OF KEY OBSERVATIONS AND RECOMMENDATIONS

9.1 Portage Pit

The Portage Pit is subdivided into 5 pits, labelled A through E from north to south.

9.1.1 Pit A

During the site visit, mining was active at Pit A in the area of the Pit A pushback. The mining down of the pushback has advanced substantially since the 2015 inspection.

The northwest through northeast, and east wall are performing satisfactorily. A small wedge was noted above the ramp on the east wall, below which stockpiled material had been placed. It was discussed with AEM that the stockpiled material should be removed, and a berm placed below the wedge to prevent equipment and personnel from parking in this area.

The west wall experienced a bench-scale failure on the 5109 bench on 26 September, estimated by AEM at approximately 1,500 m^3. The failure occurred in ultramafic rock in contact with overlying quartzite. The contributing factors to the failure is the presence of a steeply west dipping fault structure behind the bench face, and the poor quality and sheared ultramafic rock. This fault was first identified in 2011, and strikes parallel to the bench face. A tension crack is observed at the crest and associated with the fault. Stratigraphy is also inclined into the bench, creating the opportunity for flexural toppling type failure to occur. A similar failure occurred in 2012 on the 5109 bench along strike from the recent failure. Material from the recent failure spilled over on to benches below. AEM reported the event to the Mines Inspector. While there is no indication of larger scale multi-bench instability, there is the possibility that additional bench scale failures could occur within the ultramafic rock separating the 2012 and 2016 events. On-going raveling of material from the sheared ultramafic rock exposed at the toe of the slope might also continue.

The following actions are recommended for the west wall:

- Mark the tension crack location and extents with paint, survey these in, and plot on map.
- Continue monitoring the wall using the GroundProbe radar until it is moved back to Pit E3.
- Install simple crack extensometers to monitor possible lateral ground movement of the crest area.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.
- Minimize exposure time at the toe of the slope.
- Maintain a safe working distance in accordance with the internal AEM safe work procedure for work close to pit walls.

9.1.2 Pit B

Much of Pit B is being used as a waste rock dump. The segments of the east and west walls that are exposed are performing well, and there are no significant geotechnical concerns. Benches are generally clean and free of any material accumulation.

The Pit B Dump is performing well. There are no tension cracks on the crest platform, and no signs of deformation of the dump toe or dump face.

The following actions are recommended:

- Continue to monitor as part of regular geotechnical inspections.

9.1.3 Pits C and D

The west and east pit walls of Pit C are buttressed by the Pit C Dump. The pit walls do not present any geotechnical hazard at this time.

The 5088 mRL platform of the Pit D Dump was traversed, and some settlement of the dump crest, and associated tension cracks, were observed at the eastern margin of the platform where it abuts the adjust rock benches. This is interpreted as differential settlement at the boundary between the two materials (waste rock and intermediate volcanic rock benches) of different strength. There are no signs of deformation of the dump face, and no tension cracks noted parallel to the dump crest along the platform.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.1.4 Pit E3 East Wall

The east wall of Pit E3 continues to perform well, and there is little buildup of material on the benches. The lowermost benches at the south end of the pit show a re-orientation of bedding and structure, adjacent to a synformal axis which trends into to the south wall of the pit. There is some local loss of catchment due to this re-orientation. However this is not indicative of a larger scale failure mechanism.

The following actions are recommended:

- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.
- Continue to scale and clean final benches.

9.1.5 Pit E3 South Wall

Pit E3 south wall exposes primarily ultramafic rock, with iron formation and volcanic rock on its eastern edge. The ultramafic rock is poor quality. From approximately June to September of 2015 the wall experienced considerable instability, resulting in several single and multi-bench failures within the ultramafic rock exposed in the south wall. This led to cessation of mining activities at the toe of the failed area of slope. Subsequent stability analyses indicated that a combined approach of crest unloading, depressurization, and instrumentation could be successful at stabilizing the slope. The immediate crest of the failed portion of the wall was unloaded down to the 5109 mRL bench. A series of test holes were drilled from the 5109 platform to investigate hydrogeological conditions on the bench, and piezometers installed in several of the open holes. Two grouted-in piezometers were installed in one hole, and four grouted-in piezometers were installed in a second hole. The ultramafic rock to the east and west of the failure area is in permafrost, is absent of groundwater, and is performing adequately. Additional stability analyses were completed in May 2016 to investigate alternative pit designs. Mining down of a portion of the pit was completed in 2016 to the 5004 mRL platform.

At the time of the site inspection additional geotechnical drilling investigations and stability analyses were being planned for October. A revised pit plan which involves the pushback and realignment of the south wall to an orientation that will expose more favourable structural and rock conditions is being evaluated. The field investigations included the drilling of four additional oriented geotechnical boreholes, packer testing, and geophysical logging. The field investigations have been completed, and updates to the stability analyses are currently underway. Since the last failure in September of 2015, no additional failures have occurred.

The following actions are recommended:

- Continue to restrict access to the runout platform immediately below the slope instability.
- Complete the evaluation of a pushback of this wall into more favourable conditions.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.1.6 Pit E3 West Wall

Currently the performance of the west wall benches is generally satisfactory, particularly in the upper benches excavated in the stronger rock types, although some crest loss is noted. The bench face angles are steep, with wide catch benches, and these are adequate for retaining the material that has failed. At the south end of the west wall, the contact of the ultramafic rock and overlying intermediate volcanic rock is inclined into the wall, which is beneficial for overall slope stability, but results in bench-scale instability of the underlying ultramafic rock. This instability is exacerbated by the presence of shear zones and the Bay Fault within the ultramafic rock, which are inclined steeply into the west wall. The area of the overhang has been cleaned well, as has the bench beneath it.

The following actions are recommended:

- Continue to restrict access immediately below the slope.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.1.7 Pit E3 West Wall Ramp

Six areas of potential instability observed immediately adjacent to the West Wall Ramp were identified during the 2015 inspection and were visited in 2016. No indications of instability since the 2015 inspection were noted. The rock fall containment berm constructed along the west edge of the ramp continues to provide adequate catchment for rock falls that might occur along the west wall above the ramp. As the ramp descends south along the west wall into the base of Pit E3, it becomes single lane to accommodate the width of the containment berm adjacent to the bench. A buttress constructed down slope of the ramp provides additional support to the ramp.

A seventh potential area of instability was identified during the 2016 inspection. The area is at the base of the ramp, on the west and north side of the pit, and near the contact between iron formation and ultramafic rock. The ultramafic rock has been strongly sheared and faulted. Some of the sheared planes are open. The geometry and rock type is similar to the instability that was encountered adjacent to the ramp in the Goose Pit in 2014. As a preventive measure, and to avoid production delays that could result from local instability of the ultramafic rock on this bench, it was recommended to AEM during the site visit to investigate widening the ramp in this area. A safety berm should be constructed along this section of ramp to prevent personnel and equipment from stopping beneath this face.

The following actions are recommended:

- Widen ramp in this area to allow haul maintenance in the event of a failure.
- Construct a rock fall protection berm along the bench toe of this section.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.1.8 Pit E3 Pushback South and East Wall

Mining southward of the west wall has continued, exposing the south trending stratigraphy of quartzite, iron formation, intermediate volcanic and ultramafic rock. The slot area as exposed during the 2016 inspection is structurally complex. The Bay Fault trends into the south wall, and some reorientation of the stratigraphy can be seen near the fault.

Several talus cones of material are observable on the upper bench; however, these are formed by material that has been pushed over from the top platform, and are not associated with bench scale failures.

The following actions are recommended:

- Continue careful scaling and bench cleaning as the pushback is deepened.
- Do not undercut foliation with bench face angles.
- Instruct operators not to over-excavate.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections

9.2 Goose Pit

The walls of the Goose Pit continue to perform well. There are no significant concerns noted with the performance of the walls of the Goose Pit.

Dumping into the Goose Pit stopped in June of 2016; per information provided during the site visit it is planned to recommence dumping into the pit beginning in February 2017. Several large tension cracks were noted during the 2015 inspection on the dump platform, between 10 m and 20 m back from the dump crest. During the 2016 inspection, it was observed that the vertical displacement across the cracks has increased due to dump crest settlement. Additional tension cracks were also observed to have formed.

Based on discussions with AEM, much of the dump platform settlement occurred following the introduction of water to the north end of the dump platform area from pumping from Pit E3. The water line was relocated to exit over the bedrock face of the north wall of the pit, rather than on to the dump platform.

The following actions are recommended:

- If the dump is to be reactivated, carry out a dump inspection and develop an action plan for inspections and monitoring.
- Maintain the rock fill berm to restrict access to the dump crest.
- Mark the position and extents of the existing tension cracks with paint, and have these surveyed and marked on a dump plan for on-going monitoring purposes.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.2.1 Slope Monitoring Instrumentation

The TDR, thermistor, and piezometer data collected from instrumentation installed behind the east wall of the Goose Pit were reviewed. There are no noticeable changes to the data and the data show no indications of slope instability. The piezometer tip installed in PZ4c in borehole GPIT-14 continues to show erratic response and is possibly damaged.

9.3 Vault Pit

Mining of the Vault Pit has advanced significantly since the 2015 inspection. At the time of the site visit, the Phase 2 pit had been excavated to 5067 mRL.

The pit walls of the Vault Pit continue to perform well, and as expected. Final walls are pre-sheared to bench face angles of 75 degrees on the north, east, and south walls, and to 88 degrees on the west wall. Catch benches are 10.5 metres.

There are some areas of over-break of catch benches noted on the north through northeast wall, and this is predominantly associated with block sliding on inclined planes dipping obliquely to the strike of the pit wall.

The west wall is being mined on single benches and parallel to the dip of the stratigraphy. There are areas of notable bench crest and catchment loss, but this was expected because of the orientation of the stratigraphy. The design criteria for the wall was specified as single bench to accommodate the expected loss of some benches, and therefore minimize the volume of failed material.

9.3.1 Footwall (Vault Grid West Wall)

The wall is being mined as a series of single benches (7m high) to create a footwall slope. The slope follows the inclination of the ore which is inclined to the east, parallel with foliation and stratigraphy. There are no significant geotechnical concerns noted, and no evidence of large scale (overall slope) instability for the footwall slope.

The following is a summary of the inspection and associated action items:

- The low benches are used to manage undercutting of the east dipping stratigraphy, and minimize potential failure volumes.
- Bench faces are pre-sheared at steep angles but break back to the orientation of the foliation and stratigraphy. The shallow slope and low bench heights allow wedge failures to be effectively managed.
- An area of seepage adjacent to the ramp may be derived from a hydraulic connection to east-west and north-south structures connecting with the talik beneath the dewatered Vault Lake. If increased raveling is noted, it may be necessary to construct bumper berms in this area
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.3.2 Southwest Wall (Vault Grid South Wall)

The stratigraphy intersects the south wall at right angles. There are no significant geotechnical concerns noted, and no evidence of large scale (overall slope) instability for the slope.

The following is a summary of the inspection and associated action items:

- The stratigraphy intersects the south wall at right angles.
- Pre-shearing of the walls has been effective for developing steep bench faces, although these can be blocky in appearance.
- The benches are being appropriately cleaned and scaled.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.3.3 Southeast to Northeast Highwall (Vault Grid East Wall)

The southeast to northeast highwall (grid east) is being mined down from the final crest position. The wall is performing satisfactorily.

The final wall benches are being mined using pre-shear blasting methods, and are being excavated to 75-degree bench face angles. Half barrels from the blast holes are clearly visible in the walls and there is very little deviation of the borehole traces.

There are no significant geotechnical concerns noted, and no evidence of large scale (overall slope) instability for the slope. The following is a summary of the inspection and associated action items:

- Final walls are being developed using pre-shear controlled blasting methods.
- Bench performance is good and half barrels are clearly visible.
- Benches are cleaned well, and there is no indication of significant raveling and no significant buildup of material on the benches.
- There is some over break of bench crests due to blasting but this is not significant.
- Seepage in the southeast portion of the wall which coincides with an inflow of water to the Vault Pit in September 2015 is observed. The seepage is 5 m to 10 m below the pit crest, and no flow through the ring road was noted.
- Light vehicle traffic and personnel should maintain a safe setback distance from the temporary bench faces.
- In general, the toe of the thermal capping material is 5 m to 10 m back from the pit crest.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.3.4 Vault Grid North Wall

The Vault north wall (grid north) transitions from the highwall to the footwall. There is a sump near the base of the wall at the northwest corner.

- The wedge in the northwest corner noted in 2015 was inspected, and there is no evidence of movement.
- Local crest loss is related to the change of wall orientation relative to the southeast dipping foliation and its intersection with steeply northeast dipping joint planes.
- A bumper berm should be placed along the toe of the north wall to catch any material raveling from the benches, and to prevent equipment and personnel from approaching this area.
- There is a hard toe at the northwest corner that should be removed so that catchment is maintained as the pit is deepened.
- Move water lines away from wedge area.
- Continue visual monitoring and recording of observations as part of regular site geotechnical inspections.

9.3.5 Vault Thermal Exploration

During 2016 AEM carried out a field thermal exploration study to assist in characterizing the local permafrost regime around the Vault pit. The investigation involved the drilling of six vertical boreholes to a depth of 30 m. The holes which were cased and then had temporary thermistor strings installed. The thermistors equilibrated over three days and were then removed.

The data collected from the exploration program are generally consistent with previous interpretation of the general thermal regime of the area. It is understood that the data will be used to plan the installation of piezometers to monitor pore pressures behind the pit walls in areas where talik conditions may be present.

