CONSTRUCTION SUMMARY REPORT
VAULT DIKE

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT

JULY 29, 2013

EXECUTIVE SUMMARY

The construction of Vault Dike at Meadowbank was conducted from February 2013 to March 2013. Vault Dike is located across a shallow creek which connects Wally Lake and Vault Lake, at the Vault Pit area. Vault Dike is essential to allow the dewatering of Vault Lake and to isolate Vault Pit during mining activities from Wally Lake. Vault Dike is designed and constructed as a zoned rockfill dam with filter zones, an impervious upstream liner consisting of a bituminous membrane, and an upstream key trench made of aggregate mixed with bentonite. The filter zones minimize seepage and internal erosion and facilitate seepage collection.

Work carried out during construction of Vault Dike included blasting and excavation to bedrock, fill placement, membrane installation, and thermistor string installation. This construction report issued by AEM presents the general construction procedure for Vault Dike.

A monitoring program is essential to ensure the integrity of Vault Dike, including regular site visits, temperature measurement within the dike using the thermistors, monitoring of the upstream and downstream water level and detailed site inspections.

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CONSTRUCTION SUMMARY REPORT
VAULT DIKE

SECTION 1.0 - INTRODUCTION

The construction of the Vault Dike at Meadowbank was conducted from February 2013 to March 2013. Vault Dike is located across a shallow creek which connects Wally Lake and Vault Lake, at the Vault Pit area approximately 8 km north of the main Meadowbank site. Vault Dike is essential to allow the dewatering of Vault Lake and to isolate Vault Pit during mining activities from Wally Lake.

Vault Dike is designed and constructed as a zoned rockfill dam with filter zones, an impervious upstream liner consisting of a bituminous membrane, and an upstream key trench made of aggregate mixed with bentonite. The filter zones minimize seepage and internal erosion and facilitate seepage collection. Vault Dike includes a key trench at the base of the upstream side filled with a 0-25 mm fill amended with bentonite surrounding the liner. Coarse and fine filter material was placed on the upstream slope as geomembrane bedding. The bulk part of the dike consists of coarse rockfill material. The embankment crest is at El. 142.4 m and the upstream toe is at approximately El. 139.4 m. The downstream toe is at approximately El. 139.6 m and the bottom of the key trench ranges from El. 135.6m to El. 142.3m, with an average height of El. 137.0m. The upstream and downstream fill slopes of the dam are 1.5H:1V.

Work carried out during construction of Vault Dike included blasting and excavation of overburden to bedrock, fill placement, membrane installation, and thermistor string installation. The design and technical specifications of Vault Dike was carried out by SNC-Lavalin Inc. (SNC) and reviewed by Agnico Eagle Mines - Engineering (AEM) and the Meadowbank Dike Review Board (MDRB). SANA was contracted to complete the construction of Vault Dike under the supervision of AEM. TCG was contracted to complete the drilling for Vault Dike under the supervision of AEM. SNC was responsible for carrying out the Quality Assurance (QA) program component of the construction for Vault Dike. Inspec-Sol was responsible for carrying out the Quality Control (QC) program under the supervision of AEM. Texel was responsible for carrying out the Quality Control (QC) program for the bituminous geomembrane installation under the supervision of AEM.

SECTION 2.0 - SCOPE

This construction summary report presents the general construction procedure for the Vault Dike conducted between February 2013 and March 2013 at Meadowbank. Work procedures and the QA/QC program for the construction are summarized in this report. A review of the design and technical specifications is presented, followed by the construction schedule and description of construction activities. The QC testing and results, and in-field design changes made during construction are then presented.

SECTION 3.0 - DESIGN AND TECHNICAL SPECIFICATIONS

The design and technical specifications were specified by SNC prior to the start of the Vault Dike construction and are described in the following section. The full design is available in the SNC report “Detailed Engineering of Vault Dike – Final Design Report”. The full specifications are available in the SNC report “Construction of Vault Dike – Technical Specifications”. Typical sections from the original design are available in Appendix A.

3.1 FILL MATERIALS, MEMBRANE, AND THERMISTORS

Vault Dike is a zoned rockfill dam, which includes four different zones of material. It also includes an impervious upstream membrane. The technical specifications and requirements for each zone, the geomembrane, and the thermistors are summarized below.

3.1.1 Rockfill (0-1000 mm)

- The rockfill material consists of waste clean blasted rock (0-1000 mm) from Vault quarry and is composed of NPAG (non-potentially acid generating) rock;
- No topsoil, unsuitable organic soils, peat, snow, or ice are allowed in this zone;
- Lift thickness specified: 2 000 mm maximum prior to compaction;
- Compaction: Use a loaded CAT-773 (50 tons) haul truck, final surface by 4 passes of heavy dozer or equivalent.

3.1.2 Coarse Filter (0-150 mm)

- The coarse filter material consists of waste clean blasted rock (0-150 mm) from Portage Pit and is composed of NPAG (non potentially acid generating) rock;
- No topsoil, unsuitable organic soils, peat, snow, or ice are allowed in this zone;
- Lift thickness specified: 500 mm maximum prior to compaction;
- Compaction and placement: Use an excavator for placement, and the excavator bucket for compaction;
- Must meet the gradation limits specified in the table below:

Particle Size (mm)	Percent passing by weight
200	100
152.4	86-100
76.20	35-100
25.4	5-40
12.7	0-18
4.76	0-9
2.36	0-5

3.1.3 Fine Filter (0-25 mm)

- The fine filter material consists of waste clean blasted rock (0-25 mm) from Portage Pit and is composed of NPAG (non-potentially acid generating) rock;
- No topsoil, unsuitable organic soils, peat, snow, or ice are allowed in this zone;
- Lift thickness specified: 500 mm maximum prior to compaction;

- Compaction and placement: Use an excavator for placement, and the excavator bucket for compaction;
- Must meet the gradation limits specified in the table below:

Particle Size (mm)	Percent passing by weight
25	100
19	50-100
9.5	23-68
0.425	0-20
0.075	0-15

3.1.4 <u>0-25 mm Amended with Bentonite</u>

- The 0-25 mm amended with bentonite material consists of the fine filter mix described above mixed with 8% (weight basis) of sodium bentonite powder;
- This material must be well mixed in an area protected from the wind, and only small stockpiles are permitted to minimize the loss of fines and excessive particle segregation;
- Lift thickness specified: The layer between the key trench floor and the membrane must have a minimum compacted thickness of 300 mm after compaction. The layer above the membrane must have a minimum compacted thickness of 500 mm after compaction;
- Compaction and placement: Use an excavator for placement, and the excavator bucket and hand operated compactor for compaction. Great care must be taken to minimize the loss of fines during placement.

3.1.5 <u>Bituminous Geomembrane</u>

- The bituminous geomembrane shall be Teranap 431 4M, 4.1 mm. During construction this requirement was revised, see Section 7.0 for more details;
- The rolls must be stored, handled, rolled out, placed, and welded in accordance with the supplier's specifications;
- The Contractor shall roll-out the bituminous geomembrane horizontally;
- The bituminous geomembrane shall be free of folds before it is covered with fill. Cutting and patching may be performed to meet this requirement;
- All welding and repair work shall be carried out under the supervision of an experienced and certified technician and under the supervision of QA and QC representatives;
- The Contractor shall demonstrate their ability to adequately weld seams and make patches on site under arctic winter conditions;
- No fill material shall be placed over the geomembrane prior to the QA/QC personnel's approval;
- A minimum soil cover of 500 mm must be provided to all machinery tracks over the membrane;
- Patch dimensions shall overlap all defects by at least 20 cm;
- For each roll the Contractor shall provide AEM the identification label, the ASQUAL (Assurance Quality) label, and if the roll comes in one or two pieces.

3.1.6 Thermistors

- Thermistor strings must be stored, handled, and installed with care to minimize damage;
- All thermistor strings to be installed must be ice bath tested and verified. Test data sheets must be available for each thermistor string installed;
- For each thermistor string used the following must be noted: identification number, location, and spacing between each thermistor bead;
- The thermistor string beneath the liner must be placed prior to liner installation;
- Vertical thermistor strings must be placed once the dike construction has been completed;
- The Contractor shall survey and record all bead coordinates as well as the elevation of the thermistor string beneath;
- The Contractor shall survey and recorded the top (upper) thermistor bead coordinates and elevation of each thermistor string;
- Thermistor strings must be equipped with a connector for reading;
- The Contractor shall take all the necessary precautions to ensure that the thermistor strings are not damaged during installation.

3.2 ACCESS ROAD AND FOUNDATION PREPARATION

Access road and foundation preparation for Vault Dike consists of the following:

- Construction area access from Vault Dike Road West and from Vault Dike Road East;
- Foundation surface preparation prior to fill placement.

3.2.1 Construction Area Access

- Provide permanent access roads to the construction area for construction equipment;
- Road locations are planned in the Vault Pit general site plan, and then fine-tuned in the field by the AEM Engineering team.

3.2.2 Foundation Surface Preparation

- Removal of all snow, ice, frozen overburden and boulders within the Vault Dike footprint area;
- Disposal of snow and ice in Vault Lake, and all other excavated material to the Vault Waste Dump;
- Foundation surface shall be verified, checked by survey, tested (if needed) for strength, approved by QC and AEM Engineering Representative prior to fill placement;
- All foundations shall be approved by AEM, QA, and QC representatives. This shall be done by a through field inspection and signing Foundation Approval forms;
- All approved foundations shall be surveyed by the Contractor surveyor for record keeping and use in the As-Built drawings.

3.3 FILL PLACEMENT PROCEDURE

The lift thickness for the rockfill is to be 2 000 mm maximum prior to compaction and 500 mm maximum prior to compaction for the coarse and fine filters. The lift thickness for 0-25 mm amended with bentonite between the key trench floor and the membrane must have a minimum compacted thickness of 300 mm after compaction. The lift thickness for 0-25 mm amended with bentonite above the membrane must have a minimum compacted thickness of 500 mm after compaction.