9.4 Geotechnical Mapping and Surveying

Geotechnical and structural information should continue geotechnical and structural information should continue to be collected form all operational pits. This is most efficiently and safely accomplished using the Lidar scanner coupled with processing using MapTek software. Any areas that may potentially pose risk of instability should be surveyed, and assessed.

Areas of seepage in the pits should be surveyed and compiled into the overall site geotechnical management plan.

10.0 CLOSURE

The reader is referred to the Study Limitations which precede the text and forms an integral part of this report.

We trust this report meets your requirements. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Yours truly,
Tetra Tech EBA Inc.

REGISTERED PROFESSIONAL ENGINEER
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21 Dec 2016
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PERMIT TO PRACTICE
TETRA TECH EBA INC.
Signature
Date December 21, 2016
PERMIT NUMBER: P 018
NT/NU Association of Professional Engineers and Geoscientists

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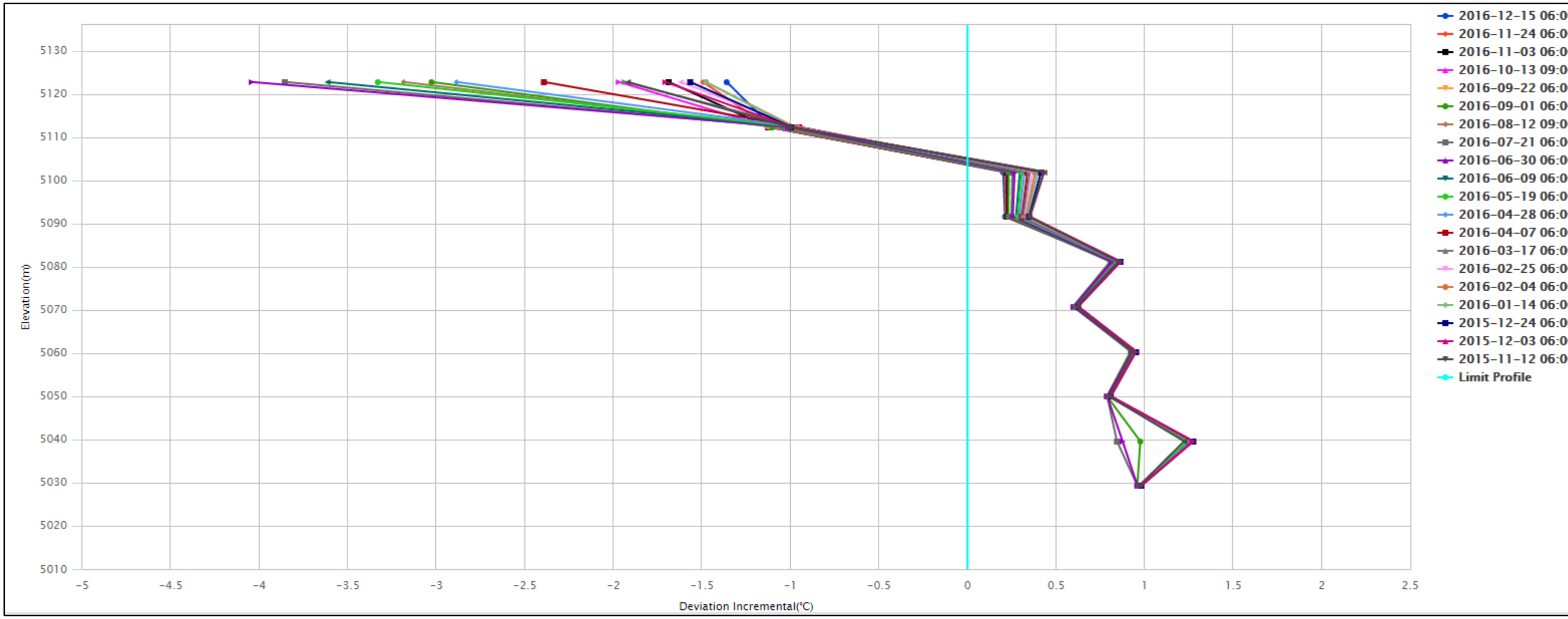
APPENDIX A

2016 GOOSE PIT THERMISTOR, TDR AND PIEZOMETER DATA

APPENDIX A-1

2016 GOOSE PIT THERMISTOR DATA



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

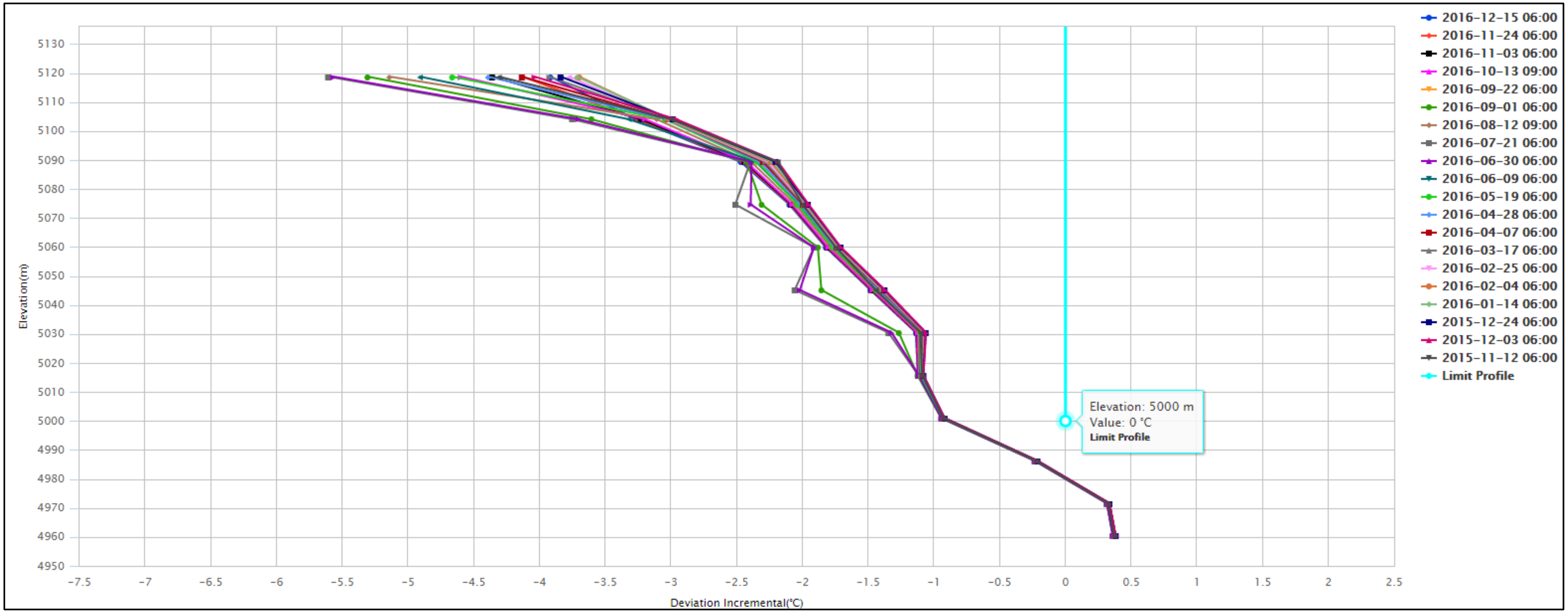
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-13

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.1



LEGEND

NOTES

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STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

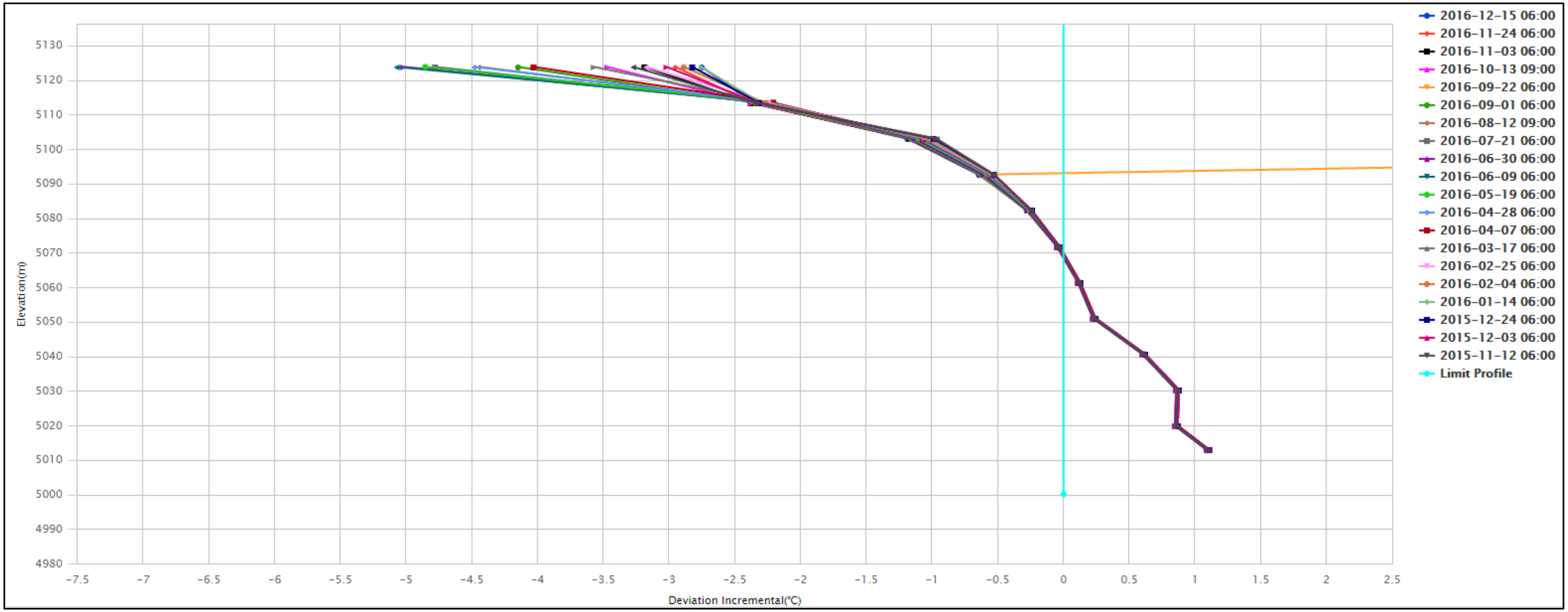
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-14

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.2



LEGEND

NOTES

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STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

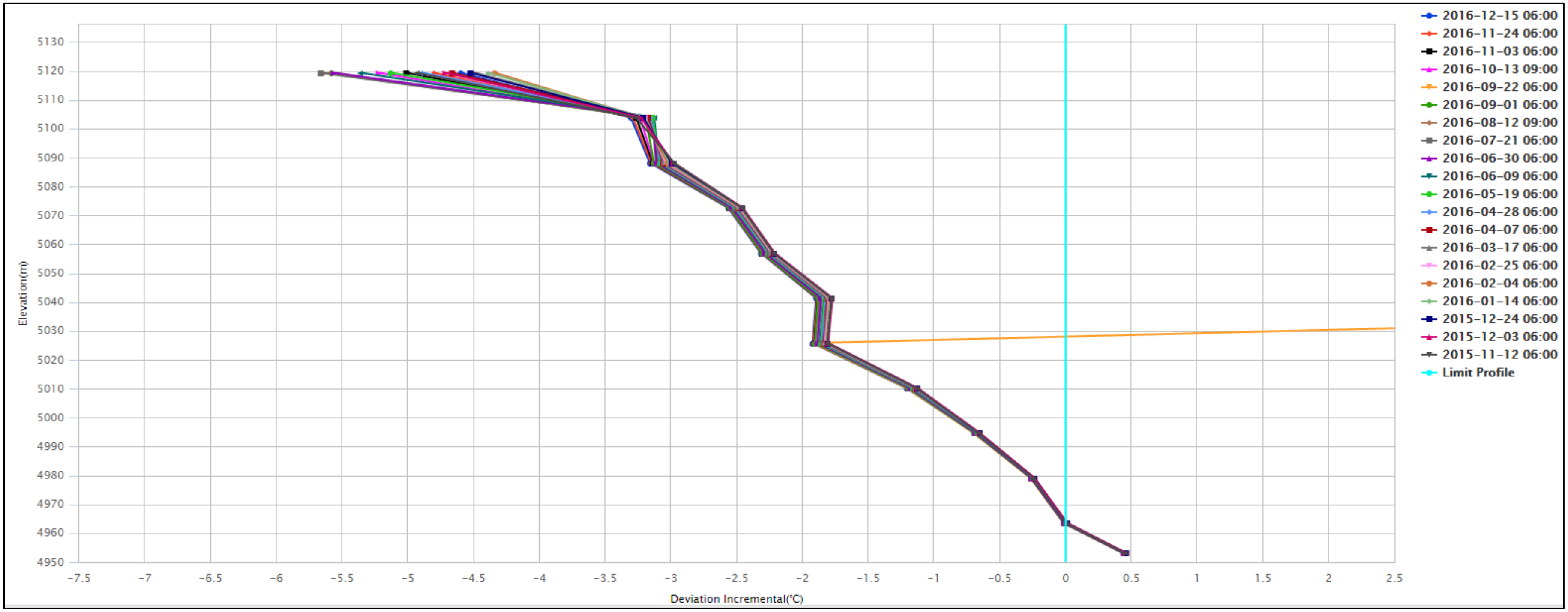
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-16

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.3



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

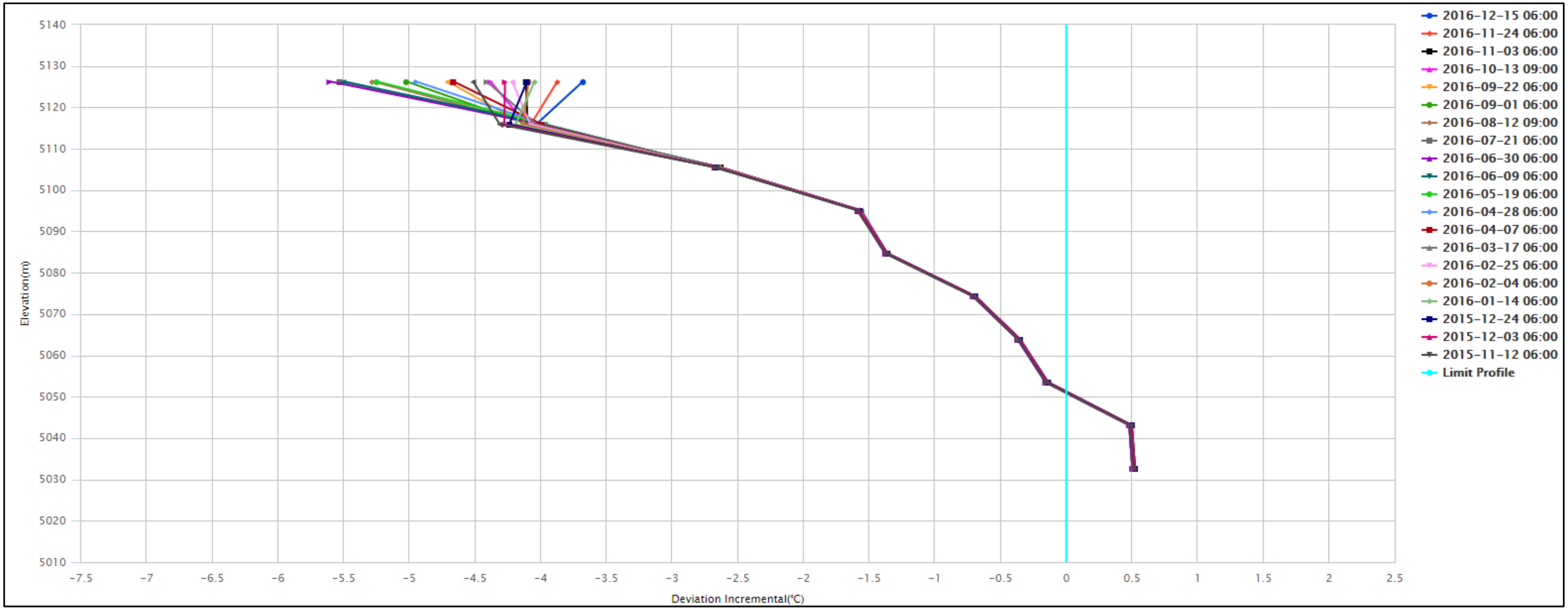
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-17

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.4



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

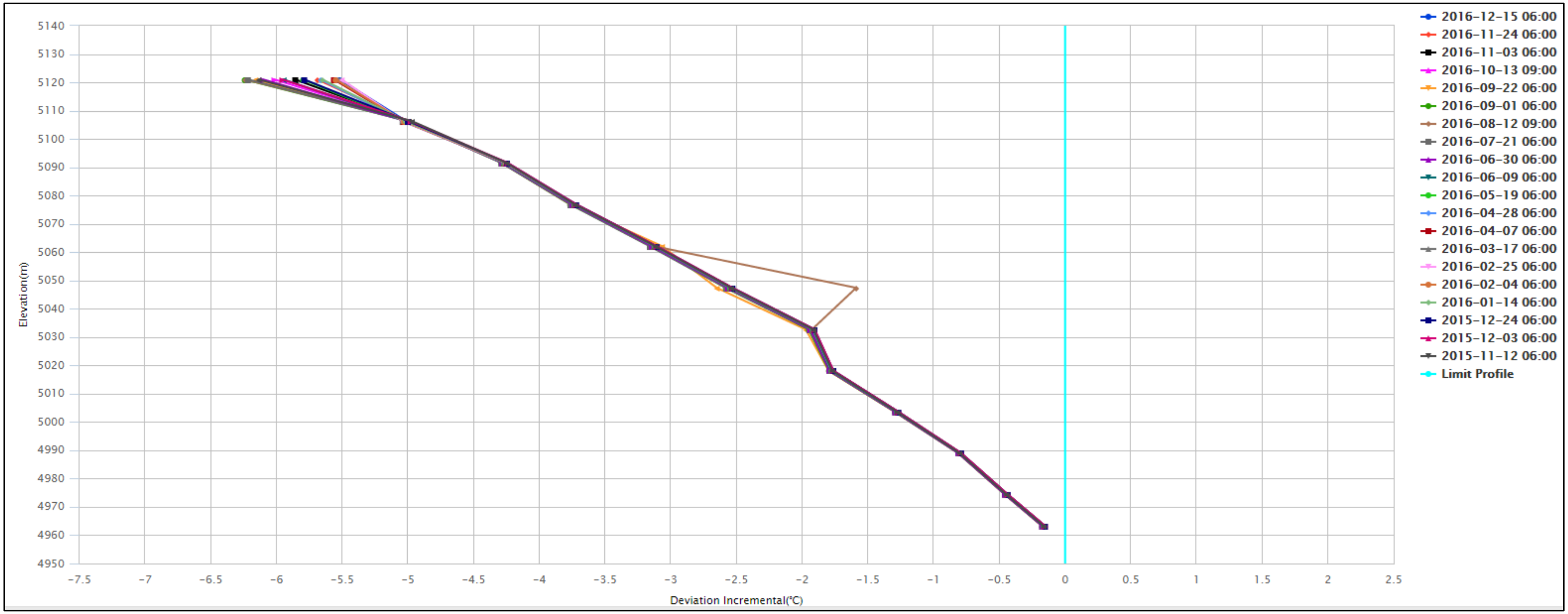
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-19

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.5



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Thermistor Cable GPIT-20

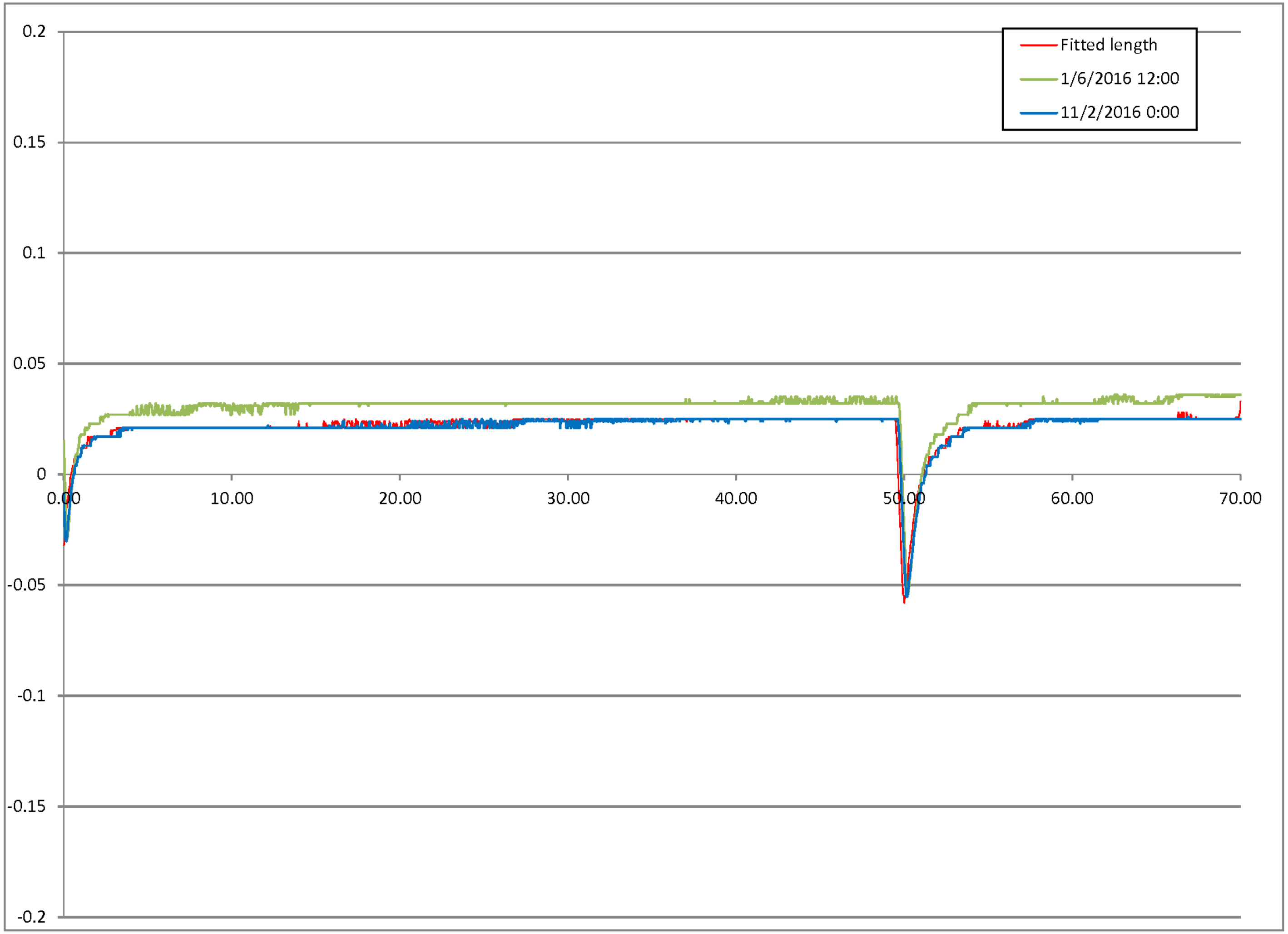
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-1.6

APPENDIX A-2

2016 GOOSE PIT TDR DATA



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

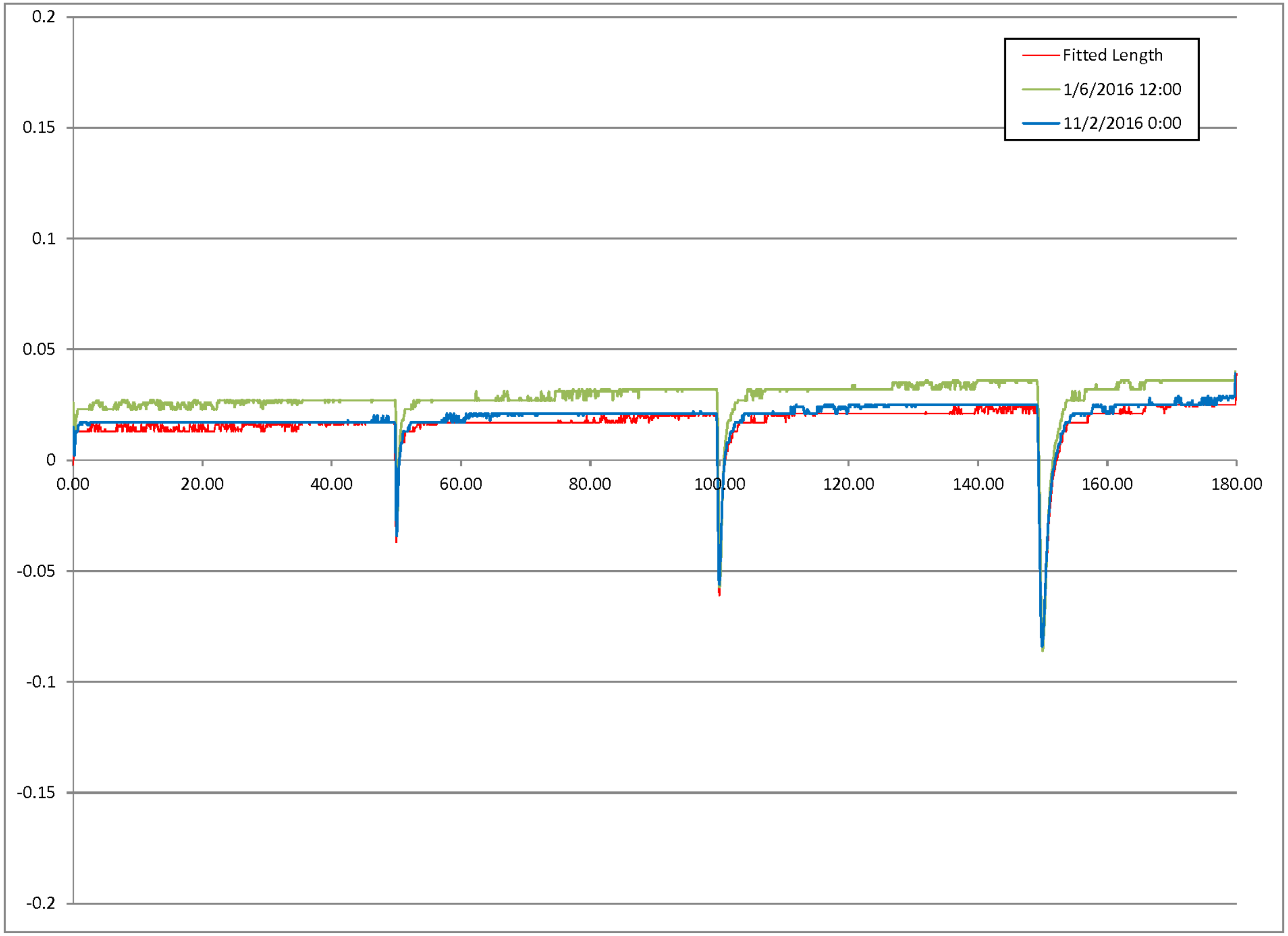
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit TDR Data TDR-11