Compaction of the rockfill is to be achieved through the use of loaded 50 ton haul trucks and final fill surface compaction is performed then by 4 passes of heavy dozer or equivalent. Compaction of the other materials is to be done either by excavator shovel or hand operated compactor. Lift thickness may be adjusted in the field based on observations during fill placement as well as the equipment used for compaction.

SECTION 4.0 - CONSTRUCTION SCHEDULE

Construction of Vault Dike was carried out between February 2013 and March 2013 at Meadowbank. The final construction schedule is available in Appendix B and is summarized as follows:

- Construction of access roads to the dike footprint occurred between January 27 and February 7.
- Foundation surface preparation occurred between January 27 and February 12.
- Key trench drilling, blasting, excavation and grading occurred between February 4 and February 18.
- Fill placement and compaction of the coarse filter (0-150 mm) occurred between February 9 and March 15.
- Fill placement and compaction of the fine filter (0-25 mm) occurred between February 9 and March 15.
- Fill placement and compaction of the 0-25 mm amended with bentonite occurred between February 13 and March 13.
- Fill placement and compaction of the rockfill (0-1000 mm) occurred between March 4 and March 20.
- Bituminous geomembrane installation occurred between March 3 and March 13.
- Thermistor strings installation occurred between February 26 and April 14.

SECTION 5.0 - VAULT DIKE CONSTRUCTION ACTIVITIES

The scope of work for the construction of the Cofferdam conducted from February 2013 to March 2013 consists of activity in the following major work items:

- Construction of access roads to the dike footprint;
- Foundation surface preparation (removal and proper disposal of all snow, ice, frozen overburden and boulders);
- Key trench drilling, blasting, excavation and grading;
- Granular fill preparation, loading, placement, and compaction;

- Bituminous geomembrane storage, handling, roll-out, welding and patching;
- Thermistor strings storage, handling, installation, and monitoring.

These items are discussed in the following sections below.

The Vault Dike as-built drawings and table of quantities used in construction are available in Appendix A. Selected photographs of the work progress taken throughout the construction program, showing various aspects of the construction work, are available in Appendix C.

5.1 ACCESS ROADS

Two access roads were constructed to the dike footprint – one from Vault Dike Road West and from Vault Dike Road East. Appendix D presents a map of the general Vault Pit area with the access roads. Vault Dike Road West begins where Vault Road ends at the Vault Waste Dump, runs northeast to pass Dewatering Road A and ends at the northwest end of the dike (Station 0+000). Vault Dike Road East begins at Vault Road between the Tower Pad and the Office Pad, runs northeast to pass Dewatering Road B and Dewatering Road C and ends at the southeast end of the dike (Station 0+350). The access roads were essential to the dike construction for providing temporary and permanent access to the dike area for construction equipment. The construction of the access roads consisted of rockfill dumped by CAT-773 (50 ton) haul trucks and pushed with dozers over the tundra, with minimal foundation preparation outside of the Vault Dike footprint. Construction of access roads to the dike footprint occurred between January 27 and February 7 2013.

5.2 FOUNDATION SURFACE PREPARATION

Starting on January 27, 2013, all the snow and ice along the dike footprint including the upstream key, was removed with backhoe excavators CAT-365 and 345. The ice within the dike footprint ranged from 0.5 to 1.5m thick over a length of about 100m. The frozen overburden thickness was between 0.3 to 3.5m. All the snow and ice which did not have a lot of sediment in it was disposed in Vault Lake. Snow and ice with high amounts of sediment was brought to the Vault Waste Dump using 50 ton haul trucks.

Starting on February 1, 2013 all of the frozen overburden and boulders along the dike footprint were removed with backhoe excavators CAT-365 and 345. The frozen overburden was excavated until reaching dense till. Foundation surface preparation was completed on February 12.

The foundation preparation consisted of the following key work steps:

- Excavate all the snow, ice, frozen overburden and boulders in the dike footprint with backhoe excavators going from Station 0+000 to station 0+350;
- Removal until reach of suitable foundation consisting of stiff dense till, free of all snow, ice, organic material, boulders, deleterious materials or any other material deemed objectionable by AEM/QC/QA representatives;
- Visual inspection of the foundation surface of stiff dense till and acceptance of the foundation was done by AEM/QC/QA representatives prior to fill placement.

The approved foundation area was surveyed by the Contractor. Approval foundation forms for all approved areas were filled out and signed by AEM/QC/QA, and can be found in Appendix E2.

A working platform was established in the dike footprint area once the foundation surface had been prepared and approved. It consisted of a rockfill pad extending the entire length of the dike and the width of the dike footprint. The working platform crest elevation was at 141.0m. It had a strip of foundation exposed along where Vault Dike's centerline would be, so that drilling and blasting could proceed more easily. Compaction of the rockfill in the construction platform was conducted by placing and compacting rockfill with the dozer, then using the vibratory roller.

5.3 KEY TRENCH DRILLING, BLASTING, EXCAVATION AND GRADING

Starting on February 4, 2013, the key trench blast holes were drilled using a Tamrock drill from TCG. The blast patterns were designed by AEM, with the Tamrock operator checking hole depth and spacing, and noting where bedrock was reached to ensure the drilled holes were drilled to the proper depth. Drilling started at the northwest end of the dike key trench, and proceeded to the southeast end of the dike key trench.

Once each pattern was finished being drilled it was then blasted. The first blast occurred on February 7, 2013, and was followed by three more blasts for a total of four blasts for the key trench. All of the blasts are listed below with the blast pattern name, the dates and times the blasts occurred, the number of holes blasted and drilled in that pattern, and the peak particle velocity (PPV) of that blast:

- Blast 5137KT001-1 on February 7, 2013 at 00:45, 99 holes, max. PPV of 6.92 mm/s
- Blast 5137KT001-2 on February 9, 2013 at 21:00, 182 holes, max. PPV of 5.06 mm/s
- Blast 5137KT001-3 on February 12, 2013 at 18:30, 99 holes, max. PPV of 3.14 mm/s
- Blast 5137KT001-4 on February 18, 2013 at 00:45, 138 holes, PPV not measured.

The PPV was not measured for the February 18th blast because the blast monitor installed did not record the event.

After each pattern was blasted it was then excavated using backhoe excavators CAT-365 and 345. Excavated material that was not needed for dike construction was hauled to the Vault Waste Dump using 50 ton haul trucks. Blasted material such as clean rockfill was left in place if it was deemed suitable for construction. Excavation started on February 7, 2013 at the northwest end of the dike key trench, and proceeded to the southeast end of the dike key trench as the blast patterns were blasted. The key trench floor needed to be excavated to bedrock or until specified by AEM/QA/QC representatives. If the key trench floor did not get approved it would be improved with blast corrections until acceptable.

After the excavation was complete in an area, the key trench slopes and floor were graded and then checked by the surveyor to see if their dimensions matched the design drawing. Adjustments were then made until the key trench depth, width (minimum 3m), and blasted rockfill upstream slopes (must be 2H:1V or as accepted by AEM/QA/QC) met the dimensions on the drawing. The slopes were compacted using the shovel bucket. The floor of the key trench was cleaned thoroughly using the excavator bucket lip. Special care was taken during excavation of the key trench to ensure that no till or overburden was left in the area that would be under the liner. Then that area of the key trench would be approved by AEM and the QA/QC representatives prior to fill placement. Once accepted the key trench floor was surveyed for use in the as-built drawings.

It is important to note that drilling, excavation, and grading were sometimes proceeding at the same time in different areas of the key trench.

5.4 GRANULAR FILL PREPARATION, LOADING, PLACEMENT, AND COMPACTION

Once work on the key trench was completed, the preparation, loading, placement, and compaction of the various types of granular fill began. This work begun on February 10, 2013 and started at the northwest end of the dike key trench, and proceeded to the southeast end of the dike key trench. All of the granular fill (except for the 0-25 mm amended with bentonite) had been prepared before the project began and had been stockpiled on the Dam Pad west of the dike beside Vault Dike Road West. It was determined through QC testing that the various types of granular fill supplied met the specifications outlined above in Section 3.1.1 to Section 3.14. QC testing results are described in Section 6 and available in Appendix E1.

The granular fill was loaded into 50 ton haul trucks by a CAT-980 loader at the Dam Pad, and was then hauled down to the dike area. The 0-25 mm material amended with bentonite was removed with one of the backhoe excavators (CAT-365 or 345) and placed over the last lift of material.

All preparation, loading, placement, and compaction procedures were done to minimize segregation as much as possible. Lift thickness was adjusted in the field based on observations during fill placement as well as the equipment used for compaction. Every lift was inspected, tested and accepted by AEM, QA, and QC representatives prior to the next fill placement. The sub-sections below describe the specific preparation, placement, and compaction procedure details for each type of granular fill.

4.4.1. Rockfill (0-1000 mm)

Following the excavation of the blasted key trench, rockfill has to be added to build or adjust the upstream slope of the trench. It was prepared to comply with the specifications listed in Section 3.1.1 for the rockfill. The majority of the rockfill came from Vault Quarry, however some rockfill produced during the blasting of the key trench was used to build the upstream key trench slope. Rockfill was placed in lifts no greater than 2 000 prior to compaction. As the blasts produced an uneven and often close to vertical slope to accommodate the liner filters, the 2H:1V slope had to be created from rockfill. The existing working platform was adapted with more rockfill to create the proper slope for the liner and filters. It was achieved by dumping the material on the platform and placing it with the excavator. Compaction was achieved using the excavator bucket.

4.4.2. Coarse Filter (0-150 mm)

This was the first material to be placed once the key trench slope was complete. Placement of this material began on February 9, 2013 and was completed March 15, 2013. It was prepared to comply with the specifications listed in Section 3.1.2 for the coarse filter.

For placement an excavator was used, and to compact the material the excavator bucket was used. The coarse filter was placed in a layer 500 mm thick (after compaction) directly on the upstream slope of the key trench.