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.1



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE
MEADOWBANK

TETRA TECH

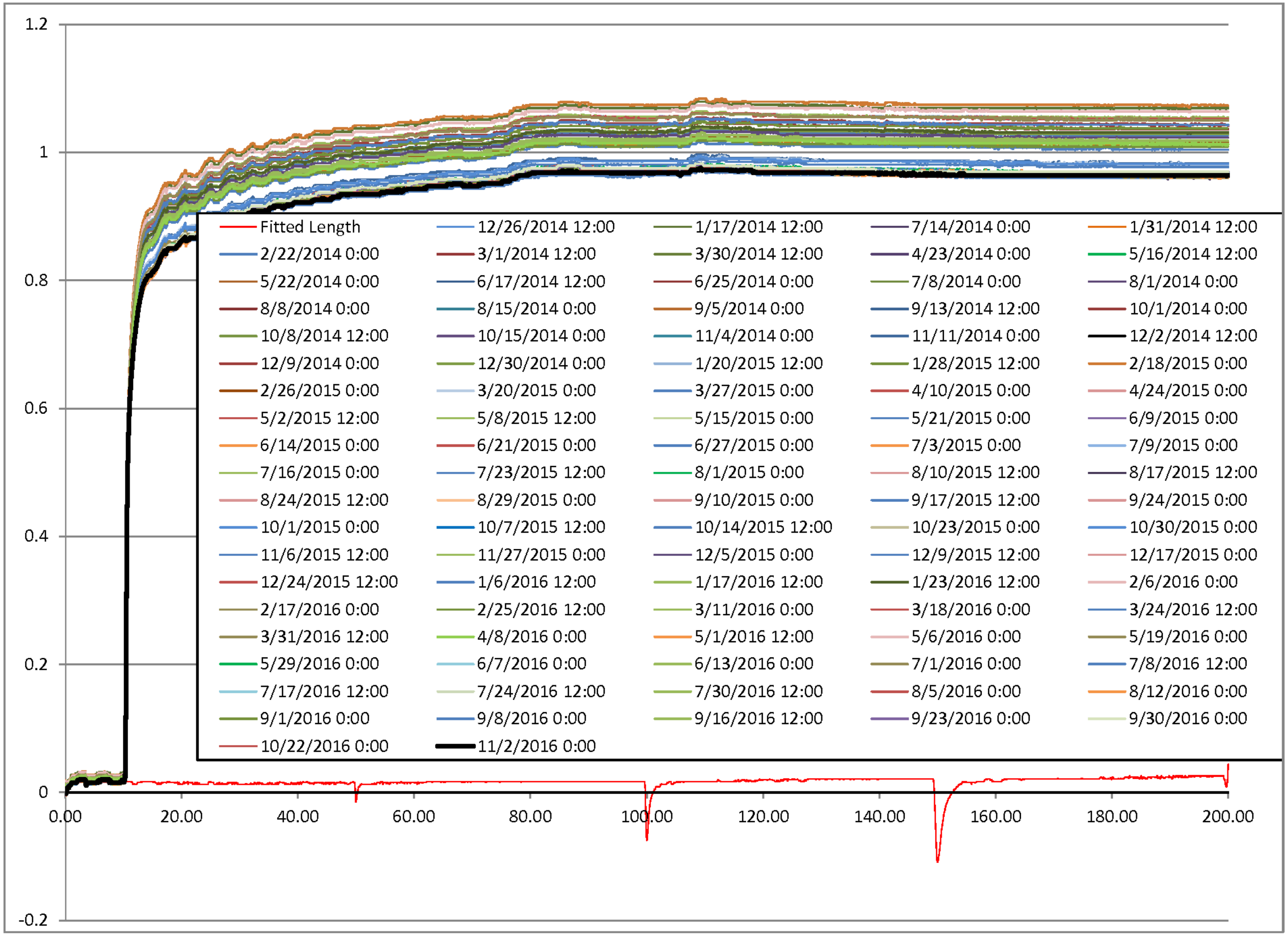
MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

Goose Pit
TDR Data TDR-12

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.2



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

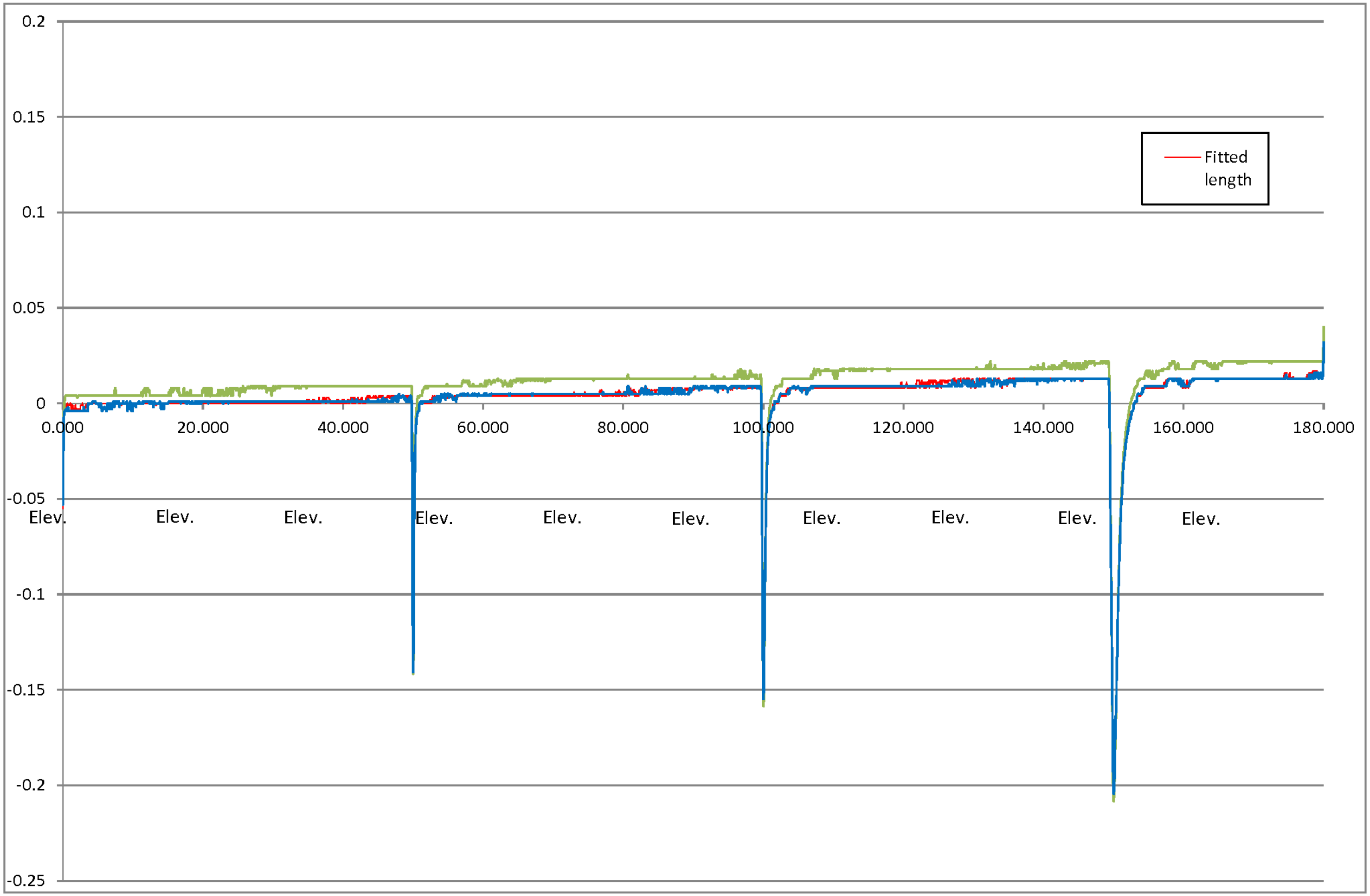
MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

Goose Pit
TDR Data TDR-14

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.3



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

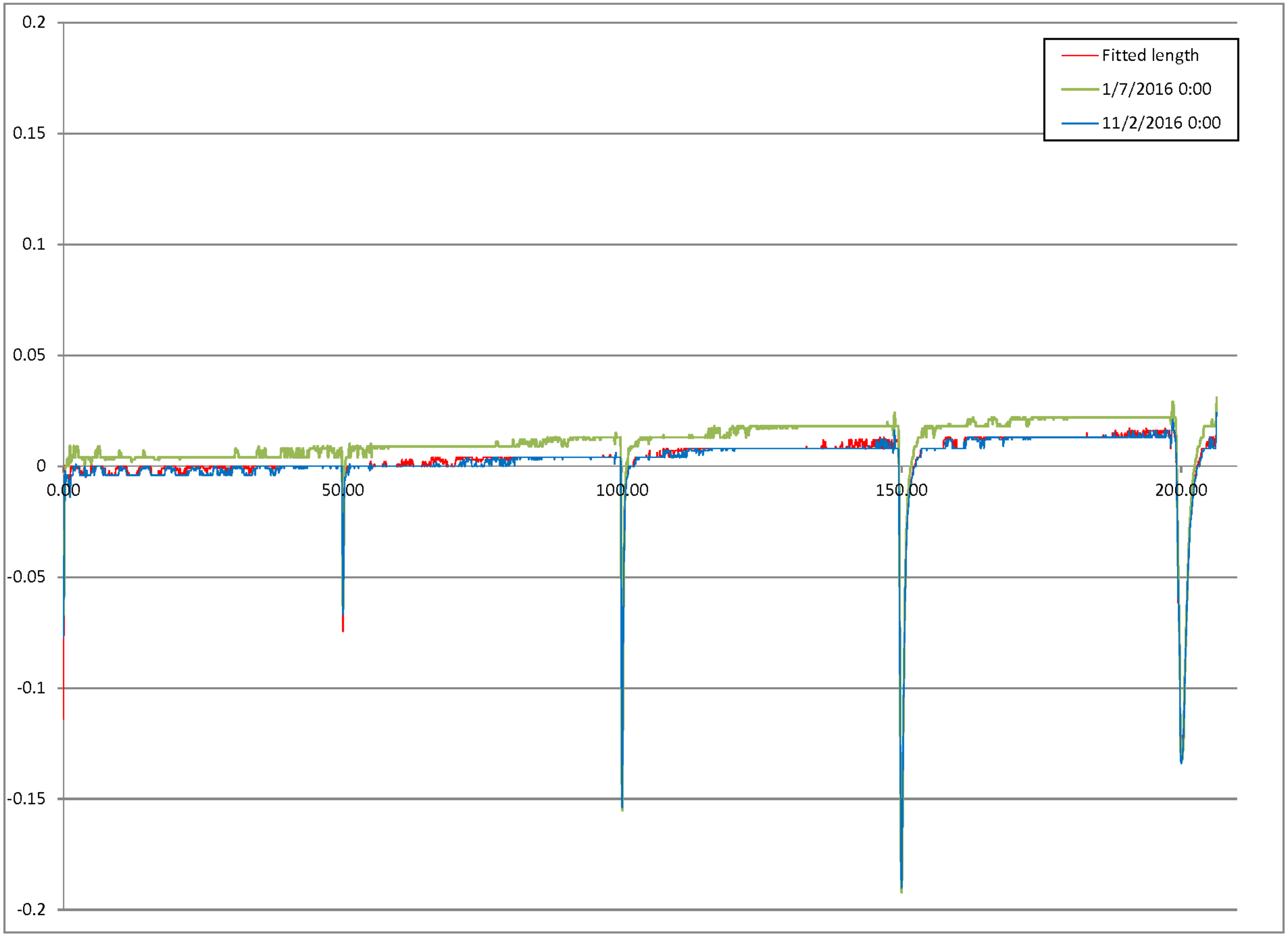
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit TDR Data TDR-15

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.4



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

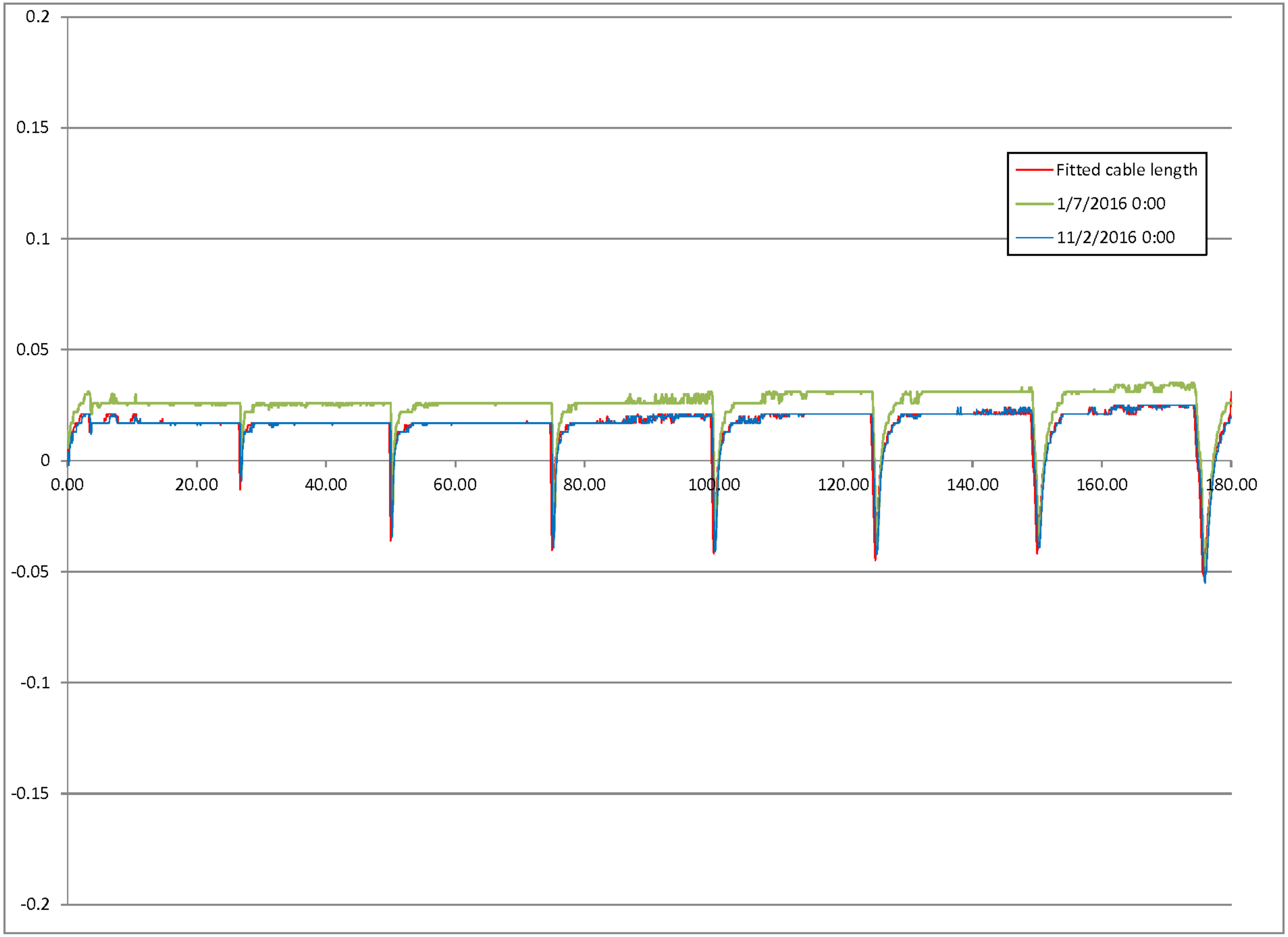
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit TDR Data TDR-17

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.5



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

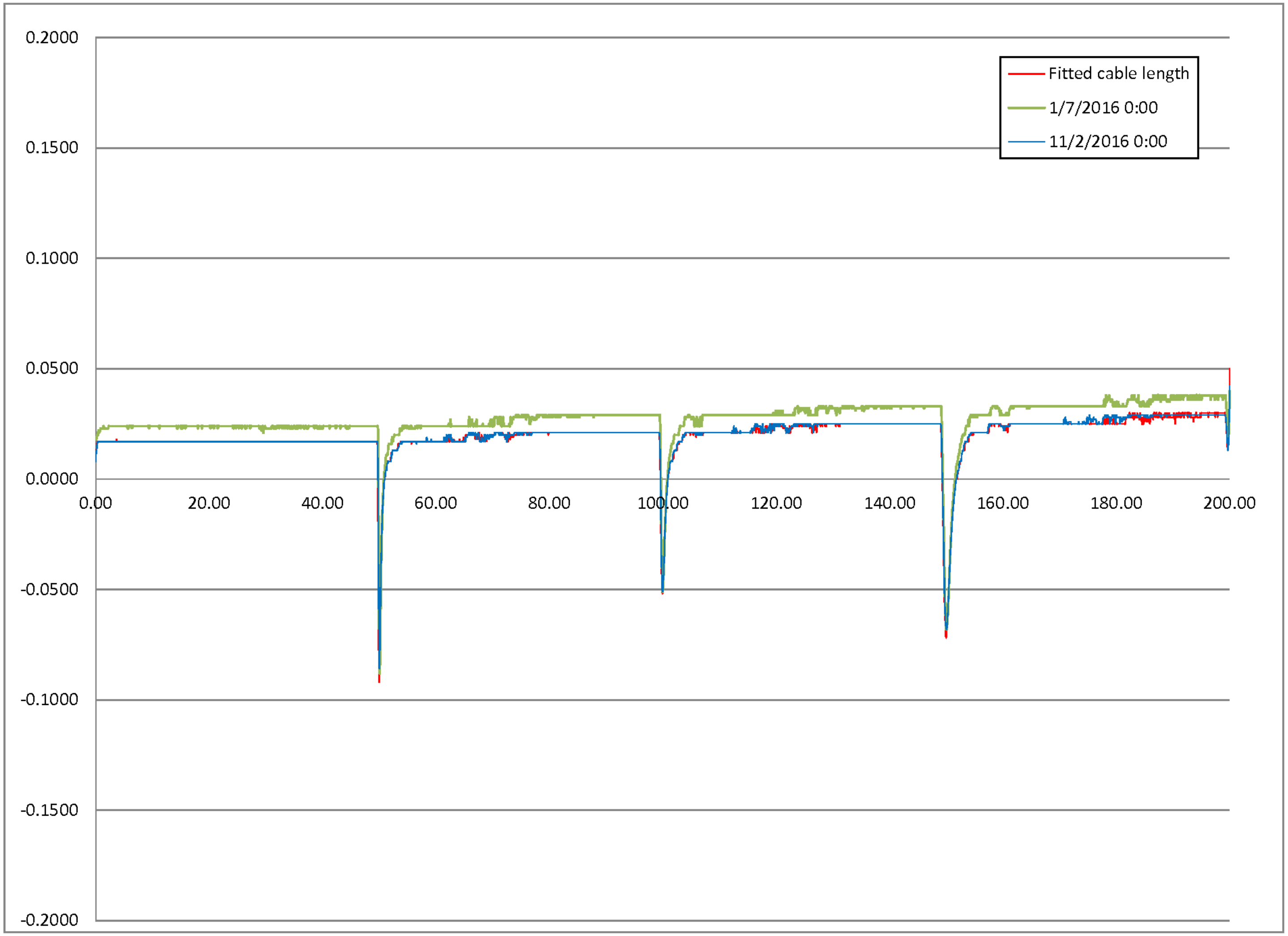
MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

Goose Pit
TDR Data TDR-18

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.6



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit TDR Data TDR-20

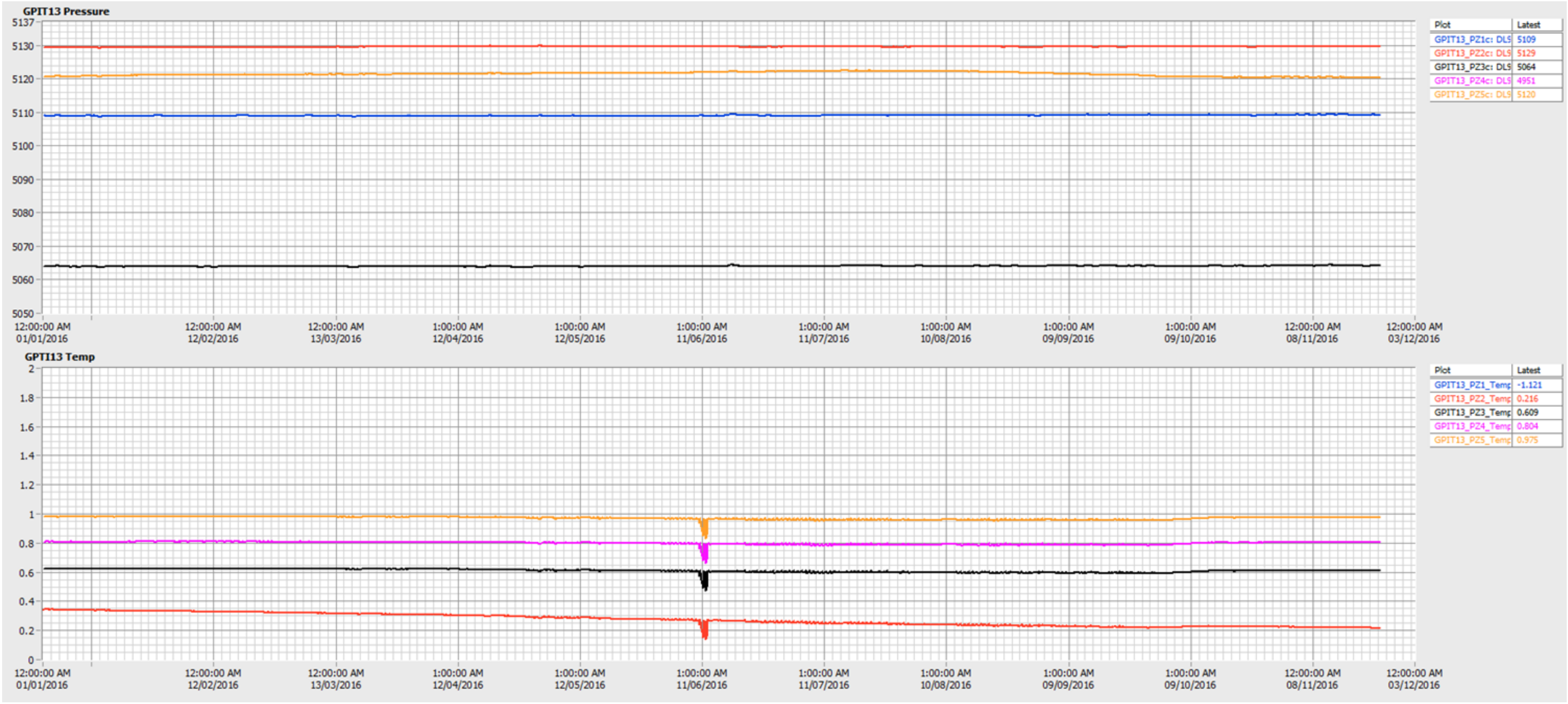
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-2.7

APPENDIX A-3

2016 GOOSE PIT PIEZOMETER DATA



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE
MEADOWBANK

TETRA TECH

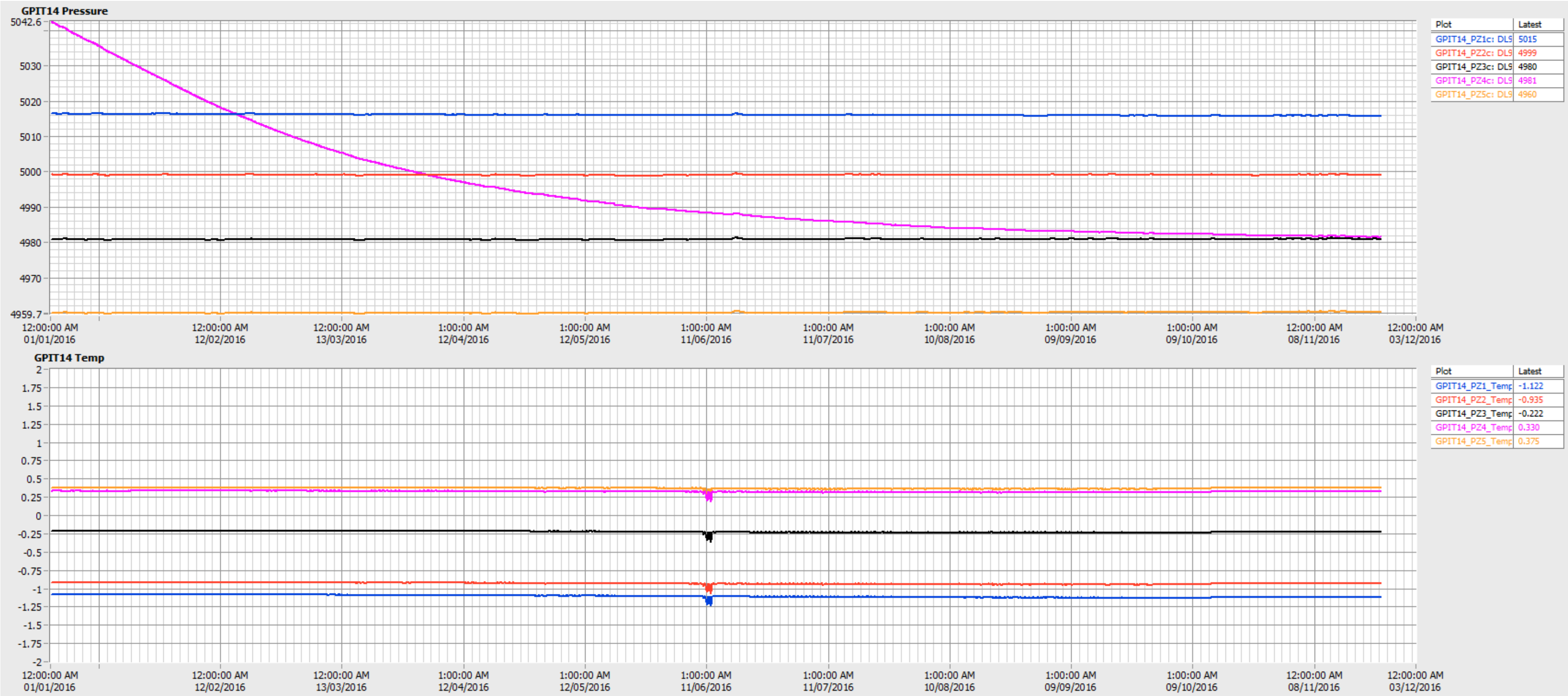
MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