4.4.3. Fine Filter (0-25 mm)

This was the second material to be placed once the key trench was excavated. Placement of this material along the upstream slope of the key trench began on February 9, 2013 and was completed March 15, 2013. It was prepared to comply with the specifications listed in Section 3.1.3 for the fine filter.

For placement an excavator was used, and to compact the material the excavator bucket was used. The fine filter was placed in a layer 500 mm thick (after compaction) over the coarse filter layer on the slope of the key trench. The surface was reworked before geomembrane placement to provide proper subgrade conditions.

4.4.4. 0-25 mm Amended with Bentonite

This was the third material to be placed in the key trench. Placement of this material began on February 13, 2013 and was completed March 13, 2013. It was prepared only in very small batches right before it was needed in order to minimize the loss of fines and excessive particle segregation, as well as to comply with the specifications listed in Section 3.1.4 for the 0-25 mm amended with bentonite.

Before mixing the material to use in the key trench, a test was conducted to ensure the preparation procedure would minimize the loss of fines and excessive particle segregation. Based on these tests a final procedure was made to mix the 0-25 mm with bentonite. In order to get the mixture to have a minimum of 8% by weight of bentonite, the procedure to mix was to create a pad of 0-25mm, 7 m wide by 7 m long by 0.5 m thick. This represents an approximate volume of $24.5m^3$ for an approximate total mass of 0-25mm of 49,000kg. Three bags of bentonite were added to the material on the pad. This represents an approximate total mass of bentonite of 3,900kg. The mixing was done in an area with walls of seacans to protect from the wind. The mixing was done very gently with an excavator under the supervision of at least the QC representative. Any prepared batches were covered by tarps when not in use. In order to accelerate the above mentioned procedure, a new improved mixing method was implemented later during the construction. Buckets full of 0-25 mm material were dumped in the mixing area (with a CAT 980 loader) in an alcove shape, then bentonite bags were opened in the middle of the pile and everything was gently mixed with an excavator.

For placement an excavator was used, and to compact the material the excavator bucket was used as well as the vibratory roller compactor and the vibratory plate compactor. Placement of this material only occurred at times when the wind speed was acceptably low as judged by the QA/QC/AEM representatives. The 0-25 mm amended with bentonite was placed in a layer 300 mm thick (after compaction) directly on the bedrock floor of the key trench, and above the bituminous membrane within the key trench.

5.5 BITUMINOUS GEOMEMBRANE STORAGE, HANDLING, ROLL-OUT, WELDING AND PATCHING CONTROL

Placement, welding, and patching of the bituminous geomembrane began on March 3, 2013 and was completed March 13, 2013. It was prepared to comply with the specifications listed in Section 3.1.5 for the bituminous geomembrane. The membrane was installed in the key trench and along the slope after the placement and compaction of the coarse filter, the fine filter, and the 0-25 mm amended with bentonite placed at the bottom of the key trench.

Preparation for installation of the membrane started on February 26, 2013 and consisted of the following steps:

- Cleaning all snow and ice from the slope and key trench using the excavator and workers with hand shovels;
- Smoothing and recompacting the subgrade in the slope and key trench using the excavator and workers manual compactor;
- Warming the rolls of membrane in a heated seacan at approximately 10 degrees Celsius. This was done to make the membrane more pliable for placement, and to restore the round shape of the membrane rolls so they would unroll easier;
- Getting the subgrade slope and key trench subgrade approved by AEM, QA, QC and QC liner representatives.

Installation of the membrane began on February 28, 2013. All of the preparation steps listed above had been completed for the area where the first section of membrane was to be placed. Placement of the Teranap membrane began by rolling out the membrane horizontally along the slope as specified in the design. However, the membrane developed a huge crack during placement, and smaller cracks propagated in the membrane even under small pressures such as a worker walking over the membrane. The Teranap membrane was then removed from the trench.

After testing the Teranap membrane with simple field tests it was determined that the Teranap membrane did not meet the manufacturer’s flexibility minimum temperature of -26 degrees Celsius. The Teranap was not judged suitable for winter placement by the QA/AEM representatives. The Teranap membrane would not meet its specified purpose of being flexible and watertight so it was decided as much of the dike would be constructed with Coletanche membrane as possible. This decision was made by AEM and the designer SNC. This liner design modification is described in Section 7.0. Only 4 rolls of Coletanche membrane were available onsite; however, this would not be enough for the entire dike. Teranap membrane was used in an area judged less critical above El. 139.5m.

On March 3, 2013 the slope and key trench were cleaned, smoothed, recompacted, and approved in order to prepare the area again for membrane installation. One roll of Coletanche membrane was then placed horizontally, patched and welded. Placement, patching and welding was closely supervised by the liner QC during membrane installation. Air tests were then performed on the membrane seams and patches. After QC testing and placement approval by QC/QA/AEM representatives the membrane would be carefully covered with the bentonite mix and compacted to protect the membrane from wind and snow. The procedure described in this paragraph was repeated for all membrane used on the dike. On March 13, 2013 the only Teranap membrane used on the dike was installed from Station 191 until Station 303 above El. 139.5m. This completed the liner installation for the entire dike.

At some points during installation, it was decided that the membrane would be placed vertically instead of horizontally in order to maximize the use of Coletanche membrane and minimize the use of Teranap membrane. This was also judged easier for deployment of the membrane. This decision was made by AEM, QA, QC and QC liner representatives, and is discussed in Section 7.0 of this report.

Membrane installation was halted in windy conditions at the liner QC representative's recommendations. No welding of membrane would proceed if snow was blowing or falling into the melted bitumen.

5.6 COMPLETION OF THE KEY TRENCH AND SLOPES

Once the bituminous geomembrane installation was completed, the following steps were taken in order to complete the construction of the key trench according to the technical specifications provided by SNC.

5.6.1 0-25mm amended with bentonite

After the membrane was placed on top of the first layer of 0-25 mm amended with bentonite, another 500 mm minimum thick (after compaction) layer was added on the membrane. It was compacted using the excavator bucket and the vibratory plate (for the part at the bottom of the slope) or the vibratory roller (for the rest of the key trench). Compaction tests were done as described in Section 6.0.

5.6.2 Fine Filter (0-25 mm)

The entire slope over the bituminous geomembrane liner was then covered with a layer 500mm thick after compaction of 0-25mm material that was compacted with the excavator bucket. Care was taken not to damage the liner during placement and compaction.

5.6.3 Coarse filter (0-150 mm)

A layer 500 mm thick after compaction of coarse filter (0-150mm) was then added over the fine filter and compacted with the excavator bucket.

5.7 MAIN ROCKFILL (0-1000 MM)

This was the final material to be placed once the key trench liner and filters were completed. Placement of this material began on March 4th, 2013 and was completed March 20th, 2013. Rockfill was used as embankment fill for the main shell structure of the dike, as well as for the safety berms on the crest, constructed on March 21st, 2013.

For placement rockfill was dumped from the 50 ton haul trucks and spread with the D8 dozer. The maximum allowable lift thickness was 2000 mm before compaction. Compaction was achieved mostly through the traffic of 50 ton haul trucks, and the vibratory roller compactor was used as well.

5.8 THERMISTOR STRINGS STORAGE, HANDLING, INSTALLATION, AND MONITORING

Installation of the thermistor strings began on February 26, 2013 and was completed April 14, 2013. Installation of the thermistors was completed by AEM with assistance from the Contractor /TCG and complied with the specifications described above in Section 3.1.6.

The thermistors installed during the geotechnical investigations in November 2012 and January 2013 (TH1, TH2, and TH4) were removed by AEM when they got in the way of construction activities. TH3 had been installed on the downstream side of the dike during the geotechnical investigations but was able to be kept throughout the dike construction. TH3 was installed in the deepest channel downstream of the dike.

TH5 was installed inclined under the liner on February 26, 2013. On March 13, 2013 a protective 0-20mm shell was built around TH5 to prevent it from getting damaged during the thermal cap building process. TH6, TH7, and TH8 were installed after construction was complete using a Rockmaster drill between April 12, 2013 and April 14, 2013. T6 was installed upstream of the dike in the deepest channel upstream of the liner. TH7 was installed east of the deepest channel in the unthawed till zone found during construction. TH8 was installed upstream of the dike in the deepest channel outside of the key trench.

The locations of the five thermistors at Vault Dike are shown on the as-built drawings in plan view in Appendix A.

SECTION 6.0 - QC TESTING AND RESULTS

6.1 FOUNDATION APPROVAL

Foundation areas were inspected and approved prior to initiating fill placement. Inspection requirements for foundation areas included ensuring the following:

- Complete and adequate clearing, stripping and grubbing;
- Complete and adequate foundation excavation and removal of unsuitable foundation materials;
- Complete and adequate preparation and treatment of the foundation surface.

The entire approved area surface was surveyed. Daily approval forms including each approved area were done and filed by QA/QC/AEM representatives. Approval foundation forms for all approved areas can be found in Appendix E2.

6.2 FILL PLACEMENT APPROVAL

Fill placement areas were inspected and approved after the completion of fill placement and compaction. Inspection requirements for fill placement included ensuring the following:

- Gradation of placed fill complies with the technical specifications for the material in Section 3.0;
- Complete and adequate placement in regard to segregation and lift thicknesses;
- Complete and adequate compaction;
- The fill is free of ice and snow;
- Fill type placed in appropriate location as per the technical construction drawings.

6.2.1 Coarse Filter (0-150 mm)

Coarse filter material was placed in two layers on the upstream side of the dam. The coarse filter was placed in two layers surrounding the fine filter material. The upstream slope of coarse filter material was spread and compacted as described above in Section 4.4.2.

A total of five (5) coarse filter control samples were collected during the construction period to determine the suitability of the materials for use in the work. Samples were collected from the stockpile at the dike construction pad, the upstream slope of the dike, in the key trench, and at the Contractor crusher stock pile. Grain size analysis testing was completed on all five samples. The results of the coarse filter tests are available in Appendix E1. The results of the QC testing demonstrate that the material tested met the technical requirements because it was well graded according to the material specifications listed above.