Goose Pit
Piezometer Data GPIT-13

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-3.1



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

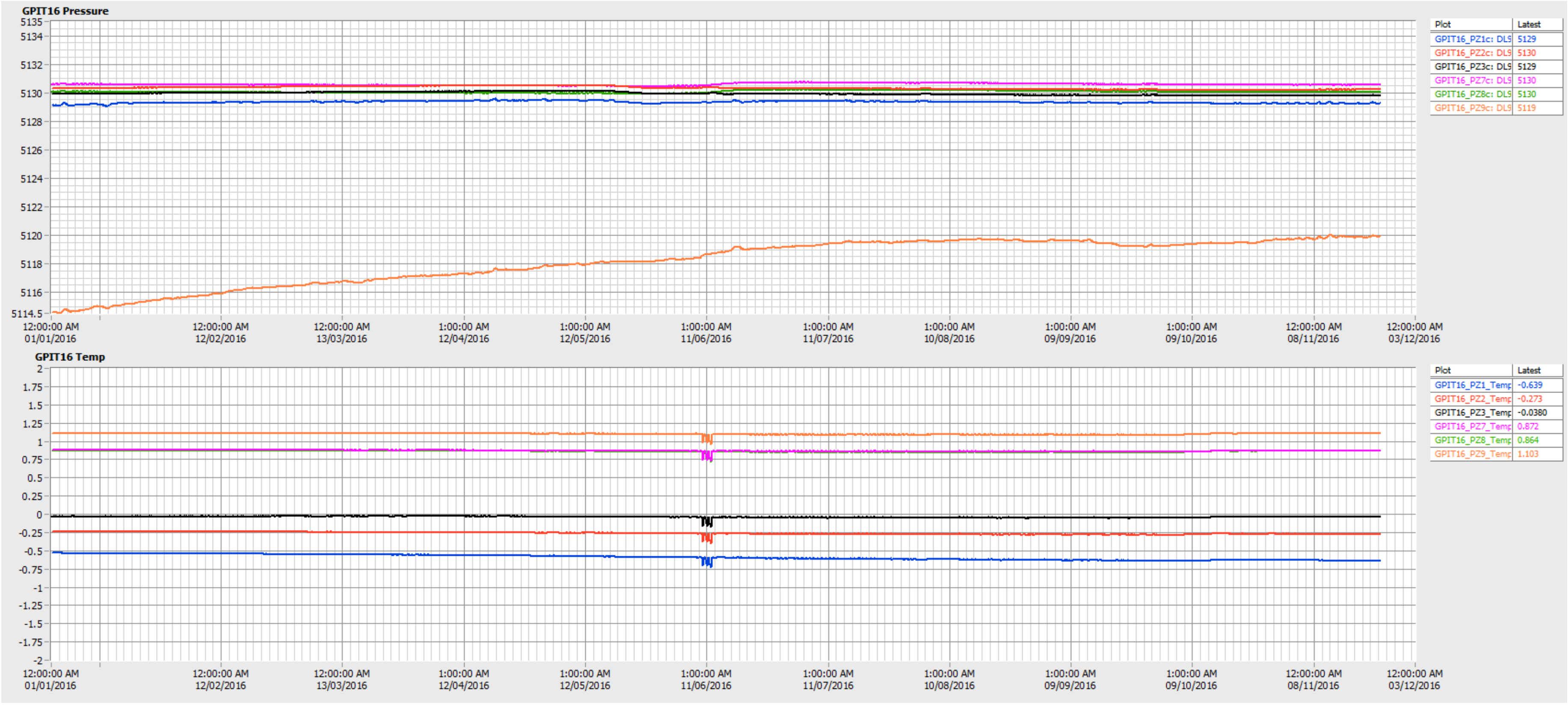
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Piezometer Data GPIT-14

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-3.2



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

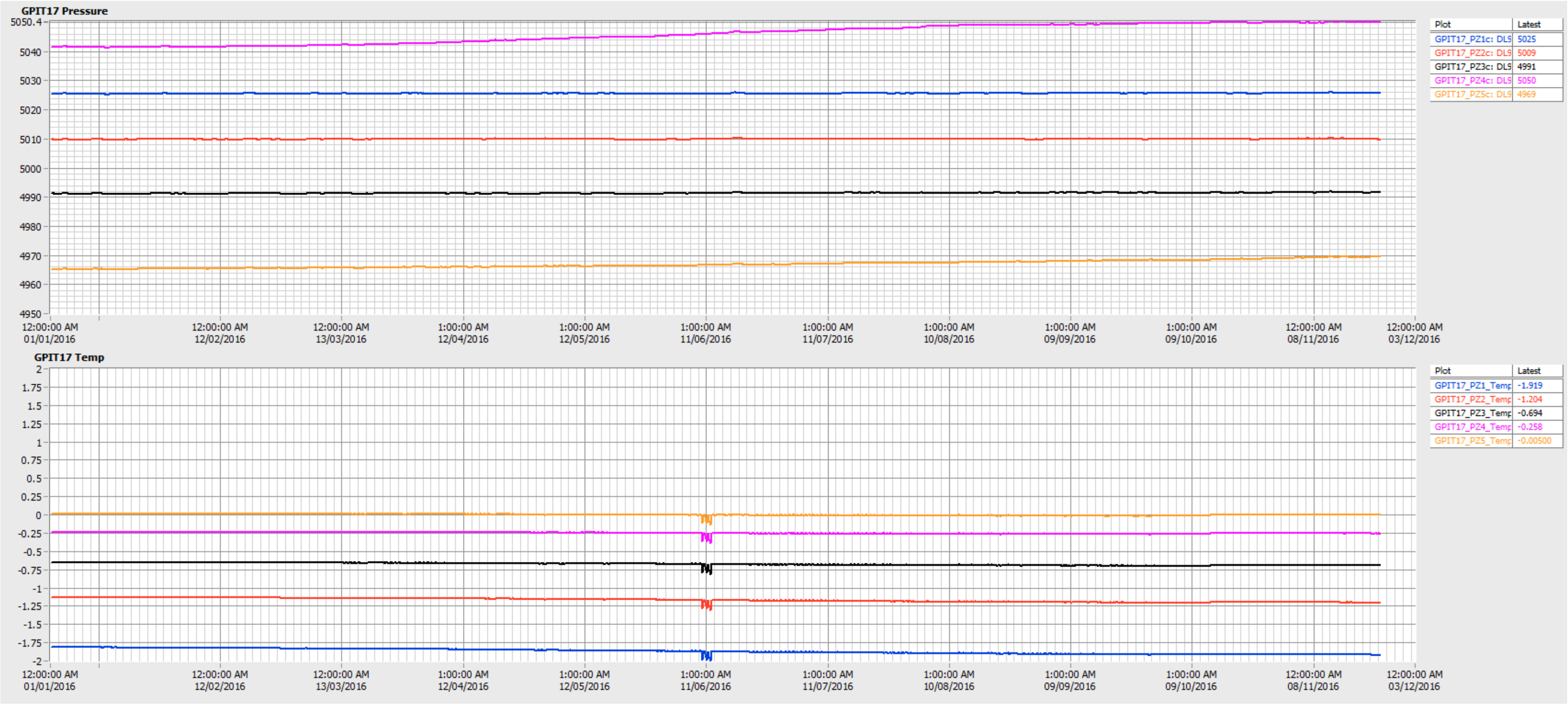
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Goose Pit Piezometer Data GPIT-16

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-3.3



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

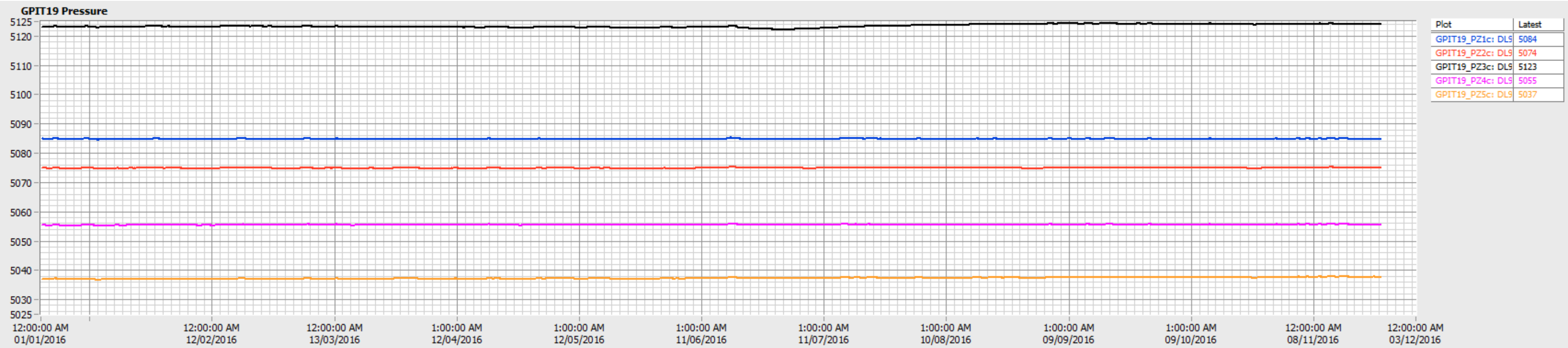
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

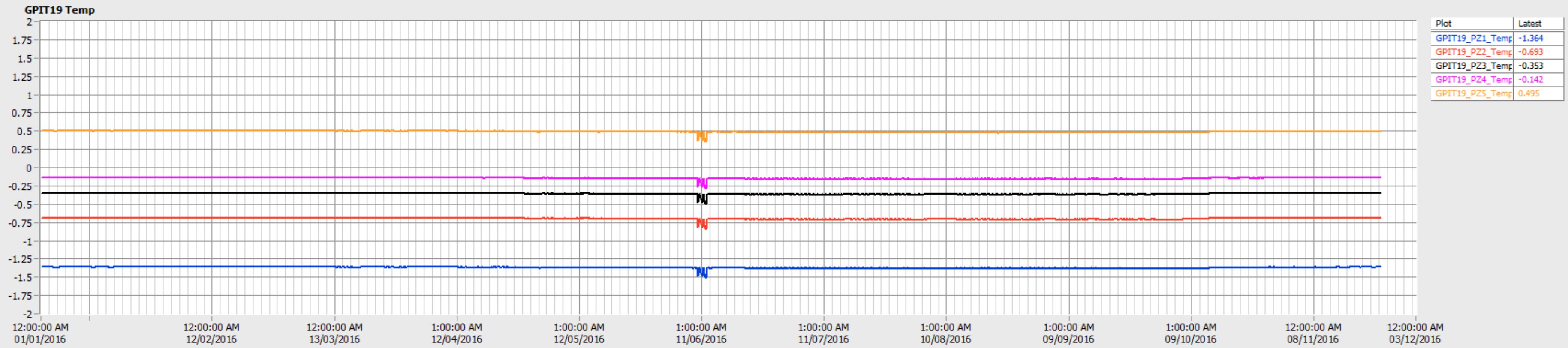
Goose Pit Piezometer Data GPIT-17

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-3.4





LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

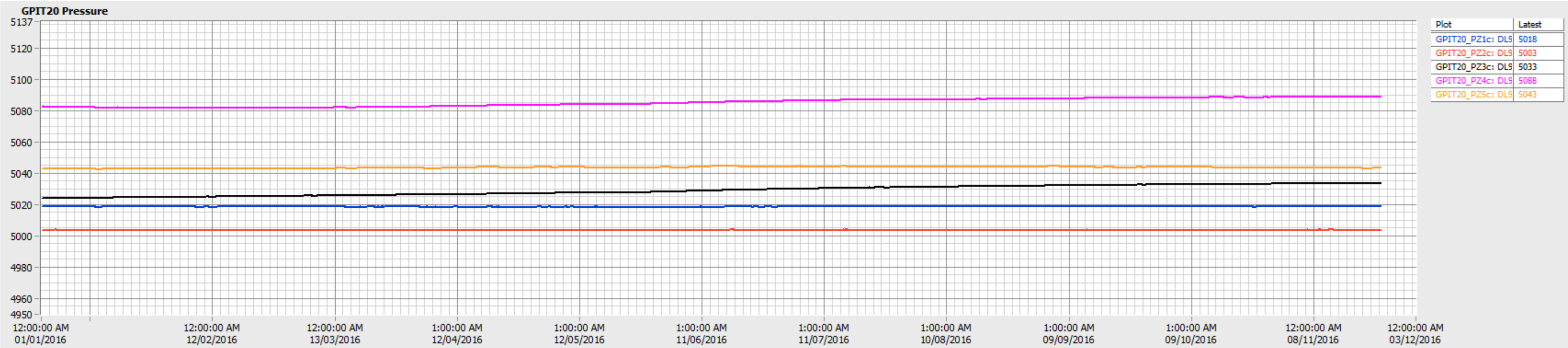
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

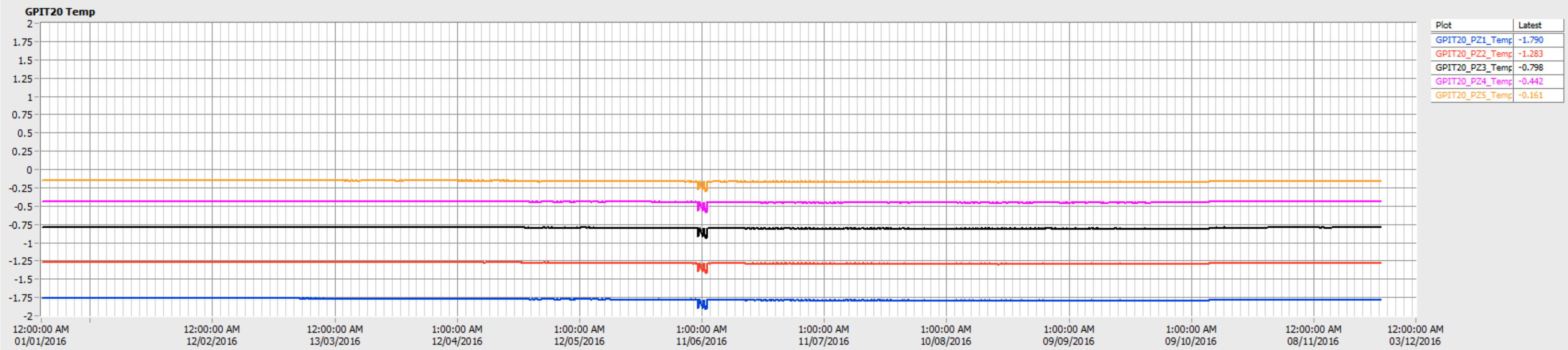
Goose Pit Piezometer Data GPIT-19

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure A-3.5





LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE
MEADOWBANK

TETRA TECH

MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

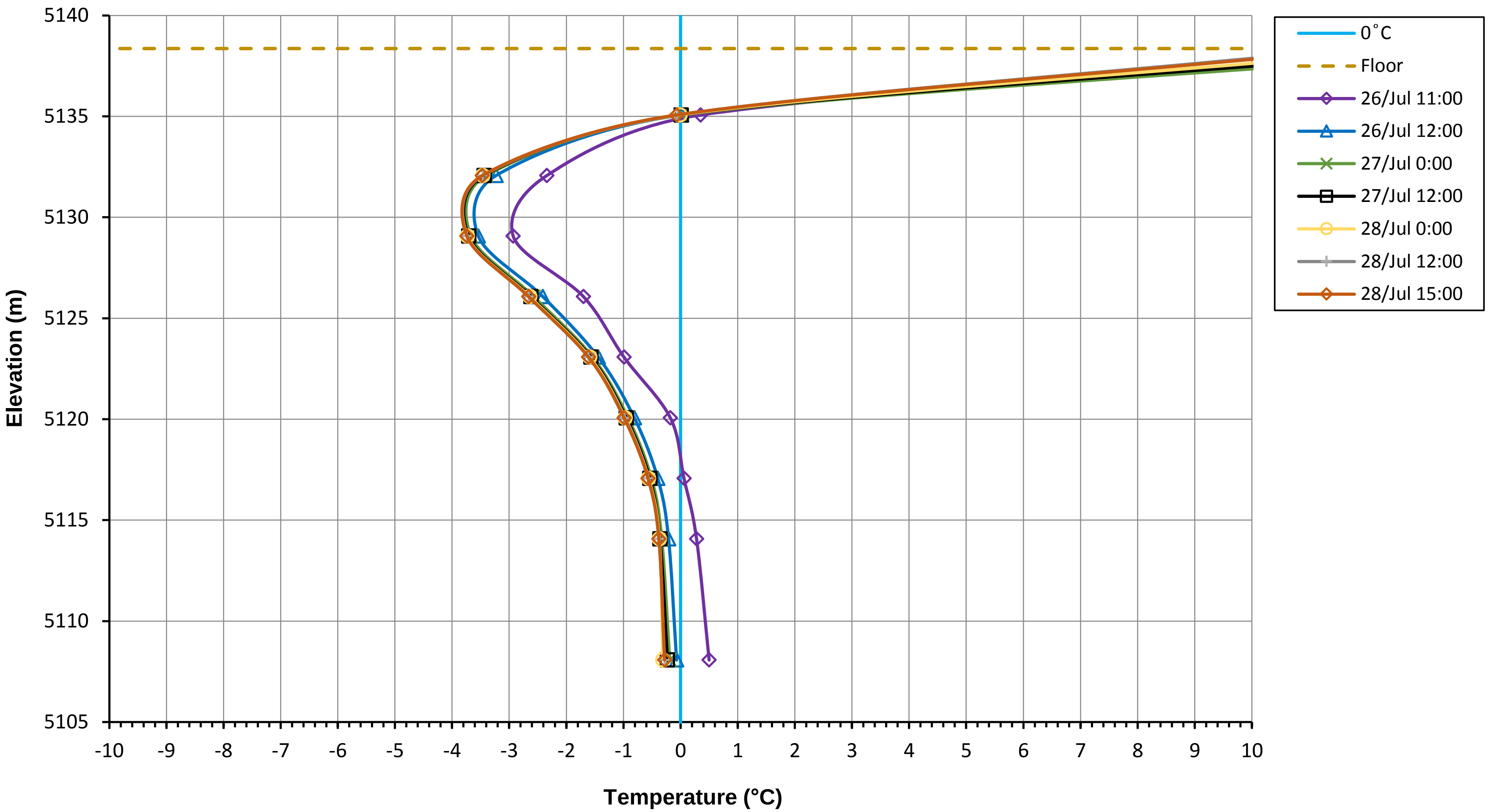
Goose Pit
Piezometer Data GPIT-20

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	CJC	CJC	CJC	00
OFFICE	**DATE**			
EBA-VANCOUVER	DECEMBER, 2016			

Figure A-3.6

APPENDIX B

2016 VAULT THERMAL EXPLORATION



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

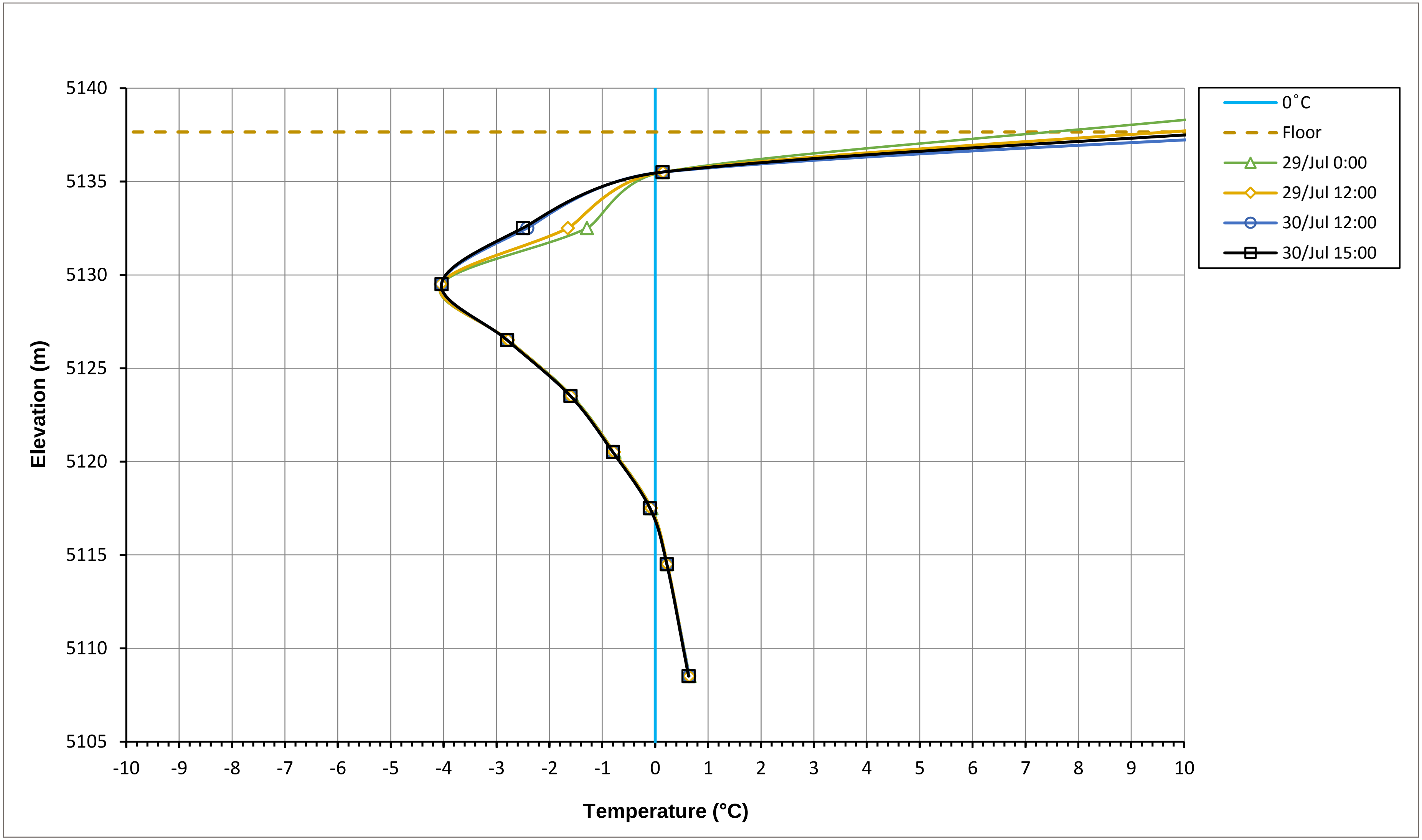
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot Vault Thermal Exploration VP1

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.1



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

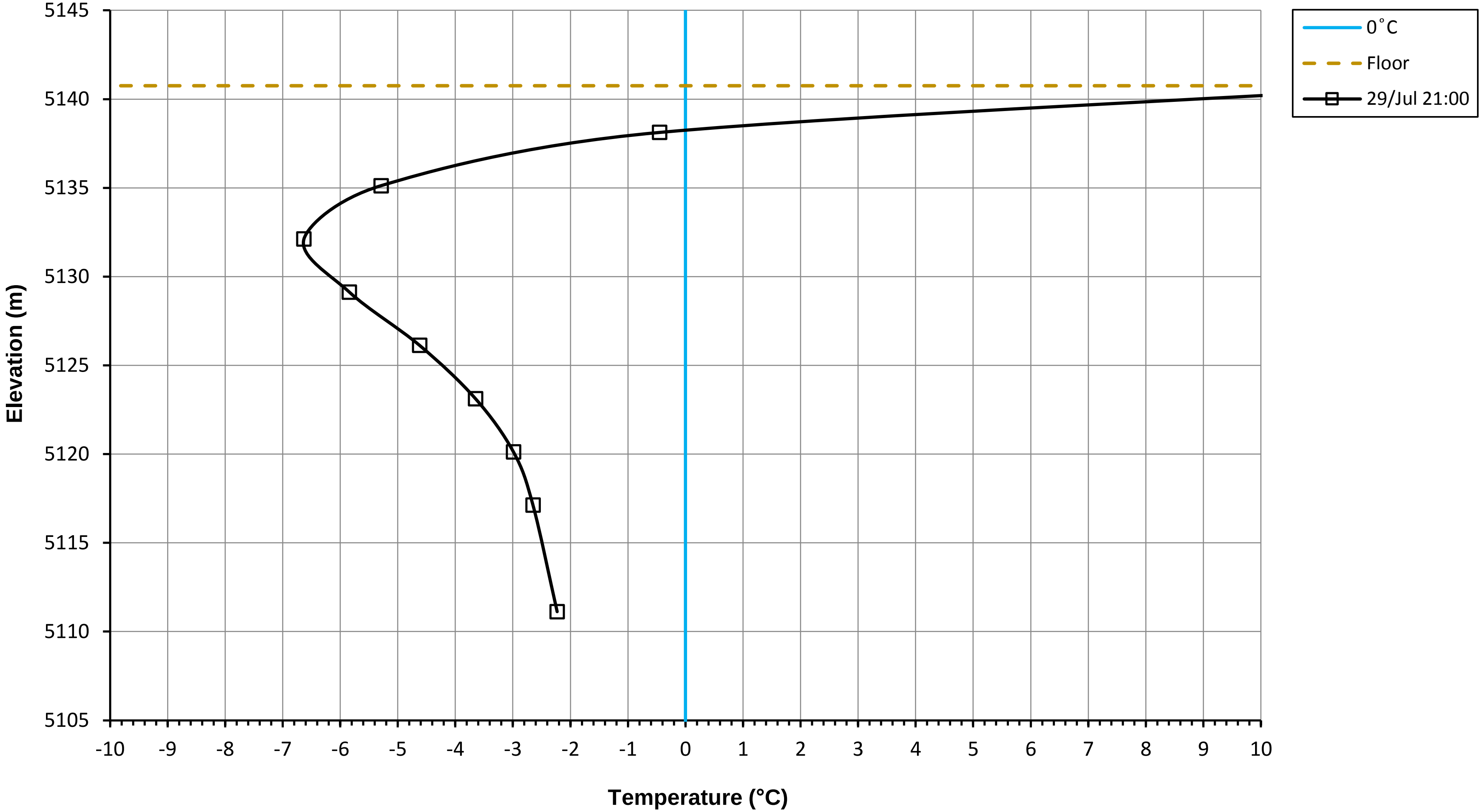
MEADOWBANK MINE
ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot
Vault Thermal Exploration VP2