6.2.2 Fine Filter (0-25 mm)

Fine filter material was placed in two layers on the upstream side of the dam. The fine filter was placed in two layers surrounding the bituminuous liner. The upstream slope of fine filter material was spread and compacted as described above in Section 4.4.3.

A total of eight (8) fine filter control samples were collected during the construction period to determine the suitability of the materials for use in the work. Samples were collected from the stockpile at the dike construction pad, the upstream slope of the dike, and in the key trench. Grain size analysis testing was completed on all eight samples. The results of the fine filter tests are available in Appendix E1. The results of the QC testing demonstrate that the material tested met the technical requirements because it was well graded according to the material specifications listed above.

6.2.3 0-25 mm Amended with Bentonite

The 0-25 mm amended with bentonite was placed in one layer directly on the bedrock floor of the key trench. The layer of 0-25 mm amended with bentonite was spread and compacted as described above in Section 4.4.4.

A total of one (1) 0-25 mm amended with bentonite control sample was collected during the construction period to determine the suitability of the materials for use in the work. Other samples were collected to be tested at a later date or in the laboratory in Quebec. Samples were collected from the material placed in the key trench. Grain size analysis testing was completed on one sample, and permeability testing was completed in Quebec on another sample. The results of the 0-25 mm amended with bentonite tests are available in Appendix E1. The results of the QC testing demonstrate that the material tested met the technical requirements because it was well graded according to the material specifications listed above.

Inspec-sol representatives conducted 15 moisture content and field density tests on the 0-25 mm amended with bentonite using a nuclear densometer (Troxler Surface Moisture-Density Guage) during construction. The tests were completed on an ongoing basis to ensure that the material placed continually met the requirements of the Technical Specifications. The results of the 0-25 mm amended with bentonite compaction testing are available in Appendix E1, Table 1 and are summarized below. Prior to placing any 0-25 mm amended with bentonite two test pads were created on the dam pad outside of the dike footprint. These test pads were made of the 0-25 mm amended with bentonite and were compacted using the vibratory roller. After each pass of the vibratory roller the compaction was checked using the nuclear densometer. This method was used to establish how many passes would need to be done for proper compaction.

The measured field dry density is compared to the standard proctor maximum dry density (SPMDD) obtained to determine the percent compaction. The maximum dry density for this material was determined to be 1835 kg/m^3. The measured field dry density ranged from 1856 kg/m^3 to 2643 kg/m^3 with a median value of 2015.5 kg/ m^3. The percent compaction ranged from 101.1% to 144.0%, with a median value of 110.0%. The field moisture content ranged from 4.1% to 5.7%, with a median value of 4.6%. After permeability testing the hydraulic conductivity for this material at 20°C was determined to be 3.5E-05 cm/sec, and its water content after the permeability testing was 22.8%. The results of the QC testing demonstrate that the material tested met the technical requirements for compaction and permeability.

6.3 BITUMINOUS GEOMEMBRANE APPROVAL

Prior to geomembrane placement the geomembrane subgrade was inspected and approved. The approved area surface was surveyed, and checked to ensure it respected all quotes and lines in the design. Daily approval forms including each approved area were completed by AEM, SNC, and Inspec-Sol. All daily approval forms were filed by AEM and can be found in Appendix E2.

Geomembrane areas were inspected and approved after the completion of geomembrane installation. Inspection requirements for geomembrane installation included ensuring the following:

- The geomembrane has no cracks or rips and is smooth and flat;
- The welding and patches are done properly;
- The geomembrane QC tests are done on all liner panels and the geomembrane passes all the tests.

The approved area surface was surveyed, and checked to ensure it respected all quotes and lines in the design. Daily approval forms including each approved area were completed by AEM, SNC, Inspec-Sol, and Texel representatives (Texel only filled out geomembrane approval forms). All daily approval forms were filed by AEM and can be found in Appendix E2. The QC report from the geomembrane installer Texel presenting the QC testing performed on the geomembrane is available in Appendix E3.

6.4 ROCKFILL (0-1000 MM)

The compaction for the rockfill material included 50 ton traffic compaction or vibratory roller over a maximum 2000 mm lift (prior to compaction), depending on the field conditions. Compaction of the rockfill material was observed and documented in the daily reports. No tests were required for the rockfill.

The field observations of the rockfill material confirmed that a dense, well graded and well compacted fill was constructed on Vault Dike.

6.5 SITE INSPECTION AND PROCEDURE REVIEW

AEM and SNC representatives routinely conducted visual observation of the work procedures during the construction of Vault Dike. Review of the work procedures was done on a daily basis and corrections were made if needed. A daily survey was conducted by Sana with the review of SNC and AEM representatives for daily progress and to ensure that limits and grades were followed correctly during the construction. Photographs of the work progress were taken throughout the construction program and selected construction photos are available in Appendix C. Daily reports for each work shift were issued and filed by AEM and SNC representatives. QC testing procedures and results from Inspec-Sol and Texel were reviewed on a regular basis by AEM and SNC.

SECTION 7.0 - FIELD CHANGES AND ADJUSTMENTS DURING CONSTRUCTION

Field changes and adjustments to the design were implemented by AEM in accordance with the designer SNC during construction of the dike to take advantage of existing site conditions and to optimize construction activities.

7.1 WORKING PLATFORM ENLARGEMENT ON WALLY LAKE SIDE

The working platform on the Wally Lake side was built larger than on the original design drawing. This enlargement was aimed to facilitate the excavation of the key trench with heavy equipment. The foundation of the platform was prepared and cleaned as specified in the technical specifications.

7.2 KEY TRENCH DEPTH

Due to blasting, some areas of the key trench are deeper than presented on the design drawing. Also due to adjustments made due to blasting, the upstream slope of the key trench presents in some areas an incline slightly steeper reaching approximately 1.75H:1V instead of 2H:1V as shown on the design drawing. This slope did not cause any problems during fill placement or geomembrane installation.

7.3 TILL IN KEY TRENCH

An area of frozen till located within the key trench from station 147 to station 149 was left in the key trench. In this area, the bedrock was not reached during excavation as the area was not blasted properly. The area was excavated as much as possible with the excavator and dozer. However, the till that was left in place could not be removed by the excavator and dozer. The thickness of the frozen till layer that was left in place was between 0.3 to 1.5m thick and the till layer was free of ice. The till was left exposed as long as possible to let it freeze. Then the frozen till was covered with 2m of rockfill. Thermistors were installed in this area for detailed thermal monitoring.

7.4 TYPE OF LINER (TERANAP VERSUS COLETANCHE)

The Teranap liner was intended to be used for the Vault Dike construction. However, due to the unexpected behavior of the membrane during placement in cold conditions, the Teranap was not placed in the Vault Dike.

The Teranap 431 Bituminous Geomembrane was planned to be used in the Vault Dike. Teranap was offered as an equivalent product to Coletanche and was supposed to present the same characteristics. Coletanche was previously used at Meadowbank for other structures.

While unrolling the first roll of Teranap 431 onto the slope it was noted that the membrane was very wavy and somewhat brittle. The membrane was previously heated in a sea can with an air blowing heating system. No heat was blowing directly on the membrane. The temperature in the sea can was between approximately 7 to 10 degrees Celsius. Once the membrane was placed over the subgrade, a large crack through the bitumen rapidly formed at the spot on the membrane which was located at the corner of the slope and the horizontal key trench surface. The outside temperature on February 28th was -36 degrees Celsius, which is under the low temperature flexibility limit of the Teranap (-26 degrees Celsius - listed in Siplast's specifications for this product).

After these observations, testing on the Teranap 431 membrane was conducted. Tests done outside between -23 and -19 degrees Celsius proved that the membrane was not suitable for installation in cold conditions at Meadowbank. Major cracks through the bitumen occurred when rolling over the membrane with a pickup truck at -23 degrees Celsius. The material was later pickup truck tested at -19 degrees Celsius and cracks still appeared in the material, though they were smaller. Similar testing with a pickup truck was done on the Coletanche ES3 membrane in 2010 and also while testing the Teranap on March 1st 2013. The Coletanche developed really small cracks only superficially on the bitumen cover.

As a result of being unable to install the Teranap in our winter conditions, Coletanche ES3/ES2 still available on site from 2009-2010 was used instead of the Teranap on Vault Dike. The installation of the Coletanche during cold conditions went well and no problems such as cracking occurred. Because of the limited quantity of Coletanche available on site, it was not possible to install only Coletanche at Vault Dike. Teranap was installed with the Coletanche in areas judged less critical by SNC and AEM, specifically at the crest section above El.139.5 m.

Teranap was installed horizontally from station 191 to station 298. The liner covers from approximately El. 139.5 m up to El. 141.0 m. All other liner used on Vault Dike was the Coletanche liner.

7.5 HORIZONTAL AND VERTICAL GEOMEMBRANE PLACEMENT

To ease the placement of the membrane in the irregular bottom of the key trench and also to minimize the loss of membrane, the geomembrane was placed vertically instead of horizontally as shown on the design drawing.

The geomembrane was placed horizontally from station 113 to station 298 from approximately El. 139.5 m up to El. 141.0 m. The geomembrane was also placed horizontally from station 120 to station 190 from the bottom of the key trench up to El. 139.5 m. For the rest of the liner placement the geomembrane was placed vertically. The QC report from the geomembrane installer Texel found in Appendix E3 shows the layout of the geomembrane panels.

SECTION 8.0 - OPERATION AND MONITORING

Vault Dike is essential to allow the dewatering of Vault Lake and to isolate Vault Pit during mining activities from Wally Lake. Therefore, the water level upstream of Vault Dike needs to be closely monitored and kept to an adequate level to preserve the integrity of the dike and to allow safe mining operations within Vault Pit.

A monitoring program is essential to ensure the integrity of Vault Dike. The monitoring program includes regular site visits after Vault Dike construction is complete, temperature measurement within the dike using the thermistors, updates on the downstream water levels after construction and during dewatering, and updates on the upstream water levels on an ongoing basis. After construction is complete and for the rest of the service life of the dike detailed site inspections of Vault Dike will be conducted and inspection reports will be issued on a regular basis by AEM. In addition, careful review and analysis will be performed regularly on the Vault Dike thermistor data.