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.2



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

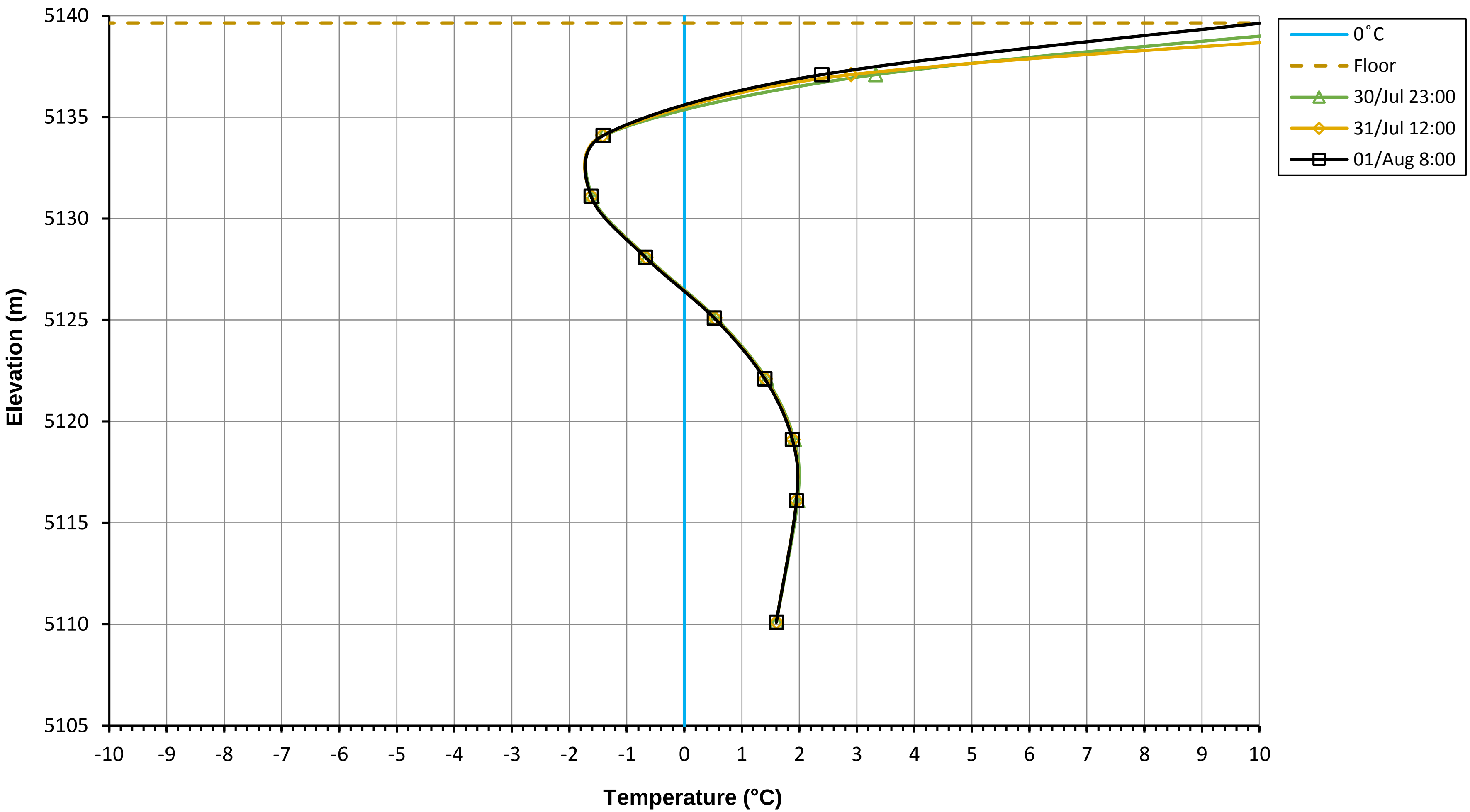
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot Vault Thermal Exploration VP3

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.3



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

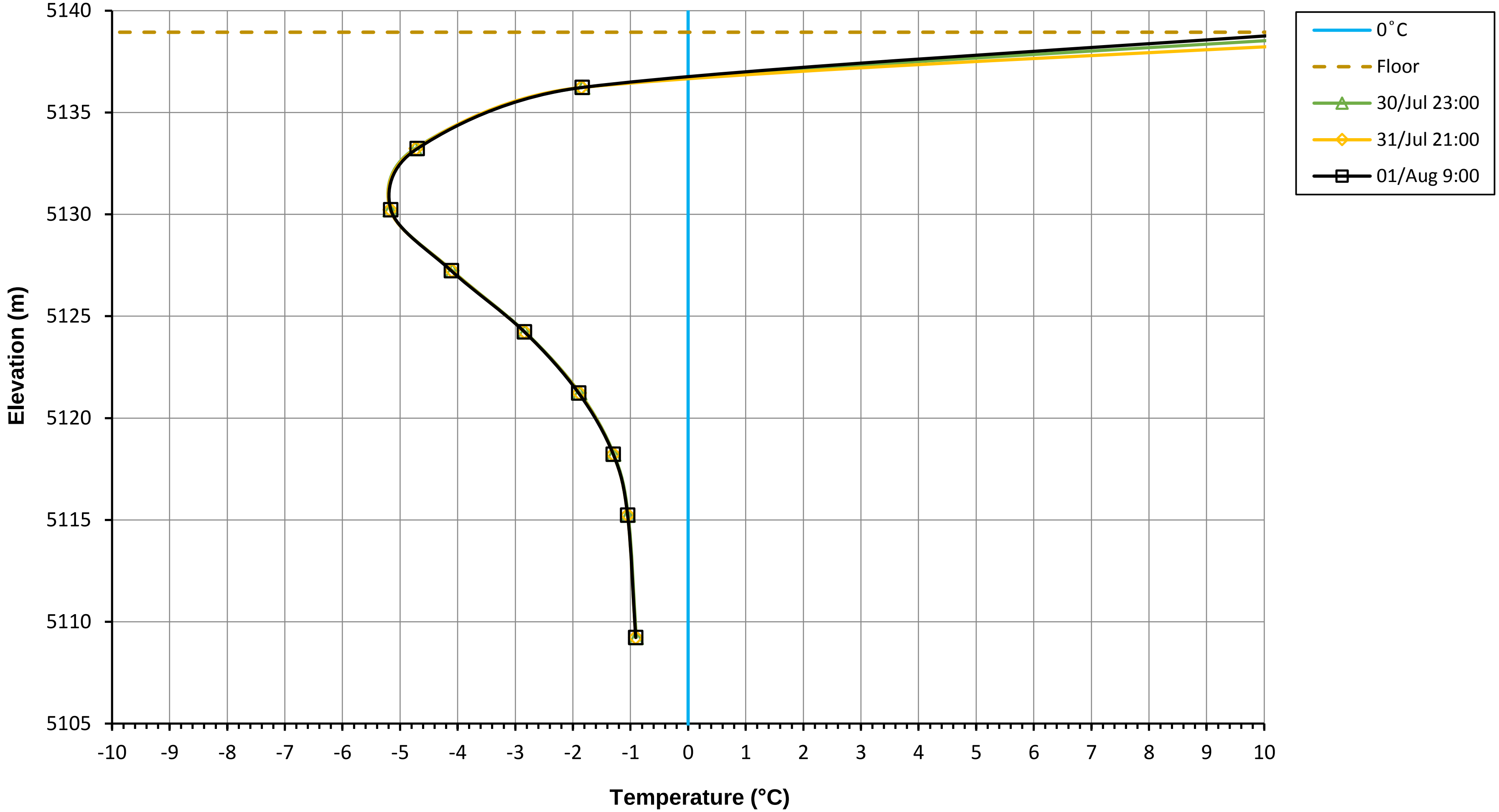
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot Vault Thermal Exploration VP4

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.4



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

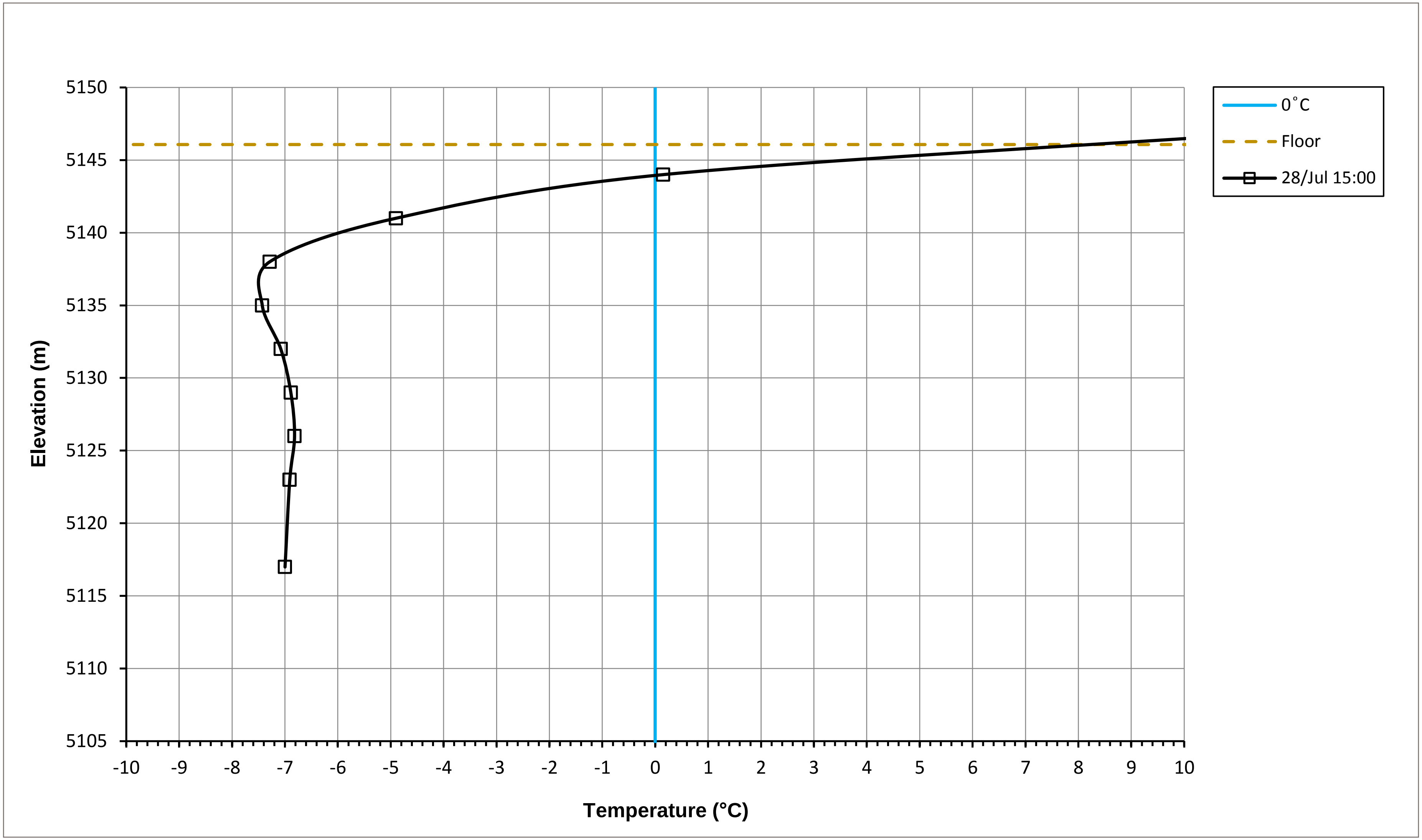
MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot Vault Thermal Exploration VP5

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.5



LEGEND

NOTES

Data provided by Agnico Eagle Mines Ltd.

STATUS

ISSUED FOR USE

CLIENT

AGNICO EAGLE MEADOWBANK

TETRA TECH

MEADOWBANK MINE ANNUAL PIT WALL INSPECTION

Bead Temperature vs. Elevation Plot Vault Thermal Exploration VP6

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.EARC03050-01	DK	CJC	CJC	00

OFFICE	DATE
EBA-VANCOUVER	DECEMBER, 2016

Figure B-1.6

APPENDIX C

TETRA TECH GENERAL CONDITIONS

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these "General Conditions".

1.1 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of TETRA TECH's Client. TETRA TECH does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than TETRA TECH's Client unless otherwise authorized in writing by TETRA TECH. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of TETRA TECH. Additional copies of the report, if required, may be obtained upon request.

1.2 ALTERNATE REPORT FORMAT

Where TETRA TECH submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed TETRA TECH's instruments of professional service); only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by TETRA TECH shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of TETRA TECH's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except TETRA TECH. TETRA TECH's instruments of professional service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.4 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.5 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.6 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

1.7 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.8 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.9 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

1.10 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.11 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

1.12 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

1.13 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client’s expense upon written request, otherwise samples will be discarded.

1.14 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of the report, TETRA TECH may rely on information provided by persons other than the Client. While TETRA TECH endeavours to verify the accuracy of such information when instructed to do so by the Client, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

AGNICO EAGLE
MEADOWBANK

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Contact: Cameron Clayton   Cameron.Clayton@tetratech.com
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TETRA TECH