SECTION 9.0 - SUMMARY AND CLOSURE

The construction of Vault Dike at Meadowbank was conducted from February 2013 to March 2013. Construction was completed in general accordance with the requirements of the Design and Technical Specifications elaborated by the designer SNC.

Data and observations for the Vault Dike construction program confirm that earthworks construction, including foundation preparation and fill placement for Vault Dike was completed in general compliance with the Technical Specifications and Design elaborated by SNC. During the course of the work, five (5) field changes from the original Design were incorporated to take advantage of existing site conditions and to optimize construction activities.

A monitoring program is essential to ensure the integrity of Vault Dike, including regular site visits, temperature measurement within the dike using the thermistors, monitoring of the upstream and downstream water level and detailed site inspections.

REGISTERED PROFESSIONAL ENGINEER
J. BELANGER
LICENSEE
29/07/2013
NWT/NU

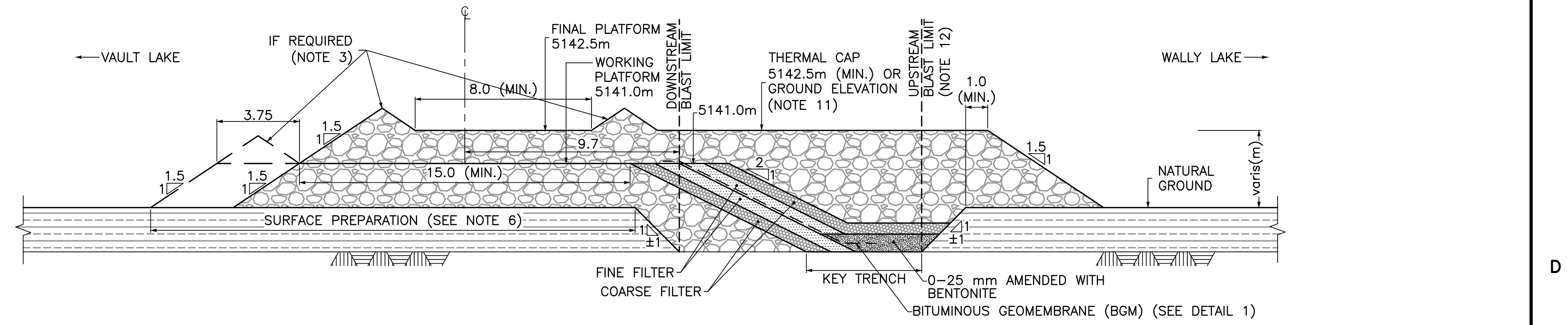
Rebecca Cameron, EIT
Agnico-Eagle Mines Limited
Meadowbank Division

Reviewed by Erika Voyer, Ing.
Agnico-Eagle Mines Limited
Meadowbank Division

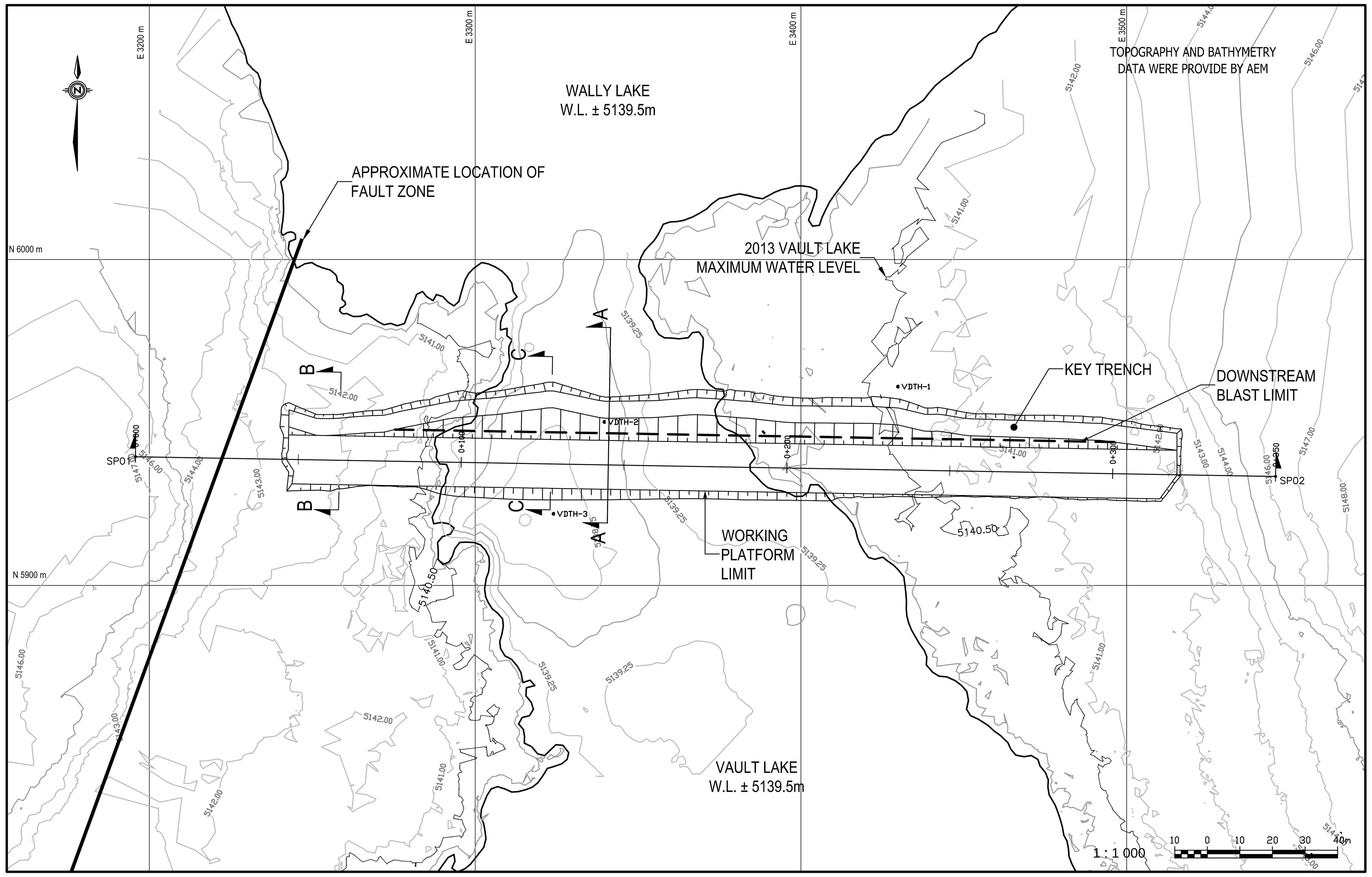
For AEM Geotechnical-Dikes Engineering

APPENDIX A

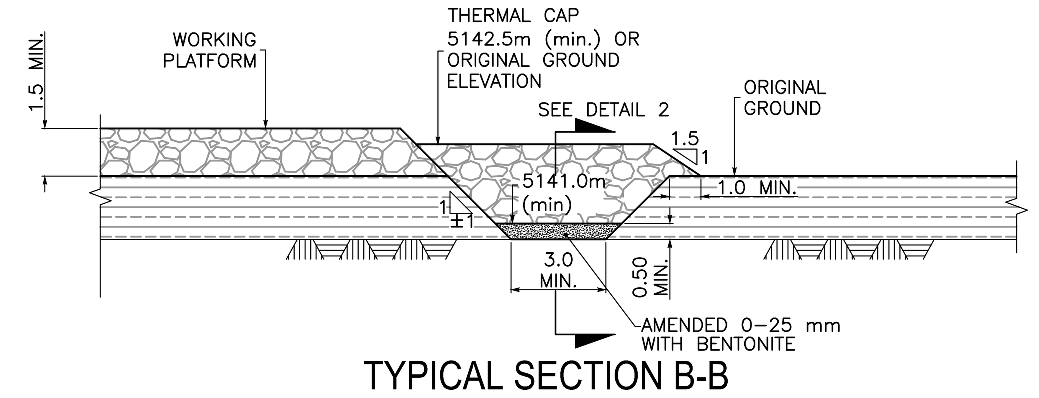
Vault Dike Typical Section, As-Built Drawings and Table of Quantities



TYPICAL SECTION A-A
BEDROCK ELEVATION BELOW 5140.5m
SCALE 1:200



PLAN VIEW - VAULT DIKE
SCALE 1:1000



TYPICAL SECTION B-B
BEDROCK ELEVATION ABOVE 5140.5 m
SCALE 1:200

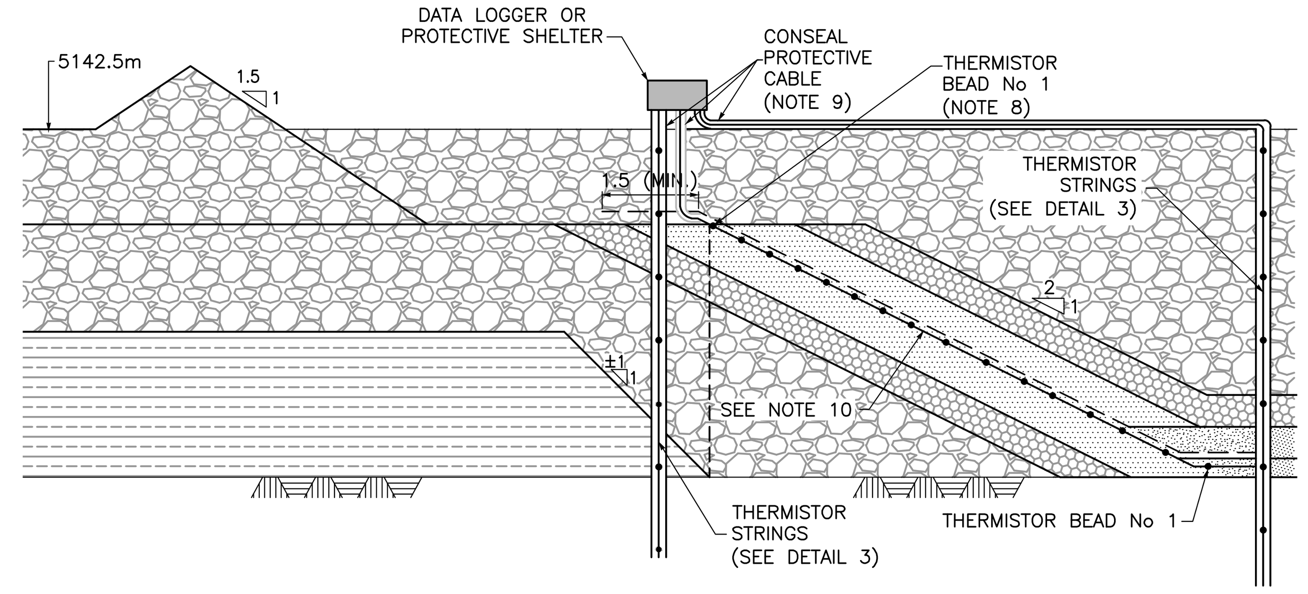
LEGEND

- ROCKFILL
- ICE RICH/POOR TILL
- COARSE FILTER (0–150 mm)
- FINE FILTER (0–25 mm)
- 0–25 mm AMENDED WITH BENTONITE
- BEDROCK

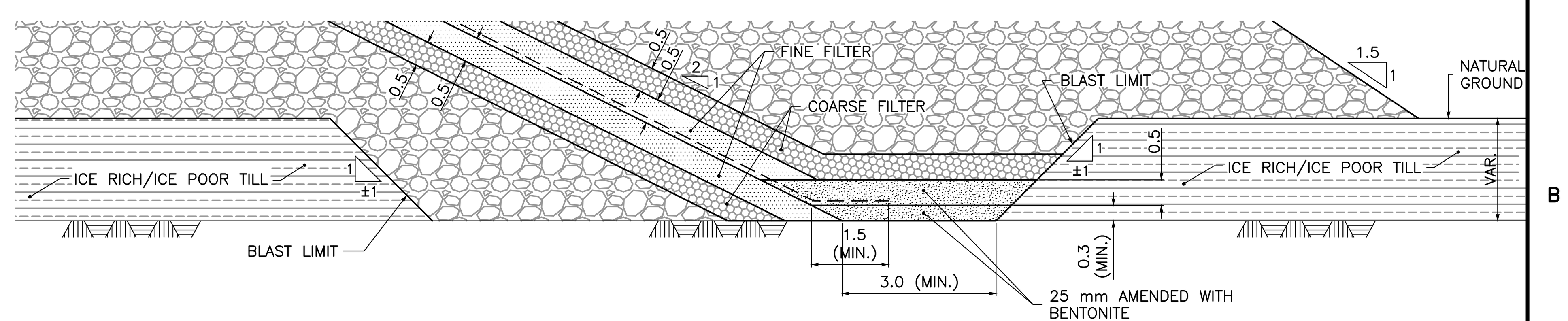
NOTES:

1. ALL COORDINATES AND ELEVATIONS SHOWN RELATE TO THE MINE SYSTEM. TOPOGRAPHY AND BATHYMETRY DATA WERE PROVIDED BY AEM.
2. ALL DIMENSIONS ARE IN METERS (EXCEPT DETAIL 3)
3. SAFETY BERMS WILL BE REQUIRED IN THE VICINITY OF WATER OR IF PLATFORM IS HIGHER THAN 3.0 m. HEIGHT OF THE SAFETY BERMS WILL BE FIXED ACCORDING TO THE SIZE OF THE HAULING TRUCK USED FOR THE CONSTRUCTION AND WILL BE SPECIFIED BY AEM DURING CONSTRUCTION.
4. BLAST SHOULD REACH BEDROCK AND A MINIMUM DEPTH OF 2.0m.
5. LINER BEDDING AND COVER FILTERS MATERIALS (0–20 mm AND 0–150 mm) SHALL BE PLACED PRIOR TO ALLOW ANY VEHICLE CIRCULATION.
6. SURFACE PREPARATION INCLUDE ICE REMOVAL PRIOR THE PLACEMENT OF FILLS WITHIN THE FOOTPRINT AREA OF THE DIKE.
7. LINER SHALL BE INSTALLED HORIZONTALLY AFTER THE APPROVAL OF THE CONTRACTOR'S PLAN BY THE DESIGNER.
8. SHOWN THERMISTOR BEAD SPACING IS NOT REPRESENTATIVE.
9. SPECIAL CARE SHALL BE TAKEN DURING THE FILL PLACEMENT AROUND THE CONSEAL.
10. INCLINED THERMISTOR STRING SHALL BE BURIED INTO A FINE SAND FILL.
11. THERMAL CAP SHALL BE PLACED BEFORE THE THAW SEASON.
12. UPSTREAM BLAST LIMIT SHALL BE VALIDATED ON FIELD BASED ON BEDROCK DEPTH DURING DRILLING OPERATION.
13. NO ACCESS ROAD SHALL BE CONSTRUCTED OVER THE BITUMINOUS GEOMEMBRANE.
14. THIS DRAWING SHALL BE READ WITH THE TECHNICAL SPECIFICATION REPORT.

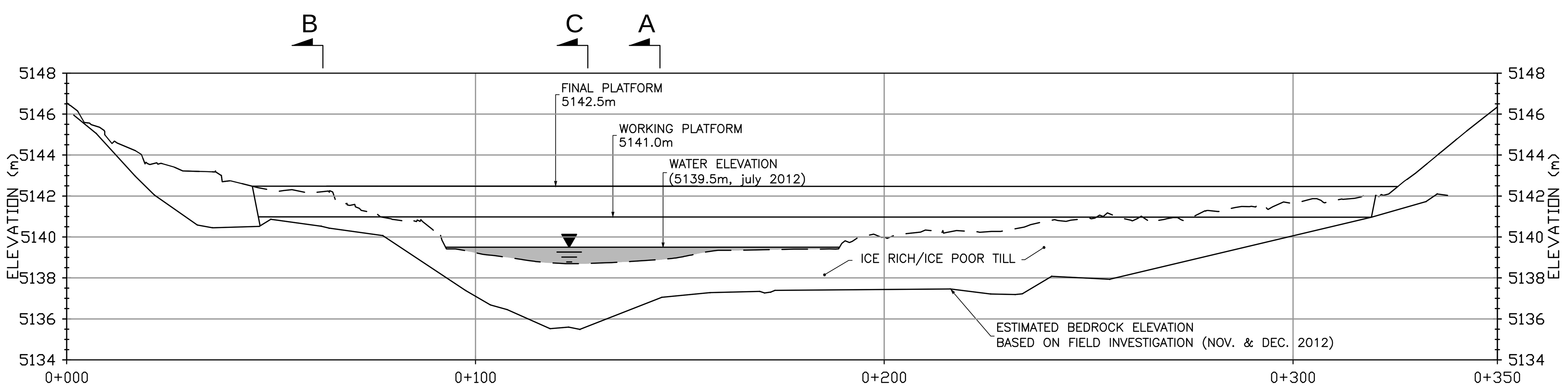
SETTING OUT POINTS		
SP01	3195.74	5939.51
SP02	3545.69	5933.46



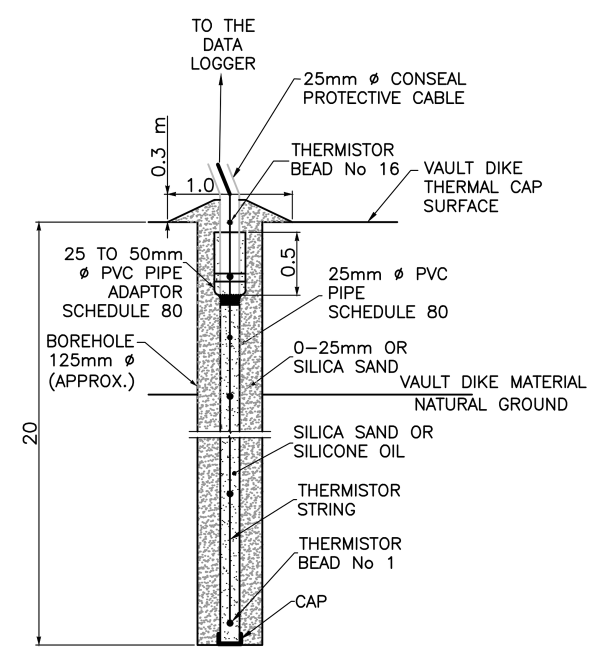
TYPICAL SECTION C-C
THERMISTOR STRINGS INSTALLATION
SCALE 1:100



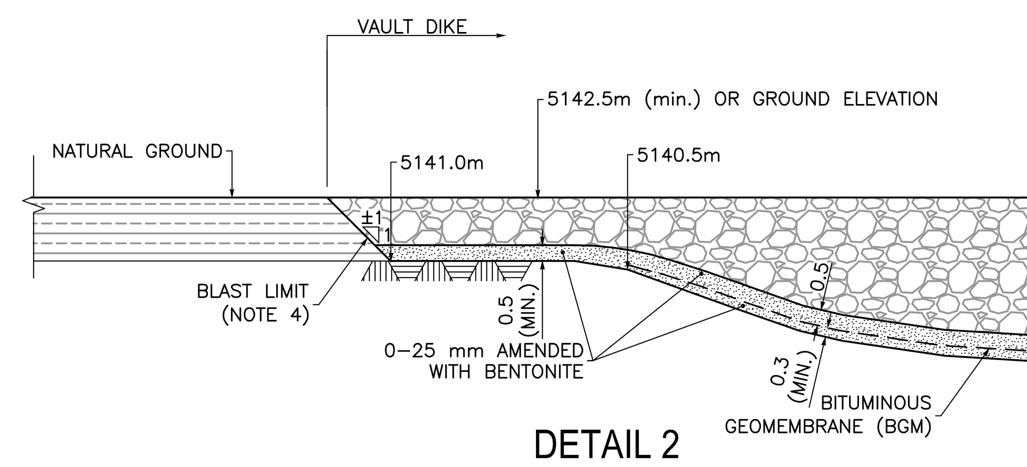
DETAIL 1 - ANCHORING LINER
SCALE 1:100



PROFIL OF VAULT DIKE
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DETAIL 3
VERTICAL THERMISTOR STRING INSTALLATION
SCALE 1:50



DETAIL 2
DIKE ABUTMENT ALONG THE KEY TRENCH
N.T.S.

No EMIS.	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No
1	00	2013/02/01	ISSUED FOR CONSTRUCTION	

ISSUE REGISTER

No	REVISION DESCRIPTION	DATE (Y/M/D)	DESIGNED	VERIFY	APPROVED	REVISOR ENG.	OIQ No

THIS DRAWING IS REPRESENTATIVE OF THE ORIGINAL WORK OF THE DESIGN ENGINEER AND REVISOR ENGINEERS

REVISION REGISTER

No	REFERENCE DRAWINGS NUMBER
1	VAULT DIKE INVESTIGATION -TAMROCK - NOV. 2012.XLSX

PROFESSIONAL SEAL

ORIGINAL HAS BEEN SEALED.

SNC·LAVALIN
Sustainable Mine Development
Global Mining & Metallurgy
SNC LAVALIN INC.
5500, boul. des Galeries, bureau 200
Québec (Québec)
Canada G2K 2E2

PREPARATION	APPROVAL
DESIGNED: Y. JALBERT	PROJECT DISCIPLINE ENGINEER: G. HAILE
DRAWN: E-V. STAICU	CLIENT: AEM
CHECKED: J-F. ST-LAURENT	DATE: 2012/10/22
SCALE: AS SHOWN	

CLIENT: AGNICO-EAGLE

PROJECT: VAULT DIKE

TITLE: CONSTRUCTION OF VAULT DIKE

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
610548	2020	4G DD	0002	00

STDSLIA1HEN – FRAME A1 HORIZONTAL ENGLISH

LAST SAVE: 2013/02/01 – 1:21pm
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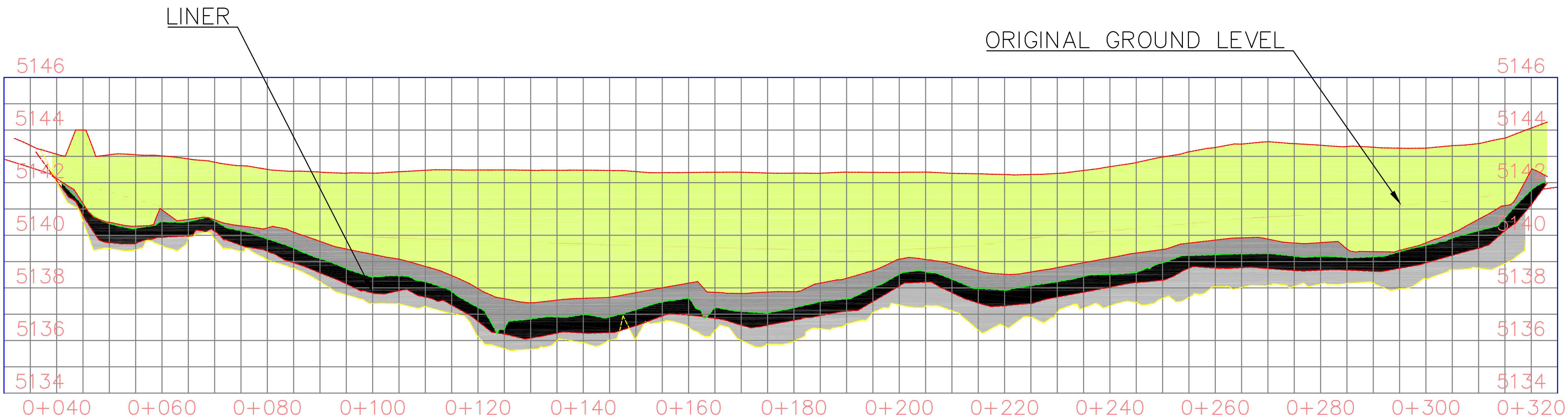
FORMAT ANSI B – LANDSCAPE

KEY TRENCH PROFILE



- FINE FILTER AMENDED WITH BENTONITE 1ST LAYER
- FINE FILTER AMENDED WITH BENTONITE 2ND LAYER
- COARSE FILTER
- ROCKFILL

TITLE	# DWG

REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	BY

REVISIONS

AGNICO-EAGLE

DRAWN BY	ROBERT CLOUATRE	DATE	02-04-2013
CHECKED BY	E.V./ R.C.		03-04-2013
APPROVED BY			
PROJECT NO.			
DATE			

TITLE AGNICO-EAGLE – MEADOWBANK DIVISION
VAULT DIKE
AS BUILT
PROFILE VIEW

SCALE 1:750 | FILE .DWG
DRAWING NO. | REVISION | SHEET 2 / 4

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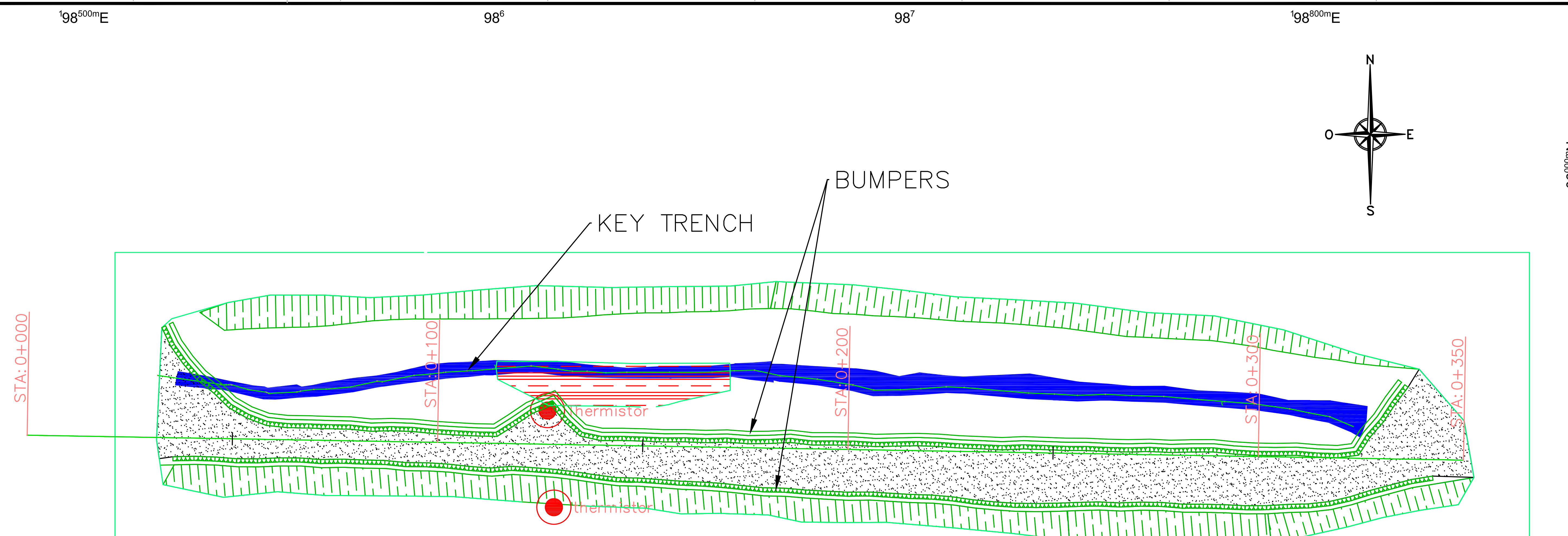

LEGEND

- KEY TRENCH
- WARM TILL
- SLOPES
- ACCESSES ROAD

PLAN VIEW– VAULT DIKE

TITLE	# DWG

REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	BY

REVISIONS

AGNICO-EAGLE

DRAWN BY	ROBERT CLOUATRE	DATE	02–04–2013
CHECKED BY	E.V. – R.C		02–04–2013
APPROVED BY			
PROJECT NO.			
DATE			

TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
VAULT DIKE

AS BUILT

SCALE	FILE
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DRAWING NO.	REVISION	SHEET
		1 / 4

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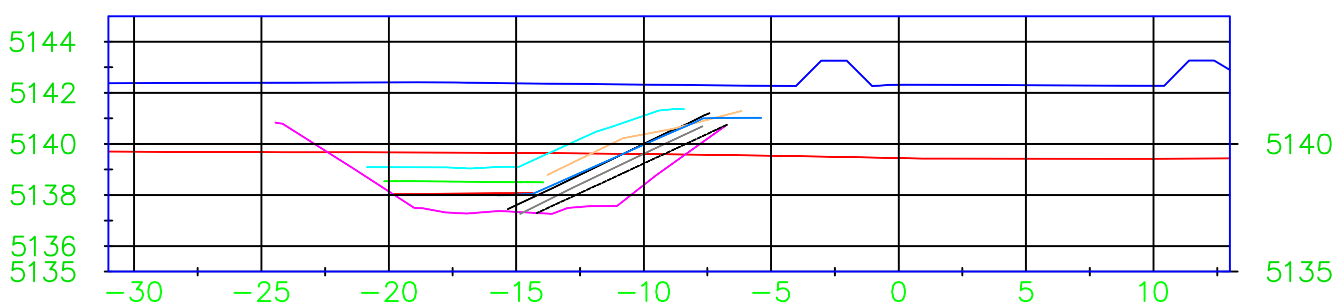

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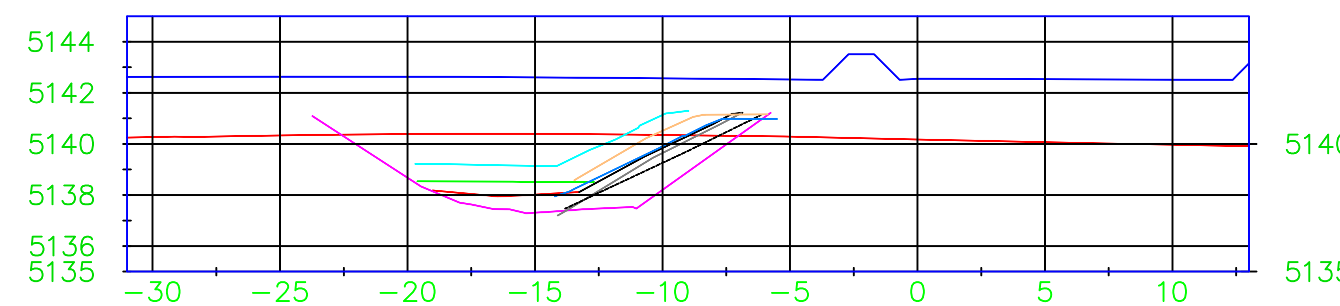

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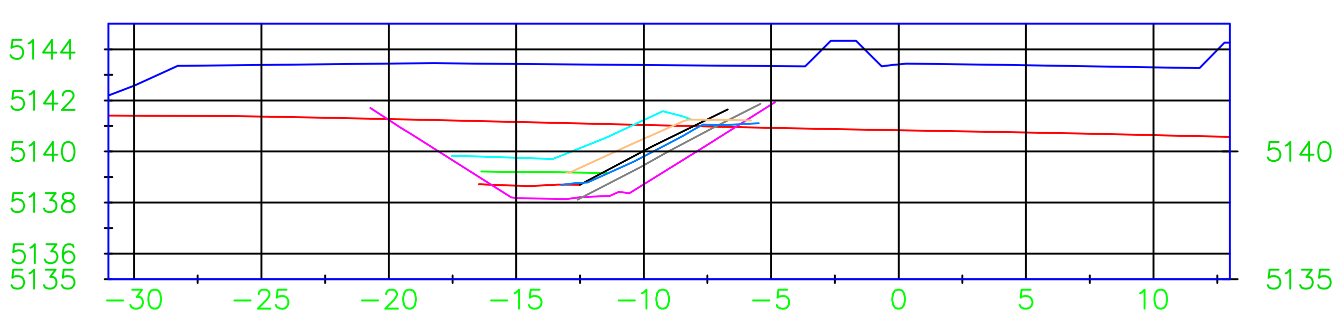


SECTION VIEWS

KEY EXCAVATION
ROCKFILL
FINE FILTER 2ND LAYER
FINE FILTER 1ST LAYER
LINER
FINE FILTER AMENDED EITH BENTONITE 1ST LAYER
0–6" 2ND LAYER
0–6"1ST LAYER
ORIGINAL GROUND
FINE FILTER AMENDEND WITH BENTONITE 2ND LAYER

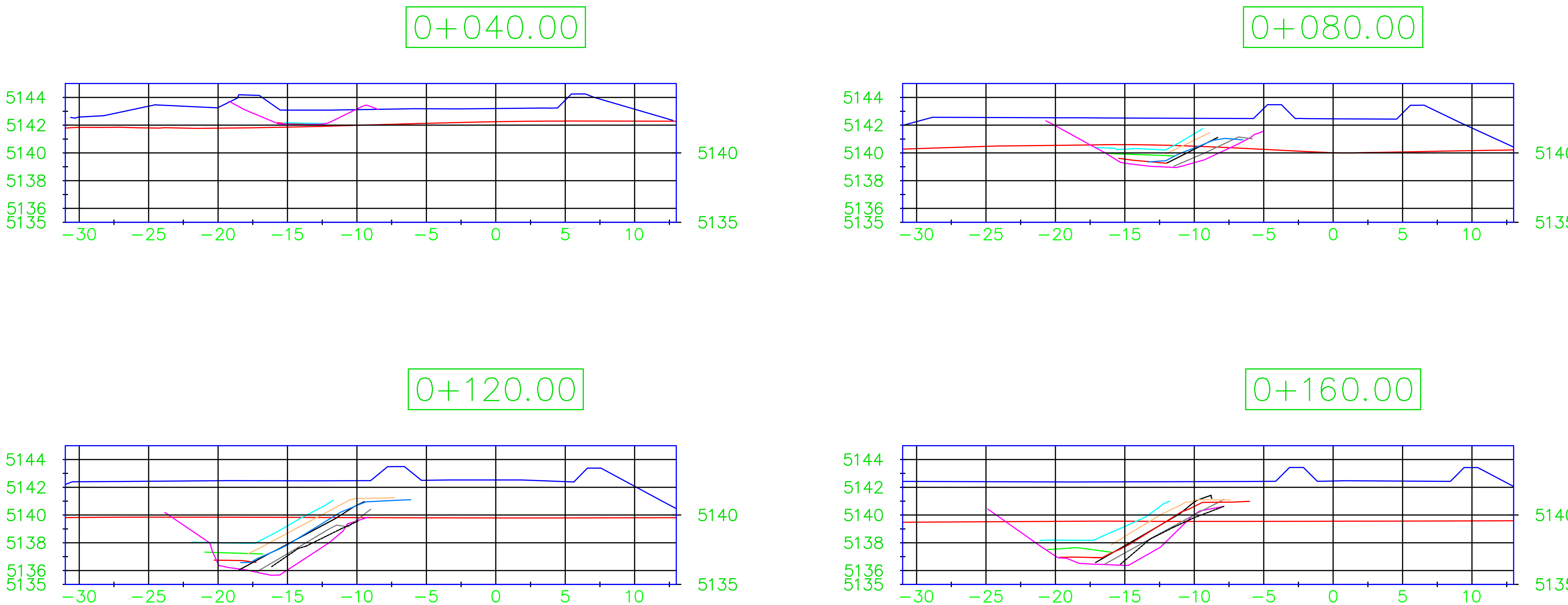
AGNICO-EAGLE

DRAWN BY	ROBERT CLOUATRE	DATE	03–04–2013
CHECKED BY	E.V. / R.C.		03–04–2013
APPROVED BY			
PROJECT NO.			
DATE			

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
VAULT DIKE
AS BUILT
SECTION VIEW

SCALE N.T.S. | FILE .DWG
DRAWING NO. | REVISION | SHEET 4 / 4

FORMAT ANSI B – LANDSCAPE



SECTION VIEWS

KEY EXCAVATION
ROCKFILL
FINE FILTER 2ND LAYER
FINE FILTER 1ST LAYER
LINER
FINE FILTER AMENDED EITH BENTONITE 1ST LAYER
0–6" 2ND LAYER
0–6"1ST LAYER
ORIGINAL GROUND
FINE FILTER AMENDEND WITH BENTONITE 2ND LAYER

AGNICO-EAGLE

DRAWN BY	ROBERT CLOUATRE	DATE	03–04–2013
CHECKED BY	E.V. – R.C.		03–04–2013
APPROVED BY			
PROJECT NO.			
DATE			

TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
VAULT DIKE
AS BUILT
SECTION VIEW

SCALE N.T.S.	FILE .DWG		
DRAWING NO.		REVISION	SHEET 3 / 4

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Table of Quantities for Vault Dike Construction

Material	Units	Total
Key trench excavation	m^3	7004.34
Rockfill on each side of the dike	m^3	8183.24
Rockfill to backfill the slope	m^3	648.15
0-6 '' first layer	m^3	767.77
0-3/4'' first layer	m^3	877.73
Bentonite first layer	m^3	482.11
Liner	m^2	1776.19
Bentonite second layer	m^3	729.62
0-3/4'' second layer	m^3	887.69
0-6'' second layer	m^3	1516.2
Final rockfill backfill	m^3	28768.05
Total rockfill used	m^3	37599.44
Total 0-6" used	m^3	2283.97
Total 0-3/4" used	m^3	1765.42
Total bentonite used	m^3	1211.73

APPENDIX B
Vault Dike Construction Schedule

2013 VAULT DIKE Schedule
Meadowbank Division
Agnico-Eagle

VAULT DIKE

Vault Dike Construction Tasks	Started task on		# Days to complete task		Completed task on	JANUARY				FEBRUARY				MARCH					APRIL			
						4-Jan	11-Jan	18-Jan	25-Jan	1-Feb	8-Feb	15-Feb	22-Feb	1-Mar	8-Mar	15-Mar	22-Mar	29-Mar	5-Apr	12-Apr	19-Apr	26-Apr
CONSTRUCT ACCESS ROADS	Date	1/27/2013	# Days	11 days	2/7/2013																	
								27			7											
FOOT PRINT AREA SNOW/ICE REMOVAL (SURFACE PREP)	Date	1/27/2013	# Days	16 days	2/12/2013																	
								27				12										
DRILL, BLAST, EXCAVATE AND GRADING - KEY TRENCH	Date	2/4/2013	# Days	14 days	2/18/2013																	
									4				18									
COARSE FILTER PLACEMENT AND COMPACTION (0-150 mm)	Date	2/9/2013	# Days	34 days	3/15/2013																	
										9						15						
FINE FILTER PLACEMENT AND COMPACTION (0-25 mm)	Date	2/9/2013	# Days	34 days	3/15/2013																	
										9						15						
0-25 mm AMENDED WITH BENTONITE PLACEMENT AND COMPACTION	Date	2/13/2013	# Days	28 days	3/13/2013																	
										13						13						
ROCKFILL PLACEMENT AND COMPACTION (0-1000 mm)	Date	3/4/2013	# Days	16 days	3/20/2013																	
													4				20					
BITUMINOUS GEOMEMBRANE INSTALLATION	Date	3/3/2013	# Days	10 days	3/13/2013																	
													3			13						
THERMISTOR STRING INSTALLATION	Date	2/26/2013	# Days	47 days	4/14/2013																	
												26									14	